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ENERGYNORTH NATURAL GAS, INC.
INTEGRATED RESOURCE PLAN
(November 1, 2013 – October 31, 2018)
DG 13-__

November 1, 2013

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I. Introduction

The purpose of this report is to present EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities ("EnergyNorth" or the "Company") Integrated Resource Plan (the "IRP" or "Plan") for the five-year period November 1, 2013 through October 31, 2018. The Plan details EnergyNorth's resource planning process and presents the Company's resource strategies based on its current forecast of customer requirements and present market conditions. The Company submits this IRP for review by the New Hampshire Public Utilities Commission (the "Commission") pursuant to Order No.25,317 dated January 11, 2012 in Docket DG 10-041. EnergyNorth is seeking herein the Commission's approval of its IRP that sets forth a resource plan to meet its expected customer requirements using currently accepted planning processes, standards and methods.

An important focus of EnergyNorth's Plan is the effective management of resources in its portfolio, including the minimization of the associated current and future costs of this portfolio. During the forecast period a number of resource decisions must be made, primarily related to the potential renewal or replacement of several individual transportation and storage resources that currently comprise EnergyNorth's best-cost portfolio.

EnergyNorth's IRP provides a complete description of the Company's planning processes which it has employed, and continues to employ, enabling the Commission to adequately review the Plan and to come to a full understanding of the methods used in practice and the results reached by applying those methods to current circumstances. The Plan also demonstrates that EnergyNorth's planning standards are appropriate and that the resource strategies described herein are in the best interests of its customers and result in a reliable, best-cost, long-range

supply and capacity portfolio to meet the Company's forecasted firm demand. The Plan adequately meets the Company's expected future design day, design winter and design year load requirements.

Important aspects of EnergyNorth's Plan are that it incorporates flexibility and reflects expected future conditions. Thus, it is a dynamic living document in the sense that it continues to be refined as needed in order to reasonably respond to the changing requirements of EnergyNorth's customers and market conditions.

As previously noted, a number of important resource decisions must be made during the five-year forecast period of the IRP. Several upstream pipeline capacity contracts require notice of renewal or termination up to one year in advance. Analysis of renewal or replacement of specific expiring resources as well as the acquisition of an incremental resource, if required, must take place early in the planning process in order for EnergyNorth to appropriately evaluate all alternatives.

Traditionally, new pipeline projects built in the region have charged marginal-cost-based rates for the associated incremental pipeline capacity. Marginal-cost-based rates are higher than current legacy capacity¹ rates on the pipelines that serve EnergyNorth. These legacy pipeline rates and associated capacity are advantageous given their significant depreciation of their plant and rate base, of which the revenue requirement is recovered by pipelines at average cost-based rates, and also flow natural gas at higher load factors, resulting in higher billing determinants, which in combination help to further maintain the low rates associated with these pipelines. In the context of this report, EnergyNorth has therefore reflected the rollover of all existing legacy

¹ Legacy capacity is defined herein as firm interstate pipeline transportation and storage service provided to EnergyNorth and other New England LDCs under FERC-approved rate schedules which were in effect upon or soon after the unbundling of the U.S. interstate pipeline system resulting from FERC Order No. 636.

capacity resources for which the Company has the Right of First Refusal (“ROFR”) or a rollover right, that come up for renewal during the five-year planning horizon of the Plan because these long-term pipeline contracts have provided competitively-priced services and offer important supply diversity benefits to the Company’s best-cost portfolio.

In addition, rollover of the Company’s other existing capacity with a ROFR or rollover right has been examined in the context of current and expected future market conditions. The Company notes that when making renewal, replacement or incremental capacity decisions, it will employ the planning, supply and capacity acquisition methods approved under this Plan to further ensure that the decision-making process used is reasonable and appropriate, and that the decision is based on the best information available to EnergyNorth at the time it is made.

Highlights of the major potential resource decisions required during the five-year term of the Plan include the following:

Pipeline Contracts

- Iroquois Gas Transmission System: EnergyNorth has contract entitlements to 4,047 Dth/day of firm transportation service on the Iroquois Gas Transmission System (“Iroquois”) on a 365-day basis. Firm Canadian supplies are transported from the Canadian/New York border from Waddington, New York via the Iroquois system to the Tennessee Gas Pipeline (“Tennessee”) interconnect at Wright, New York. Effective May 1, 2009, EnergyNorth entered into an amendment extending the term from December 1, 2011 to November 1, 2017. This amendment aligns the Iroquois contract expiration with the upstream contracts of TransCanada and Union.
- Portland Natural Gas Transmission System: EnergyNorth has contract entitlements to 1,000 Dth/day of firm transportation service on the Portland Natural Gas Transmission System (“PNGTS”) on a 365-day basis. PNGTS transports gas from Pittsburg, New Hampshire to the Company’s city gate in Berlin, New Hampshire.
- Tennessee Gas Pipeline: In the production area, the Tennessee Gas Pipeline system splits into three legs: the 100 leg, the 800 leg, and the 500 leg. In addition, the Tennessee system is divided into six market zones, from Zone 0 and Zone 1 in Texas

and Louisiana to Zone 6 in New England. See Chart IV-C-3 for a map showing the Tennessee Zone locations. EnergyNorth has capacity entitlements of 107,833 Dth/day on the Tennessee to its New Hampshire citygates. The Company's contract entitlements consist of transport volumes from Zone 0 and Zone 1 of up to 21,596 Dth/day to the Company's citygates in New Hampshire located in Zone 6 and to the Company's storage fields located in Zone 4 and Zone 5; from the Zone 4 and Zone 5 storage market area the Company's contract entitlement consists of transport volumes of up to 28,115 Dth/day to the Company's citygates; from the interconnect at Niagara in Zone 5 the Company's contract entitlements transport volumes of up to 3,122 Dth/day to the Company's citygates; from the interconnect at Wright, New York with Iroquois in Zone 5 the Company's contract entitlements transport volumes of up to 4,000 Dth/day to the Company's citygates; and finally, the Company has contract entitlements of up to 50,000 Dth/day from Dracut, Massachusetts located in Zone 6 to the Company's citygates.

- TransCanada Pipelines Limited ("TransCanada"): EnergyNorth has contract entitlements to 4,047 Dth/day of firm transportation service on TransCanada on a 365-day basis. Firm Canadian supplies are transported from the receipt point at Union at Dawn, Ontario, to the interconnection with Iroquois at Waddington.
- Union Gas Limited ("Union"): Effective November 1, 2007 TransCanada and EnergyNorth entered into a permanent assignment, whereby EnergyNorth permanently assigned to TransCanada 4,092 Dth/day of capacity on Union with an expiration date of October 31, 2017. This assignment provides for a contiguous nomination path. Firm Canadian supplies are still transported from the receipt point at Dawn, Ontario to the interconnection with Iroquois at Waddington, New York.

Storage Contracts

- Dominion Transmission, Incorporated: Under rate schedule GSS which provides 102,700 Dth of storage capacity with a withdrawal rate of up to 934 Dth/day and an injection rate of 934 Dth/day.
- Honeoye Storage Corporation: Under rate schedule SS-NY that provides 245,280 Dth of storage capacity with a withdrawal rate of up to 1,957 Dth/day and an injection rate of 1,362 Dth/day.
- National Fuel Supply Corporation: Under rate schedule FSS that provides 670,800 Dth of storage capacity with a withdrawal rate of up to 6,098 Dth/day and an injection rate of 4,472 Dth/day. Along with this storage service, the Company also contracts for 365-day firm transportation under rate schedule FST in order to transport the storage gas into and out of the storage field.
- Tennessee Gas Pipeline: Under rate schedule FS-MA that provides 1,560,391 Dth of

Storage capacity with a withdrawal rate of up to 21,844 Dth/day and an injection rate of 10,404 Dth/day.

I.A. Company Background

EnergyNorth is a local distribution company that provides natural gas service to approximately 87,000 residential and commercial customers in thirty cities and towns in the state of New Hampshire. In May 2012, the Commission approved the transfer of ownership of EnergyNorth to Liberty Energy Utilities (New Hampshire) Corp. in Order No. 25,370. The majority of EnergyNorth's customer base is comprised of residential heating customers having temperature-sensitive demand. The remainder of EnergyNorth's customers are traditional small and medium-size commercial and industrial ("C&I") loads, as well as some larger industrial customers. The forecast aggregate throughput for the 2013-2014 normal winter season is expected to be approximately 12,236,635 Dth while Normal annual load is expected to be approximately 15,929,715 Dth in the initial year of the Plan.

EnergyNorth's C&I customers have the option of purchasing supply from a competitive supplier and receiving transportation-only service from EnergyNorth, pursuant to the Company's unbundled tariff options. The terms and conditions applicable to transportation-only service specify EnergyNorth's obligation to assign capacity to portions of the transportation customer loads. EnergyNorth's resource planning process appropriately reflects its obligation to assign capacity and maintain reliability in conjunction with its unbundled service offerings.

EnergyNorth's current resource portfolio is comprised of long- and short-haul transportation capacity, storage capacity and associated transportation capacity and on-system peak-shaving facilities. Nearly all of EnergyNorth's upstream long- and short-haul

transportation capacity and underground storage is ultimately delivered to the Company off of the Tennessee pipeline with the exception of 1,000 Dth of pipeline capacity which is delivered off of PNGTS. EnergyNorth's peaking supplies include on-system liquid propane gas ("LPG") and liquefied natural gas ("LNG") facilities located in Manchester, Concord, Nashua and Tilton. The combination of base load, winter and peaking resources provides a diverse, reliable and cost-effective means of serving EnergyNorth's overall firm customer load profile.

I.B. Summary of the IRP Process

The purpose of this IRP is to document the process undertaken by the Company to forecast customer sendout requirements and to design and manage its gas resource portfolio to meet that obligation.

The IRP process begins with the development of a long-range forecast of customer demand. Next, the Company matches its available resources against expected demand to determine if incremental resources are required over the forecast period. If so required, the Company would identify the resources available to meet the incremental demand requirements and procure a least-cost asset or mix of assets available. In determining the least cost available assets, the Company analyzes both price and non-price factors. Examples of non-price factors include reliability, flexibility, viability and diversity of supply source. Next, the Company looks at its currently available assets and determines if there are any "decision points" with respect to any of its contracts such as expiration dates or options to increase or decrease volumes. If so, the Company determines whether to renew those supplies or replace them with an available alternative. Finally, the Company analyzes its portfolio of expected resources against a range of

weather scenarios to determine if those resources are sufficient to reliably meet sendout requirements.

I.C. Organization of the Filing

The Plan is organized in five sections, including this Section I. Section II provides a summary of the current resource planning environment, the Company's resource planning objectives and goals, and the resource planning process prior to examining each of the Plan's elements in more detail. Also, Section II summarizes the Company's planning tools.

Section III presents EnergyNorth's demand forecast methodology and estimation models, scenario analyses and projected customer demand over the Plan period.

Section IV describes the Company's current resource portfolio design, including its analytical process and assumptions, and its evaluation of the adequacy of the resource portfolio under a variety of demand scenarios.

Section V summarizes the Company's compliance with the directives from Order No. 25,317.

Section VI provides all charts and appendices referenced in the Plan.

Finally, Section VII states EnergyNorth's conclusion regarding its resource plan.

II. Overview of EnergyNorth's Resource Planning Process

EnergyNorth's resource planning process begins with the establishment of appropriate goals and objectives. The primary goal of EnergyNorth's planning process is to acquire and

manage resources in a manner that achieves a best-cost resource portfolio for its customers. A best-cost portfolio appropriately balances lower costs with EnergyNorth's other planning objectives, which are to maintain supply security, provide contract flexibility and promote the acquisition of viable resources. Pursuit of a best-cost portfolio allows EnergyNorth to provide its customers with reliable service at the lowest possible cost. In addition, EnergyNorth's resource planning process incorporates the current status of market restructuring in natural gas markets.

II.A. Current Resource Planning Environment

Market and regulatory restructuring of wholesale and retail natural gas markets over the last few decades has increased the complexity associated with acquiring and managing a best-cost resource portfolio. Virtually every aspect of LDC portfolio management has been transformed by regulatory and market changes. In the broadest of terms, the very markets that LDCs such as EnergyNorth participate in, the types of products and services that are bought and sold, and the manner in which these transactions are completed are vastly different today than 30 years ago. Market transformation has brought about many new opportunities and risks for all market participants, including LDCs, which must continue to reliably meet the supply requirements of their customers.

Natural gas markets continue on a course of broad restructuring that began with the initial deregulation of most wellhead supply prices in 1978 through an act of Congress. Through a series of physical infrastructure, financial market, regulatory and technological advances, the manner in which gas supplies are traded and delivered to end-use customers has changed entirely. The result is a dynamic and competitive marketplace that is capable of delivering

greater value to customers, but also increases the complexity of resource planning.

Today, wholesale natural gas commodity markets are no longer price-regulated and the delivery of supplies to LDC city-gate stations is unbundled from supply and storage services. Large volumes of gas are traded at many different pooling points along the interstate pipeline transmission system at transparent prices. LDCs and even many end-users purchase supplies directly from marketing entities under flexible contract terms. Additionally, natural gas contracts are among the most actively traded futures and options in financial markets. Even pipeline and storage capacity services are actively traded under more flexible terms in the primary and secondary release markets.

Prior to these changes, LDCs purchased all of their supplies from a limited number of pipelines serving their market area. To a large degree, LDCs relied upon Federal Energy Regulatory Commission (“FERC”) oversight to ensure that the bundled supplies were reliable and reasonably-priced. Moreover, LDC markets demonstrated remarkable stability from year-to-year, minimizing the market risks associated with the long-term contracts required by pipeline providers.

Restructuring of retail markets has also had a significant impact on EnergyNorth’s planning process as C&I customers avail themselves of opportunities to purchase supply from competitive suppliers pursuant to firm transportation options available under EnergyNorth’s tariff. Over 2,000 C&I customers currently purchase supply from competitive suppliers.

These changes in natural gas markets have brought greater competition and customer choice. They have also introduced considerable uncertainty in the resource planning process. In particular, the LDC’s continuing role to plan for and acquire firm capacity resources for C&I

customers complicates the manner in which an LDC forecasts customer demand and designs its resource portfolio. Unlike electricity markets, for example, gas markets do not have centralized bodies such as independent system operators that can effectively take responsibility for regional reliability. Even with the introduction of competition from marketers, the LDC remains responsible for ensuring the overall reliability on its distribution system, and must be prepared to address any situation whereby one or more of its firm customers is without gas supply for any reason.

EnergyNorth must continue to plan in a manner that ensures adequate and reliable supply so that its distribution system is not impaired by an upstream disruption or a failure to deliver natural gas on a critical day. Natural gas flows on EnergyNorth's system and through the meters of every customer on its system, regardless of whether that customer buys its commodity from EnergyNorth or someone else.

II.B. EnergyNorth's Planning Process

EnergyNorth's process of planning for and meeting customer load requirements involves the coordination of a number of activities including demand forecasting, long-term resource planning, gas supply management and gas distribution. The majority of these activities are centralized within the Energy Procurement Team, which includes the Company's Gas Load Forecasting, Gas Supply Planning, and Energy Trading and Scheduling. The Energy Procurement Team coordinates closely with the Gas Control Department, which is responsible for gas deliveries across the EnergyNorth distribution system in New Hampshire as well as the Customer Choice Team, which is responsible for management of the Supplier Service program

and the Energy Efficiency Team which is responsible for the design, implementation, and management the Company-sponsored energy efficiency programs. Among the responsibilities of the Energy Procurement Team are to project the resource requirements of the EnergyNorth system and to assemble a least-cost portfolio of reliable resources to meet those requirements. The projection of resource requirements requires two steps: (1) the preparation of forecasts of long-term trends in customer requirements under normal weather conditions; and, (2) the preparation of forecasts of customer requirements under defined (design day and design year) weather conditions. Assembling the least-cost portfolio is also a two-step process involving: (1) the procurement of a sufficient and appropriate portfolio of resources to meet the design sendout requirements resulting from the demand forecasting process; and, (2) the economic dispatch of those volumes given available resources. The Company's resource portfolio provides a range of flexibility in making these determinations in the course of the day-to-day management of the portfolio.

EnergyNorth's forecasting and gas supply planning activities are coordinated through its local Energy Procurement and Gas Control groups. Each day, Gas Control provides Energy Procurement with projected sendout requirements that are developed based on the results of the load forecasting process. Energy Procurement determines the availability, reliability and pricing information necessary to satisfy the predicted customer loads taking into account both currently available projections of weather and prices as well as the possibility of design-forward conditions for the remainder of the heating season (design-forward planning). Energy Procurement and Gas Control then establish a daily "Game Plan" that matches available resources with sendout requirements for the EnergyNorth system. The Game Plan is designed to

balance the demand requirements of the system for the current gas day with scheduled supply volumes and also projects a seven-day supply/demand balance.

As described in detail in this filing, the Company's planning process is based on a comprehensive methodology for forecasting customer load requirements using a series of econometric models to determine the annual growth expected for residential heating, residential non-heating, commercial/industrial heating and commercial/industrial non-heating markets for both sales and transportation services. To determine the projected growth over the forecast period, the econometric models use historical economic, demographic and energy price data, as well as weather data to determine total energy demand. The results of the econometric models are augmented by a consideration of non-traditional markets. The econometric model uses the SAS statistical software package to perform data analysis that relates sales by class to factors such as population, labor force, gross state product and economic forecasts to develop annual incremental sales projections. The results of the Company's forecasting methodology indicate that, over the five year forecast period, retail sales in the residential market are projected to grow by an average of 30,495 Dth per year and retail sales in the commercial/industrial market are projected to grow by an average of 291,121 Dth per year. The Company projects no incremental growth opportunities in non-traditional markets over the forecast period.

As explained below, the Company's demand forecast is then converted to supply requirements at the Company's citygates. The end result of the forecasting process is projected sendout increase over the forecast period averaging 341,000 Dth (approximately 2.5 %) per year under normal weather conditions.

To ensure that the Company maintains adequate supplies in its portfolio to meet customer demand, the planning process continues with the development of design year and design day planning standards based on a Monte Carlo statistical analysis to establish a reasonable level of reliability for firm customers. As a result of this analysis the Company defined a design year at 6,932 HDD and a design day at 71 HDD. Combining the results of the design planning standards definition and the load forecasting process, the Company is projecting design year sendout to increase over the forecast period by an average of 375,000 Dth, or 2.5 percent, per year, and design day sendout to increase by an average of 3,710 Dth/day, or 2.5 percent, per year.

After the forecast of customer requirements is determined, the third step in the Company's planning process is to design a resource portfolio to meet those requirements in the most reliable and least cost manner possible. To that end, the Company uses the SENDOUT® Model (a proprietary linear programming model developed by New Energy Associates now Ventyx) to determine the adequacy of the existing portfolio in meeting the forecasted requirements and to identify any shortfalls during the forecast period. SENDOUT® allows the Company to determine the least-cost, economic dispatch of its existing resources subject to contractual and operating constraints and identifies the need for, and type of additional resources during the forecast period, if any. To evaluate the flexibility and adequacy of the resource portfolio under a range of reasonably foreseeable conditions, the portfolio is assessed under base-case conditions, as well as high and low alternative demand scenarios. In the base case, the Company forecasts an average annual increase in sendout requirements under design conditions of approximately 3,710 Dth per day for its design day. The Company's resource plan is sufficient to meet base-case design-year load requirements throughout the forecast period.

The next step in the planning process is to test the adequacy of the portfolio design by evaluating how it would perform under high and low alternative demand scenarios. Under the high and low demand scenarios, the Company adjusted the annual growth rate that resulted from its base case forecast upward and downward by one percentage point. The Company's resource plan shows that the portfolio is adequate under design conditions in all years of the forecast period in both cases, with the addition of incremental long-term capacity resources and/or city-gate delivered supplies in the High Case.

The analysis presented in these sections demonstrates that the Company's planning process results in a reliable resource portfolio that is adequate to meet the forecasted needs of its customers at the lowest possible cost.

III. Forecast Methodology

III.A. Introduction

The Company's forecast methodology supports its supply planning goals of ensuring that: (1) its resource portfolio maintains sufficient supply deliverability to meet customer requirements on the coldest planning day ("design day"); and (2) it maintains sufficient supplies under contract and in storage (underground storage, LNG and propane) to meet customers' requirements over the coldest planning year ("design year"). Each year, the Company employs the same process of preparing a five-year forecast in order to ensure that the portfolio has sufficient resources for the upcoming winter period, as well as sufficient time to contract for additional resources should they be required. Specifically, herein, "customer" is defined as a customer for whom the Company must make capacity planning decisions.

The Company develops its customer requirements forecast from econometric models of

its customer billing data. This data is available by month and by rate class. The Company models its resources and requirements on a daily basis with its SENDOUT® linear programming software modeling package, and hence it needs as input a forecast of daily customer requirements. One of the goals of the Company's modeling exercise is to translate the Company's monthly forecast of billed sales data (which are lagged in time due to the Company's monthly billing cycle schedule) into a forecast of unlagged daily resource requirements at the Company's city gates. This translation involves accounting for Company use and unbilled volumes each calendar month, quantifying unaccounted-for gas, and allocating these monthly volumes to daily volumes.

Based on the forecast, EnergyNorth projects incremental sendout of 1,286,000 Dth over the forecast period or 322,000 Dth per year (assuming normal weather) (see Chart III-A-1). Overall, this growth in firm volume represents a 10.0 percent total increase in sendout requirements over the forecast period, or 2.4 percent per year on average. The development of the Company's five-year forecast of customer sendout requirements, based on the steps set forth above is described in the following sections.

III.B. Forecast of Customer Billing Data ("Demand Forecast")

III.B.1 Introduction

The first step in the Company's forecasting methodology is the generation of its demand forecast. The Company's demand forecast is comprised of two forecasts: a forecast of traditional markets which can be analyzed through econometric modeling and a consideration of any non-traditional markets that might develop using Company market information specific to those markets.

III.B.2 Demand Forecast for Traditional Markets

III.B.2.a Service Territory Specific Data Availability

The Company used its monthly customer billing data (volume and number of customers) for the period January 2005 through March 2013 to define the dependent variables in its econometric modeling. The billing data was modeled at the customer class level for the residential heat, residential non-heat, commercial / industrial heat and commercial/industrial non-heat classes. For each customer class, the data for the sales customers, the mandatory-capacity transportation ("Customer Choice") customers, and the third-party transportation ("Zero Capacity" or "ZCC") customers were modeled separately, where the data is available. These sales and transportation categories were chosen since the Company maintains provider-of-last-resort responsibility for the sales and Customer Choice customers and, by including the ZCC customers, total retail volumes can be correlated with total natural gas flow into the Company's distribution system.

Specifically, the table below lists the relevant customer classes used in the Company's analysis.

Description	Rate Classes
Residential Non-heating Sales	R-1
Residential Heating Sales	R-3, R-4
C&I Heating Sales	G-41, G-42, G-43
C&I Non-heating Sales	G-51, G-52, G-53. G-54
Residential Non-heating Transportation	(none)
Residential Heating Transportation	(none)
C&I Heating Transportation	G-41T, G-42T, G-43T
C&I Non-heating Transportation	G-51T, G-52T, G-53T. G-54T
Residential Non-heating ZCC	(none)
Residential Heating ZCC	(none)
C&I Heating ZCC	G-41T, G-42T, G-43T
C&I Non-heating ZCC	G-51T, G-52T, G-53T. G-54T

Customer Classes

As noted in the table, the Company has no residential transportation customers to model.

III.B.2.b Econometric Models

With volume and customer data as identified above, the Company developed econometric models for use per customer (the quotient of the division of volume and number of customers) and customer counts for each class. The Company's econometric modeling effort regressed each of the two dependent variables against an array of possible independent variables and selected the equation with the best fit and whose independent variables made sense in terms of theoretical causality, as well as the sign of its coefficients.

By using historical economic, demographic and energy price data, listed in the table below, as the independent variables, the Company estimated statistically valid econometric equations for each class.

Series	Description	Var
FHHOLDA	Total Households, (Ths., SA)	HH
FPOPA	Total Population, (Ths., SA)	POP
FNMA	Total Net Migration, (Ths., SAAR)	NMA
FGDP\$A	Gross Product: Total, (Mil. Chained 2000 \$)	GDPR
FYHHMEDA	Income: Median Household, (\$, SAAR)	INC
FYPA	Income: Total Personal, (Mil. \$, SAAR)	PI
FYPCPIA	Income: Per Capita, (2005 \$, SAAR)	PIP
FYPDPIA	Income: Disposable Personal, (Mil. \$, SAAR)	PID
FLBFA	Household Survey: Total Labor Force, (Ths., SA)	LBF
FLBEA	Household Survey: Total Employed, (Ths., SA)	EMP
FLBUA	Household Survey: Total Unemployed, (Ths., SA)	UEM
FLBRA	Household Survey: Unemployment Rate, (% , SA)	UER
FHSTA	Housing Starts: Total, (#, SAAR)	HST
FHST1A	Housing starts: Single-family privately owned, (# of units, SAAR)	HSS
FHSTMFA	Housing starts: Multi-family privately owned, (# of units, SAAR)	HSM
FHPNRA	Permits: Residential - Total, (# of units, SAAR)	HPT
FHPN1A	Permits: Residential - Single-Family, (# of units, SAAR)	HPS
FHPNMA	Permits: Residential - Multifamily, (# of units, SAAR)	HPM
FHX1MEDA	Median Existing Home Sales Price, (Ths., SA)	XHP
FHXAFFA	Affordability Index - Single-family Housing, (Index)	HID

Series	Description	Var
FHX1A	Existing Home Sales, (Ths., SA)	XHS
FHSTKA	Housing stock: Total, (Ths., SA)	HTT
FHSTK1A	Housing stock: Single-family, (Ths., SA)	HSF
FHSTKMFA	Housing stock: Multi-family, (Ths., SA)	HMF
FHSTKOTA	Housing Stock: Other, (Ths.)	HOT
FRTFSA	Total Retail Sales, (Mil \$, SAAR)	RSL
FETA	Employment: Total nonfarm, (Ths., SA)	EE
FERMA	Employment: Natural Resources & Mining, (Ths.)	ERMA
FE23A	Employment: Construction, (Ths.)	ECON
FEMFA	Employment: Manufacturing, (Ths., SA)	EMFA
FETLA	Employment: Trade, Transportation, & Utilities, (Ths.)	ETLA
FE51A	Employment: Information, (Ths.)	EINF
FEFIA	Employment: Financial Activities, (Ths., SA)	EFIA
FEPSA	Employment: Professional & Business Services, (Ths.)	EPSA
FEEHA	Employment: Education & Health Services, (Ths.)	EEHA
FELHA	Employment: Leisure & Hospitality, (Ths.)	ELHA
FE81A	Employment: Other Services (except Public Administration), (Ths.)	EOTH
FEGVA	Employment: Government, (Ths., SA)	EGVA
FEGVFA	Employment: Federal government, (Ths.)	EGVF
FEGVSA	Employment: State government, (Ths.)	EGVS
FEGVLA	Employment: Local government, (Ths.)	EGVL
FGDP	Gross Product: Total, (Mil.\$)	GDP
FCPIU	CPI: Urban Consumer - All Items, (Index, 1982-84=100, SA)	CPI

Independent variables as provided by Moody's economy.com. The "Series" represents Moody's mnemonic for the data series, and "var" represents the variable term the Company used in its models.

Additionally, the Company tested: date as a time trend, actual calendar Heating Degree Days, actual Billing Degree Days, as well as residential natural gas price, commercial natural gas price, and industrial natural gas price from the Department of Energy/Energy Information Administration ("DOE/EIA"), distillate oil price from DOE/EIA, and gas/distillate oil price ratios using all three natural gas prices.

III.B.3 Final econometric models for the Company's demand forecast

Once the Company specified customer and use per customer equations, rate class, and

category (Sales or Transportation), the Company then multiplied the results of the customer models by the results of the corresponding use per customer models to calculate the volume forecasts for each class. Appendix A contains the results of the regression analysis for each component of each class.

Since the Company's filing is an integrated resource plan where Energy Efficiency measures are treated on equal footing with traditional natural gas resources, the Company made no further adjustments to the demand forecast other than to add back into the final demand forecast approximately 99,000 Dth per year to adjust for the trend in its historical retail volume data representative of its historical Energy Efficiency programs.

III.B.3.a Residential Heating Class

The residential heating class presently represents approximately 45 percent of the Company's total firm throughput. EnergyNorth prepared the demand forecast for the residential heating class by developing separate econometric models for numbers of customers and use per customer. There being no residential transportation, residential heating was modeled for only sales customers. The Company multiplied the results of the econometric equations for number of customers by the results of the corresponding econometric equations for use per customer to calculate total sales. It then deducted the estimated impact of the Company-sponsored energy efficiency programs to determine the annual net sales volumes.

Together, residential heating deliveries to sales customers are forecast to increase by an average of 27,000 Dth per year or 0.5% per year over the forecast period, 2013/14 through 2017/18. The forecast results for the residential heating class are presented in Chart III-B-1.

III.B.3.a.1 Number of Residential Heating Customers

The econometric equation for number of residential heating customers is driven by the number of households. Appendix A contains the results of the regression analysis. The results show that the equation is statistically significant and the independent economic / demographic variable is significant with t-statistic greater than 1.96. Using Moody's forecast for the independent variable in the resulting econometric equations, the Company projected the number of residential heating customers. The final forecast shows an increase of approximately 1,142 customers per year through 2017/18, as seen in Chart III-B-2.

III.B.3.a.2 Use per Residential Heating Customer

The independent variables in the use per residential heating customer regression equation include date/time trends and lagged calendar degree days. The results of the regression analysis are presented in Appendix A and demonstrate that the equation is statistically significant and the independent economic / demographic variables are significant with t-statistics greater than 1.96. To generate the forecast, the Company used its normal heating degree days and Moody's household forecast. Residential heating use per customer is projected to decrease from 79 to 76 Dth, or by -1 Dth and -3% per year, over the forecast period as a result of the long-term trend in declining use per customer due to efficiency improvements in gas burning equipment and housing stock, and the impact of the Company's energy efficiency programs. The forecast results for the residential heating class are presented in Chart III-B-3.

III.B.3.a.3 Total Residential Heating Class Sales

The final step in forecasting residential heating sales multiplied the results of the number of customer models by the results of the use per customer models to calculate total sales. The

residential heating throughput (sales plus transportation) is forecast to increase by an average of 27,000 Dth per year or 0.5% per year over the forecast period.

III.B.3.b Residential Non-Heating Class

The residential non-heating class represents approximately 1 percent of the Company's total firm throughput. EnergyNorth prepared the demand forecast for the residential non-heating class by developing separate econometric models for numbers of customers and use per customer. There being no residential transportation, residential non-heating was modeled for only sales customers. The Company multiplied the results of the econometric equation for the number of customers by the results of the corresponding econometric equation for use per customer to calculate total sales.

Residential non-heating sales is forecast to increase by an average of 2,768 Dth per year, or 3.0%, per year over the forecast period 2013/14 through 2017/18, due to decreasing numbers of customers offset by rising use per customer relating largely to the conversion of non-heating customers to gas heat. The forecast results for the residential heating class are presented in Chart III-B-1.

III.B.3.b.1 Number of Residential Non-Heating Customers

The econometric equation for number of residential non-heating customers include as independent variables the employment and date/time trends variables. Appendix A presents the results of the regression analysis. The result shows that the equation is statistically significant and the independent economic / demographic variables are significant with t-statistics greater than 1.96. Using Moody's forecast for the independent variable in the resulting econometric

equation, the Company projected the number of residential non-heating customers.

The final forecast shows an average decrease of approximately 114 customers per year through 2017/18, as seen in Chart III-B-2.

III.B.3.b.2 Use per Residential Non-Heating Customer

The independent variable in the use per residential non-heating customer regression equation was lagged calendar degree days. The results of the regression analysis are presented in Appendix A and demonstrate that the equation is statistically significant and the independent variable is significant with t-statistic greater than 1.96. To generate the forecast, the Company used normal heating degree days.

The results of the analysis show that use per residential non-heating customer is forecast to increase over the forecast period from 25 to 33 Dth, 2 Dth or 6.6% per year, as seen in Chart II-B-3.

III.B.3.b.3 Total Residential Non-Heating Class Sales

As a final step in forecasting residential non-heating sales, the Company multiplied the results of the number of customer model by the results of the use per customer model to calculate total sales. Residential non-heating sales are forecast to increase by an average of 2,768 Dth per year or 3.0% per year over the forecast period.

III.B.3.c Commercial/Industrial Class

The commercial / industrial class represents approximately 55 percent of the Company's total firm throughput. EnergyNorth prepared the demand forecast for the commercial / industrial class by developing separate econometric models for numbers of customers and use per

customer, disaggregated by heating and non-heating classes and sales and transportation categories. In each case, the Company multiplied the results of the econometric equations for number of customer by the results of the corresponding econometric equations for use per customer to calculate total sales. It then deducted the estimated impact of the anticipated Company-sponsored energy efficiency programs to determine the annual net sales volume increase.

Together, commercial / industrial demand (sales plus transportation) is forecast to increase by an average of 291,121 Dth per year or 3.9% per year over the forecast period 2013/14 through 2017/18. The forecast results for the commercial / industrial class are presented in Chart III-B-1.

III.B.3.c.1 Number of Commercial/Industrial Customers

The econometric equations for number of commercial / industrial customers include as independent variables manufacturing employment and date / time trends. Appendix A presents the results of the regression analysis for each commercial / industrial class. These results show that the equations are statistically significant with the independent economic/demographic variables are significant with t-statistics greater than 1.96. The Company projected the number of commercial / industrial customers by using Moody's forecast for the independent variable in the resulting econometric equations.

The final forecast shows an average increase of approximately 215 customers per year from 2013/14 through 2017/18, as seen in Chart III-B-2.

III.B.3.c.2 Use per Commercial/Industrial Customer

The independent variables in the use per commercial/industrial customer regression

equations include: households, billing degree days, calendar degree days, lagged calendar degree days, and date/time trends. The results of the regression analysis are presented in Appendix A and demonstrate that the equations are statistically significant and the independent economic / demographic variables are significant with t-statistics greater than 1.96. To generate the forecast, the Company used normal heating degree days, normal billing degree days, and forecast of the demographic data from Moody's.

The results of the econometric forecast show use per commercial / industrial customer is forecast to increase over the forecast period from 624 Dth per customer per year to 676 Dth per customer per year, an increase of 2.0% per year. The forecast results for the commercial / industrial class are presented in Chart III-B-3.

III.B.3.c.3 Total Commercial/Industrial Class Sales

As a final step in forecasting commercial / industrial sales, the Company multiplied the results of the number of customer models by the results of the use per customer models to calculate total sales.

Together, commercial / industrial demand (sales plus transportation) is forecast to increase by an average of 291,121 Dth per year or 3.9% per year over the forecast period.

III.B.4 Demand Forecast for Non-Traditional Markets

III.B.4.a Introduction

As mentioned above, the Company's demand forecast is comprised of two forecasts: a forecast of traditional markets which can be analyzed through econometric modeling and a forecast of its non-traditional markets which are not modeled econometrically. These non-traditional markets include natural gas vehicles, seasonal firm sales and large-scale power

generation.

III.B.4.b Natural Gas Vehicles

EnergyNorth is forecasting no incremental sales for the natural gas vehicles (“NGV”) market beyond what is already embedded in the historical data upon which the Company’s econometric models are based. Currently the Company has a single NGV customer in Nashua which provides service to the city of Nashua’s refuse vehicles. Since the Company does not have sufficient empirical data, it does not believe that a forecast of NGV load is appropriate at this time but will attempt to address this non-traditional demand as the NGV market becomes more fully developed.

III.B.4.c Seasonal Firm Gas Sales and Large-Scale Power Market

EnergyNorth’s assessment of the seasonal firm gas sales and large-scale power market is that the natural gas required to meet the demands of these markets during the forecast period will not have an impact on the Company’s sendout requirements or resource plan. All seasonal firm gas sales and power generation previously served by the Company converted to transportation before the date of this filing. In addition, the Company is not currently aware of any potential seasonal firm gas sales customers or large-scale gas-fired power generating facilities planned for locations within its service territory over the forecast period that would not procure their natural gas requirements from a third-party. Consistent with EnergyNorth’s recent experience, if a new seasonal firm sales customer or gas-fired power plant were to be located in the Company’s service territory, EnergyNorth believes that the gas requirements of such facilities would likely be served by third-party gas suppliers in conjunction with firm transportation service provided by the Company from the city gate to the facility. Accordingly, EnergyNorth’s forecast shows no

demand for the seasonal firm gas sales or large-scale power generation markets and no impact on the resource plan.

III.B.5 Comparison of the 2010 and 2013 Demand Forecasts

Chart III-B-4 shows EnergyNorth's 2010 forecast as a comparison to the instant forecast. Chart III-B-4 shows that the average annual load additions in the current forecast of 322,000 Dth is 34,000 Dth per year lower than the 356,000 Dth value in the previous forecast. The lower load additions in the current forecast mainly result from lower projected average residential sendout offset partially by a higher projected average commercial / industrial sendout.

III.C Translation of Demand Forecast into Customer Requirements

III.C.1 Introduction

In the second step of EnergyNorth's forecasting methodology, the Company translates its monthly demand forecast into monthly customer requirements, unaffected by billing cycle lag. This translation requires the Company to account for the difference between gas arriving at its city gates ("supply forecast") and gas metered at its customers' burner tips ("demand forecast"). This translation requires adding to the demand forecast the metered Company use of natural gas, adding an amount of supply which represents unaccounted-for gas, and then accounting for the billing lag.

III.C.2 Unaccounted-For Gas

The difference between gas supply metered at the Company's city gates and that which is metered at its customers' burner tips is Unaccounted-For and Company Use Gas. The Company calculated a percentage by which the billed sales needed to be grossed up to match the metered city gate volumes based on the difference between the two over the period Sep 2011 - Aug 2012

(the most recent available September through August period). The forecasted Unaccounted For and Company Use percentage resulting from this analysis is 1.66 percent.

III.C.3 Unbilled Sales

With the application of the Unaccounted-For Gas percentage to the Company's demand forecast, the Company had volumes that were equivalent, except for accounting for billing lag. To align the demand forecast with the supply forecast, the Company developed a logical model of the lag in billing its customers based on its underlying historical and future meter reading schedule. It used this model to then determine the lag-induced difference between its gas deliveries as metered at the citygate and its gas deliveries as metered at its customers' burner tips.

The Company calculated the unbilled volumes by taking the difference between the historical actual monthly sendout figures and the historical actual billed sales figures (including Unaccounted For). It then calculated a linear regression model of the unbilled volumes versus the difference between actual monthly heating degree days and the monthly billing degree days as determined using the billing cycle model described above over the period Sep 2005 - Aug 2012. Since unbilled volumes are a function of timing of delivery versus meter reading, the resulting regression equations were specified with a zero intercept, with the theory being that the differences between sendout and sales tend to zero over time, with only minor differences caused by the year-to-year adaptation of the Company's billing schedule to the actual calendar.

Using the future normal billing degree days from its billing cycle model and its normal calendar heating degree days, the Company then calculated the normalized unbilled volumes which it then added to its normal forecasted billing volumes for the forecast period to determine

its forecast of normal monthly volumes to be delivered to its city gates.

III.D Regression Equation

In the third step of its forecasting methodology, the Company uses regression equations of daily sendout versus daily temperature for the most recent twelve months to allocate its monthly normal forecasted customer requirements to daily normal customer requirements. This step is used to determine EnergyNorth's normal year forecast of customer requirements over the forecast period and to determine its design year forecast of customer requirements over the forecast period for resource planning purposes. To perform its regression analysis, the Company used version 2.15.1 of the R statistical software package².

The Company developed a linear-regression equation using data for the reference-year period April 1, 2012 through March 31, 2013. Its regression equation uses sendout as its dependent variable and temperature as its independent variable³.

Through the use of the linear-regression equation, the Company is able to normalize daily sendout. Specifically, the actual daily firm sendout is regressed against heating degree day ("HDD") data as provided by its weather service vendor WSI, HDD data lagged over two days, and a weekend dummy variable. These data elements were selected for the regression analysis since these elements have been, and continue to be, the major explanatory variables underlying the Company's daily sendout requirements.

2 "R is a language and environment for statistical computing and graphics. It is a GNU project which is similar to the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies). R can be considered as a different implementation of S. There are some important differences, but much code written for S runs unaltered under R. R is available as Free Software under the terms of the Free Software Foundation's GNU General Public License in source code form. It compiles and runs on a wide variety of UNIX platforms and similar systems (including FreeBSD and Linux), Windows and MacOS." (Source: The R Project for Statistical Computing)

3 Sendout includes both Sales and supplier service ("Customer Choice") customer requirements.

EnergyNorth selected the Manchester, NH weather station (KMHT) as the source of the weather data that is used as the principal explanatory variable in its regression equations. The Manchester weather station was selected because it is close to the center of the Company's service territory, on a load-weighted basis. Specifically, the Company used the HDD value for each 24-hour period of 10 a.m. to 10 a.m., which constitutes the gas day and therefore corresponds to the same daily time period of observation of the sendout data. Throughout its regression analysis, the Company used the WSI HDD data when the daily value was greater than zero. When HDD equaled zero, the Company defined that day's HDD as 65o F minus the daily average air temperature so as to have a continuous range of temperature data and avoid the left-truncation that occurs in the standard definition of degree days.

Based on its observations of the relationship between sendout and HDD over the split years 2003/04 through 2012/13, the Company chose to develop its regression equation as a segmented model, a *"regression model where the relationships between the response and one or more explanatory variables are piecewise linear, namely represented by two or more straight lines connected at unknown values: these values are usually referred as breakpoints."* (Source: "segmented: an R package to fit regression models with broken-line relationships," R News, Volume 8/1, May 2008, page 20). Since a significant portion of the Company's sendout is due to spaceheating usage and spaceheating only occurs when average air temperatures fall below a certain level, the segmented model serves as an excellent starting point for modeling the relationship between daily sendout and HDD. This form of regression equation is the same that the Company used in its 2010 Integrated Resource Plan (DG 10-041).

In the tables below, Intercept is the Dth sendout predicted at HDD=0, Slope1 is the

Dth/HDD usage below the Breakpoint HDD level, Slope2 is the incremental Dth/HDD usage above the Breakpoint HDD level, the Standard Error is expressed in Dth, and the Breakpoint HDD is the HDD value at which spaceheating equipment is observed to turn on. The signs of the Slope1 and Slope2 coefficients (positive) imply that as temperatures get colder and HDD increases in value, then sendout will increase, which agrees with what the Company observes.

From the frequency plots (periodogram) of the residuals of the sendout vs. HDD regression, the Company continues to observe a significant peak at frequency 0.14 (and its harmonic at 0.28), which indicates a correlation in the error term once in $1/0.14$, or 7, days, confirming the Company's observations that weekday and weekend sendout requirements are different at similar HDD levels. Examining the average of the residuals by day of the week, the Company again used a second independent variable, a weekday/weekend dummy variable set to zero for Mondays through Thursdays, 1 on Fridays and Sundays, and 2 on Saturdays. The introduction of this second independent variable adds an incremental improvement in the adjusted R2 of the equations and, more importantly, eliminates the 7-day correlation of the residuals. The sign of the coefficient (negative) implies that there is a reduction in sendout on weekend days versus weekday days at similar temperatures, as has been observed by the Company.

Again, the Company observed a correlation between lagged temperature and the residuals of the above equation and it investigated adding a third independent variable. Its three choices were: (1) the difference between HDD on day t and HDD on day $t-1$, (2) the difference between HDD on day t and mean of the HDD on day $t-1$ and day $t-2$, or (3) the difference between HDD on day t and the mean of the HDD on day $t-1$ and day $t-2$ and day $t-3$. The differences were used

in lieu of the actual lagged values to avoid correlation among the independent variables. The Company chose option (2) as the optimal additional independent variable. The underlying theory of this analysis is that heating requirements increase as two consecutive days of cold weather occur, which cools down structures to a greater degree than would be experienced on a single day. The negative sign of the coefficient implies that, if a day is colder than the average of the previous two days, the increase in sendout will be somewhat lower than what would be forecast without the coefficient, and vice versa.

The tables below list the coefficients for the final regression equation form. As noted above, in the instant filing, the Company uses its 2012/13 regression equations to allocate its monthly forecasted volumes to its daily forecasted volumes.

Segmented Regression Results for EnergyNorth sendout vs. HDD and Weekend and Lagged Delta HDD

Table III.C.1: Segmented Regression Results for sendout vs. HDD and Weekend and Lagged Delta HDD								
Split Year	Intercept	Slope1	Slope2	Weekend	Lagged Delta HDD	Standard Error	Adjusted R ²	Breakpoint HDD
2003/04	12,625.63	399.09	1,524.37	-1,340.39	-294.62	2,828.00	0.9897	10.56
2004/05	12,289.28	358.37	1,606.29	-1,437.21	-274.05	2,201.00	0.9933	10.50
2005/06	12,793.90	244.37	1,591.56	-1,699.06	-225.75	2,446.00	0.9898	8.28
2006/07	13,821.97	332.57	1,640.84	-1,988.96	-230.03	2,577.00	0.9904	10.24
2007/08	12,691.10	323.95	1,598.45	-1,692.66	-260.81	2,479.00	0.9911	9.25
2008/09	12,966.30	381.04	1,571.44	-2,042.38	-317.73	2,511.00	0.9918	10.25
2009/10	12,351.09	324.77	1,693.18	-2,015.95	-271.09	2,688.00	0.9882	10.20
2010/11	13,017.19	317.34	1,597.81	-2,280.08	-273.08	2,587.00	0.9911	9.59
2011/12	12,868.72	357.30	1,614.43	-2,350.68	-302.77	2,497.00	0.9881	9.50
2012/13	13,410.08	349.63	1,759.78	-2,190.78	-316.24	2,846.00	0.9884	10.57

The table above sets forth the 2012/13 regression coefficients for EnergyNorth. The functional form of the equation, in pseudocode, is then:

```

Sendout = Intercept Coefficient +
Weekend Dummy Coefficient * Weekend Dummy Variable +
Slope1 Coefficient * min(HDD~t~, Breakpoint HDD) +
if(HDD~t~<=Breakpoint HDD) {0} else {(Slope1 Coefficient + Slope2 Coefficient) *
(HDD~t~ - Breakpoint HDD)} +
Lagged Delta HDD Coefficient * (HDD~t~ - average(HDD~t-1~, HDD~t-2~))

```

As seen above, the adjusted R-squared value for the 2012/13 regression is 0.9884, and all of the t-statistics of the independent variables are greater than 2.0, indicating that these variables are significant to the explanatory power of the equation.

The regression equation captures the observed characteristics of the Company's sendout requirements. The observed characteristics include the following: (1) sendout requirements are directly related to HDD; (2) sendout requirements are affected by HDDs that occur over a multi-day period; and (3) sendout requirements differ by day of the week. Thus, the Company has developed a reliable regression equation to establish the basis upon which future sendout requirements can be forecast. Using its forecast of customer requirements and an appropriate set of daily HDD values for a design year, the Company can successfully plan its operational requirements to provide a low-cost, adequate and reliable supply of natural gas to its customers.

III.E Sensitivity Analysis

III.E.1 Overview

In order to provide guidance as to the timing of the need for additional portfolio resources, the Company designed its high and low cases using a +/- 1 percent growth interval range, higher and lower than the growth rate of its Base Case forecast.

III.E.2 Development of High and Low Demand Scenarios

III.E.2.a Introduction

Charts III-B-5 and III-B-6 summarize the Company's high and low demand scenarios.

III.E.2.b High-Demand Scenario

To generate the High Case demand forecast, the Company added 1 % per annum growth to its Base Case growth rate, assuming the growth is distributed equally among the various rate classes. A summary of the High Case forecast is found in Chart III-B-5. The High Case forecast results in an average per annum growth in demand of 467,000 Dth per year, or 145,000 Dth per year higher than the base case, with an average annual growth rate of 3.4% compared to the Base Case growth rate of 2.4%.

III.E.2.c Low-Demand Scenario

To generate the Low Case demand forecast, the Company subtracted 1 % per annum growth to its Base Case growth rate, assuming the growth is distributed equally among the various rate classes. A summary of the Low Case forecast is found in Chart III-B-6. The Low Case forecast results in an average per annum growth in demand of 185,000 Dth per year, or 136,000 Dth per year lower than the base case, with an average growth rate of 1.4% compared to the Base Case growth rate of 2.4%.

III.F Normal Year Forecast of Customer Requirements for Ratemaking Purposes

To establish the normal year's daily heating degree day ("HDD") data, the Company calculated the average annual number of HDD for the Manchester, NH weather station for the thirty-year period (calendar years 1983 through 2012), with an average of 6,297 HDD. In doing so, the Company aligns its normal year forecast with the normalization period used in its

ratemaking / cost of gas processes.

The Company then prepared a "Typical Meteorological Year" by selecting, for each calendar month, the month in the KMHT weather database that most closely approximated the thirty-year average HDD and standard deviation for each month. A summary of the monthly averages for the KMHT weather site is listed in the chart below.

Average Monthly HDD for the Manchester, NH (KMHT) Weather Station

<u>Month</u>	<u>HDD</u>
Jan	1,230
Feb	1,031
Mar	886
Apr	518
May	245
Jun	51
Jul	3
Aug	13
Sep	123
Oct	421
Nov	711
<u>Dec</u>	<u>1,065</u>
Total	6,297

In the third step of the Company's forecasting methodology set forth in Section III.A above, the Company allocates each of the monthly demand forecast volumes discussed in the section above (using normal year HDD) based on the ratio of the daily to monthly totals from the Company's normalized 2012/13 regression equation, to yield the forecast of customer requirements under normal weather conditions for the Base Case, High Case, and Low Case demand forecasts.

Base Case

Base Case Normal Year Customer Requirements (MDth)

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	9,565	9,839	10,027	10,320	10,561
<u>Non-Heating Season</u>	<u>3,833</u>	<u>3,906</u>	<u>4,020</u>	<u>4,114</u>	<u>4,201</u>
Total	13,398	13,745	14,047	14,434	14,762
Per-Annum Growth		346	302	387	328
Per-Annum Growth %		2.6%	2.2%	2.8%	2.3%

High Case

High Case Normal Year Customer Requirements (MDth)

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	9,711	10,060	10,382	10,772	11,124
<u>Non-Heating Season</u>	<u>3,818</u>	<u>3,956</u>	<u>4,082</u>	<u>4,235</u>	<u>4,374</u>
Total	13,530	14,016	14,464	15,007	15,498
Per-Annum Growth		486	448	543	491
Per-Annum Growth %		3.6%	3.2%	3.8%	3.3%

Low Case

Low Case Normal Year Customer Requirements (MDth)

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	9,522	9,674	9,790	9,961	10,088
<u>Non-Heating Season</u>	<u>3,744</u>	<u>3,803</u>	<u>3,849</u>	<u>3,916</u>	<u>3,966</u>
Total	13,266	13,477	13,639	13,878	14,054
Per-Annum Growth		212	162	239	177
Per-Annum Growth %		1.6%	1.2%	1.8%	1.3%

III.G Planning Standards

In the fourth step of the Company's forecasting methodology, pursuant to Order No. 24,-941, the Company bases its planning standards on a Monte Carlo analysis, having selected average daily temperature as the variable to be modeled and HDD, which is a linear transformation of average daily temperature, as the independent variable for its regression analysis. The Company continues to perform its Monte Carlo analysis on average daily

temperature in this filing based on the experience it gained in its 2006 Long-Range Plan filing (DG 06-105). In DG 06-105, the Company performed its Monte Carlo analysis on Effective Degree Days (“EDD”) and it learned that there a number of accommodations that have to be made when using data that is not continuous, i.e. EDD is a left-truncated data series in that it is the set of integer numbers greater than or equal to zero, whereas average daily temperature is a continuous data set when characterizing air temperature at Manchester, NH.

For its Monte Carlo analysis, the Company used temperature data from the Manchester, NH weather station for the period January 1, 1977 through December 31, 2012.

III.G.1 The Theory of the Company’s Monte Carlo Methodology

For its 2013 filing, the Company has used a Monte Carlo simulation method to generate synthetic daily EHDD values for Manchester, NH for purposes of establishing its normal and design planning standards. The application of this Monte Carlo method provides the Company with a much larger time series of daily temperature values on which to base its standards.

The Monte Carlo methodology generally implies the generation of a dataset of synthetic values, larger than a given dataset of actual observations, based on the observed statistical properties of the actual dataset. The larger size of the synthetic dataset (4,096 simulated years) can assist in the determination of a better approximation of average expected temperatures (normal) as well as the likelihood of extreme weather events, such as those the Company seeks to define in its design standards.

In developing a time series of daily temperature values much larger than the Company’s existing actual historical observations from 1977-present, greater consideration had to be given than to generate 365 random values for each year of the synthetic dataset. First, consideration of

the seasonality of temperature values had to be given. Second, consideration of the interdependence of one day's temperature value with the prior day's value had to be given, as well. To generate its set of synthetic data values, the Company chose to model its temperature data using a first-order autoregressive process (denoted AR(1)). Such a model has been commonly assumed for meteorological time series.

Letting X_t denote the temperature value on the t th day, the AR(1) process requires that the conditional probability distribution of X_t , given the past record of observed temperatures, X_{t-1}, X_{t-2}, \dots , depends only on X_{t-1} , the observed temperature value for the previous day. This property can be expressed as:

$$X_t - \mu = \Phi(X_{t-1} - \mu) + \varepsilon_t, \quad (1)$$

where the daily temperature values are expressed in terms of deviations from their common mean μ , and Φ denotes the first-order autocorrelation coefficient. The error terms (ε_t) in equation (1) are assumed to constitute a "white-noise process"; that is, they are uncorrelated random variables with zero mean and constant variance σ_ε^2 . It is further assumed that the ε_t are normally distributed [denoted $N(0, \sigma_\varepsilon^2)$].

The first-order autocorrelation coefficient Φ measures the degree of dependence between the temperature values on consecutive days, X_{t-1} and X_t . A value of $\Phi = 0$ implies that X_{t-1} and X_t are uncorrelated (i.e., X_t is completely unpredictable from the past record of daily temperatures), whereas a value of $\Phi = 1$ or -1 implies that the X_t are perfectly correlated (i.e., X_t is completely predictable). For daily temperature time series, typically $0 < \Phi < 1$, meaning that the X_t are positively, but not perfectly, correlated. An AR(1) process is stationary (i.e., all the

joint probability distributions of the X_t , are time invariant) if $|\Phi| < 1$.

The requirement that the error term ϵ_t is normally distributed implies that the daily temperature X_t also is normally distributed. Letting σ^2 denote the variance of X_t , it is straightforward to show that σ^2 is related to σ_ϵ^2 , the variance of an error term, by

$$\sigma_\epsilon^2 = (1 - \Phi^2) \sigma^2 \quad (2)$$

We see by equation (2), that the stronger the dependence between X_{t-1} and X_t , the greater the reduction in the variance of an error term relative to the variance of daily temperature. More importantly, (2) implies that an AR(1) process can be completely characterized in terms of three parameters, μ , Φ and σ^2 .

III.G.2 The Application of the Company's Monte Carlo Methodology

The Company used the dataset of thirty-five calendar years of daily average air temperature (in °F; 1977-2012) at Manchester NH airport as the source data for its Monte Carlo analysis. For the purposes of this analysis, the data for leap days were removed. To begin its analysis, the Company determined the annual (365-day) cycle in the dataset Fourier analysis and removed it from the input dataset (i.e. it “deseasonalized” the temperature pattern over the course of the year) to conduct its analysis on the variations in temperature about the long-term mean values. The Company then calculated Φ , the first-order autocorrelation coefficient, over the entire dataset of deseasonalized daily average temperatures. For each calendar day, the Company then computed the mean and standard deviation values (32 observations per day) to establish the μ and σ^2 parameters required for its AR(1) process.

To create 4,096 years of synthetic daily temperature time series, the Company generated

365 random HDD deviation values (January 1st – December 31st) denoted by $X'1, X'2, \dots, X'365$, from the AR(1) process. The initial daily temperature deviation value (for the day of January 1st), $X'1$ was produced from the $N(\mu, \sigma^2)$ normal distribution by means of a random number generator. Each subsequent daily temperature deviation value, $X'n$, was produced using Equations (1) and (2) from the $N(\mu, \sigma^2)$ normal distribution by means of a random number generator and the first-order autocorrelation coefficient Φ . Finally, the entire Monte Carlo data series was re-seasonalized by adding back in the 365-day seasonal component removed at the beginning of the analysis.

The results of the Monte Carlo analysis establish the mean expected annual HDD as 6,373.75 with a standard deviation of 279.23 HDD.

The results of the Monte Carlo analysis establish the mean expected coldest day as 4.127 oF (60.9 HDD) with a standard deviation of 5.303 oF.

III.G.3 The 2013 Design Day and Design Year Standards

The results of the Monte Carlo analysis permit the Company to determine the appropriate design-day and design-year planning standards to develop a least-cost reliable supply portfolio over the forecast period. Design day and design year are two types of extreme weather events for which the Company must maintain adequate resources. These two types of standards are significant in that the design day standard determines the most cost-effective amount of daily transportation capacity (both interstate and supplemental) and the design year standard determines the most cost-effective amount of storage supply to maintain to ensure reliable seasonal service to the Company's customers.

The design day standard is based on the statistical distribution of the coldest day of each

calendar year. The design year standard is based on the statistical distribution of the total HDDs in each calendar year.

The Company bases its planning standards on its Monte Carlo analysis, using a design day/year of mean plus two standard deviations.

Therefore, the Company's design day is defined as $4.127 - 2 * 5.303$, or -6.479 oF.

Converting to HDD yields a design day of 71 HDD.

The Company's design year is defined as $6,373.75 + 2 * 279.23$ HDD, or 6932 HDD.

To create its design year of daily HDD values, the Company scaled upward each of the daily HDD values in its normal year by the ratio of $6,932 / 6,297$.

The Company's design year is summarized in Table III.F.1.

Table III.F.1: Design Year HDD	
January	1,352
February	1,135
March	974
April	569
May	265
June	60
July	4
August	14
September	136
October	468
November	782
<u>December</u>	<u>1,173</u>
Total	6,932

III.H Forecast of Design Year Customer Requirements

In the fifth and final step of the Company's forecasting methodology set forth in Section III.A, above, the Company uses the applicable design day and design-year planning standards to determine the design day and design-year sendout requirements. To accomplish this, the Company applied its normal year daily HDD pattern and its design year daily HDD pattern to its 2012/13 regressions equation, which is derived from the sendout regression analysis, to yield two springboard year estimates of normal year and design year daily customer requirements. The five-year daily forecast of normal year customer requirements generated by the Company's demand forecast was then scaled by the 2012/13 ratio of each day's design year to normal year daily requirements ratio to produce an equivalent five-year daily forecast of design year customer requirements. Below are tables for the resulting design year requirements for the base case, high case, and low case demand forecasts.

Base Case

Base Case Design Year Customer Requirements (MDth)

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	10,627	10,931	11,140	11,466	11,733
<u>Non-Heating Season</u>	<u>4,090</u>	<u>4,169</u>	<u>4,290</u>	<u>4,390</u>	<u>4,484</u>
Total	14,717	15,100	15,431	15,856	16,217
Per-Annun Growth		383	331	425	361
Per-Annun Growth %		2.6%	2.2%	2.8%	2.3%
Design Day (Dth) ⁴	142,542	146,630	149,433	153,799	157,380

High Case

High Case Design Year Customer Requirements (MDth)

⁴ The design day represents total sales and customer choice requirements before the application of any energy efficiency. The design day numbers in Appendix B are net of energy efficiency.

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	10,789	11,177	11,534	11,967	12,359
<u>Non-Heating Season</u>	<u>4,075</u>	<u>4,222</u>	<u>4,357</u>	<u>4,520</u>	<u>4,668</u>
Total	14,864	15,399	15,891	16,487	17,027
Per-Annum Growth		534	493	596	540
Per-Annum Growth %		3.6%	3.2%	3.8%	3.3%

Low Case

Low Case Design Year Customer Requirements (MDth)

	<u>2013/14</u>	<u>2014/15</u>	<u>2015/16</u>	<u>2016/17</u>	<u>2017/18</u>
Heating Season	10,578	10,747	10,876	11,067	11,207
<u>Non-Heating Season</u>	<u>3,996</u>	<u>4,059</u>	<u>4,108</u>	<u>4,180</u>	<u>4,233</u>
Total	14,574	14,807	14,984	15,247	15,441
Per-Annum Growth		232	177	263	194
Per-Annum Growth %		1.6%	1.2%	1.8%	1.3%

IV. Design of the Resource Portfolio

IVA Portfolio Design

In the third step of the Company's resource-planning process, the Company evaluates the existing resource portfolio in relation to the firm sendout forecast developed in Section III above. As part of this evaluation, the Company reviews the possible strategies for meeting customer requirements using the existing resource portfolio in a variety of circumstances. Using the SENDOUT® model (described below), the Company is able to (1) determine the least-cost portfolio that will meet forecasted customer demand, and (2) test the sensitivity of the portfolio to key inputs and assumptions, as well as its ability to meet all of the Company's planning standards and contingencies. Based on the results of this analysis, the Company is able to make preliminary decisions on the adequacy of the resource portfolio and its ability to meet system requirements over the longer term.

Since 1996, the Company has been using the SENDOUT® model developed by New

Energy Associates, now Ventyx, as its primary analytical tool in the portfolio design process. The SENDOUT® model is a linear-programming optimization software tool used to assist in evaluating, selecting and explaining long-term portfolio strategies. SENDOUT® has several advantages over previous models. For instance, there is no limit to the number of resources that can be defined. This allows the Company to model its resources more realistically and to receive more meaningful output. Second, the model allows the Company to examine the effect of various contracts on the total portfolio cost.

In that regard, the SENDOUT® model can be used in one of two ways. First, the model can be used to determine the best use of a given portfolio of supply, capacity and storage contracts to meet a specified demand. That is, it can solve for the dispatch of resources that minimizes the cost of serving the specified demand given the existing resource and system-operating constraints. The model dispatches resources based on the lowest variable cost to meet demand, assuming that demand charges are fixed. Second, the SENDOUT® model can be used to determine the optimal portfolio to meet a given demand. To do this, the model uses a linear programming algorithm to analyze the combination of contracts and the size of each contract (i.e., MDQ) to determine the combination that results in the lowest total cost, taking into account both variable and fixed costs.

IV.B Analytical Process and Assumptions

For the purpose of preparing this Supply Plan filing, the Company analyzed three demand scenarios, i.e., the low-demand scenario, the base-case scenario and the high-demand scenario, as described in Section III. In addition, the Company analyzed an additional scenario using the Company's existing resource portfolio and enhanced Energy Efficiency options. The examination

of these various scenarios enables the Company to test the adequacy and flexibility of the resource portfolio (see Section IV.C.4).

To perform the analysis of these various scenarios, the Company incorporated several key assumptions. First, the Company assumed that, throughout the forecast period, there is no change in the Company's service obligation to plan for the capacity requirements of firm sales and Customer Choice customers. Second, the Company's analysis assumes that all legacy contracts expiring during the forecast period would be renewed with no change in pricing, quantities or operating characteristics. Third, the Company includes a new capacity resource, the Tennessee Northeast Expansion (“TGP_NEX”) project, as an alternative resource to its existing market area capacity and as a replacement for its aging propane facilities in Manchester and Nashua. This new resource option is discussed in more detail in Section IV.C.8.

The Company's first analysis was to run the Base Case Design Year scenario in Resource Mix mode, allowing the SENDOUT model to determine the most cost-effective mix of pipeline capacity and baseline Energy Efficiency measures. The Company believes that its baseline Energy Efficiency program (the calendar year 2013 program fully available in 2013/14 and the calendar year 2013 program fully available in 2014/15 through 2017/18) to be most reasonable ending point of meeting the market demand for these Energy Efficiency programs. To account for the assumed 20-year life span of the Energy Efficiency measures, this model run was performed for the period 2013/14 through 2038/39, with a 3.25 percent discount rate.

The results of this run, found in Appendix B.1: Base Case Design Year: Resource Mix Results demonstrate that the full capacity of the Company's traditional ANE supply path, Boundary supply path, Tennessee long-haul path, 90,000 Dth/day of capacity from the

TGP_NEX” project, plus 100 percent of each year’s Energy Efficiency program contributes to a least-cost portfolio under design weather conditions. The selection of all of the Energy Efficiency programs validates the results of the 2013 Avoided Energy Supply Cost study performed by Synapse Energy on behalf of the Company and other New England utilities. Section IV.D.1 summarizes the results of this scenario.

The Company’s second analysis was to run the Base Case Normal Year scenario in Resource Mix mode, allowing the SENDOUT model to determine the most cost-effective mix of pipeline capacity and baseline Energy Efficiency measures. The results of this run, found in Appendix B.4: Base Case Normal Year: Resource Mix Results demonstrate that the full capacity of the Company’s traditional ANE supply path, Boundary supply path, Tennessee long-haul path, 90,000 Dth/day of capacity from the TGP_NEX project, plus 100 percent of each year’s Energy Efficiency program continue to contribute to a least-cost portfolio even under normal weather conditions. To account for the assumed 20-year life span of the Energy Efficiency measures, this model run was also performed for the period 2013/14 through 2038/39, with a 3.25 percent discount rate.

Given the validation of a resource portfolio consisting of the Company’s traditional pipeline resources, 90,000 Dth/day of capacity from the TGP_NEX project, plus 100 percent of each year’s Energy Efficiency program, the Company then ran normal and design year SENDOUT model runs for its High and Low demand forecasts, not in Resource Mix mode, as sensitivity scenarios to test this resource portfolio. Section IV.D.2 and IV.D.3 summarize the results of the High Case and Low Case scenarios, respectively.

Lastly, the Company used its Base Case Design Year forecast to test an Enhanced Energy

Efficiency scenario providing a larger range of possible extensions to its Base Case scenario to explore potential cost-effective Energy Efficiency measures. This scenario highlighted certain measures as cost-effective and certain measures as not cost-effective in the present-day environment of natural gas supply and pricing. This scenario is described in more detail in Section IV.D.4.

IV.C Expected Available Resources

This section describes EnergyNorth's current resource portfolio and discusses the modifications that the Company anticipates making to the portfolio during the forecast period to meet sendout requirements. As discussed below, to meet design day and design year sendout requirements, the Company's resource portfolio is composed of the following categories of available resources: (1) long-haul and short-haul transportation; (2) underground storage services; (3) gas supply contracts; (4) supplemental resources; (5) market area supply purchases and (6) Demand Side Management ("DSM") resources. Chart IV-C-1 is a schematic of the Company's transportation and underground storage contracts effective November 1, 2013. Chart IV-C-2 is a table listing and description of the Company's resource portfolio.

IV.C.1 Transportation Contracts

EnergyNorth has capacity entitlements on multiple upstream pipelines that provide access to various production areas that afford the Company a level of operational flexibility to ensure the least-cost and reliable delivery of gas supplies.

The Company's pipeline capacity contracts fall into three primary categories. First, the Company has contract entitlements to long-haul capacity from the lower 48 states that are used to transport gas from production areas located in the Gulf of Mexico to the Company's New

Hampshire citygates. The long-haul transportation capacity from the Gulf of Mexico is also used to transport gas from the production areas to the Company's underground storage facilities in Pennsylvania and New York. By using long-haul capacity to fill storage, the Company is able to use these resources at a higher load factor. Second, the Company has contract entitlements to short-haul capacity that is used to transport gas from the underground storage fields in Pennsylvania and New York to the Company's citygates. These short-haul capacity entitlements are also used to transport non-storage supplies from the storage market area to the Company's citygates when the capacity is not being used to transport underground storage supplies. Third, the Company has a short-haul contract with entitlements to transport gas from the Dracut, Massachusetts interconnect on Tennessee Gas Pipeline to the Company's citygates. Lastly, the Company's capacity on Union Gas Limited ("Union") and TransCanada Pipelines Limited ("TransCanada") became effective November 1, 2006. This capacity path consists of entitlements from Dawn, Ontario to Kirkland/Parkway on Union and from Parkway to Waddington on TransCanada. Effective November 1, 2006, TransCanada and EnergyNorth amended the contract to change to receipt point to Union Dawn Receipt Point from Union Parkway belt for a term of November 1, 2006 to October 31, 2007. In addition, within the terms and conditions of this amendment, TransCanada and EnergyNorth amended to change the expiration date from October 31, 2016 to October 31, 2017; this change was implemented to align both the Union and TransCanada contracts. Effective November 1, 2007 TransCanada and EnergyNorth entered into a permanent assignment, whereby EnergyNorth permanently assigned to TransCanada 4,270 GJ per day of capacity on Union with an expiration date of October 31, 2017. The gas is then transported to the Company's citygates using existing Iroquois and

Tennessee capacity. The Company's long-haul and short-haul transportation contracts are described in more detail below:

- Iroquois Gas Transmission System: EnergyNorth has contract entitlements to 4,047 Dth/day of firm transportation service on the Iroquois Gas Transmission System ("Iroquois") on a 365-day basis. Firm Canadian supplies are transported from the Canadian/New York border from Waddington, New York via the Iroquois system to the Tennessee Gas Pipeline ("Tennessee") interconnect at Wright, New York. Effective May 1, 2009, EnergyNorth entered into an amendment extending the term from December 1, 2011 to November 1, 2017. This amendment aligns the Iroquois contract with the upstream contracts within the portfolio.
- Portland Natural Gas Transmission System: EnergyNorth has contract entitlements to 1,000 Dth/day of firm transportation service on the Portland Natural Gas Transmission System ("PNGTS") on a 365-day basis. PNGTS transports gas from Pittsburg, New Hampshire to the Company's city gate in Berlin, New Hampshire.
- Tennessee Gas Pipeline: In the production area, the Tennessee Gas Pipeline system splits into three legs: the 100 leg, the 800 leg, and the 500 leg. In addition, the Tennessee system is divided into six market zones, from Zone 0 and Zone 1 in Texas and Louisiana to Zone 6 in New England. See Chart IV-C-3 for a map showing the Tennessee Zone locations. EnergyNorth has capacity entitlements of 107,833 Dth/day on the Tennessee to its New Hampshire citygates. The Company's contract entitlements consist of transport volumes from Zone 0 and Zone 1 of up to 21,596 Dth/day to the Company's citygates in New Hampshire located in Zone 6 and to the Company's storage fields located in Zone 4 and Zone 5; from the Zone 4 and Zone 5 storage market area the Company's contract entitlement consists of transport volumes of up to 28,115 Dth/day to the Company's citygates; from the interconnect at Niagara in Zone 5 the Company's contract entitlements transport volumes of up to 3,122 Dth/day to the Company's citygates; from the interconnect at Wright, New York with Iroquois in Zone 5 the Company's contract entitlements transport volumes of up to 4,000 Dth/day to the Company's citygates; and finally, the Company has contract entitlements of up to 50,000 Dth/day from Dracut, Massachusetts located in Zone 6 to the Company's citygates.
- TransCanada Pipelines Limited: EnergyNorth has contract entitlements to 4,092 Dth/day of firm transportation service on TransCanada on a 365-day basis. Firm Canadian supplies are transported from the receipt point at Union at Dawn, Ontario, to the interconnection with Iroquois at Waddington.
- Union Gas Limited : Effective November 1, 2007 TransCanada and EnergyNorth entered into a permanent assignment, whereby EnergyNorth permanently assigned to TransCanada 4,092 Dth/day of capacity on Union with an expiration date of October 31,

2017. This assignment provides for a contiguous nomination path. Firm Canadian supplies are still transported from the receipt point at Dawn, Ontario to the interconnection with Iroquois at Waddington, New York.

IV.C.2 Underground Storage Services

EnergyNorth's underground storage contracts provide the Company with the ability to meet winter-season loads, while avoiding the expense of adding 365-day long-haul transportation capacity. These contracts enable the Company to store approximately 2.5 million Dth of gas. These underground storage supplies allow EnergyNorth to serve a percentage of the winter period requirements with gas injected during the off- peak period and to manage short-term fluctuations in demand during the winter period. It is the Company's practice to have storage inventories approximately 95% full as of November 1st of each year, thus leaving approximately 5% of the storage capacity available for balancing purposes.

The Company contracts with the following storage providers:

- Dominion Transmission, Incorporated: Under rate schedule GSS which provides 102,700 Dth of storage capacity with a withdrawal rate of 934 Dth/day and an injection rate of 934 Dth/day.
- Honeoye Storage Corporation: Under rate schedule SS-NY that provides 245,280 Dth of storage capacity with a withdrawal rate of 1,957 Dth/day and an injection rate of 1,362 Dth/day.
- National Fuel Supply Corporation: Under rate schedule FSS that provides 670,800 Dth of storage capacity with a withdrawal rate of 6,098 Dth/day and an injection rate of 4,472 Dth/day. Along with this storage service, the Company also contracts for 365-day firm transportation under rate schedule FST in order to transport the storage gas into and out of the storage field.
- Tennessee Gas Pipeline: Under rate schedule FS-MA that provides 1,560,391 Dth of Storage capacity with a withdrawal rate of 21,844 Dth/day and an injection rate of 10,404 Dth/day.

IV.C.3 Supplemental Resources

In addition to interstate pipeline and storage resources, EnergyNorth utilizes supplemental peaking supplies to meet its design day and design season requirements in excess of pipeline resources. Peaking supplies are an important component of the resource mix because these supplies provide the Company with the ability to respond to fluctuations in weather, economics and other factors driving the Company's sendout requirements. The Company utilizes both off-system and on-system supplemental resources.

The only off-system supplemental resource in the Company's portfolio is a firm liquid service ("FLS") contract with GDF Suez/Distrigas ("Distrigas").

On-system supplemental resources are the local production plants that store LNG and liquid propane until vaporized. It is the Company's practice to have its supplemental storage facilities full as of November 1st of each year. EnergyNorth's on-system supplemental facilities are distributed strategically across the service territory, which enhances service reliability and provides a source of supply for the entire distribution system. Chart IV-C-4 shows the locations of these facilities. Because these resources can be brought on line quickly, these plants can be used to meet hourly fluctuations in demand, maintain deliveries to customers and balance pressures across portions of the distribution system during periods of high demand. The Company's forecasted need for on-system supplemental supplies over the maximum pipeline availability is 31,767 Dth for the 2013/14 design day. These supplemental volumes are the supplies that must be available throughout the winter period to ensure reliability of service to customers when the Company has exhausted its available pipeline supplies.

Pursuant to N.H. Code Admin. Rule Puc 506.03, the Company must maintain adequate

LNG and propane storage levels throughout the winter period. Thus, the availability of liquid natural gas and propane gas to refill the Company's local storage tanks throughout the winter season is a necessity. The Company's Distrigas contract is currently the primary source of LNG refill throughout the winter season. The Company contracts with Distrigas for a liquid refill service on a year-to-year basis. However, due to the constraints on liquid supply and increased premiums that Distrigas has recently placed on its LNG liquid refill services, the Company is actively seeking alternatives to Distrigas as part of a broad consortium of New England LDC's. Together with the consortium, EnergyNorth hopes to encourage competition through the development of LNG liquid refill alternatives in the market place and will utilize its best-cost planning process to contract for liquid refill services on an ongoing basis. Lastly, the Company contracts for annual trucking services for the transportation of its LNG and propane supply contracts to its facilities with various carriers that it selects through a comprehensive RFP process on a year-to-year basis.

IV.C.4 Energy Efficiency Resources

EnergyNorth operates natural gas energy efficiency programs for low income, residential and commercial / industrial customer classes detailed in the plan for calendar years 2013 and 2014 in DE 12-262 (as revised Dec 20, 2012) (see Appendix C). The NH Gas Utilities, one of which being EnergyNorth, began offering energy efficiency programs in 1993. These programs were suspended in 1999 during the restructuring of the gas industry to allow for a comprehensive review of the energy efficiency programs. In January 2003, the NH Gas Utilities resumed offering energy efficiency programs which were designed to increase customer awareness of the benefits of energy efficient products and services.

This 2013-2014 filing is the result of additional coordinated planning efforts between the NH Electric Utilities and the NH Gas Utilities. Specifically, the customer programs (both gas and electric) have been brought together into one coordinated filing, as was contemplated by the Commission in Orders 24,636 and 24,968. These programs are collectively referred to throughout the remainder of this document as the “CORE Programs”.

The goals for the EnergyNorth plan, enumerated for the year 2013 in Attachment D-G (page 94) of Appendix C for Program Year 2013 (January 1, 2013 – December 31, 2013) were assumed to be implemented in 2013 and fully effective for the 2013/2014 planning year. These program goals are as follows:

Calendar Year Dth Goals⁵

	<u>2013</u>
Residential	36,568
Commercial/industrial	<u>41,836</u>
Total	78,404

In the subsequent September 13, 2013 filing entitled “2014 CORE New Hampshire Energy Efficiency Programs” (see Appendix D), the goals for the EnergyNorth plan were enumerated for the year 2014 in Attachment D-G (page 36) for Program Year 2014 (January 1, 2014 – December 31, 2014). These goals are assumed to be implemented in 2014 and fully effective for the 2014/2015 planning year. These program goals are as follows:

⁵ In September 2013, after the modeling for the Company’s filing was underway, EnergyNorth upwardly revised its 2013 Low Income program savings goal after applying some carryover budget from 2012. Therefore, its actual 2013 program annual savings targets are as follows: Residential = 38,013, Commercial/Industrial = 41,836, Total = 79,849 Dth.

Calendar Year Dth Goals

	<u>2014</u>
Residential	34,125
<u>Commercial/industrial</u>	<u>59,817</u>
Total	93,942

For purposes of determining the base case annual Energy Efficiency supply for the forecast, the Company assumed its 2014 programs would continue to be implemented annually for the balance of the forecast period.

IV.C.5 Changes to EnergyNorth's Resource Portfolio Since its Previous IRP

On-System Peaking:

Since ENGI's previous IRP, one supply resource has been terminated. The Company had previously contracted for a winter peaking service from the Granite Ridge power plant for up to 15,000 Dth per day during the peak winter period. That contract expired in 2012 and was not renewed because Granite Ridge could not guarantee its availability from one year to the next. This uncertainty of supply does not meet the Company's objective of a safe and reliable portfolio of resources.

On-System Peaking:

In the process of reviewing the operational capabilities of its LNG facilities, the Company has determined that the vaporization capacity of these facilities should be adjusted to reflect the fact that the inventory capacity of the facilities, net of tank heel, is approximately 12,600 Dth. This constitutes a reduction in vaporization capacity of approximately 10,200 Dth as

compared to the prior maximum vaporization capacity of 22,800 Dth. The revised vaporization capacity best represents the facilities' operational capabilities on a design day given the logistical concerns and uncertainty of replenishing the inventory on a design day. In order to achieve the design vaporization capacity in each facility, the Company would have to truck 11-12 loads of LNG on the design day and then another 14-15 loads to refill the facilities in preparation for the following day in order to adhere to Puc Rule 506.3 (On-site Storage requirement). This equates to approximately 25 LNG truckloads during the design day cold period, which is neither feasible nor reliable for planning purposes.

IV.C.6 Other Purchased Resources

As will be shown below in Section IV.D.1, the Company's current resource portfolio is sufficient to meet the Company's forecasted base case and low case design-year sendout requirements throughout the forecast period. However, under the High Case demand forecast, the current portfolio would need to be supplemented in 2016/17 with the addition of "Other Purchased Resources" during the heating season. Other Purchased Resources represent additional resources that are needed over and above the available assets in the portfolio that must be acquired by the Company. The need for Other Purchased Resources is filled through the procurement of a citygate-delivered supply. This purchasing strategy minimizes the cost of the resource portfolio because the Company is able to avoid annual demand charges for capacity. However, the level at which the Company can depend on such resources varies due to a number of factors, including but not limited to; current market conditions, capacity availability and supply availability. As such, the Company may also fill the need for Other Purchases Resources through the addition of long-term capacity contracts or other long-term arrangements.

IV.C.7 Gas Commodity

The Company contracts for quantities of gas to ensure sufficient supply to reliably meet design conditions, as well as to account for daily and seasonal load variations. The Company's portfolio contains a variety of transportation contracts utilized to transport baseload and swing supplies, as well as underground storage and related transportation contracts – all with varying degrees of flexibility with respect to such features as no-notice requirements and nomination changes. These no-notice contracts allow for nominations to be made throughout the day up until the last hour of the gas day, allowing the Company the ability to balance system load.

Supply contract durations are generally limited to a maximum term of one seasonal period. Baseload volumes are mainly one-month in duration, augmented with daily firm spot purchases allowing for the ability to respond to fluctuations in demand and maintain planned storage inventory targets. In the winter, the Company looks to storage as the primary swing supply, although since storage alone cannot account for all possible conditions, often, transportation capacity is left open allowing for the flexibility to meet changing conditions (demand, weather, storage inventory level and/or price).

The Company's gas supply contracts are priced at various locations at market-based prices for both monthly and daily purchases. The Company uses North American Energy Standards Board (NAESB) form standard contracts which have been established with over one-hundred qualified and reliable gas suppliers.

IV.C.8 Future Portfolio Decisions

EnergyNorth will be faced with significant decisions regarding the expiration of almost

all of the transportation and underground storage contracts as well as key decisions related to its aging propane facilities during the forecast period. The Company's current strategies related to each of its upstream capacity and underground storage contracts are provided in Table IV.C.8 below.

Table IV.C.8

<u>Resource</u>	<u>Pipeline Company</u>	<u>Rate Schedule</u>	<u>Contract Number</u>	<u>MDQ/ MDWQ</u>	<u>Storage MSQ</u>	<u>Termination Date</u>	<u>Renew (Yes/No)</u>
<u>Pipeline</u>	Union	M12	M12200	4,092		10/31/2017	Yes
	TransCanada	FT	29600	4,047		10/31/2017	Yes
	Iroquois	RTS to Wright	47001	4,047		11/1/2017	Yes
	TGP	FT-A (Z5-Z6)	95346	<u>4,000</u>		11/30/2016	Yes
	TGP	FT-A (Z5-Z6)	2302	<u>3,122</u>		10/31/2015	Yes
	TGP	FT-A (Z0,1-6)	8587	25,407		10/31/2015	Yes
	TGP	FT-A (Z6-Z6)	42076	20,000		10/31/2015	Will Evaluate
	TGP	FT-A (Z6-Z6)	72694	30,000		10/31/2029	NA
	PNGTS	FT	1999-001	1,000		10/31/2019	Yes
<u>Storage</u>	TGP	FS-MA (Storage)	523	21,844	1,560,391	10/31/2015	Yes
	TGP	FT-A (Z4-Z6)	632	15,265		10/31/2015	Yes
	National Fuel	FSS-1 (Storage)	O02357	6,098	670,800	3/31/2015	Yes
	National Fuel	FST (Transport)	N02358	6,098		3/31/2015	Yes
	TGP	FT-A (Z4-Z6)	11234	6,150		10/31/2015	Yes

	Honeoye	SS-NY (Storage)	SS-NY	1,957	245,280	4/1/2014	Yes
	TGP	FT-A (Z5-Z6)	11234	1,957		10/31/2015	Yes
	Dominion	GSS (Storage)	300076	934	102,700	3/31/2016	Yes
	TGP	FT-A (Z4-Z6)	11234	932		10/31/2015	Yes

In addition to the above contractual decisions, the Company must also address its aging propane facilities and the continued reliance on these facilities to perform at peak capacity during the coldest days of the year. In particular, the Manchester and Nashua propane facilities, which provide the Company with peaking supply service, are nearly 50 years old. As with any aging facility, it becomes increasingly expensive and labor intensive to operate and maintain them at peak efficiency. Further, parts and equipment become scarcer and more expensive. For reliability, security and economic reasons, the Company feels that the replacement of these propane facilities with incremental pipeline capacity is in the public interest.

The new pipeline project, TGP_NEX, is being proposed by Tennessee Gas Pipeline and would connect to Tennessee's existing pipeline in Wright, NY and run some 200 miles to Dracut, MA. This pipeline will access Marcellus and Utica shale supplies being brought to Wright, NY by the proposed Constitution Pipeline project. The TGP_NEX pipeline will run through Northern Massachusetts and will come within 3 miles of southern NH creating a unique opportunity for EnergyNorth to not only replace its two aging propane facilities in Manchester and Nashua, but also fortify its distribution system with a new supply point into its distribution system via a lateral connected to the TGP_NEX project. This new lateral would provide the Company and its customers with significant reliability benefits by creating a secondary feed into

its distribution system and significantly reducing the risk of a distribution system failure should a force majeure event ever occur on the Concord Lateral, which today is the only source of gas supply to EnergyNorth's service territory in and around the Manchester, Nashua and Concord area. Further, depending on the ultimate route of this new lateral, there will be opportunities for the Company to expand its distribution system and provide economic natural gas service to businesses and communities that today do not have natural gas service.

Lastly, since the TGP_NEX project will provide access to cheap and stable Marcellus gas supplies, the Company will negotiate with Tennessee to transfer its existing Market area capacity, with a receipt point at Dracut, to the new TGP_NEX project in order to access the cheaper Marcellus supplies. The Company's current Dracut capacity is susceptible to market area price volatility and has contributed to the significant price increases and price volatility that its customers have had to endure. While New England customers have had to deal with significant price spikes in the winter period, other customers outside of New England have benefited from the much lower priced shale gas as new pipeline projects have been built to serve the historically constrained Northeast market. In fact, in past winters, the New York market has traded higher than New England during peak cold periods; however, with new pipeline projects bringing cheap shale supplies to New York and New Jersey, this past winter period saw prices in New England trade at three to four times those of NY and NJ during similar peak periods.

When faced with making a decision, the Company will employ a three-step analysis to reach its conclusions on contract renewals, as well as the addition of new resources. First, the Company will evaluate the need to maintain the contracts as part of the resource portfolio. As part of this need analysis, the Company will consider the trends in transportation migration and

the growth in transportation relating to new customers that have not previously been served by the Company, and therefore, are not subject to the assignment of capacity. If the Company determines that the resource is needed to meet firm sendout requirements, the Company will consult with competitive suppliers serving customers on EnergyNorth's system to solicit their input on the Company's contract renewals.

Second, depending on the types of needed resources, the Company will canvas the marketplace to determine the availability of a replacement or new resource. And, where appropriate, the Company will solicit competitive bids to determine the lowest-cost available resource.

Finally, the Company will evaluate non-price factors associated with the available replacement or new resource option. The Company will consider the flexibility, diversity, reliability and contract term to determine the least-cost, most reliable option to meet the Company's resource need.

Absent the development of new incremental capacity projects or upgrades to on-system facilities that present cost-effective alternatives to the existing resource portfolio, the Company expects to renew its contracts for an extended time period to maintain flexibility, diversity and reliability consistent with least-cost principles. Until the upstream capacity market is sufficiently competitive to warrant a modification of its obligation to procure and plan for the capacity needs of its customers, EnergyNorth will protect its rights to needed resources.

During the forecast period, the Company must continue its monitoring of the Northeast market, in particular, the enduring effects of the Marcellus Shale on the overall supply dynamic. To date, there have been a significant number of pipeline projects which have gone into service

bringing Marcellus gas to market. Construction of gathering systems by producers continues, with the additional production creating more liquidity in the Marcellus shale basin. The Company's long-haul and short-haul capacity with receipt points outside of New England continues to provide cost benefits to customers by accessing inexpensive Marcellus and Gulf of Mexico supplies. The Company's underground storage contracts similarly take advantage of opportunities to inject Marcellus supplies during the summer period and withdraw them during the winter when New England market area prices are highest. As discussed previously, the Company's New England market area capacity at Dracut does not provide the pricing benefits of these other capacity resources and will be renegotiated as part of the company's discussions with Tennessee regarding the proposed TGP_NEX project.

In order to evaluate the cost benefits of the TGP_NEX project over the long term planning horizon, the Company has included in its model runs 90,000 Dth/day of 365-day capacity on the TGP_NEX project from Wright NY to its citygate commencing on November 1, 2017. 50,000 Dth/day of this capacity would serve to replace the Company's existing short-haul New England market area capacity from Dracut which provides supply to the Company via the Concord Lateral. Approximately 33,000 Dth/day would serve to replace propane vaporization currently existing at Company's aging facilities at Manchester and Nashua, and 7,000 Dth/day would provide for long-term growth as the Company seeks to bring cost-effective, reliable and clean energy to those customers in NH that currently do not have access to natural gas service.

The Company will continue to monitor market trends and opportunities so that when portfolio decisions need to be made, the Company will be prepared to act swiftly using its best-cost planning process.

IV.D Adequacy of the Resource Portfolio

IV.D.1 Base Case

The Company's resource plan is sufficient to meet base-case design-year load requirements throughout the forecast period. These requirements are set forth below in Appendix B.2: Base Case Design Year: Monthly Resources and Requirements.

Other Purchased Resources: Base Case/Design Year

<u>YEAR</u>	<u>Volume (Dth)</u>
2013/14	0
2014/15	0
2015/16	0
2016/17	0
2017/18	0

On a design day, the Company relies on all of its available resources to meet customer requirements and there is no "back-up" capacity to ensure deliveries at the Company's citygate. Therefore, the resource portfolio must have sufficient capacity entitlements to meet design-day sendout requirements. From a planning perspective, a capacity shortfall is signaled where the analysis shows that Other Purchased Resources are required to ensure deliverability to the city gate on a peak day. The incremental design-day capacity need is set forth in Appendix B.3: Base Case Design Year: Annual Design Day, as follows:

Incremental Requirement: Base Case/Design Day

<u>YEAR</u>	<u>Capacity Resources (Dth)</u>
2013/14	0

<u>YEAR</u>	<u>Capacity Resources (Dth)</u>
2014/15	0
2015/16	0
2016/17	0
2017/18	0

Based on the Company's current projections, there is no need for incremental capacity resources in the forecast period.

IV.D.2 High-Demand Case

The Company's resource plan shows that it can meet high-demand design-year load requirements throughout the forecast period, with the addition of incremental long-term capacity resources and city-gate delivered supplies during the peak period. These additional purchases are set forth in Appendix B.6: High Case Design Year: Monthly Resources and Requirements and are summarized as follows:

Other Purchased Resources: High Case/Design Year

<u>YEAR</u>	<u>Volume (Dth)</u>
2013/14	0
2014/15	0
2015/16	0
2016/17	13,100
2017/18	2,100

The incremental capacity need for the High-Demand case is set forth at in Appendix B.7: High Case Design Year: Annual Design Day:

Incremental Requirement: High Case/Design Day

<u>YEAR</u>	<u>Capacity Resources (Dth)</u>
2013/14	0
2014/15	0
2015/16	0
2016/17	4,330
2017/18	2,090

As indicated, volumes in addition to the Company's existing portfolio are required to meet design-day sendout requirements beginning in 2016/17. In addition, in the high-demand case, the amount of Other Purchased Resources needed to meet design-year requirements are greater than that relied upon in the Base Case. To ensure continued deliverability over the peak season, the Company will need to consider the level of citygate delivered resources available to the Company to decide whether less reliance should be placed on Other Purchased Resources. Should incremental demand increase consistent with the high-demand case projections, the Company would acquire adequate, least-cost, reliable resources to address this need.

IV.D.3 Low-Demand Case

As shown in Appendix B.9: Low Case Design Year: Monthly Resources and Requirements, the Company's resource portfolio is adequate to meet total low-demand case system requirements throughout the forecast period. On a design-year seasonal basis, the Company's forecast indicates that it will not need to supplement its resource portfolio with Other Purchased Resources.

Other Purchased Resources: Low Case/Design Year

<u>YEAR</u>	<u>Volume (Dth)</u>
2013/14	0
2014/15	0
2015/16	0
2016/17	0
2017/18	0

The Company's forecast also indicates that there would be no incremental capacity need for the Low-Demand case, as set forth in Appendix B.10: Low Case Design Year: Annual Design Day:

Incremental Requirement: Low Case/Design Day

<u>YEAR</u>	<u>Capacity Resources (Dth)</u>
2013/14	0
2014/15	0
2015/16	0
2016/17	0
2017/18	0

Under any of the three scenarios, the Company will work through its resource-planning process to evaluate and fill identified needs with a least-cost, reliable mix of capacity and citygate delivered gas supplies. This approach provides a high level of flexibility to meet uncertainties in future demand, while ensuring the adequacy of the overall resource portfolio.

IV.D.4 Expanded Energy Efficiency Scenario

The Company's expanded Energy Efficiency ('EE') scenario was designed as a scenario to test a larger range of possible extensions to its Base Case scenario EE programs and to explore potential cost-effective EE measures. The Company's Base Case EE measures were discussed in Section IV.C.4 and documented in Appendix C and Appendix D. This scenario assumed the use of a pipeline resource portfolio that includes its as-planned EE programs and the Company's

pipeline contracts for its traditional ANE supply path, its Boundary supply path, its traditional Tennessee long-haul supply path plus 90,000 Dth/day of capacity under the Tennessee Northeast Expansion project, concurrent with the retirement of the Manchester and Nashua propane plants.

This model run was performed for the period 2013/14 through 2038/39, with the EE measures having an assumed 20-year life span and being valued using a 3.25 percent discount rate (Appendix D, page 29).

The incremental EE projects included a ramping-up of the proposed 2014 residential EE measures. The Company has observed that EE measures in the commercial and industrial sectors are larger and more case-based, whereas the residential measures are more readily scaled. The Company assumed that it would take two years to reach this doubling so 2014/15 included a project of 50 percent of the doubling. One hundred percent of the doubling was then available in years 2015/16 through 2017/18.

For additional EE programs, the Company referred back to the 2009 GDS report (“Additional Opportunities for Energy Efficiency in New Hampshire”, 2009). Therein, in Appendix I (see Appendix E herein for a copy), GDS referred to potential residential improvement packages (Good, Better, and Best) to improve the energy efficiency of single-family homes. This theme of improvements in residential natural gas energy efficiency was integral in the subsequent 2012 GDS report “New Hampshire Energy Code Compliance Roadmap.” While the 2009 GDS report only listed the thermal savings for each of the three tiers of EE savings, consultation with GDS provided the Company with the corresponding costs associated with each tier. For its enhanced EE scenario, the Company designed Good, Better and

Best EE tiers offered up to 1,000 residential homes per year holding the costs and savings the same as those from the 2009 report.

Appendix B.12: Base Case Design Year (Enhanced EE): Resource Mix Results contains a summary of the results of the Company's enhanced EE scenario. The conclusions from the model are that doubling of the current residential EE programs would be taken at the 100 percent level. As for the Good, Better, and Best residential EE tiers, only the Good level of home improvement is determined to be cost-effective in the forecasted natural gas market conditions.

V. Summary of Compliance with Order 25,317

In Order No.25,317 in DG 10-041, the Commission required the Company to address the following two issues in its next IRP::

1. To incorporate the recommended methodological changes contained in Staff testimony pertaining to its Resource Mix analysis; and,
2. To address supply side issues related to excess capacity, including the amount of the excess, the pros and cons of eliminating the excess an options for how to handle the excess, and opportunities for gas cost savings that involve replacement of expiring contracts with alternative supply options.

With respect to Condition 1, Staff's concerns were to include all of the Company's long-haul transportation contracts in its Resource Mix run, to use proper pricing of all resources for the scenario(s), and to run the Resource Mix analysis over the entire lifetime of the EE measures (DG 10-041, Direct Testimony of George R. McCluskey Analyst, September 24, 2010). As documented throughout this filing, the Company has addressed these concerns by including all of

its long-haul transportation contracts in its Resource Mix analysis, selected what it believes to be proper resource pricing, and run each scenario for the period 2013/14 through 2037/38 to account for the 20-year lifespan of its EE measures.

With respect to Condition 2, the Commission opened a docket on the alleged excess capacity in response to Staff's concerns, which docket was closed after Staff withdrew its testimony in that matter. *See* DG 12-001. For the reasons stated in that docket, the Company does not believe that during this IRP planning period, there is any excess capacity, and thus there is no further consideration required of this issue.

VI. Conclusions Regarding the Plan

EnergyNorth submits that this IRP reflects completeness, integration, feasibility and adequacy of the planning process. With respect to the Company's supply resource portfolio, the Plan indicates that EnergyNorth's resource portfolio is adequate to meet the projected base case throughput requirements of its customers over the term of the forecast period, given the rollover and renewal of key existing pipeline transportation and storage capacity contracts. Further, EnergyNorth's planning process achieves a best-cost portfolio, where resource decisions appropriately balance cost considerations with those related to supply security, contract flexibility and supply viability.

VII. Charts

Chart III-B-1

EnergyNorth Natural Gas, Inc. Retail Volume Forecast (Dth)
 2013/14 - 2017/18
 Base Case

	2013/14	2014/15	2015/16	2016/17	2017/18	Average Increment or Percent	Total Increment or Percent
Normal Weather							
Residential Heating	5,677,332	5,703,675	5,739,716	5,770,438	5,788,238	27,727	110,907
<u>Residential Non-heating</u>	<u>88,855</u>	<u>90,000</u>	<u>91,760</u>	<u>94,380</u>	<u>99,926</u>	<u>2,768</u>	<u>11,071</u>
Residential	5,766,187	5,793,675	5,831,475	5,864,817	5,888,164	30,494	121,978
<u>Commercial & Industrial</u>	<u>7,083,528</u>	<u>7,368,643</u>	<u>7,701,283</u>	<u>7,957,936</u>	<u>8,248,013</u>	<u>291,121</u>	<u>1,164,485</u>
Traditional Market	12,849,714	13,162,317	13,532,759	13,822,754	14,136,177	321,616	1,286,462
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	12,849,714	13,162,317	13,532,759	13,822,754	14,136,177	321,616	1,286,462
Percent of Total							
Residential Heating	44%	43%	42%	42%	41%		
<u>Residential Non-heating</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>		
Residential	45%	44%	43%	42%	42%		
<u>Commercial & Industrial</u>	<u>55%</u>	<u>56%</u>	<u>57%</u>	<u>58%</u>	<u>58%</u>		
Traditional Market	100%	100%	100%	100%	100%		
<u>Non-traditional markets</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>		
Total	100%	100%	100%	100%	100%		
Growth Rate							
Residential Heating		0.5%	0.6%	0.5%	0.3%	0.5%	2.0%
<u>Residential Non-heating</u>		<u>1.3%</u>	<u>2.0%</u>	<u>2.9%</u>	<u>5.9%</u>	<u>3.0%</u>	<u>12.5%</u>
Residential		0.5%	0.7%	0.6%	0.4%	0.5%	2.1%
<u>Commercial & Industrial</u>		<u>4.0%</u>	<u>4.5%</u>	<u>3.3%</u>	<u>3.6%</u>	<u>3.9%</u>	<u>16.4%</u>
Traditional Market		2.4%	2.8%	2.1%	2.3%	2.4%	10.0%
<u>Non-traditional markets</u>		<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total		2.4%	2.8%	2.1%	2.3%	2.4%	10.0%

Chart III-B-2

EnergyNorth Natural Gas, Inc. Annual Average Customer Count Forecast
2013/14 - 2017/18
Base Case

	2013/14	2014/15	2015/16	2016/17	2017/18	Average Increment or Percent	Total Increment or Percent
Residential Heating	71,855	72,968	74,186	75,362	76,424	1,142	4,570
<u>Residential Non-heating</u>	<u>3,503</u>	<u>3,423</u>	<u>3,337</u>	<u>3,210</u>	<u>3,048</u>	<u>-114</u>	<u>-455</u>
Residential	75,358	76,391	77,523	78,572	79,473	1,029	4,115
<u>Commercial & Industrial</u>	<u>11,347</u>	<u>11,577</u>	<u>11,808</u>	<u>12,018</u>	<u>12,209</u>	<u>215</u>	<u>862</u>
Traditional Market	86,705	87,968	89,331	90,590	91,681	1,244	4,976
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	86,705	87,968	89,331	90,590	91,681	1,244	4,976
Percent of Total							
Residential Heating	83%	83%	83%	83%	83%		
<u>Residential Non-heating</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>3%</u>		
Residential	87%	87%	87%	87%	87%		
<u>Commercial & Industrial</u>	<u>13%</u>	<u>13%</u>	<u>13%</u>	<u>13%</u>	<u>13%</u>		
Traditional Market	100%	100%	100%	100%	100%		
<u>Non-traditional markets</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>		
Total	100%	100%	100%	100%	100%		
Growth Rate							
Residential Heating		1.5%	1.7%	1.6%	1.4%	1.6%	6.4%
<u>Residential Non-heating</u>		<u>-2.3%</u>	<u>-2.5%</u>	<u>-3.8%</u>	<u>-5.0%</u>	<u>-3.4%</u>	<u>-13.0%</u>
Residential		1.4%	1.5%	1.4%	1.1%	1.3%	5.5%
<u>Commercial & Industrial</u>		<u>2.0%</u>	<u>2.0%</u>	<u>1.8%</u>	<u>1.6%</u>	<u>1.8%</u>	<u>7.6%</u>
Traditional Market		1.5%	1.5%	1.4%	1.2%	1.4%	5.7%
<u>Non-traditional markets</u>		<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total		1.5%	1.5%	1.4%	1.2%	1.4%	5.7%

Chart III-B-3

EnergyNorth Natural Gas, Inc. Use per Annual Average Customer Forecast (Dth/meter)
 2013/14 - 2017/18
 Base Case

	2013/14	2014/15	2015/16	2016/17	2017/18	Average Increment or Percent	Total Increment or Percent
Residential Heating	79	78	77	77	76	-1	-3
<u>Residential Non-heating</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>29</u>	<u>33</u>	<u>2</u>	<u>7</u>
Residential	77	76	75	75	74	-1	-2
<u>Commercial & Industrial</u>	<u>624</u>	<u>636</u>	<u>652</u>	<u>662</u>	<u>676</u>	<u>13</u>	<u>51</u>
Traditional Market	148	150	151	153	154	1	6
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	148	150	151	153	154	1	6

Growth Rate

Residential Heating	-1.1%	-1.0%	-1.0%	-1.1%	-1.1%	-4.1%
<u>Residential Non-heating</u>	<u>3.7%</u>	<u>4.6%</u>	<u>6.9%</u>	<u>11.5%</u>	<u>6.6%</u>	<u>29.3%</u>
Residential	-0.9%	-0.8%	-0.8%	-0.7%	-0.8%	-3.2%
<u>Commercial & Industrial</u>	<u>2.0%</u>	<u>2.5%</u>	<u>1.5%</u>	<u>2.0%</u>	<u>2.0%</u>	<u>8.2%</u>
Traditional Market	1.0%	1.2%	0.7%	1.1%	1.0%	4.0%
<u>Non-traditional markets</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total	1.0%	1.2%	0.7%	1.1%	1.0%	4.0%

Chart III-B-4

EnergyNorth Natural Gas, Inc. Retail Volume Forecast (Dth)
 Source: DG 10-041, page III-65
 Base Case

	2010/11	2011/12	2012/13	2013/14	2014/15	Average Increment or Percent	Total Increment or Percent
Normal Weather							
Residential Heating							
<u>Residential Non-heating</u>							
Residential	6,242,666	6,333,987	6,422,372	6,506,607	6,592,574	87,477	349,908
<u>Commercial & Industrial</u>	<u>6,855,706</u>	<u>7,122,787</u>	<u>7,405,831</u>	<u>7,699,942</u>	<u>7,931,333</u>	<u>268,907</u>	<u>1,075,627</u>
Traditional Market	13,098,372	13,456,774	13,828,203	14,206,549	14,523,907	356,384	1,425,535
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	13,098,372	13,456,774	13,828,203	14,206,549	14,523,907	356,384	1,425,535
Percent of Total							
Residential Heating	0%	0%	0%	0%	0%		
<u>Residential Non-heating</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>		
Residential	48%	47%	46%	46%	45%		
<u>Commercial & Industrial</u>	<u>52%</u>	<u>53%</u>	<u>54%</u>	<u>54%</u>	<u>55%</u>		
Traditional Market	100%	100%	100%	100%	100%		
<u>Non-traditional markets</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>		
Total	100%	100%	100%	100%	100%		
Growth Rate							
Residential Heating							
<u>Residential Non-heating</u>							
Residential		1.5%	1.4%	1.3%	1.3%	1.4%	5.6%
<u>Commercial & Industrial</u>		<u>3.9%</u>	<u>4.0%</u>	<u>4.0%</u>	<u>3.0%</u>	<u>3.7%</u>	<u>15.7%</u>
Traditional Market		2.7%	2.8%	2.7%	2.2%	2.6%	10.9%
<u>Non-traditional markets</u>		<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total		2.7%	2.8%	2.7%	2.2%	2.6%	10.9%

Chart III-B-5

EnergyNorth Natural Gas, Inc. Retail Volume Forecast (Dth)
2013/14 - 2017/18
High Case

Normal Weather	2013/14	2014/15	2015/16	2016/17	2017/18	Average Increment or Percent	Total Increment or Percent
Residential Heating	5,731,645	5,815,008	5,908,040	5,997,861	6,075,303	85,914	343,658
<u>Residential Non-heating</u>	<u>89,425</u>	<u>91,597</u>	<u>94,078</u>	<u>97,791</u>	<u>104,542</u>	<u>3,779</u>	<u>15,117</u>
Residential	5,821,070	5,906,604	6,002,118	6,095,652	6,179,845	89,694	358,775
<u>Commercial & Industrial</u>	<u>7,145,768</u>	<u>7,509,907</u>	<u>7,922,994</u>	<u>8,269,342</u>	<u>8,655,983</u>	<u>377,554</u>	<u>1,510,216</u>
Traditional Market	12,966,838	13,416,512	13,925,112	14,364,994	14,835,829	467,248	1,868,991
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	12,966,838	13,416,512	13,925,112	14,364,994	14,835,829	467,248	1,868,991

Percent of Total

Residential Heating	44%	43%	42%	42%	41%
<u>Residential Non-heating</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>
Residential	45%	44%	43%	42%	42%
<u>Commercial & Industrial</u>	<u>55%</u>	<u>56%</u>	<u>57%</u>	<u>58%</u>	<u>58%</u>
Traditional Market	100%	100%	100%	100%	100%
<u>Non-traditional markets</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Total	100%	100%	100%	100%	100%

Growth Rate

Residential Heating		1.5%	1.6%	1.5%	1.3%	1.5%	6.0%
<u>Residential Non-heating</u>		<u>2.4%</u>	<u>2.7%</u>	<u>3.9%</u>	<u>6.9%</u>	<u>4.0%</u>	<u>16.9%</u>
Residential		1.5%	1.6%	1.6%	1.4%	1.5%	6.2%
<u>Commercial & Industrial</u>		<u>5.1%</u>	<u>5.5%</u>	<u>4.4%</u>	<u>4.7%</u>	<u>4.9%</u>	<u>21.1%</u>
Traditional Market		3.5%	3.8%	3.2%	3.3%	3.4%	14.4%
<u>Non-traditional markets</u>		<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total		3.5%	3.8%	3.2%	3.3%	3.4%	14.4%

Chart III-B-6

EnergyNorth Natural Gas, Inc. Retail Volume Forecast (Dth)
2013/14 - 2017/18
Low Case

	2013/14	2014/15	2015/16	2016/17	2017/18	Average Increment or Percent	Total Increment or Percent
Normal Weather							
Residential Heating	5,619,791	5,591,454	5,570,813	5,546,487	5,509,300	-27,623	-110,491
<u>Residential Non-heating</u>	<u>87,680</u>	<u>88,075</u>	<u>88,708</u>	<u>90,432</u>	<u>94,803</u>	<u>1,781</u>	<u>7,123</u>
Residential	5,707,471	5,679,529	5,659,521	5,636,919	5,604,103	-25,842	-103,368
<u>Commercial & Industrial</u>	<u>7,006,318</u>	<u>7,221,194</u>	<u>7,470,754</u>	<u>7,647,026</u>	<u>7,849,553</u>	<u>210,809</u>	<u>843,235</u>
Traditional Market	12,713,789	12,900,722	13,130,275	13,283,945	13,453,656	184,967	739,867
<u>Non-traditional markets</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	12,713,789	12,900,722	13,130,275	13,283,945	13,453,656	184,967	739,867
Percent of Total							
Residential Heating	44%	43%	42%	42%	41%		
<u>Residential Non-heating</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>	<u>1%</u>		
Residential	45%	44%	43%	42%	42%		
<u>Commercial & Industrial</u>	<u>55%</u>	<u>56%</u>	<u>57%</u>	<u>58%</u>	<u>58%</u>		
Traditional Market	100%	100%	100%	100%	100%		
<u>Non-traditional markets</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>		
Total	100%	100%	100%	100%	100%		
Growth Rate							
Residential Heating		-0.5%	-0.4%	-0.4%	-0.7%	-0.5%	-2.0%
<u>Residential Non-heating</u>		<u>0.5%</u>	<u>0.7%</u>	<u>1.9%</u>	<u>4.8%</u>	<u>2.0%</u>	<u>8.1%</u>
Residential		-0.5%	-0.4%	-0.4%	-0.6%	-0.5%	-1.8%
<u>Commercial & Industrial</u>		<u>3.1%</u>	<u>3.5%</u>	<u>2.4%</u>	<u>2.6%</u>	<u>2.9%</u>	<u>12.0%</u>
Traditional Market		1.5%	1.8%	1.2%	1.3%	1.4%	5.8%
<u>Non-traditional markets</u>		<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total		1.5%	1.8%	1.2%	1.3%	1.4%	5.8%

Appendix A: Demand Forecast Models and Regression Results

Appendix B: SENDOUT Model Results

Appendix C: 2013-2014 CORE New Hampshire Energy Efficiency Programs

Appendix D: 2014 CORE New Hampshire Energy Efficiency Programs

**Appendix E: Additional Opportunities for Energy Efficiency in
New Hampshire, Final Report – January 2009 (Appendix I)**

LIBERTY UTILITIES
DEMAND FORECAST SUPPORTING MATERIAL

MODELS AND REGRESSION RESULTS

Modeling Results
Liberty Utilities
Residential Heating Sales Customers

Dependent Variable: RHS_CUS
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	(115,144.57)	20,104.49	(5.73)	0.00
HH	1	504.14	54.86	9.19	0.00
dm1	1	3,947.47	651.38	6.06	0.00
dm2	1	(1,818.49)	656.29	(2.77)	0.01
dm10	1	(2,944.50)	690.21	(4.27)	0.00
dm11	1	(4,166.52)	678.02	(6.15)	0.00
dm12	1	1,510.37	682.01	2.21	0.03
AR10	1	0.35	0.11	3.24	0.00

Model Fitness:

Regress R-Square	0.68
Total R-Square	0.69
SSE	227,988,960.39
MSE	2,849,862.00
SBC	1,586.37
MAE	1,352.71
MAPE	1.95
Durbin-Watson	2.04
Root MSE	1,688.15
AIC	1,566.55
AICC	1,568.38
HQC	1,574.54

Modeling Results
Liberty Utilities
Residential Heating Sales Customers

<u>Actual, Projected, Residual</u>				<u>Project Error</u>	<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HH</u>
Jan-05	59,762	59,635	127	0.21%	0.08	357
Feb-05	59,970	60,669	(699)	-1.15%	(0.44)	358
Mar-05	60,064	61,553	(1,489)	-2.42%	(0.94)	358
Apr-05	59,979	59,749	230	0.39%	0.15	358
May-05	59,853	61,669	(1,816)	-2.94%	(1.15)	358
Jun-05	59,742	57,470	2,272	3.95%	1.44	359
Jul-05	56,957	54,609	2,348	4.30%	1.48	359
Aug-05	60,095	60,988	(893)	-1.46%	(0.56)	359
Sep-05	59,581	59,991	(410)	-0.68%	(0.26)	359
Oct-05	59,283	58,077	1,206	2.08%	0.76	360
Nov-05	60,178	61,620	(1,442)	-2.34%	(0.91)	360
Dec-05	61,105	60,732	373	0.61%	0.24	360
Jan-06	70,739	70,589	151	0.21%	0.10	361
Feb-06	64,206	64,955	(749)	-1.15%	(0.47)	361
Mar-06	65,282	66,900	(1,619)	-2.42%	(1.02)	361
Apr-06	67,284	67,026	258	0.39%	0.16	361
May-06	65,168	67,145	(1,977)	-2.94%	(1.25)	362
Jun-06	69,914	67,255	2,659	3.95%	1.68	362
Jul-06	70,252	67,355	2,896	4.30%	1.83	362
Aug-06	66,460	67,448	(988)	-1.46%	(0.62)	362
Sep-06	67,069	67,532	(462)	-0.68%	(0.29)	362
Oct-06	66,006	64,663	1,343	2.08%	0.85	363
Nov-06	61,975	63,460	(1,485)	-2.34%	(0.94)	363
Dec-06	69,943	69,516	427	0.61%	0.27	363
Jan-07	72,314	72,320	(6)	-0.01%	(0.00)	363
Feb-07	65,480	65,963	(483)	-0.73%	(0.31)	363
Mar-07	69,780	68,617	1,163	1.69%	0.73	363
Apr-07	66,402	67,073	(671)	-1.00%	(0.42)	363
May-07	68,098	67,056	1,042	1.55%	0.66	363
Jun-07	69,276	68,473	802	1.17%	0.51	364
Jul-07	67,128	68,366	(1,237)	-1.81%	(0.78)	364
Aug-07	67,117	67,821	(704)	-1.04%	(0.44)	364
Sep-07	68,265	68,904	(640)	-0.93%	(0.40)	364
Oct-07	64,569	65,275	(706)	-1.08%	(0.45)	364
Nov-07	67,745	64,188	3,557	5.54%	2.25	364
Dec-07	72,312	70,346	1,966	2.80%	1.24	365
Jan-08	70,895	72,034	(1,139)	-1.58%	(0.72)	365
Feb-08	69,941	67,549	2,392	3.54%	1.51	365
Mar-08	65,827	68,886	(3,060)	-4.44%	(1.93)	365
Apr-08	66,525	68,584	(2,059)	-3.00%	(1.30)	365
May-08	70,918	69,432	1,486	2.14%	0.94	365
Jun-08	69,102	69,536	(434)	-0.62%	(0.27)	366
Jul-08	70,766	69,231	1,534	2.22%	0.97	366
Aug-08	67,759	69,580	(1,821)	-2.62%	(1.15)	366
Sep-08	70,316	68,137	2,178	3.20%	1.38	366
Oct-08	66,462	65,655	807	1.23%	0.51	366
Nov-08	66,027	65,845	182	0.28%	0.11	366
Dec-08	68,805	69,923	(1,118)	-1.60%	(0.71)	366
Jan-09	75,224	74,487	737	0.99%	0.47	366
Feb-09	68,611	68,544	66	0.10%	0.04	366
Mar-09	67,363	68,904	(1,541)	-2.24%	(0.97)	366
Apr-09	68,822	69,599	(777)	-1.12%	(0.49)	366
May-09	70,284	69,089	1,196	1.73%	0.76	367
Jun-09	73,023	70,200	2,823	4.02%	1.78	367
Jul-09	74,177	69,384	4,793	6.91%	3.03	367
Aug-09	68,361	69,775	(1,414)	-2.03%	(0.89)	367
Sep-09	66,863	69,579	(2,716)	-3.90%	(1.72)	367
Oct-09	68,383	67,719	664	0.98%	0.42	367
Nov-09	63,132	65,196	(2,064)	-3.17%	(1.30)	367
Dec-09	68,314	71,247	(2,933)	-4.12%	(1.85)	367
Jan-10	77,143	74,828	2,315	3.09%	1.46	367

Modeling Results
Liberty Utilities
Residential Heating Sales Customers

<u>Actual, Projected, Residual</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>HH</u>
Feb-10	68,321	68,632	(312)	-0.45%	(0.20)	368
Mar-10	67,298	70,018	(2,720)	-3.88%	(1.72)	368
Apr-10	68,929	69,142	(212)	-0.31%	(0.13)	368
May-10	67,301	68,811	(1,510)	-2.19%	(0.95)	368
Jun-10	69,374	70,894	(1,520)	-2.14%	(0.96)	368
Jul-10	73,058	71,472	1,586	2.22%	1.00	368
Aug-10	68,393	69,975	(1,582)	-2.26%	(1.00)	368
Sep-10	69,350	71,418	(2,068)	-2.90%	(1.31)	368
Oct-10	67,401	68,685	(1,284)	-1.87%	(0.81)	368
Nov-10	66,084	65,282	802	1.23%	0.51	368
Dec-10	72,888	72,051	837	1.16%	0.53	368
Jan-11	72,185	75,504	(3,319)	-4.40%	(2.10)	368
Feb-11	68,372	69,201	(829)	-1.20%	(0.52)	368
Mar-11	70,445	71,612	(1,167)	-1.63%	(0.74)	368
Apr-11	72,403	70,922	1,481	2.09%	0.94	368
May-11	70,601	69,674	927	1.33%	0.59	368
Jun-11	69,947	71,326	(1,378)	-1.93%	(0.87)	368
Jul-11	72,538	71,031	1,507	2.12%	0.95	369
Aug-11	69,409	70,729	(1,319)	-1.87%	(0.83)	369
Sep-11	70,087	70,809	(722)	-1.02%	(0.46)	369
Oct-11	69,152	67,524	1,628	2.41%	1.03	369
Nov-11	69,155	67,447	1,708	2.53%	1.08	369
Dec-11	72,064	72,504	(440)	-0.61%	(0.28)	369
Jan-12	73,827	74,913	(1,087)	-1.45%	(0.69)	369
Feb-12	67,526	68,529	(1,003)	-1.46%	(0.63)	369
Mar-12	73,624	71,035	2,589	3.65%	1.64	369
Apr-12	72,481	71,326	1,155	1.62%	0.73	369
May-12	70,948	70,491	457	0.65%	0.29	370
Jun-12	73,241	71,640	1,601	2.23%	1.01	370
Jul-12	69,837	71,466	(1,628)	-2.28%	(1.03)	370
Aug-12	72,585	70,827	1,758	2.48%	1.11	370
Sep-12	70,439	70,458	(19)	-0.03%	(0.01)	370
Oct-12	67,999	68,527	(528)	-0.77%	(0.33)	370
Nov-12	66,272	67,591	(1,319)	-1.95%	(0.83)	370
Dec-12	74,562	73,503	1,059	1.44%	0.67	370
Jan-13	76,391	74,504	1,888	2.53%	1.19	370
Feb-13	70,078	69,181	897	1.30%	0.57	370
Mar-13	70,681	71,577	(896)	-1.25%	(0.57)	370
Apr-13	71,699	70,828	871	1.23%	0.55	370
May-13		72,054				370
Jun-13		71,148				370
Jul-13		71,940				370
Aug-13		71,815				371
Sep-13		72,042				371
Oct-13		68,245				371
Nov-13		67,291				371
Dec-13		73,219				371
Jan-14		76,143				371
Feb-14		70,091				371
Mar-14		71,858				371
Apr-14		72,251				371
May-14		72,060				372
Jun-14		72,194				372
Jul-14		72,211				372
Aug-14		72,610				372
Sep-14		72,624				372
Oct-14		69,705				372
Nov-14		68,431				373
Dec-14		74,327				373
Jan-15		76,908				373
Feb-15		71,129				373

Modeling Results
Liberty Utilities
Residential Heating Sales Customers

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>Independent Variable</u> <u>HH</u>
Mar-15		73,141				373
Apr-15		73,227				374
May-15		73,355				374
Jun-15		73,352				374
Jul-15		73,483				374
Aug-15		73,612				374
Sep-15		73,766				375
Oct-15		70,881				375
Nov-15		69,745				375
Dec-15		75,561				375
Jan-16		78,067				375
Feb-16		72,405				376
Mar-16		74,312				376
Apr-16		74,448				376
May-16		74,537				376
Jun-16		74,628				376
Jul-16		74,709				377
Aug-16		74,824				377
Sep-16		74,929				377
Oct-16		72,071				377
Nov-16		70,959				377
Dec-16		76,733				378
Jan-17		79,274				378
Feb-17		73,590				378
Mar-17		75,506				378
Apr-17		75,606				378
May-17		75,708				379
Jun-17		75,797				379
Jul-17		75,889				379
Aug-17		75,987				379
Sep-17		76,073				379
Oct-17		73,218				379
Nov-17		72,083				380
Dec-17		77,851				380
Jan-18		80,374				380
Feb-18		74,690				380
Mar-18		76,587				380
Jul-18		76,922				381
Aug-18		77,006				381
Sep-18		77,088				381
Oct-18		74,224				381
Nov-18		73,085				382
Dec-18		78,844				382
Jan-19		81,365				382
Feb-19		75,677				382
Mar-19		77,574				382
Apr-19		77,656				382
May-19		77,737				383
Jun-19		77,818				383
Jul-19		77,899				383
Aug-19		77,981				383
Sep-19		78,062				383
Oct-19		75,198				383
Nov-19		74,057				384
Dec-19		79,815				384

Modeling Results
Liberty Utilities
Residential Heating Sales Use per Customer

Dependent Variable: RHS_UPC
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	75.62	20.76	3.64	0.00
HDD_1	1	0.10	0.00	33.23	0.00
DT	1	(0.00)	0.00	(2.92)	0.00
dm1	1	8.29	2.50	3.32	0.00
dm12	1	14.02	1.44	9.75	0.00
AR1	1	(0.63)	0.05	(13.84)	0.00
AR2	1	0.21	0.04	6.04	0.00
AR11	1	(0.17)	0.04	(3.88)	0.00
ARCH0	1	8.38	2.97	2.82	0.00
ARCH12	1	1.72	0.28	6.26	0.00

Model Fitness:

Regress R-Square	-
Total R-Square	0.95
SSE	18,030.39
MSE	146.59
SBC	927.65
MAE	8.05
MAPE	10.84
Durbin-Watson	-
Root MSE	-
AIC	0.95
AICC	899.52
HQC	901.49

Modeling Results
Liberty Utilities
Residential Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Jan-05	177	151	26	17.27%	1.24	1,060
Feb-05	181	173	8	4.73%	0.39	1,246
Mar-05	158	141	17	12.26%	0.82	1,059
Apr-05	107	121	(15)	-12.00%	(0.69)	911
May-05	60	60	0	0.00%	0.00	516
Jun-05	42	36	6	15.81%	0.27	238
Jul-05	25	26	(1)	-2.61%	(0.03)	52
Aug-05	19	20	(1)	-3.09%	(0.03)	3
Sep-05	21	19	2	9.78%	0.09	5
Oct-05	27	32	(5)	-16.03%	(0.25)	108
Nov-05	66	61	5	8.66%	0.25	422
Dec-05	128	115	13	11.03%	0.61	708
Jan-06	138	155	(17)	-10.82%	(0.80)	1,060
Feb-06	127	148	(21)	-13.94%	(0.98)	1,246
Mar-06	142	113	29	25.87%	1.40	1,059
Apr-06	87	123	(36)	-29.63%	(1.74)	911
May-06	49	51	(3)	-5.55%	(0.14)	516
Jun-06	31	33	(2)	-6.79%	(0.11)	238
Jul-06	20	21	(1)	-4.47%	(0.04)	52
Aug-06	17	18	(1)	-5.64%	(0.05)	3
Sep-06	20	18	2	10.77%	0.09	5
Oct-06	30	30	0	0.40%	0.01	108
Nov-06	62	65	(3)	-5.31%	(0.16)	422
Dec-06	86	104	(19)	-18.08%	(0.90)	708
Jan-07	112	119	(7)	-5.91%	(0.33)	1,060
Feb-07	168	137	30	22.04%	1.44	1,246
Mar-07	146	140	6	3.94%	0.26	1,059
Apr-07	98	114	(16)	-14.36%	(0.78)	911
May-07	52	55	(3)	-5.36%	(0.14)	516
Jun-07	26	32	(5)	-17.14%	(0.26)	238
Jul-07	19	16	3	21.84%	0.17	52
Aug-07	17	18	(1)	-5.94%	(0.05)	3
Sep-07	18	18	1	2.86%	0.02	5
Oct-07	23	28	(5)	-17.77%	(0.24)	108
Nov-07	55	53	2	3.33%	0.08	422
Dec-07	120	97	24	24.39%	1.12	708
Jan-08	134	149	(15)	-9.92%	(0.70)	1,060
Feb-08	136	144	(8)	-5.26%	(0.36)	1,246
Mar-08	130	121	9	7.22%	0.42	1,099
Apr-08	97	108	(12)	-10.63%	(0.55)	911
May-08	48	58	(10)	-17.43%	(0.48)	516
Jun-08	26	29	(3)	-9.85%	(0.13)	238
Jul-08	18	16	2	14.07%	0.11	52
Aug-08	17	17	(0)	-0.68%	(0.01)	3
Sep-08	18	16	2	13.30%	0.10	5
Oct-08	28	26	2	7.84%	0.10	108
Nov-08	61	62	(1)	-0.94%	(0.03)	422
Dec-08	109	103	6	5.81%	0.28	708
Jan-09	145	134	10	7.56%	0.48	1,060
Feb-09	156	149	7	4.83%	0.34	1,246
Mar-09	126	127	(1)	-0.92%	(0.06)	1,059
Apr-09	85	103	(18)	-17.16%	(0.84)	911
May-09	42	50	(8)	-16.28%	(0.38)	516
Jun-09	26	26	(1)	-3.30%	(0.04)	238
Jul-09	20	17	3	20.18%	0.16	52
Aug-09	17	17	(0)	-0.90%	(0.01)	3
Sep-09	18	16	2	9.88%	0.08	5
Oct-09	33	27	6	22.85%	0.29	108
Nov-09	62	62	(1)	-1.25%	(0.04)	422
Dec-09	84	103	(19)	-18.61%	(0.92)	708
Jan-10	145	122	23	19.11%	1.11	1,060

Modeling Results
Liberty Utilities
Residential Heating Sales Use per Customer

<u>Date</u>	<u>Actual, Projected, Residual (Therms/ Customer)</u>			<u>Project Error %</u>	<u>Independent Variable</u>	
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HDD_1</u>
Feb-10	143	154	(11)	-7.32%	(0.54)	1,246
Mar-10	109	116	(7)	-5.73%	(0.32)	1,059
Apr-10	67	94	(26)	-27.97%	(1.25)	911
May-10	44	41	3	6.08%	0.12	516
Jun-10	25	32	(7)	-21.98%	(0.33)	238
Jul-10	18	15	3	17.69%	0.13	52
Aug-10	15	16	(0)	-2.80%	(0.02)	3
Sep-10	16	16	0	3.11%	0.02	5
Oct-10	23	26	(2)	-9.03%	(0.11)	108
Nov-10	56	52	4	7.86%	0.19	422
Dec-10	95	101	(7)	-6.65%	(0.32)	708
Jan-11	138	127	11	9.07%	0.55	1,060
Feb-11	159	144	15	10.71%	0.74	1,246
Mar-11	134	124	10	7.82%	0.46	1,059
Apr-11	98	106	(8)	-7.51%	(0.38)	911
May-11	50	55	(4)	-8.12%	(0.21)	516
Jun-11	27	28	(2)	-5.67%	(0.08)	238
Jul-11	18	14	4	31.26%	0.21	52
Aug-11	15	15	0	2.29%	0.02	3
Sep-11	16	13	3	20.67%	0.13	5
Oct-11	21	24	(3)	-13.14%	(0.15)	108
Nov-11	52	52	1	1.42%	0.03	422
Dec-11	77	98	(21)	-21.77%	(1.02)	708
Jan-12	118	118	(1)	-0.43%	(0.02)	1,060
Feb-12	129	139	(10)	-7.09%	(0.47)	1,246
Mar-12	109	118	(9)	-7.89%	(0.44)	1,099
Apr-12	66	94	(28)	-29.42%	(1.32)	911
May-12	45	41	4	9.09%	0.18	516
Jun-12	24	31	(7)	-21.93%	(0.32)	238
Jul-12	18	13	4	33.70%	0.21	52
Aug-12	15	15	0	2.75%	0.02	3
Sep-12	16	12	3	24.98%	0.15	5
Oct-12	24	23	2	7.01%	0.08	108
Nov-12	47	50	(3)	-5.95%	(0.14)	422
Dec-12	94	90	4	4.35%	0.19	708
Jan-13	122	125	(3)	-2.37%	(0.14)	1,060
Feb-13	146	132	14	10.60%	0.67	1,246
Mar-13	123	118	6	4.73%	0.27	1,059
Apr-13	94	101	(7)	-6.54%	(0.31)	911
May-13		54				516
Jun-13		30				240
Jul-13		14				52
Aug-13		11				3
Sep-13		11				12
Oct-13		20				123
Nov-13		51				423
Dec-13		94				710
Jan-14		127				1,067
Feb-14		136				1,227
Mar-14		113				1,031
Apr-14		97				886
May-14		59				516
Jun-14		31				240
Jul-14		13				52
Aug-14		8				3
Sep-14		8				12
Oct-14		19				123
Nov-14		50				423
Dec-14		94				710
Jan-15		125				1,067
Feb-15		133				1,227

Modeling Results
Liberty Utilities
Residential Heating Sales Use per Customer

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>Independent Variable</u> <u>HDD_1</u>
Mar-15		112				1,031
Apr-15		97				886
May-15		59				516
Jun-15		31				240
Jul-15		11				52
Aug-15		6				3
Sep-15		7				12
Oct-15		18				123
Nov-15		49				423
Dec-15		92				710
Jan-16		123				1,067
Feb-16		131				1,227
Mar-16		114				1,065
Apr-16		96				886
May-16		58				516
Jun-16		29				240
Jul-16		10				52
Aug-16		5				3
Sep-16		6				12
Oct-16		17				123
Nov-16		48				423
Dec-16		91				710
Jan-17		122				1,067
Feb-17		130				1,227
Mar-17		110				1,031
Apr-17		95				886
May-17		57				516
Jun-17		28				240
Jul-17		9				52
Aug-17		4				3
Sep-17		4				12
Oct-17		16				123
Nov-17		46				423
Dec-17		90				710
Jan-18		121				1,067
Feb-18		129				1,227
Mar-18		109				1,031
Jul-18		7				52
Aug-18		2				3
Sep-18		3				12
Oct-18		14				123
Nov-18		45				423
Dec-18		89				710
Jan-19		119				1,067
Feb-19		128				1,227
Mar-19		107				1,031
Apr-19		92				886
May-19		54				516
Jun-19		26				240
Jul-19		6				52
Aug-19		2				3
Sep-19		2				12
Oct-19		13				123
Nov-19		44				423
Dec-19		87				710

Modeling Results
Liberty Utilities
Residential Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>					<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	
Jan-05	10,551,258	8,978,580	1,572,678	17.52%	1.94	1,060	
Feb-05	10,844,694	10,475,907	368,787	3.52%	0.45	1,246	
Mar-05	9,497,808	8,670,317	827,491	9.54%	1.02	1,059	
Apr-05	6,389,689	7,232,773	(843,084)	-11.66%	(1.04)	911	
May-05	3,584,293	3,692,869	(108,576)	-2.94%	(0.13)	516	
Jun-05	2,524,970	2,097,422	427,548	20.38%	0.53	238	
Jul-05	1,447,273	1,424,746	22,527	1.58%	0.03	52	
Aug-05	1,167,774	1,222,878	(55,104)	-4.51%	(0.07)	3	
Sep-05	1,268,954	1,163,903	105,051	9.03%	0.13	5	
Oct-05	1,611,244	1,879,708	(268,464)	-14.28%	(0.33)	108	
Nov-05	3,993,768	3,763,650	230,118	6.11%	0.28	422	
Dec-05	7,820,141	7,000,141	820,000	11.71%	1.01	708	
Jan-06	9,752,611	10,912,801	(1,160,190)	-10.63%	(1.43)	1,060	
Feb-06	8,172,987	9,607,687	(1,434,700)	-14.93%	(1.77)	1,246	
Mar-06	9,299,421	7,571,055	1,728,366	22.83%	2.13	1,059	
Apr-06	5,830,782	8,254,048	(2,423,266)	-29.36%	(2.99)	911	
May-06	3,165,245	3,453,014	(287,769)	-8.33%	(0.35)	516	
Jun-06	2,175,652	2,245,293	(69,641)	-3.10%	(0.09)	238	
Jul-06	1,379,920	1,384,907	(4,987)	-0.36%	(0.01)	52	
Aug-06	1,144,087	1,230,499	(86,412)	-7.02%	(0.11)	3	
Sep-06	1,309,053	1,189,910	119,143	10.01%	0.15	5	
Oct-06	1,997,339	1,948,989	48,350	2.48%	0.06	108	
Nov-06	3,825,597	4,136,806	(311,209)	-7.52%	(0.38)	422	
Dec-06	5,985,939	7,262,318	(1,276,379)	-17.58%	(1.57)	708	
Jan-07	8,096,032	8,604,899	(508,867)	-5.91%	(0.63)	1,060	
Feb-07	10,970,785	9,055,757	1,915,028	21.15%	2.36	1,246	
Mar-07	10,166,893	9,618,160	548,733	5.71%	0.68	1,059	
Apr-07	6,494,114	7,659,859	(1,165,745)	-15.22%	(1.44)	911	
May-07	3,566,774	3,711,297	(144,523)	-3.89%	(0.18)	516	
Jun-07	1,832,491	2,185,844	(353,353)	-16.17%	(0.44)	238	
Jul-07	1,301,063	1,087,565	213,498	19.63%	0.26	52	
Aug-07	1,152,032	1,237,668	(85,636)	-6.92%	(0.11)	3	
Sep-07	1,240,508	1,217,291	23,217	1.91%	0.03	5	
Oct-07	1,486,017	1,826,830	(340,813)	-18.66%	(0.42)	108	
Nov-07	3,713,088	3,404,598	308,490	9.06%	0.38	422	
Dec-07	8,692,419	6,797,858	1,894,561	27.87%	2.33	708	
Jan-08	9,503,457	10,719,268	(1,215,811)	-11.34%	(1.50)	1,060	
Feb-08	9,539,936	9,725,308	(185,372)	-1.91%	(0.23)	1,246	
Mar-08	8,562,340	8,357,050	205,290	2.46%	0.25	1,099	
Apr-08	6,448,838	7,438,874	(990,036)	-13.31%	(1.22)	911	
May-08	3,376,527	4,003,765	(627,238)	-15.67%	(0.77)	516	
Jun-08	1,777,499	1,984,063	(206,564)	-10.41%	(0.25)	238	
Jul-08	1,286,373	1,103,228	183,145	16.60%	0.23	52	
Aug-08	1,137,129	1,175,681	(38,552)	-3.28%	(0.05)	3	
Sep-08	1,267,743	1,084,257	183,486	16.92%	0.23	5	
Oct-08	1,882,596	1,724,593	158,003	9.16%	0.19	108	
Nov-08	4,049,171	4,076,544	(27,373)	-0.67%	(0.03)	422	
Dec-08	7,494,363	7,197,989	296,374	4.12%	0.37	708	
Jan-09	10,873,583	10,009,968	863,615	8.63%	1.06	1,060	
Feb-09	10,722,175	10,218,499	503,676	4.93%	0.62	1,246	
Mar-09	8,469,210	8,743,331	(274,121)	-3.14%	(0.34)	1,059	
Apr-09	5,859,354	7,152,553	(1,293,199)	-18.08%	(1.59)	911	
May-09	2,919,457	3,427,682	(508,225)	-14.83%	(0.63)	516	
Jun-09	1,869,371	1,858,461	10,910	0.59%	0.01	238	
Jul-09	1,476,963	1,149,595	327,368	28.48%	0.40	52	
Aug-09	1,184,525	1,219,986	(35,461)	-2.91%	(0.04)	3	
Sep-09	1,197,519	1,134,145	63,374	5.59%	0.08	5	
Oct-09	2,242,518	1,807,715	434,803	24.05%	0.54	108	
Nov-09	3,883,957	4,061,686	(177,729)	-4.38%	(0.22)	422	
Dec-09	5,750,914	7,368,750	(1,617,836)	-21.96%	(1.99)	708	
Jan-10	11,175,414	9,101,045	2,074,369	22.79%	2.56	1,060	

Modeling Results
Liberty Utilities
Residential Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>					<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	
Feb-10	9,749,840	10,567,388	(817,548)	-7.74%	(1.01)	1,246	
Mar-10	7,339,552	8,100,347	(760,795)	-9.39%	(0.94)	1,059	
Apr-10	4,644,396	6,467,498	(1,823,102)	-28.19%	(2.25)	911	
May-10	2,954,208	2,847,383	106,825	3.75%	0.13	516	
Jun-10	1,705,880	2,234,450	(528,570)	-23.66%	(0.65)	238	
Jul-10	1,290,888	1,073,070	217,818	20.30%	0.27	52	
Aug-10	1,046,982	1,102,061	(55,079)	-5.00%	(0.07)	3	
Sep-10	1,126,977	1,125,589	1,388	0.12%	0.00	5	
Oct-10	1,569,461	1,758,040	(188,579)	-10.73%	(0.23)	108	
Nov-10	3,695,531	3,384,507	311,024	9.19%	0.38	422	
Dec-10	6,902,073	7,309,089	(407,016)	-5.57%	(0.50)	708	
Jan-11	9,967,760	9,558,925	408,835	4.28%	0.50	1,060	
Feb-11	10,904,734	9,969,030	935,704	9.39%	1.15	1,246	
Mar-11	9,430,576	8,891,289	539,287	6.07%	0.66	1,059	
Apr-11	7,069,973	7,487,525	(417,552)	-5.58%	(0.51)	911	
May-11	3,540,848	3,802,989	(262,141)	-6.89%	(0.32)	516	
Jun-11	1,858,289	2,008,726	(150,437)	-7.49%	(0.19)	238	
Jul-11	1,340,459	1,000,011	340,448	34.04%	0.42	52	
Aug-11	1,068,190	1,064,110	4,080	0.38%	0.01	3	
Sep-11	1,140,417	954,798	185,619	19.44%	0.23	5	
Oct-11	1,448,235	1,628,140	(179,905)	-11.05%	(0.22)	108	
Nov-11	3,623,623	3,484,750	138,873	3.99%	0.17	422	
Dec-11	5,526,243	7,107,345	(1,581,102)	-22.25%	(1.95)	708	
Jan-12	8,700,336	8,866,132	(165,796)	-1.87%	(0.20)	1,060	
Feb-12	8,711,454	9,515,850	(804,396)	-8.45%	(0.99)	1,246	
Mar-12	8,002,412	8,382,540	(380,128)	-4.53%	(0.47)	1,059	
Apr-12	4,812,561	6,710,049	(1,897,488)	-28.28%	(2.34)	911	
May-12	3,161,932	2,879,784	282,148	9.80%	0.35	516	
Jun-12	1,765,800	2,212,235	(446,435)	-20.18%	(0.55)	238	
Jul-12	1,233,382	944,016	289,366	30.65%	0.36	52	
Aug-12	1,084,359	1,029,751	54,608	5.30%	0.07	3	
Sep-12	1,096,486	877,534	218,952	24.95%	0.27	5	
Oct-12	1,647,311	1,551,390	95,921	6.18%	0.12	108	
Nov-12	3,132,788	3,397,327	(264,539)	-7.79%	(0.33)	422	
Dec-12	7,007,912	6,620,600	387,312	5.85%	0.48	708	
Jan-13	9,292,827	9,282,797	10,030	0.11%	0.01	1,060	
Feb-13	10,232,016	9,132,767	1,099,249	12.04%	1.35	1,246	
Mar-13	8,729,067	8,440,520	288,547	3.42%	0.36	1,059	
Apr-13	6,765,808	7,151,121	(385,313)	-5.39%	(0.47)	911	
May-13		3,861,978				516	
Jun-13		2,150,076				240	
Jul-13		1,038,984				52	
Aug-13		762,659				3	
Sep-13		805,628				12	
Oct-13		1,397,100				123	
Nov-13		3,403,742				423	
Dec-13		6,851,655				710	
Jan-14		9,645,632				1,067	
Feb-14		9,509,910				1,227	
Mar-14		8,131,459				1,031	
Apr-14		6,972,397				886	
May-14		4,227,747				516	
Jun-14		2,264,139				240	
Jul-14		926,604				52	
Aug-14		578,344				3	
Sep-14		611,318				12	
Oct-14		1,347,384				123	
Nov-14		3,409,818				423	
Dec-14		6,955,440				710	
Jan-15		9,604,082				1,067	
Feb-15		9,441,683				1,227	

Modeling Results
Liberty Utilities
Residential Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Project Error</u>	<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>%</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Mar-15		8,190,818				1,031
Apr-15		7,084,756				886
May-15		4,310,523				516
Jun-15		2,243,036				240
Jul-15		833,804				52
Aug-15		456,582				3
Sep-15		509,664				12
Oct-15		1,283,533				123
Nov-15		3,408,117				423
Dec-15		6,982,271				710
Jan-16		9,627,281				1,067
Feb-16		9,505,958				1,227
Mar-16		8,503,250				1,065
Apr-16		7,139,028				886
May-16		4,307,956				516
Jun-16		2,192,545				240
Jul-16		745,264				52
Aug-16		360,329				3
Sep-16		419,497				12
Oct-16		1,217,558				123
Nov-16		3,381,877				423
Dec-16		6,991,840				710
Jan-17		9,671,311				1,067
Feb-17		9,568,974				1,227
Mar-17		8,287,250				1,031
Apr-17		7,162,892				886
May-17		4,284,895				516
Jun-17		2,131,338				240
Jul-17		658,863				52
Aug-17		268,065				3
Sep-17		330,003				12
Oct-17		1,145,922				123
Nov-17		3,345,178				423
Dec-17		6,995,017				710
Jan-18		9,703,952				1,067
Feb-18		9,618,962				1,227
Mar-18		8,311,735				1,031
Apr-18		7,169,511				886
May-18		4,248,502				516
Jun-18		2,063,594				240
Jul-18		570,324				52
Aug-18		174,400				3
Sep-18		237,585				12
Oct-18		1,068,591				123
Nov-18		3,299,805				423
Dec-18		6,984,981				710
Jan-19		9,721,359				1,067
Feb-19		9,651,469				1,227
Mar-19		8,321,925				1,031
Apr-19		7,164,252				886
May-19		4,205,104				516
Jun-19		1,991,917				240
Jul-19		479,451				52
Aug-19		176,609				3
Sep-19		142,518				12
Oct-19		988,145				123
Nov-19		3,250,618				423
Dec-19		6,970,694				710

Plan Year Actual Projected HDD_1

Modeling Results
Liberty Utilities
Residential Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u> <u>HDD_1</u>
PY2005	60,020,555	58,147,810			6,328
PY2006	56,041,006	58,561,995			6,328
PY2007	56,118,245	57,604,293			6,328
PY2008	57,187,945	57,518,543			6,368
PY2009	58,358,209	57,996,469			6,328
PY2010	52,238,469	55,807,307			6,328
PY2011	58,367,085	57,059,138			6,328
PY2012	49,365,899	53,561,376			6,368
PY2013		54,041,557			6,352
PY2014		54,470,331			6,290
PY2015		54,323,739			6,290
PY2016		54,409,054			6,324
PY2017		53,883,229			6,290
PY2018		53,507,349			6,290
PY2019		53,127,535			6,290
Growth					
PY2006	(3,979,549)	414,186			-
PY2007	77,239	(957,702)			-
PY2008	1,069,700	(85,750)			40
PY2009	1,170,264	477,926			(40)
PY2010	(6,119,740)	(2,189,162)			-
PY2011	6,128,616	1,251,830			-
PY2012	(9,001,186)	(3,497,762)			40
PY2013		480,182			(16)
PY2014		428,773			(62)
PY2015		(146,591)			-
PY2016		85,315			34
PY2017		(525,825)			(34)
PY2018		(375,880)			-
PY2019		(379,814)			-
Growth Rate (%)					
PY2006	-6.6%	0.7%			0.0%
PY2007	0.1%	-1.6%			0.0%
PY2008	1.9%	-0.1%			0.6%
PY2009	2.0%	0.8%			-0.6%
PY2010	-10.5%	-3.8%			0.0%
PY2011	11.7%	2.2%			0.0%
PY2012	-15.4%	-6.1%			0.6%
PY2013		0.9%			-0.3%
PY2014		0.8%			-1.0%
PY2015		-0.3%			0.0%
PY2016		0.2%			0.5%
PY2017		-1.0%			-0.5%
PY2018		-0.7%			0.0%
PY2019		-0.7%			0.0%

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Customers

Dependent Variable: RNS_CUS
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	9,205.57	900.53	10.22	0.00
EE	1	10.27	1.47	6.98	0.00
DT	1	(0.53)	0.02	(34.04)	0.00
dm1	1	295.58	49.27	6.00	0.00
dm2	1	(100.27)	46.09	(2.18)	0.03
dm12	1	197.63	47.27	4.18	0.00
AR4	1	0.48	0.10	4.78	0.00
AR8	1	0.32	0.10	3.28	0.00
AR11	1	(0.32)	0.09	(3.53)	0.00

Model Fitness:

Regress R-Square	0.97
Total R-Square	0.95
SSE	1,109,739.41
MSE	14,047.33
SBC	1,124.20
MAE	87.98
MAPE	2.03
Durbin-Watson	1.95
Root MSE	118.52
AIC	1,101.91
AICC	1,104.21
HQC	1,110.89

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EE</u>
Jan-05	5,973	6,019	(46)	-0.77%	(0.32)	463
Feb-05	6,019	6,036	(17)	-0.29%	(0.12)	464
Mar-05	5,968	6,028	(60)	-1.00%	(0.41)	464
Apr-05	5,991	5,943	48	0.82%	0.33	465
May-05	5,956	6,153	(197)	-3.20%	(1.35)	465
Jun-05	5,942	5,595	347	6.19%	2.37	466
Jul-05	5,774	5,468	306	5.60%	2.09	466
Aug-05	5,900	5,920	(20)	-0.34%	(0.14)	467
Sep-05	5,882	5,902	(20)	-0.34%	(0.14)	467
Oct-05	5,805	5,580	225	4.03%	1.54	468
Nov-05	5,806	6,129	(323)	-5.26%	(2.20)	468
Dec-05	5,801	5,675	126	2.23%	0.86	468
Jan-06	5,330	5,371	(41)	-0.77%	(0.28)	469
Feb-06	4,945	4,959	(14)	-0.29%	(0.10)	469
Mar-06	4,999	5,050	(50)	-1.00%	(0.34)	469
Apr-06	5,078	5,036	41	0.82%	0.28	470
May-06	4,882	5,043	(161)	-3.20%	(1.10)	470
Jun-06	5,317	5,007	310	6.19%	2.12	470
Jul-06	5,320	5,038	282	5.60%	1.93	470
Aug-06	4,997	5,013	(17)	-0.34%	(0.12)	471
Sep-06	5,009	5,026	(17)	-0.34%	(0.12)	471
Oct-06	4,958	4,766	192	4.03%	1.31	471
Nov-06	4,523	4,775	(251)	-5.26%	(1.72)	471
Dec-06	5,202	5,089	113	2.23%	0.78	471
Jan-07	5,239	5,225	14	0.26%	0.09	472
Feb-07	4,770	4,678	93	1.98%	0.63	472
Mar-07	5,117	4,992	125	2.50%	0.85	472
Apr-07	4,683	4,780	(98)	-2.04%	(0.67)	472
May-07	4,948	4,926	23	0.46%	0.15	473
Jun-07	4,951	4,958	(7)	-0.15%	(0.05)	473
Jul-07	4,884	4,857	27	0.55%	0.18	473
Aug-07	4,840	4,897	(57)	-1.17%	(0.39)	474
Sep-07	4,856	4,754	101	2.13%	0.69	474
Oct-07	4,552	4,619	(67)	-1.45%	(0.46)	475
Nov-07	4,735	4,709	26	0.55%	0.18	475
Dec-07	5,048	5,029	18	0.36%	0.12	475
Jan-08	4,905	4,992	(86)	-1.73%	(0.59)	476
Feb-08	4,705	4,799	(94)	-1.95%	(0.64)	476
Mar-08	4,541	4,672	(130)	-2.79%	(0.89)	476
Apr-08	4,558	4,691	(133)	-2.84%	(0.91)	475
May-08	4,828	4,775	53	1.10%	0.36	475
Jun-08	4,696	4,726	(30)	-0.63%	(0.20)	474
Jul-08	4,815	4,747	68	1.43%	0.46	473
Aug-08	4,636	4,669	(33)	-0.71%	(0.23)	472
Sep-08	4,676	4,477	199	4.45%	1.36	471
Oct-08	4,492	4,492	1	0.01%	0.00	469
Nov-08	4,315	4,509	(194)	-4.30%	(1.33)	467
Dec-08	4,513	4,661	(148)	-3.18%	(1.01)	466
Jan-09	4,738	4,664	74	1.59%	0.51	464
Feb-09	4,199	4,261	(63)	-1.47%	(0.43)	462
Mar-09	4,199	4,364	(164)	-3.76%	(1.12)	460
Apr-09	4,358	4,456	(98)	-2.19%	(0.67)	459
May-09	4,392	4,288	104	2.42%	0.71	457
Jun-09	4,445	4,405	40	0.91%	0.27	456
Jul-09	4,744	4,408	336	7.62%	2.30	455
Aug-09	4,349	4,303	46	1.08%	0.32	454
Sep-09	3,962	4,147	(185)	-4.47%	(1.27)	453
Oct-09	4,238	4,075	163	4.00%	1.11	453
Nov-09	3,863	3,931	(69)	-1.75%	(0.47)	453
Dec-09	4,117	4,281	(164)	-3.82%	(1.12)	452
Jan-10	4,639	4,481	158	3.53%	1.08	452

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EE</u>
Feb-10	3,900	3,879	21	0.55%	0.15	453
Mar-10	3,943	4,094	(151)	-3.70%	(1.03)	453
Apr-10	3,983	4,184	(201)	-4.81%	(1.37)	453
May-10	3,941	4,103	(161)	-3.93%	(1.10)	453
Jun-10	4,125	4,257	(132)	-3.10%	(0.90)	453
Jul-10	4,222	4,260	(38)	-0.88%	(0.26)	454
Aug-10	4,086	4,079	7	0.17%	0.05	454
Sep-10	4,130	4,033	97	2.41%	0.66	454
Oct-10	3,857	3,915	(58)	-1.49%	(0.40)	454
Nov-10	3,867	3,885	(18)	-0.47%	(0.12)	455
Dec-10	4,287	4,252	35	0.83%	0.24	455
Jan-11	4,119	4,212	(93)	-2.20%	(0.63)	455
Feb-11	3,851	3,849	3	0.07%	0.02	455
Mar-11	3,975	3,906	69	1.77%	0.47	455
Apr-11	3,996	3,808	188	4.93%	1.28	456
May-11	3,896	3,960	(64)	-1.62%	(0.44)	456
Jun-11	3,901	3,996	(96)	-2.39%	(0.65)	456
Jul-11	4,030	3,918	112	2.86%	0.76	456
Aug-11	3,971	3,831	141	3.67%	0.96	457
Sep-11	3,860	3,856	4	0.12%	0.03	457
Oct-11	3,771	3,796	(25)	-0.67%	(0.17)	457
Nov-11	3,879	3,779	101	2.66%	0.69	458
Dec-11	3,943	3,894	50	1.28%	0.34	458
Jan-12	4,042	4,099	(57)	-1.38%	(0.39)	458
Feb-12	3,724	3,733	(9)	-0.24%	(0.06)	459
Mar-12	3,906	3,728	179	4.79%	1.22	459
Apr-12	3,738	3,760	(22)	-0.60%	(0.15)	459
May-12	3,824	3,778	46	1.22%	0.31	460
Jun-12	3,877	3,792	85	2.23%	0.58	460
Jul-12	3,600	3,680	(81)	-2.19%	(0.55)	460
Aug-12	3,867	3,750	117	3.12%	0.80	461
Sep-12	3,699	3,659	39	1.07%	0.27	461
Oct-12	3,623	3,625	(2)	-0.05%	(0.01)	461
Nov-12	3,515	3,669	(154)	-4.20%	(1.05)	461
Dec-12	3,862	3,774	89	2.35%	0.60	462
Jan-13	3,921	3,930	(9)	-0.22%	(0.06)	462
Feb-13	3,548	3,560	(12)	-0.34%	(0.08)	462
Mar-13	3,598	3,729	(130)	-3.50%	(0.89)	463
Apr-13	3,605	3,579	26	0.72%	0.17	463
May-13		3,650				463
Jun-13		3,555				464
Jul-13		3,682				464
Aug-13		3,558				465
Sep-13		3,507				465
Oct-13		3,494				465
Nov-13		3,480				466
Dec-13		3,706				467
Jan-14		3,806				467
Feb-14		3,415				468
Mar-14		3,470				468
Apr-14		3,496				469
May-14		3,468				470
Jun-14		3,497				471
Jul-14		3,472				471
Aug-14		3,423				472
Sep-14		3,420				473
Oct-14		3,390				474
Nov-14		3,416				475
Dec-14		3,621				476
Jan-15		3,721				477
Feb-15		3,306				478

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Customers

<u>Actual</u> , <u>Projected</u> , <u>Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EE</u>
Mar-15		3,403				479
Apr-15		3,398				480
May-15		3,399				481
Jun-15		3,401				482
Jul-15		3,370				483
Aug-15		3,361				484
Sep-15		3,340				485
Oct-15		3,344				486
Nov-15		3,352				487
Dec-15		3,547				488
Jan-16		3,638				488
Feb-16		3,226				489
Mar-16		3,320				490
Apr-16		3,312				491
May-16		3,310				492
Jun-16		3,293				492
Jul-16		3,278				493
Aug-16		3,262				494
Sep-16		3,252				494
Oct-16		3,253				495
Nov-16		3,246				495
Dec-16		3,436				496
Jan-17		3,518				496
Feb-17		3,107				497
Mar-17		3,197				497
Apr-17		3,188				498
May-17		3,176				498
Jun-17		3,158				498
Jul-17		3,142				499
Aug-17		3,127				499
Sep-17		3,118				499
Oct-17		3,109				499
Nov-17		3,098				500
Dec-17		3,280				500
Jan-18		3,361				500
Feb-18		2,950				500
Mar-18		3,038				501
Jul-18		2,976				501
Aug-18		2,962				501
Sep-18		2,951				502
Oct-18		2,938				502
Nov-18		2,924				502
Dec-18		3,105				502
Jan-19		3,187				502
Feb-19		2,776				502
Mar-19		2,864				503
Apr-19		2,849				503
May-19		2,834				503
Jun-19		2,818				503
Jul-19		2,804				503
Aug-19		2,792				503
Sep-19		2,779				504
Oct-19		2,766				504
Nov-19		2,750				504
Dec-19		2,933				504

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Use per Customer

Dependent Variable: RNS_UPC
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	10.93	0.33	33.52	0.00
HDD_1	1	0.02	0.00	29.63	0.00
dm2	1	(2.12)	0.58	(3.68)	0.00
dm3	1	(1.60)	0.61	(2.61)	0.01
dm4	1	(3.61)	0.59	(6.13)	0.00
dm5	1	(1.07)	0.47	(2.27)	0.02
AR1	1	(0.43)	0.09	(5.01)	0.00

Model Fitness:

Regress R-Square	0.92
Total R-Square	0.96
SSE	213.11
MSE	1.90
SBC	440.71
MAE	1.02
MAPE	5.47
Durbin-Watson	2.08
Root MSE	1.38
AIC	421.25
AICC	422.26
HQC	429.15

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>						<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	
Jan-05	28	28	0	1.75%	0.14	1,060	
Feb-05	26	30	(3)	-11.29%	(0.97)	1,246	
Mar-05	27	26	1	5.85%	0.43	1,059	
Apr-05	20	23	(3)	-11.77%	(0.77)	911	
May-05	17	17	(0)	-0.66%	(0.03)	516	
Jun-05	15	14	1	4.29%	0.18	238	
Jul-05	12	12	1	4.73%	0.16	52	
Aug-05	10	11	(2)	-15.02%	(0.49)	3	
Sep-05	11	10	1	4.94%	0.15	5	
Oct-05	12	13	(1)	-6.52%	(0.24)	108	
Nov-05	16	18	(2)	-10.92%	(0.56)	422	
Dec-05	23	22	1	5.12%	0.32	708	
Jan-06	28	29	(1)	-2.00%	(0.17)	1,060	
Feb-06	27	30	(3)	-10.16%	(0.87)	1,246	
Mar-06	28	26	2	8.22%	0.61	1,059	
Apr-06	23	23	(0)	-0.64%	(0.04)	911	
May-06	18	19	(0)	-2.10%	(0.11)	516	
Jun-06	16	15	1	6.38%	0.27	238	
Jul-06	13	12	0	3.21%	0.11	52	
Aug-06	11	11	(0)	-4.38%	(0.14)	3	
Sep-06	12	11	1	10.33%	0.33	5	
Oct-06	14	13	1	6.74%	0.26	108	
Nov-06	18	19	(0)	-0.93%	(0.05)	422	
Dec-06	22	23	(1)	-6.32%	(0.42)	708	
Jan-07	24	28	(4)	-13.61%	(1.11)	1,060	
Feb-07	30	28	2	7.62%	0.62	1,246	
Mar-07	28	27	1	2.48%	0.20	1,059	
Apr-07	23	23	0	0.32%	0.02	911	
May-07	18	19	(0)	-1.39%	(0.08)	516	
Jun-07	14	15	(0)	-3.04%	(0.13)	238	
Jul-07	12	12	1	4.82%	0.16	52	
Aug-07	11	11	(0)	-4.23%	(0.14)	3	
Sep-07	11	11	0	0.76%	0.02	5	
Oct-07	13	13	(0)	-0.98%	(0.04)	108	
Nov-07	17	18	(1)	-5.97%	(0.31)	422	
Dec-07	24	22	2	9.41%	0.61	708	
Jan-08	27	29	(3)	-9.32%	(0.80)	1,060	
Feb-08	27	29	(2)	-5.88%	(0.49)	1,246	
Mar-08	27	27	(0)	-0.67%	(0.05)	1,059	
Apr-08	24	22	2	7.17%	0.46	911	
May-08	18	19	(1)	-5.14%	(0.28)	516	
Jun-08	15	15	0	1.54%	0.07	238	
Jul-08	13	12	1	7.58%	0.26	52	
Aug-08	11	11	(0)	-1.90%	(0.06)	3	
Sep-08	9	11	(2)	-18.48%	(0.59)	5	
Oct-08	14	12	2	15.37%	0.53	108	
Nov-08	19	18	1	4.18%	0.22	422	
Dec-08	26	23	3	11.60%	0.79	708	
Jan-09	31	30	1	1.86%	0.16	1,060	
Feb-09	31	31	0	0.06%	0.01	1,246	
Mar-09	27	28	(0)	-0.21%	(0.02)	1,059	
Apr-09	23	23	0	0.23%	0.02	911	
May-09	17	19	(1)	-6.34%	(0.34)	516	
Jun-09	14	14	(0)	-0.60%	(0.03)	238	
Jul-09	13	12	1	11.55%	0.39	52	
Aug-09	11	11	(0)	-1.70%	(0.06)	3	
Sep-09	11	11	(0)	-0.60%	(0.02)	5	
Oct-09	14	13	2	12.55%	0.47	108	
Nov-09	18	19	(0)	-1.35%	(0.07)	422	
Dec-09	22	23	(1)	-4.87%	(0.33)	708	
Jan-10	29	28	1	1.97%	0.16	1,060	

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Feb-10	29	30	(0)	-1.66%	(0.14)	1,246
Mar-10	25	27	(2)	-6.79%	(0.53)	1,059
Apr-10	20	22	(2)	-7.01%	(0.44)	911
May-10	16	18	(1)	-5.79%	(0.29)	516
Jun-10	14	14	(0)	-2.61%	(0.11)	238
Jul-10	11	11	0	0.24%	0.01	52
Aug-10	10	11	(1)	-11.31%	(0.35)	3
Sep-10	10	10	(0)	-0.46%	(0.01)	5
Oct-10	12	12	(0)	-0.05%	(0.00)	108
Nov-10	17	18	(1)	-3.10%	(0.16)	422
Dec-10	23	23	1	3.00%	0.20	708
Jan-11	30	29	1	3.39%	0.28	1,060
Feb-11	32	30	2	6.92%	0.61	1,246
Mar-11	27	28	(1)	-3.86%	(0.32)	1,059
Apr-11	24	23	1	4.17%	0.27	911
May-11	18	19	(1)	-2.70%	(0.15)	516
Jun-11	14	15	(0)	-3.23%	(0.14)	238
Jul-11	12	12	0	4.16%	0.14	52
Aug-11	10	11	(1)	-10.83%	(0.35)	3
Sep-11	11	11	(0)	-0.25%	(0.01)	5
Oct-11	12	13	(1)	-4.00%	(0.15)	108
Nov-11	17	18	(0)	-1.89%	(0.10)	422
Dec-11	22	23	(1)	-3.40%	(0.22)	708
Jan-12	28	28	(0)	-1.68%	(0.14)	1,060
Feb-12	30	29	1	2.65%	0.23	1,246
Mar-12	27	28	(1)	-5.03%	(0.41)	1,099
Apr-12	20	22	(2)	-7.87%	(0.51)	911
May-12	18	18	0	1.47%	0.07	516
Jun-12	14	15	(1)	-4.70%	(0.20)	238
Jul-12	12	11	0	3.75%	0.12	52
Aug-12	10	11	(1)	-12.28%	(0.39)	3
Sep-12	10	10	(1)	-4.84%	(0.15)	5
Oct-12	13	12	0	2.70%	0.10	108
Nov-12	17	18	(1)	-3.29%	(0.17)	422
Dec-12	25	23	3	11.17%	0.73	708
Jan-13	31	30	1	3.67%	0.32	1,060
Feb-13	31	30	1	2.11%	0.18	1,246
Mar-13	31	27	3	12.78%	1.01	1,059
Apr-13	31	23	8	35.61%	2.35	911
May-13	31	19	12	65.90%	3.55	516
Jun-13		15				240
Jul-13		12				52
Aug-13		11				3
Sep-13		11				12
Oct-13		13				123
Nov-13		18				423
Dec-13		23				710
Jan-14		29				1,067
Feb-14		29				1,227
Mar-14		27				1,031
Apr-14		22				886
May-14		19				516
Jun-14		15				240
Jul-14		12				52
Aug-14		11				3
Sep-14		11				12
Oct-14		13				123
Nov-14		18				423
Dec-14		23				710
Jan-15		29				1,067
Feb-15		29				1,227

Modeling Results
Liberty Utilities
Residential Non-Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Mar-15		27				1,031
Apr-15		22				886
May-15		19				516
Jun-15		15				240
Jul-15		12				52
Aug-15		11				3
Sep-15		11				12
Oct-15		13				123
Nov-15		18				423
Dec-15		23				710
Jan-16		29				1,067
Feb-16		29				1,227
Mar-16		27				1,065
Apr-16		22				886
May-16		19				516
Jun-16		15				240
Jul-16		12				52
Aug-16		11				3
Sep-16		11				12
Oct-16		13				123
Nov-16		18				423
Dec-16		23				710
Jan-17		29				1,067
Feb-17		29				1,227
Mar-17		27				1,031
Apr-17		22				886
May-17		19				516
Jun-17		15				240
Jul-17		12				52
Aug-17		11				3
Sep-17		11				12
Oct-17		13				123
Nov-17		18				423
Dec-17		23				710
Jan-18		29				1,067
Feb-18		29				1,227
Mar-18		27				1,031
Apr-18		22				886
May-18		19				516
Jun-18		15				240
Jul-18		12				52
Aug-18		11				3
Sep-18		11				12
Oct-18		13				123
Nov-18		18				423
Dec-18		23				710
Jan-19		29				1,067
Feb-19		29				1,227
Mar-19		27				1,031
Apr-19		22				886
May-19		19				516
Jun-19		15				240
Jul-19		12				52
Aug-19		11				3
Sep-19		11				12
Oct-19		13				123
Nov-19		18				423
Dec-19		23				710

Modeling Results
Liberty Utilities
Residential Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>						<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	
Jan-05	168,194	166,580	1,614	0.97%	0.21	1,060	
Feb-05	157,533	178,091	(20,558)	-11.54%	(2.66)	1,246	
Mar-05	161,671	154,285	7,386	4.79%	0.96	1,059	
Apr-05	119,579	134,435	(14,856)	-11.05%	(1.92)	911	
May-05	102,836	106,948	(4,112)	-3.84%	(0.53)	516	
Jun-05	89,116	80,465	8,651	10.75%	1.12	238	
Jul-05	71,542	64,686	6,856	10.60%	0.89	52	
Aug-05	56,309	66,488	(10,179)	-15.31%	(1.32)	3	
Sep-05	64,146	61,337	2,809	4.58%	0.36	5	
Oct-05	68,902	70,857	(1,955)	-2.76%	(0.25)	108	
Nov-05	91,280	108,157	(16,877)	-15.60%	(2.19)	422	
Dec-05	133,189	123,943	9,246	7.46%	1.20	708	
Jan-06	150,483	154,751	(4,268)	-2.76%	(0.55)	1,060	
Feb-06	131,193	146,457	(15,264)	-10.42%	(1.98)	1,246	
Mar-06	139,307	130,027	9,280	7.14%	1.20	1,059	
Apr-06	115,814	115,623	191	0.17%	0.02	911	
May-06	88,944	93,859	(4,915)	-5.24%	(0.64)	516	
Jun-06	83,670	74,065	9,605	12.97%	1.24	238	
Jul-06	66,704	61,201	5,503	8.99%	0.71	52	
Aug-06	53,967	56,628	(2,661)	-4.70%	(0.34)	3	
Sep-06	60,431	54,960	5,471	9.96%	0.71	5	
Oct-06	69,850	62,905	6,945	11.04%	0.90	108	
Nov-06	83,377	88,833	(5,456)	-6.14%	(0.71)	422	
Dec-06	112,145	117,101	(4,956)	-4.23%	(0.64)	708	
Jan-07	127,661	147,382	(19,721)	-13.38%	(2.55)	1,060	
Feb-07	143,073	130,357	12,716	9.75%	1.65	1,246	
Mar-07	142,847	135,988	6,859	5.04%	0.89	1,059	
Apr-07	107,953	109,852	(1,899)	-1.73%	(0.25)	911	
May-07	91,326	92,189	(863)	-0.94%	(0.11)	516	
Jun-07	71,491	73,842	(2,351)	-3.18%	(0.30)	238	
Jul-07	59,332	56,297	3,035	5.39%	0.39	52	
Aug-07	51,578	54,490	(2,912)	-5.34%	(0.38)	3	
Sep-07	53,192	51,692	1,500	2.90%	0.19	5	
Oct-07	57,337	58,753	(1,416)	-2.41%	(0.18)	108	
Nov-07	79,969	84,584	(4,615)	-5.46%	(0.60)	422	
Dec-07	123,398	112,382	11,016	9.80%	1.43	708	
Jan-08	130,994	147,011	(16,017)	-10.90%	(2.07)	1,060	
Feb-08	127,879	138,571	(10,692)	-7.72%	(1.38)	1,246	
Mar-08	120,442	124,736	(4,294)	-3.44%	(0.56)	1,099	
Apr-08	107,883	103,611	4,272	4.12%	0.55	911	
May-08	86,931	90,645	(3,714)	-4.10%	(0.48)	516	
Jun-08	70,100	69,471	629	0.91%	0.08	238	
Jul-08	61,123	56,013	5,110	9.12%	0.66	52	
Aug-08	51,671	53,050	(1,379)	-2.60%	(0.18)	3	
Sep-08	42,249	49,620	(7,371)	-14.86%	(0.95)	5	
Oct-08	61,626	53,411	8,215	15.38%	1.06	108	
Nov-08	82,918	83,172	(254)	-0.31%	(0.03)	422	
Dec-08	117,588	108,827	8,761	8.05%	1.13	708	
Jan-09	145,489	140,593	4,896	3.48%	0.63	1,060	
Feb-09	128,571	130,413	(1,842)	-1.41%	(0.24)	1,246	
Mar-09	115,292	120,055	(4,763)	-3.97%	(0.62)	1,059	
Apr-09	99,497	101,495	(1,998)	-1.97%	(0.26)	911	
May-09	76,595	79,844	(3,249)	-4.07%	(0.42)	516	
Jun-09	63,876	63,684	192	0.30%	0.02	238	
Jul-09	61,177	50,957	10,220	20.06%	1.32	52	
Aug-09	48,942	49,258	(316)	-0.64%	(0.04)	3	
Sep-09	43,829	46,157	(2,328)	-5.04%	(0.30)	5	
Oct-09	60,891	52,023	8,868	17.05%	1.15	108	
Nov-09	71,353	73,617	(2,264)	-3.08%	(0.29)	422	
Dec-09	90,191	98,577	(8,386)	-8.51%	(1.09)	708	
Jan-10	134,141	127,070	7,071	5.56%	0.92	1,060	

Modeling Results
Liberty Utilities
Residential Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Feb-10	114,402	115,695	(1,293)	-1.12%	(0.17)	1,246
Mar-10	99,073	110,367	(11,294)	-10.23%	(1.46)	1,059
Apr-10	80,652	91,117	(10,465)	-11.49%	(1.35)	911
May-10	65,003	71,821	(6,818)	-9.49%	(0.88)	516
Jun-10	56,429	59,792	(3,363)	-5.62%	(0.44)	238
Jul-10	47,667	47,978	(311)	-0.65%	(0.04)	52
Aug-10	38,982	43,877	(4,895)	-11.16%	(0.63)	3
Sep-10	42,716	41,904	812	1.94%	0.11	5
Oct-10	48,012	48,763	(751)	-1.54%	(0.10)	108
Nov-10	67,072	69,540	(2,468)	-3.55%	(0.32)	422
Dec-10	99,546	95,854	3,692	3.85%	0.48	708
Jan-11	123,156	121,806	1,350	1.11%	0.17	1,060
Feb-11	124,579	116,437	8,142	6.99%	1.05	1,246
Mar-11	107,983	110,370	(2,387)	-2.16%	(0.31)	1,059
Apr-11	94,296	86,269	8,027	9.30%	1.04	911
May-11	71,846	75,056	(3,210)	-4.28%	(0.42)	516
Jun-11	56,192	59,493	(3,301)	-5.55%	(0.43)	238
Jul-11	48,591	45,355	3,236	7.14%	0.42	52
Aug-11	39,262	42,472	(3,210)	-7.56%	(0.42)	3
Sep-11	40,587	40,643	(56)	-0.14%	(0.01)	5
Oct-11	45,357	47,565	(2,208)	-4.64%	(0.29)	108
Nov-11	67,430	66,949	481	0.72%	0.06	422
Dec-11	85,932	87,832	(1,900)	-2.16%	(0.25)	708
Jan-12	112,503	116,024	(3,521)	-3.03%	(0.46)	1,060
Feb-12	112,232	109,600	2,632	2.40%	0.34	1,246
Mar-12	103,794	104,298	(504)	-0.48%	(0.07)	1,099
Apr-12	76,133	83,130	(6,997)	-8.42%	(0.91)	911
May-12	68,129	66,336	1,793	2.70%	0.23	516
Jun-12	54,004	55,433	(1,429)	-2.58%	(0.18)	238
Jul-12	42,464	41,845	619	1.48%	0.08	52
Aug-12	37,225	41,151	(3,926)	-9.54%	(0.51)	3
Sep-12	36,705	38,162	(1,457)	-3.82%	(0.19)	5
Oct-12	45,671	44,494	1,177	2.65%	0.15	108
Nov-12	61,075	65,920	(4,845)	-7.35%	(0.63)	422
Dec-12	96,843	85,113	11,730	13.78%	1.52	708
Jan-13	120,820	116,802	4,018	3.44%	0.52	1,060
Feb-13	109,319	107,427	1,892	1.76%	0.24	1,246
Mar-13	110,871	101,869	9,002	8.84%	1.17	1,059
Apr-13	111,075	81,328	29,747	36.58%	3.85	911
May-13		67,789				516
Jun-13		53,246				240
Jul-13		43,472				52
Aug-13		39,070				3
Sep-13		39,031				12
Oct-13		45,402				123
Nov-13		62,784				423
Dec-13		84,756				710
Jan-14		109,889				1,067
Feb-14		100,538				1,227
Mar-14		92,537				1,031
Apr-14		77,688				886
May-14		64,288				516
Jun-14		52,329				240
Jul-14		40,979				52
Aug-14		37,571				3
Sep-14		38,062				12
Oct-14		44,053				123
Nov-14		61,629				423
Dec-14		82,800				710
Jan-15		107,452				1,067
Feb-15		97,348				1,227

Modeling Results
Liberty Utilities
Residential Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Project Error</u>	<u>Standard</u>	<u>Independent Variable</u>
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>%</u>	<u>Residual</u>	<u>HDD_1</u>
Mar-15		90,762				1,031
Apr-15		75,519				886
May-15		63,013				516
Jun-15		50,888				240
Jul-15		39,773				52
Aug-15		36,889				3
Sep-15		37,170				12
Oct-15		43,458				123
Nov-15		60,482				423
Dec-15		81,115				710
Jan-16		105,033				1,067
Feb-16		94,982				1,227
Mar-16		90,436				1,065
Apr-16		73,608				886
May-16		61,374				516
Jun-16		49,280				240
Jul-16		38,683				52
Aug-16		35,805				3
Sep-16		36,185				12
Oct-16		42,270				123
Nov-16		58,562				423
Dec-16		78,572				710
Jan-17		101,571				1,067
Feb-17		91,485				1,227
Mar-17		85,278				1,031
Apr-17		70,850				886
May-17		58,875				516
Jun-17		47,261				240
Jul-17		37,083				52
Aug-17		34,322				3
Sep-17		34,702				12
Oct-17		40,407				123
Nov-17		55,888				423
Dec-17		75,021				710
Jan-18		97,041				1,067
Feb-18		86,850				1,227
Mar-18		81,025				1,031
Apr-18		67,219				886
May-18		55,783				516
Jun-18		44,768				240
Jul-18		35,116				52
Aug-18		32,517				3
Sep-18		32,835				12
Oct-18		38,184				123
Nov-18		52,747				423
Dec-18		71,005				710
Jan-19		92,015				1,067
Feb-19		81,732				1,227
Mar-19		76,386				1,031
Apr-19		63,327				886
May-19		52,544				516
Jun-19		42,172				240
Jul-19		33,094				52
Aug-19		30,643				3
Sep-19		30,923				12
Oct-19		35,941				123
Nov-19		49,623				423
Dec-19		67,080				710

Plan Year Actual Projected HDD_1

Modeling Results
Liberty Utilities
Residential Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u> <u>HDD_1</u>
PY2005	1,284,850	1,328,839			6,328
PY2006	1,184,832	1,182,574			6,328
PY2007	1,101,312	1,116,777			6,328
PY2008	1,064,265	1,083,105			6,368
PY2009	1,044,665	1,026,479			6,328
PY2010	888,621	930,578			6,328
PY2011	918,467	910,860			6,328
PY2012	842,222	855,251			6,368
PY2013		846,469			6,352
PY2014		805,474			6,290
PY2015		786,700			6,290
PY2016		769,253			6,324
PY2017		738,967			6,290
PY2018		702,247			6,290
PY2019		662,529			6,290
Growth					
PY2006	(100,018)	(146,265)			-
PY2007	(83,520)	(65,797)			-
PY2008	(37,047)	(33,672)			40
PY2009	(19,600)	(56,626)			(40)
PY2010	(156,044)	(95,901)			-
PY2011	29,846	(19,719)			-
PY2012	(76,245)	(55,608)			40
PY2013		(8,782)			(16)
PY2014		(40,995)			(62)
PY2015		(18,774)			-
PY2016		(17,447)			34
PY2017		(30,286)			(34)
PY2018		(36,721)			-
PY2019		(39,717)			-
Growth Rate (%)					
PY2006	-7.8%	-11.0%			0.0%
PY2007	-7.0%	-5.6%			0.0%
PY2008	-3.4%	-3.0%			0.6%
PY2009	-1.8%	-5.2%			-0.6%
PY2010	-14.9%	-9.3%			0.0%
PY2011	3.4%	-2.1%			0.0%
PY2012	-8.3%	-6.1%			0.6%
PY2013		-1.0%			-0.3%
PY2014		-4.8%			-1.0%
PY2015		-2.3%			0.0%
PY2016		-2.2%			0.5%
PY2017		-3.9%			-0.5%
PY2018		-5.0%			0.0%
PY2019		-5.7%			0.0%

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Customers

Dependent Variable: CHS_CUS
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	5,735.22	490.35	11.70	0.00
EMFA	1	44.85	9.40	4.77	0.00
dm1	1	686.85	79.67	8.62	0.00
dm5	1	176.15	82.93	2.12	0.04
dm6	1	188.96	82.78	2.28	0.03
dm10	1	(288.37)	84.09	(3.43)	0.00
dm11	1	(396.53)	80.53	(4.92)	0.00
dm12	1	361.79	81.12	4.46	0.00
AR3	1	(0.21)	0.11	(1.94)	0.06
AR8	1	(0.27)	0.12	(2.33)	0.02

Model Fitness:

Regress R-Square	0.71
Total R-Square	0.73
SSE	3,717,184.89
MSE	47,656.22
SBC	1,232.61
MAE	163.25
MAPE	2.01
Durbin-Watson	1.76
Root MSE	218.30
AIC	1,207.83
AICC	1,210.69
HQC	1,217.81

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EMFA</u>
Jan-05	7,463	7,572	(109)	-1.45%	(0.58)	59.40
Feb-05	7,474	7,715	(241)	-3.12%	(1.27)	59.39
Mar-05	7,535	7,725	(190)	-2.47%	(1.00)	59.36
Apr-05	7,541	7,348	193	2.63%	1.02	59.32
May-05	7,310	7,501	(191)	-2.54%	(1.01)	59.26
Jun-05	7,127	6,917	210	3.04%	1.11	59.18
Jul-05	6,300	6,141	159	2.59%	0.84	59.09
Aug-05	6,209	6,146	62	1.01%	0.33	58.98
Sep-05	6,951	7,071	(120)	-1.70%	(0.63)	58.85
Oct-05	7,889	7,705	184	2.38%	0.97	58.72
Nov-05	7,295	7,359	(63)	-0.86%	(0.33)	58.57
Dec-05	7,542	7,596	(54)	-0.71%	(0.28)	58.42
Jan-06	8,905	9,035	(131)	-1.45%	(0.69)	58.26
Feb-06	8,081	8,341	(260)	-3.12%	(1.37)	58.11
Mar-06	8,127	8,332	(205)	-2.47%	(1.08)	57.96
Apr-06	8,512	8,294	218	2.63%	1.15	57.81
May-06	8,220	8,434	(215)	-2.54%	(1.13)	57.67
Jun-06	8,705	8,448	257	3.04%	1.35	57.53
Jul-06	8,552	8,336	216	2.59%	1.14	57.41
Aug-06	8,311	8,228	83	1.01%	0.44	57.30
Sep-06	8,167	8,308	(141)	-1.70%	(0.74)	57.20
Oct-06	8,180	7,989	190	2.38%	1.00	57.12
Nov-06	7,775	7,842	(67)	-0.86%	(0.36)	57.05
Dec-06	8,613	8,675	(62)	-0.71%	(0.32)	56.99
Jan-07	8,992	8,937	55	0.62%	0.29	56.94
Feb-07	8,065	8,316	(251)	-3.02%	(1.32)	56.91
Mar-07	8,756	8,344	412	4.94%	2.17	56.89
Apr-07	8,145	8,292	(147)	-1.77%	(0.77)	56.88
May-07	8,377	8,379	(2)	-0.03%	(0.01)	56.89
Jun-07	8,490	8,623	(133)	-1.54%	(0.70)	56.90
Jul-07	8,024	8,225	(201)	-2.45%	(1.06)	56.92
Aug-07	8,268	8,261	8	0.09%	0.04	56.96
Sep-07	8,214	8,299	(84)	-1.02%	(0.44)	56.99
Oct-07	7,887	7,887	(1)	-0.01%	(0.00)	57.02
Nov-07	8,259	8,020	240	2.99%	1.26	57.03
Dec-07	8,889	8,599	289	3.36%	1.52	57.02
Jan-08	8,823	8,929	(106)	-1.18%	(0.56)	56.97
Feb-08	8,516	8,368	147	1.76%	0.78	56.90
Mar-08	8,151	8,260	(109)	-1.32%	(0.57)	56.77
Apr-08	8,234	8,235	(1)	-0.02%	(0.01)	56.60
May-08	8,617	8,467	150	1.77%	0.79	56.36
Jun-08	8,412	8,379	33	0.40%	0.18	56.06
Jul-08	8,348	8,323	25	0.30%	0.13	55.69
Aug-08	8,346	8,314	32	0.38%	0.17	55.23
Sep-08	8,409	8,142	267	3.28%	1.41	54.72
Oct-08	7,904	7,963	(59)	-0.74%	(0.31)	54.16
Nov-08	7,930	7,734	196	2.54%	1.03	53.57
Dec-08	8,694	8,508	186	2.18%	0.98	52.96
Jan-09	8,849	8,823	26	0.29%	0.14	52.33
Feb-09	8,208	8,088	119	1.48%	0.63	51.73
Mar-09	8,208	8,108	100	1.23%	0.53	51.15
Apr-09	7,761	8,057	(296)	-3.68%	(1.56)	50.57
May-09	8,510	8,248	262	3.18%	1.38	50.04
Jun-09	8,500	8,193	307	3.75%	1.62	49.56
Jul-09	8,578	7,939	639	8.05%	3.37	49.15
Aug-09	8,007	8,060	(53)	-0.66%	(0.28)	48.80
Sep-09	7,632	8,009	(377)	-4.70%	(1.99)	48.53
Oct-09	7,914	7,791	123	1.58%	0.65	48.31
Nov-09	7,391	7,564	(173)	-2.28%	(0.91)	48.14
Dec-09	8,043	8,125	(83)	-1.02%	(0.44)	48.02
Jan-10	9,084	8,733	351	4.02%	1.85	47.95

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EMFA</u>
Feb-10	8,050	7,957	93	1.17%	0.49	47.90
Mar-10	7,970	8,012	(42)	-0.53%	(0.22)	47.89
Apr-10	8,167	8,015	152	1.90%	0.80	47.90
May-10	7,827	8,020	(194)	-2.41%	(1.02)	47.92
Jun-10	7,918	8,175	(258)	-3.15%	(1.36)	47.96
Jul-10	8,222	7,920	303	3.82%	1.60	48.00
Aug-10	7,726	7,783	(57)	-0.73%	(0.30)	48.04
Sep-10	7,848	7,997	(150)	-1.87%	(0.79)	48.09
Oct-10	7,636	7,722	(86)	-1.11%	(0.45)	48.13
Nov-10	7,641	7,488	153	2.04%	0.81	48.17
Dec-10	8,269	8,327	(58)	-0.70%	(0.31)	48.21
Jan-11	8,432	8,529	(97)	-1.13%	(0.51)	48.25
Feb-11	7,865	7,888	(23)	-0.29%	(0.12)	48.28
Mar-11	8,089	7,995	94	1.18%	0.50	48.31
Apr-11	8,353	7,826	528	6.74%	2.78	48.34
May-11	8,021	8,060	(39)	-0.49%	(0.21)	48.35
Jun-11	7,864	8,142	(277)	-3.41%	(1.46)	48.37
Jul-11	8,021	8,039	(18)	-0.23%	(0.10)	48.37
Aug-11	7,661	7,895	(234)	-2.96%	(1.23)	48.37
Sep-11	7,638	7,813	(176)	-2.25%	(0.93)	48.36
Oct-11	7,580	7,630	(50)	-0.65%	(0.26)	48.34
Nov-11	7,543	7,505	38	0.51%	0.20	48.32
Dec-11	8,157	8,328	(171)	-2.06%	(0.90)	48.29
Jan-12	8,352	8,563	(211)	-2.46%	(1.11)	48.25
Feb-12	7,701	7,843	(142)	-1.81%	(0.75)	48.21
Mar-12	8,250	7,904	346	4.37%	1.82	48.16
Apr-12	8,103	7,777	326	4.20%	1.72	48.11
May-12	7,918	7,952	(34)	-0.43%	(0.18)	48.05
Jun-12	8,014	8,143	(129)	-1.58%	(0.68)	47.99
Jul-12	7,476	7,939	(464)	-5.84%	(2.45)	47.92
Aug-12	7,729	7,821	(92)	-1.18%	(0.48)	47.85
Sep-12	7,417	7,801	(384)	-4.92%	(2.02)	47.78
Oct-12	7,213	7,446	(233)	-3.13%	(1.23)	47.71
Nov-12	7,233	7,539	(306)	-4.06%	(1.61)	47.63
Dec-12	8,174	8,189	(14)	-0.18%	(0.08)	47.55
Jan-13	8,458	8,431	26	0.31%	0.14	47.48
Feb-13	7,865	7,793	72	0.93%	0.38	47.41
Mar-13	7,847	7,735	112	1.45%	0.59	47.34
Apr-13	7,969	7,794	175	2.25%	0.92	47.27
May-13		7,904				47.20
Jun-13		7,935				47.14
Jul-13		7,806				47.09
Aug-13		7,803				47.04
Sep-13		7,795				46.99
Oct-13		7,545				46.95
Nov-13		7,431				46.92
Dec-13		8,221				46.89
Jan-14		8,488				46.86
Feb-14		7,805				46.84
Mar-14		7,829				46.83
Apr-14		7,816				46.81
May-14		7,991				46.80
Jun-14		8,019				46.80
Jul-14		7,827				46.79
Aug-14		7,835				46.79
Sep-14		7,823				46.79
Oct-14		7,536				46.79
Nov-14		7,436				46.80
Dec-14		8,189				46.81
Jan-15		8,514				46.82
Feb-15		7,834				46.83

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Customers

<u>Actual</u> , <u>Projected</u> , <u>Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EMFA</u>
Mar-15		7,832				46.84
Apr-15		7,835				46.85
May-15		8,010				46.87
Jun-15		8,023				46.88
Jul-15		7,838				46.90
Aug-15		7,837				46.92
Sep-15		7,837				46.93
Oct-15		7,552				46.95
Nov-15		7,444				46.96
Dec-15		8,203				46.98
Jan-16		8,529				46.99
Feb-16		7,842				47.00
Mar-16		7,843				47.01
Apr-16		7,843				47.02
May-16		8,019				47.02
Jun-16		8,033				47.02
Jul-16		7,844				47.02
Aug-16		7,843				47.01
Sep-16		7,843				47.00
Oct-16		7,554				46.99
Nov-16		7,445				46.97
Dec-16		8,203				46.95
Jan-17		8,526				46.93
Feb-17		7,839				46.90
Mar-17		7,837				46.87
Apr-17		7,836				46.84
May-17		8,011				46.81
Jun-17		8,022				46.77
Jul-17		7,831				46.73
Aug-17		7,829				46.68
Sep-17		7,827				46.64
Oct-17		7,536				46.59
Nov-17		7,426				46.54
Dec-17		8,182				46.49
Jan-18		8,505				46.44
Feb-18		7,816				46.39
Mar-18		7,813				46.33
Jul-18		7,803				46.11
Aug-18		7,800				46.05
Sep-18		7,798				45.99
Oct-18		7,507				45.93
Nov-18		7,396				45.87
Dec-18		8,152				45.81
Jan-19		8,474				45.75
Feb-19		7,784				45.69
Mar-19		7,782				45.63
Apr-19		7,779				45.57
May-19		7,953				45.51
Jun-19		7,963				45.45
Jul-19		7,771				45.39
Aug-19		7,768				45.33
Sep-19		7,766				45.27
Oct-19		7,475				45.21
Nov-19		7,364				45.15
Dec-19		8,120				45.10

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Use per Customer

Dependent Variable: CHS_UPC
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
HDD_1	1	0.49	0.03	17.45	0.00
AR1	1	(0.73)	0.03	(27.22)	0.00
AR2	1	0.15	0.02	8.32	0.00
AR11	1	(0.33)	0.01	(28.12)	0.00
ARCH0	1	208.29	92.84	2.24	0.02
ARCH12	1	2.80	0.40	7.03	0.00

Model Fitness:

Regress R-Square	-
Total R-Square	0.97
SSE	1,012,184.76
MSE	8,229.14
SBC	1,403.22
MAE	49.92
MAPE	12.75
Durbin-Watson	-
Root MSE	-
AIC	0.97
AICC	1,386.34
HQC	1,387.07

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>						<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	
Jan-05	1,078	950	128	13.43%	1.42	1,060	
Feb-05	1,188	1,129	59	5.26%	0.66	1,246	
Mar-05	995	928	67	7.17%	0.74	1,059	
Apr-05	675	721	(46)	-6.39%	(0.51)	911	
May-05	351	366	(14)	-3.95%	(0.16)	516	
Jun-05	230	187	43	23.00%	0.48	238	
Jul-05	128	125	3	2.48%	0.03	52	
Aug-05	85	97	(13)	-13.07%	(0.14)	3	
Sep-05	105	84	21	24.77%	0.23	5	
Oct-05	140	178	(39)	-21.66%	(0.43)	108	
Nov-05	391	359	32	8.83%	0.35	422	
Dec-05	752	655	97	14.77%	1.07	708	
Jan-06	905	982	(77)	-7.84%	(0.85)	1,060	
Feb-06	828	992	(165)	-16.58%	(1.83)	1,246	
Mar-06	934	698	236	33.84%	2.62	1,059	
Apr-06	548	752	(204)	-27.12%	(2.26)	911	
May-06	311	304	7	2.33%	0.08	516	
Jun-06	175	179	(4)	-1.97%	(0.04)	238	
Jul-06	94	88	7	7.66%	0.07	52	
Aug-06	84	77	6	8.17%	0.07	3	
Sep-06	105	82	24	28.95%	0.26	5	
Oct-06	170	178	(7)	-4.13%	(0.08)	108	
Nov-06	368	412	(44)	-10.69%	(0.49)	422	
Dec-06	517	576	(59)	-10.29%	(0.66)	708	
Jan-07	719	693	26	3.77%	0.29	1,060	
Feb-07	1,060	870	190	21.83%	2.11	1,246	
Mar-07	960	853	106	12.43%	1.18	1,059	
Apr-07	637	724	(86)	-11.89%	(0.95)	911	
May-07	316	348	(32)	-9.09%	(0.35)	516	
Jun-07	145	158	(13)	-8.30%	(0.15)	238	
Jul-07	98	64	34	52.80%	0.38	52	
Aug-07	83	85	(2)	-1.98%	(0.02)	3	
Sep-07	93	91	2	2.23%	0.02	5	
Oct-07	136	161	(25)	-15.30%	(0.27)	108	
Nov-07	322	311	11	3.52%	0.12	422	
Dec-07	707	486	222	45.62%	2.46	708	
Jan-08	861	917	(55)	-6.02%	(0.61)	1,060	
Feb-08	851	955	(105)	-10.95%	(1.16)	1,246	
Mar-08	787	728	59	8.10%	0.65	1,099	
Apr-08	564	615	(51)	-8.24%	(0.56)	911	
May-08	269	312	(44)	-13.96%	(0.48)	516	
Jun-08	142	135	7	5.33%	0.08	238	
Jul-08	83	69	14	20.28%	0.16	52	
Aug-08	80	70	10	13.62%	0.11	3	
Sep-08	91	79	12	14.95%	0.13	5	
Oct-08	143	145	(1)	-0.87%	(0.01)	108	
Nov-08	328	380	(52)	-13.57%	(0.57)	422	
Dec-08	619	537	82	15.36%	0.91	708	
Jan-09	830	781	49	6.24%	0.54	1,060	
Feb-09	930	881	49	5.51%	0.54	1,246	
Mar-09	728	747	(19)	-2.56%	(0.21)	1,059	
Apr-09	489	558	(69)	-12.32%	(0.76)	911	
May-09	212	262	(50)	-19.06%	(0.55)	516	
Jun-09	112	100	13	12.55%	0.14	238	
Jul-09	77	54	23	41.78%	0.25	52	
Aug-09	67	69	(2)	-2.97%	(0.02)	3	
Sep-09	67	73	(6)	-7.83%	(0.06)	5	
Oct-09	136	131	4	3.42%	0.05	108	
Nov-09	296	349	(53)	-15.16%	(0.59)	422	
Dec-09	421	503	(82)	-16.25%	(0.91)	708	
Jan-10	799	667	131	19.70%	1.46	1,060	

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Use per Customer

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Independent Variable</u>	
					<u>Standard Residual</u>	<u>HDD_1</u>
Feb-10	781	874	(94)	-10.71%	(1.04)	1,246
Mar-10	596	617	(21)	-3.38%	(0.23)	1,059
Apr-10	349	465	(115)	-24.82%	(1.28)	911
May-10	200	169	32	18.73%	0.35	516
Jun-10	105	109	(4)	-4.02%	(0.05)	238
Jul-10	66	46	19	41.95%	0.22	52
Aug-10	62	54	8	14.51%	0.09	3
Sep-10	68	69	(1)	-1.38%	(0.01)	5
Oct-10	104	121	(18)	-14.66%	(0.20)	108
Nov-10	261	259	2	0.81%	0.02	422
Dec-10	463	472	(10)	-2.06%	(0.11)	708
Jan-11	750	653	97	14.91%	1.08	1,060
Feb-11	859	789	70	8.91%	0.78	1,246
Mar-11	727	635	92	14.46%	1.02	1,059
Apr-11	501	546	(45)	-8.21%	(0.50)	911
May-11	247	258	(11)	-4.39%	(0.13)	516
Jun-11	118	118	0	0.09%	0.00	238
Jul-11	72	47	25	52.49%	0.28	52
Aug-11	60	57	3	5.29%	0.03	3
Sep-11	66	56	10	18.64%	0.12	5
Oct-11	93	109	(16)	-14.67%	(0.18)	108
Nov-11	244	265	(21)	-8.04%	(0.24)	422
Dec-11	380	445	(65)	-14.67%	(0.72)	708
Jan-12	607	621	(14)	-2.18%	(0.15)	1,060
Feb-12	674	740	(65)	-8.84%	(0.73)	1,246
Mar-12	546	590	(45)	-7.59%	(0.50)	1,099
Apr-12	322	440	(118)	-26.85%	(1.31)	911
May-12	209	161	48	30.14%	0.54	516
Jun-12	112	118	(7)	-5.85%	(0.08)	238
Jul-12	74	48	26	54.58%	0.29	52
Aug-12	59	59	1	1.10%	0.01	3
Sep-12	65	51	14	27.67%	0.16	5
Oct-12	112	103	9	8.46%	0.10	108
Nov-12	222	252	(30)	-11.85%	(0.33)	422
Dec-12	457	379	79	20.82%	0.87	708
Jan-13	617	620	(3)	-0.46%	(0.03)	1,060
Feb-13	760	668	92	13.73%	1.02	1,246
Mar-13		573				1,059
Apr-13		497				911
May-13		264				516
Jun-13		136				240
Jul-13		56				52
Aug-13		42				3
Sep-13		51				12
Oct-13		92				123
Nov-13		261				423
Dec-13		415				710
Jan-14		614				1,067
Feb-14		698				1,227
Mar-14		576				1,031
Apr-14		476				886
May-14		279				516
Jun-14		141				240
Jul-14		52				52
Aug-14		33				3
Sep-14		36				12
Oct-14		95				123
Nov-14		251				423
Dec-14		405				710
Jan-15		591				1,067
Feb-15		666				1,227

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>
Mar-15		557				1,031
Apr-15		471				886
May-15		280				516
Jun-15		141				240
Jul-15		49				52
Aug-15		25				3
Sep-15		31				12
Oct-15		90				123
Nov-15		244				423
Dec-15		393				710
Jan-16		572				1,067
Feb-16		648				1,227
Mar-16		562				1,065
Apr-16		466				886
May-16		278				516
Jun-16		139				240
Jul-16		46				52
Aug-16		22				3
Sep-16		28				12
Oct-16		86				123
Nov-16		238				423
Dec-16		383				710
Jan-17		560				1,067
Feb-17		637				1,227
Mar-17		536				1,031
Apr-17		460				886
May-17		275				516
Jun-17		136				240
Jul-17		43				52
Aug-17		19				3
Sep-17		24				12
Oct-17		81				123
Nov-17		232				423
Dec-17		375				710
Jan-18		551				1,067
Feb-18		628				1,227
Mar-18		530				1,031
Jul-18		40				52
Aug-18		16				3
Sep-18		21				12
Oct-18		78				123
Nov-18		227				423
Dec-18		369				710
Jan-19		545				1,067
Feb-19		622				1,227
Mar-19		525				1,031
Apr-19		451				886
May-19		268				516
Jun-19		131				240
Jul-19		38				52
Aug-19		14				3
Sep-19		19				12
Oct-19		75				123
Nov-19		223				423
Dec-19		365				710

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>					<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	<u>EMFA</u>
Jan-05	8,045,555	7,196,668	848,887	11.80%	0.79	1,060	59
Feb-05	8,882,886	8,710,382	172,504	1.98%	0.16	1,246	59
Mar-05	7,497,992	7,172,875	325,117	4.53%	0.30	1,059	59
Apr-05	5,088,379	5,296,865	(208,486)	-3.94%	(0.19)	911	59
May-05	2,568,001	2,743,399	(175,398)	-6.39%	(0.16)	516	59
Jun-05	1,639,249	1,293,372	345,877	26.74%	0.32	238	59
Jul-05	808,986	769,506	39,480	5.13%	0.04	52	59
Aug-05	526,195	599,206	(73,011)	-12.18%	(0.07)	3	59
Sep-05	729,257	594,593	134,664	22.65%	0.13	5	59
Oct-05	1,102,996	1,375,260	(272,264)	-19.80%	(0.25)	108	59
Nov-05	2,853,251	2,644,404	208,847	7.90%	0.19	422	59
Dec-05	5,670,392	4,976,022	694,370	13.95%	0.65	708	58
Jan-06	8,056,473	8,870,157	(813,684)	-9.17%	(0.76)	1,060	58
Feb-06	6,689,145	8,277,276	(1,588,131)	-19.19%	(1.48)	1,246	58
Mar-06	7,589,078	5,813,356	1,775,722	30.55%	1.66	1,059	58
Apr-06	4,665,014	6,237,185	(1,572,171)	-25.21%	(1.47)	911	58
May-06	2,559,035	2,566,020	(6,985)	-0.27%	(0.01)	516	58
Jun-06	1,525,982	1,510,745	15,237	1.01%	0.01	238	58
Jul-06	806,708	730,406	76,302	10.45%	0.07	52	57
Aug-06	696,316	637,265	59,051	9.27%	0.06	3	57
Sep-06	859,706	678,229	181,477	26.76%	0.17	5	57
Oct-06	1,392,254	1,418,431	(26,177)	-1.85%	(0.02)	108	57
Nov-06	2,863,146	3,233,744	(370,598)	-11.46%	(0.35)	422	57
Dec-06	4,453,085	4,999,216	(546,131)	-10.92%	(0.51)	708	57
Jan-07	6,465,018	6,191,928	273,090	4.41%	0.25	1,060	57
Feb-07	8,549,260	7,235,578	1,313,682	18.16%	1.23	1,246	57
Mar-07	8,401,953	7,121,135	1,280,818	17.99%	1.20	1,059	57
Apr-07	5,192,379	5,999,105	(806,726)	-13.45%	(0.75)	911	57
May-07	2,649,703	2,915,569	(265,866)	-9.12%	(0.25)	516	57
Jun-07	1,230,497	1,362,823	(132,326)	-9.71%	(0.12)	238	57
Jul-07	787,970	528,620	259,350	49.06%	0.24	52	57
Aug-07	687,824	701,044	(13,220)	-1.89%	(0.01)	3	57
Sep-07	761,903	752,926	8,977	1.19%	0.01	5	57
Oct-07	1,074,459	1,268,714	(194,255)	-15.31%	(0.18)	108	57
Nov-07	2,661,332	2,496,141	165,191	6.62%	0.15	422	57
Dec-07	6,287,797	4,177,369	2,110,428	50.52%	1.97	708	57
Jan-08	7,600,157	8,183,675	(583,518)	-7.13%	(0.54)	1,060	57
Feb-08	7,243,253	7,993,427	(750,174)	-9.38%	(0.70)	1,246	57
Mar-08	6,415,045	6,013,747	401,298	6.67%	0.37	1,099	57
Apr-08	4,644,967	5,063,010	(418,043)	-8.26%	(0.39)	911	57
May-08	2,314,802	2,643,539	(328,737)	-12.44%	(0.31)	516	56
Jun-08	1,196,829	1,131,765	65,064	5.75%	0.06	238	56
Jul-08	694,011	575,265	118,746	20.64%	0.11	52	56
Aug-08	664,054	582,252	81,802	14.05%	0.08	3	55
Sep-08	763,570	643,214	120,356	18.71%	0.11	5	55
Oct-08	1,133,537	1,151,963	(18,426)	-1.60%	(0.02)	108	54
Nov-08	2,604,860	2,939,330	(334,470)	-11.38%	(0.31)	422	54
Dec-08	5,381,820	4,565,475	816,345	17.88%	0.76	708	53
Jan-09	7,344,032	6,892,702	451,330	6.55%	0.42	1,060	52
Feb-09	7,632,027	7,128,178	503,849	7.07%	0.47	1,246	52
Mar-09	5,973,430	6,056,018	(82,588)	-1.36%	(0.08)	1,059	51
Apr-09	3,798,482	4,497,631	(699,149)	-15.54%	(0.65)	911	51
May-09	1,806,838	2,163,386	(356,548)	-16.48%	(0.33)	516	50
Jun-09	953,507	816,617	136,890	16.76%	0.13	238	50
Jul-09	657,750	429,364	228,386	53.19%	0.21	52	49
Aug-09	536,547	556,626	(20,079)	-3.61%	(0.02)	3	49
Sep-09	514,260	585,493	(71,233)	-12.17%	(0.07)	5	49
Oct-09	1,075,245	1,023,597	51,648	5.05%	0.05	108	48
Nov-09	2,186,048	2,636,756	(450,708)	-17.09%	(0.42)	422	48
Dec-09	3,389,472	4,088,968	(699,496)	-17.11%	(0.65)	708	48
Jan-10	7,254,928	5,826,663	1,428,265	24.51%	1.33	1,060	48

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD_1</u>	<u>EMFA</u>
Feb-10	6,283,444	6,955,547	(672,103)	-9.66%	(0.63)	1,246	48
Mar-10	4,751,832	4,944,330	(192,498)	-3.89%	(0.18)	1,059	48
Apr-10	2,853,970	3,725,582	(871,612)	-23.40%	(0.81)	911	48
May-10	1,568,357	1,353,662	214,695	15.86%	0.20	516	48
Jun-10	830,786	893,744	(62,958)	-7.04%	(0.06)	238	48
Jul-10	540,801	366,945	173,856	47.38%	0.16	52	48
Aug-10	480,762	422,934	57,828	13.67%	0.05	3	48
Sep-10	531,577	549,318	(17,741)	-3.23%	(0.02)	5	48
Oct-10	791,673	938,070	(146,397)	-15.61%	(0.14)	108	48
Nov-10	1,997,026	1,941,418	55,608	2.86%	0.05	422	48
Dec-10	3,825,409	3,933,160	(107,751)	-2.74%	(0.10)	708	48
Jan-11	6,326,067	5,568,587	757,480	13.60%	0.71	1,060	48
Feb-11	6,757,180	6,222,467	534,713	8.59%	0.50	1,246	48
Mar-11	5,883,246	5,080,193	803,053	15.81%	0.75	1,059	48
Apr-11	4,183,519	4,269,696	(86,177)	-2.02%	(0.08)	911	48
May-11	1,980,999	2,082,090	(101,091)	-4.86%	(0.09)	516	48
Jun-11	926,413	958,240	(31,827)	-3.32%	(0.03)	238	48
Jul-11	579,270	380,733	198,537	52.15%	0.19	52	48
Aug-11	462,210	452,382	9,828	2.17%	0.01	3	48
Sep-11	504,369	434,900	69,469	15.97%	0.06	5	48
Oct-11	705,593	832,345	(126,752)	-15.23%	(0.12)	108	48
Nov-11	1,841,116	1,991,911	(150,795)	-7.57%	(0.14)	422	48
Dec-11	3,098,288	3,707,086	(608,798)	-16.42%	(0.57)	708	48
Jan-12	5,071,493	5,315,294	(243,801)	-4.59%	(0.23)	1,060	48
Feb-12	5,191,533	5,800,086	(608,553)	-10.49%	(0.57)	1,246	48
Mar-12	4,501,325	4,666,916	(165,591)	-3.55%	(0.15)	1,099	48
Apr-12	2,610,172	3,424,686	(814,514)	-23.78%	(0.76)	911	48
May-12	1,657,991	1,279,491	378,500	29.58%	0.35	516	48
Jun-12	893,747	964,561	(70,814)	-7.34%	(0.07)	238	48
Jul-12	550,528	378,250	172,278	45.55%	0.16	52	48
Aug-12	458,697	459,114	(417)	-0.09%	(0.00)	3	48
Sep-12	484,943	399,496	85,447	21.39%	0.08	5	48
Oct-12	805,891	767,030	38,861	5.07%	0.04	108	48
Nov-12	1,604,841	1,897,675	(292,834)	-15.43%	(0.27)	422	48
Dec-12	3,738,931	3,100,089	638,842	20.61%	0.60	708	48
Jan-13	5,215,648	5,223,571	(7,923)	-0.15%	(0.01)	1,060	47
Feb-13	5,976,958	5,207,323	769,635	14.78%	0.72	1,246	47
Mar-13		4,432,976				1,059	47
Apr-13		3,875,288				911	47
May-13		2,086,162				516	47
Jun-13		1,076,691				240	47
Jul-13		439,740				52	47
Aug-13		330,651				3	47
Sep-13		396,871				12	47
Oct-13		696,692				123	47
Nov-13		1,939,170				423	47
Dec-13		3,411,266				710	47
Jan-14		5,211,067				1,067	47
Feb-14		5,446,329				1,227	47
Mar-14		4,512,286				1,031	47
Apr-14		3,720,466				886	47
May-14		2,230,450				516	47
Jun-14		1,130,656				240	47
Jul-14		409,805				52	47
Aug-14		256,457				3	47
Sep-14		277,976				12	47
Oct-14		717,945				123	47
Nov-14		1,866,029				423	47
Dec-14		3,317,449				710	47
Jan-15		5,028,552				1,067	47
Feb-15		5,220,227				1,227	47

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Volumes

<u>Date</u>	<u>Actual, Projected, Residual (Therms)</u>			<u>Project Error %</u>	<u>Independent Variable</u>		
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HDD_1</u>	<u>EMFA</u>
Mar-15		4,362,395			1,031	47	
Apr-15		3,693,632			886	47	
May-15		2,245,631			516	47	
Jun-15		1,133,264			240	47	
Jul-15		385,356			52	47	
Aug-15		197,794			3	47	
Sep-15		246,665			12	47	
Oct-15		680,189			123	47	
Nov-15		1,819,534			423	47	
Dec-15		3,226,810			710	47	
Jan-16		4,882,562			1,067	47	
Feb-16		5,084,158			1,227	47	
Mar-16		4,404,300			1,065	47	
Apr-16		3,651,443			886	47	
May-16		2,228,697			516	47	
Jun-16		1,118,646			240	47	
Jul-16		357,457			52	47	
Aug-16		168,990			3	47	
Sep-16		216,142			12	47	
Oct-16		646,441			123	47	
Nov-16		1,770,628			423	47	
Dec-16		3,142,729			710	47	
Jan-17		4,774,483			1,067	47	
Feb-17		4,990,116			1,227	47	
Mar-17		4,201,924			1,031	47	
Apr-17		3,605,092			886	47	
May-17		2,198,935			516	47	
Jun-17		1,093,857			240	47	
Jul-17		334,564			52	47	
Aug-17		145,438			3	47	
Sep-17		190,235			12	47	
Oct-17		613,648			123	47	
Nov-17		1,721,759			423	47	
Dec-17		3,070,028			710	46	
Jan-18		4,687,223			1,067	46	
Feb-18		4,911,208			1,227	46	
Mar-18		4,137,820			1,031	46	
Apr-18		3,556,528			886	46	
May-18		2,163,974			516	46	
Jun-18		1,067,753			240	46	
Jul-18		313,588			52	46	
Aug-18		125,167			3	46	
Sep-18		167,182			12	46	
Oct-18		583,342			123	46	
Nov-18		1,678,223			423	46	
Dec-18		3,009,496			710	46	
Jan-19		4,615,714			1,067	46	
Feb-19		4,844,787			1,227	46	
Mar-19		4,081,873			1,031	46	
Apr-19		3,511,144			886	46	
May-19		2,130,590			516	46	
Jun-19		1,043,221			240	45	
Jul-19		294,797			52	45	
Aug-19		107,310			3	45	
Sep-19		146,750			12	45	
Oct-19		557,078			123	45	
Nov-19		1,641,784			423	45	
Dec-19		2,960,527			710	45	

Plan Year Actual Projected HDD_1 EMFA

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>HDD_1</u>	<u>EMFA</u>
PY2005	44,615,166	44,004,739			6,328		710
PY2006	43,363,354	44,359,497			6,328		693
PY2007	43,117,197	42,310,402			6,328		683
PY2008	41,619,354	40,655,367			6,368		674
PY2009	38,278,798	37,654,417			6,328		607
PY2010	31,463,650	32,702,520			6,328		576
PY2011	34,131,301	32,156,211			6,328		580
PY2012	27,165,724	29,153,920			6,368		577
PY2013		28,763,731			6,352		567
PY2014		29,263,873			6,290		562
PY2015		28,377,184			6,290		562
PY2016		27,805,179			6,324		564
PY2017		27,061,651			6,290		562
PY2018		26,505,573			6,290		555
PY2019		26,020,984			6,290		546
Growth							
PY2006	(1,251,812)	354,758			-		(17)
PY2007	(246,157)	(2,049,094)			-		(10)
PY2008	(1,497,843)	(1,655,035)			40		(10)
PY2009	(3,340,556)	(3,000,950)			(40)		(67)
PY2010	(6,815,148)	(4,951,897)			-		(31)
PY2011	2,667,651	(546,309)			-		4
PY2012	(6,965,577)	(3,002,291)			40		(3)
PY2013		(390,189)			(16)		(10)
PY2014		500,142			(62)		(5)
PY2015		(886,689)			-		0
PY2016		(572,005)			34		2
PY2017		(743,528)			(34)		(2)
PY2018		(556,078)			-		(7)
PY2019		(484,589)			-		(8)
Growth Rate (%)							
PY2006	-2.8%	0.8%			0.0%		-2.4%
PY2007	-0.6%	-4.6%			0.0%		-1.4%
PY2008	-3.5%	-3.9%			0.6%		-1.4%
PY2009	-8.0%	-7.4%			-0.6%		-9.9%
PY2010	-17.8%	-13.2%			0.0%		-5.1%
PY2011	8.5%	-1.7%			0.0%		0.7%
PY2012	-20.4%	-9.3%			0.6%		-0.5%
PY2013		-1.3%			-0.3%		-1.7%
PY2014		1.7%			-1.0%		-0.9%
PY2015		-3.0%			0.0%		0.1%
PY2016		-2.0%			0.5%		0.3%
PY2017		-2.7%			-0.5%		-0.4%
PY2018		-2.1%			0.0%		-1.2%
PY2019		-1.8%			0.0%		-1.5%

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Customers

Dependent Variable: CNS_CUS
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	3,193.83	563.88	5.66	0.00
EMFA	1	8.36	3.56	2.35	0.02
DT	1	(0.12)	0.02	(5.66)	0.00
dm1	1	89.25	14.40	6.20	0.00
dm11	1	(62.98)	16.09	(3.92)	0.00
dm12	1	45.35	27.49	1.65	0.10
AR6	1	(0.23)	0.11	(2.13)	0.03
ARCH0	1	1,222.59	304.52	4.01	0.00
ARCH1	1	0.41	0.23	1.80	0.07

Model Fitness:

Regress R-Square	
Total R-Square	0.88
SSE	197,262.04
MSE	2,241.61
SBC	952.99
MAE	35.66
MAPE	2.49
Durbin-Watson	-
Root MSE	-
AIC	0.88
AICC	930.69
HQC	933.00

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Customers

<u>Actual, Projected, Residual</u>						<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EMFA</u>	
Jan-05	1,532	1,573	(41)	-2.62%	(0.74)	59.40	
Feb-05	1,527	1,646	(120)	-7.27%	(2.15)	59.39	
Mar-05	1,546	1,710	(163)	-9.55%	(2.93)	59.36	
Apr-05	1,545	1,603	(58)	-3.59%	(1.03)	59.32	
May-05	1,507	1,591	(84)	-5.30%	(1.51)	59.26	
Jun-05	1,482	1,453	29	1.97%	0.51	59.18	
Jul-05	1,311	1,287	24	1.87%	0.43	59.09	
Aug-05	1,293	1,278	15	1.15%	0.26	58.98	
Sep-05	1,445	1,463	(18)	-1.20%	(0.31)	58.85	
Oct-05	1,630	1,645	(16)	-0.94%	(0.28)	58.72	
Nov-05	1,490	1,549	(60)	-3.85%	(1.07)	58.57	
Dec-05	1,504	1,509	(5)	-0.31%	(0.08)	58.42	
Jan-06	1,668	1,712	(45)	-2.62%	(0.81)	58.26	
Feb-06	1,500	1,618	(118)	-7.27%	(2.11)	58.11	
Mar-06	1,459	1,613	(154)	-9.55%	(2.77)	57.96	
Apr-06	1,551	1,608	(58)	-3.59%	(1.04)	57.81	
May-06	1,518	1,603	(85)	-5.30%	(1.53)	57.67	
Jun-06	1,630	1,599	32	1.97%	0.57	57.53	
Jul-06	1,613	1,583	30	1.87%	0.53	57.41	
Aug-06	1,580	1,562	18	1.15%	0.32	57.30	
Sep-06	1,530	1,549	(19)	-1.20%	(0.33)	57.20	
Oct-06	1,552	1,567	(15)	-0.94%	(0.27)	57.12	
Nov-06	1,436	1,493	(57)	-3.85%	(1.03)	57.05	
Dec-06	1,619	1,624	(5)	-0.31%	(0.09)	56.99	
Jan-07	1,674	1,661	13	0.79%	0.24	56.94	
Feb-07	1,502	1,561	(59)	-3.80%	(1.06)	56.91	
Mar-07	1,633	1,547	86	5.53%	1.53	56.89	
Apr-07	1,481	1,549	(68)	-4.39%	(1.22)	56.88	
May-07	1,565	1,534	31	2.00%	0.55	56.89	
Jun-07	1,579	1,549	30	1.93%	0.54	56.90	
Jul-07	1,511	1,549	(38)	-2.44%	(0.68)	56.92	
Aug-07	1,550	1,527	23	1.50%	0.41	56.96	
Sep-07	1,535	1,555	(20)	-1.28%	(0.36)	56.99	
Oct-07	1,461	1,517	(56)	-3.70%	(1.01)	57.02	
Nov-07	1,530	1,471	60	4.05%	1.07	57.03	
Dec-07	1,610	1,580	30	1.92%	0.54	57.02	
Jan-08	1,600	1,604	(5)	-0.29%	(0.08)	56.97	
Feb-08	1,574	1,521	53	3.50%	0.96	56.90	
Mar-08	1,485	1,513	(28)	-1.88%	(0.51)	56.77	
Apr-08	1,490	1,492	(1)	-0.08%	(0.02)	56.60	
May-08	1,567	1,518	49	3.26%	0.89	56.36	
Jun-08	1,535	1,505	30	1.99%	0.54	56.06	
Jul-08	1,542	1,487	55	3.73%	0.99	55.69	
Aug-08	1,527	1,495	32	2.12%	0.57	55.23	
Sep-08	1,519	1,467	51	3.49%	0.92	54.72	
Oct-08	1,416	1,462	(46)	-3.13%	(0.82)	54.16	
Nov-08	1,403	1,409	(6)	-0.41%	(0.10)	53.57	
Dec-08	1,515	1,503	12	0.80%	0.22	52.96	
Jan-09	1,562	1,541	22	1.41%	0.39	52.33	
Feb-09	1,433	1,441	(8)	-0.54%	(0.14)	51.73	
Mar-09	1,441	1,433	9	0.60%	0.15	51.15	
Apr-09	1,292	1,402	(110)	-7.86%	(1.98)	50.57	
May-09	1,500	1,408	92	6.55%	1.65	50.04	
Jun-09	1,504	1,403	101	7.23%	1.82	49.56	
Jul-09	1,532	1,398	134	9.56%	2.40	49.15	
Aug-09	1,429	1,384	45	3.25%	0.81	48.80	
Sep-09	1,360	1,382	(22)	-1.57%	(0.39)	48.53	
Oct-09	1,406	1,344	62	4.59%	1.11	48.31	
Nov-09	1,290	1,326	(36)	-2.69%	(0.64)	48.14	
Dec-09	1,372	1,432	(61)	-4.23%	(1.09)	48.02	
Jan-10	1,552	1,480	72	4.89%	1.30	47.95	

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>EMFA</u>
Feb-10	1,354	1,364	(11)	-0.79%	(0.19)	47.90
Mar-10	1,347	1,346	1	0.05%	0.01	47.89
Apr-10	1,366	1,354	12	0.89%	0.22	47.90
May-10	1,318	1,340	(21)	-1.60%	(0.39)	47.92
Jun-10	1,367	1,331	36	2.71%	0.65	47.96
Jul-10	1,387	1,361	26	1.91%	0.47	48.00
Aug-10	1,308	1,333	(25)	-1.86%	(0.45)	48.04
Sep-10	1,332	1,329	3	0.25%	0.06	48.09
Oct-10	1,270	1,331	(61)	-4.59%	(1.10)	48.13
Nov-10	1,252	1,254	(2)	-0.18%	(0.04)	48.17
Dec-10	1,375	1,371	4	0.28%	0.07	48.21
Jan-11	1,387	1,417	(30)	-2.09%	(0.53)	48.25
Feb-11	1,274	1,306	(32)	-2.47%	(0.58)	48.28
Mar-11	1,306	1,310	(3)	-0.26%	(0.06)	48.31
Apr-11	1,351	1,292	59	4.57%	1.06	48.34
May-11	1,299	1,300	(1)	-0.07%	(0.02)	48.35
Jun-11	1,280	1,301	(21)	-1.59%	(0.37)	48.37
Jul-11	1,335	1,290	44	3.43%	0.79	48.37
Aug-11	1,282	1,282	(0)	-0.02%	(0.01)	48.37
Sep-11	1,275	1,286	(12)	-0.90%	(0.21)	48.36
Oct-11	1,284	1,294	(10)	-0.78%	(0.18)	48.34
Nov-11	1,268	1,216	53	4.36%	0.95	48.32
Dec-11	1,318	1,316	1	0.10%	0.02	48.29
Jan-12	1,318	1,370	(52)	-3.80%	(0.93)	48.25
Feb-12	1,222	1,265	(42)	-3.35%	(0.76)	48.21
Mar-12	1,296	1,260	36	2.84%	0.64	48.16
Apr-12	1,262	1,259	3	0.22%	0.05	48.11
May-12	1,250	1,267	(16)	-1.29%	(0.29)	48.05
Jun-12	1,274	1,250	25	1.96%	0.44	47.99
Jul-12	1,204	1,236	(32)	-2.59%	(0.57)	47.92
Aug-12	1,268	1,231	37	2.97%	0.66	47.85
Sep-12	1,220	1,245	(25)	-2.00%	(0.45)	47.78
Oct-12	1,179	1,234	(55)	-4.44%	(0.98)	47.71
Nov-12	1,148	1,165	(16)	-1.41%	(0.30)	47.63
Dec-12	1,285	1,275	10	0.77%	0.18	47.55
Jan-13	1,302	1,299	3	0.20%	0.05	47.48
Feb-13	1,210	1,221	(12)	-0.98%	(0.21)	47.41
Mar-13	1,200	1,207	(7)	-0.61%	(0.13)	47.34
Apr-13	1,217	1,194	23	1.92%	0.41	47.27
May-13		1,199				47.20
Jun-13		1,202				47.14
Jul-13		1,193				47.09
Aug-13		1,189				47.04
Sep-13		1,183				46.99
Oct-13		1,184				46.95
Nov-13		1,114				46.92
Dec-13		1,220				46.89
Jan-14		1,259				46.86
Feb-14		1,166				46.84
Mar-14		1,162				46.83
Apr-14		1,159				46.81
May-14		1,155				46.80
Jun-14		1,151				46.80
Jul-14		1,147				46.79
Aug-14		1,143				46.79
Sep-14		1,139				46.79
Oct-14		1,136				46.79
Nov-14		1,069				46.80
Dec-14		1,174				46.81
Jan-15		1,214				46.82
Feb-15		1,121				46.83

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Customers

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>Independent Variable</u> EMFA
Mar-15		1,118				46.84
Apr-15		1,114				46.85
May-15		1,111				46.87
Jun-15		1,107				46.88
Jul-15		1,103				46.90
Aug-15		1,100				46.92
Sep-15		1,096				46.93
Oct-15		1,093				46.95
Nov-15		1,026				46.96
Dec-15		1,131				46.98
Jan-16		1,171				46.99
Feb-16		1,078				47.00
Mar-16		1,074				47.01
Apr-16		1,071				47.02
May-16		1,067				47.02
Jun-16		1,063				47.02
Jul-16		1,060				47.02
Aug-16		1,056				47.01
Sep-16		1,052				47.00
Oct-16		1,048				46.99
Nov-16		981				46.97
Dec-16		1,086				46.95
Jan-17		1,125				46.93
Feb-17		1,032				46.90
Mar-17		1,029				46.87
Apr-17		1,024				46.84
May-17		1,021				46.81
Jun-17		1,016				46.77
Jul-17		1,012				46.73
Aug-17		1,008				46.68
Sep-17		1,004				46.64
Oct-17		1,000				46.59
Nov-17		933				46.54
Dec-17		1,037				46.49
Jan-18		1,077				46.44
Feb-18		983				46.39
Mar-18		979				46.33
Jul-18		963				46.11
Aug-18		958				46.05
Sep-18		954				45.99
Oct-18		950				45.93
Nov-18		882				45.87
Dec-18		987				45.81
Jan-19		1,026				45.75
Feb-19		933				45.69
Mar-19		929				45.63
Apr-19		924				45.57
May-19		920				45.51
Jun-19		916				45.45
Jul-19		912				45.39
Aug-19		908				45.33
Sep-19		903				45.27
Oct-19		899				45.21
Nov-19		832				45.15
Dec-19		936				45.10

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Use per Customer

Dependent Variable: CNS_UPC
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	1,299.01	131.01	9.92	0.00
BDD	1	0.35	0.01	26.14	0.00
DT	1	(0.06)	0.01	(7.50)	0.00
dm1	1	(40.78)	9.28	(4.39)	0.00
dm10	1	(23.75)	9.38	(2.53)	0.01
dm11	1	(47.85)	12.25	(3.91)	0.00
dm12	1	(57.61)	12.29	(4.69)	0.00
AR1	1	(0.55)	0.07	(7.68)	0.00
AR11	1	(0.26)	0.07	(3.51)	0.00

Model Fitness:

Regress R-Square	0.88
Total R-Square	0.98
SSE	72,671.47
MSE	631.93
SBC	1,187.12
MAE	18.69
MAPE	3.90
Durbin-Watson	1.87
Root MSE	25.14
AIC	1,161.74
AICC	1,163.32
HQC	1,172.05

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>BDD</u>
Jan-05	745	739	5	0.73%	0.22	1,227
Feb-05	747	793	(46)	-5.78%	(1.85)	1,249
Mar-05	700	712	(12)	-1.69%	(0.49)	1,114
Apr-05	555	571	(17)	-2.90%	(0.67)	711
May-05	455	468	(13)	-2.72%	(0.51)	421
Jun-05	428	414	13	3.26%	0.54	227
Jul-05	434	375	59	15.74%	2.38	32
Aug-05	405	391	14	3.50%	0.55	2
Sep-05	394	378	16	4.16%	0.63	9
Oct-05	342	398	(56)	-14.12%	(2.27)	162
Nov-05	466	445	21	4.72%	0.85	491
Dec-05	644	620	24	3.84%	0.96	953
Jan-06	690	711	(21)	-2.99%	(0.86)	1,161
Feb-06	685	667	18	2.68%	0.72	984
Mar-06	739	700	39	5.56%	1.57	1,059
Apr-06	572	570	2	0.33%	0.07	640
May-06	449	481	(32)	-6.63%	(1.29)	390
Jun-06	387	405	(18)	-4.32%	(0.71)	173
Jul-06	366	353	14	3.87%	0.55	17
Aug-06	351	363	(12)	-3.20%	(0.47)	4
Sep-06	354	357	(3)	-0.72%	(0.10)	65
Oct-06	442	392	49	12.58%	1.99	240
Nov-06	460	493	(34)	-6.83%	(1.36)	502
Dec-06	547	524	22	4.21%	0.89	729
Jan-07	633	650	(17)	-2.59%	(0.68)	1,003
Feb-07	859	783	76	9.75%	3.08	1,289
Mar-07	761	777	(16)	-2.03%	(0.64)	1,154
Apr-07	609	612	(2)	-0.34%	(0.08)	785
May-07	446	461	(15)	-3.25%	(0.60)	380
Jun-07	368	368	0	0.01%	0.00	125
Jul-07	334	336	(2)	-0.49%	(0.07)	23
Aug-07	317	326	(9)	-2.66%	(0.35)	6
Sep-07	336	346	(10)	-2.84%	(0.40)	48
Oct-07	343	347	(4)	-1.25%	(0.18)	148
Nov-07	424	453	(29)	-6.30%	(1.15)	517
Dec-07	602	617	(15)	-2.50%	(0.62)	1,073
Jan-08	689	698	(9)	-1.28%	(0.36)	1,205
Feb-08	728	726	1	0.19%	0.06	1,168
Mar-08	714	680	34	4.93%	1.35	1,037
Apr-08	593	596	(3)	-0.49%	(0.12)	762
May-08	436	453	(16)	-3.61%	(0.66)	382
Jun-08	390	349	41	11.76%	1.66	123
Jul-08	317	331	(14)	-4.29%	(0.57)	11
Aug-08	316	310	5	1.72%	0.22	3
Sep-08	335	322	13	3.99%	0.52	39
Oct-08	396	367	29	7.95%	1.18	244
Nov-08	464	446	18	3.97%	0.71	524
Dec-08	604	599	5	0.82%	0.20	985
Jan-09	724	716	8	1.07%	0.31	1,282
Feb-09	760	746	14	1.90%	0.57	1,229
Mar-09	657	651	6	0.92%	0.24	951
Apr-09	559	546	12	2.25%	0.49	681
May-09	397	422	(25)	-5.95%	(1.01)	298
Jun-09	350	343	7	2.10%	0.29	143
Jul-09	319	313	5	1.75%	0.22	46
Aug-09	303	301	1	0.40%	0.05	4
Sep-09	325	325	(1)	-0.21%	(0.03)	66
Oct-09	370	381	(11)	-2.91%	(0.45)	301
Nov-09	453	415	38	9.21%	1.54	494
Dec-09	505	519	(14)	-2.73%	(0.57)	759
Jan-10	696	691	5	0.68%	0.19	1,247

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>BDD</u>
Feb-10	686	687	(1)	-0.16%	(0.04)	1,116
Mar-10	598	574	23	4.04%	0.93	803
Apr-10	470	469	1	0.24%	0.05	489
May-10	395	396	(0)	-0.07%	(0.01)	304
Jun-10	337	314	23	7.31%	0.93	84
Jul-10	313	300	13	4.24%	0.51	17
Aug-10	292	293	(1)	-0.34%	(0.04)	1
Sep-10	304	290	14	4.93%	0.58	24
Oct-10	335	291	44	15.12%	1.77	60
Nov-10	439	406	33	8.06%	1.32	419
Dec-10	513	556	(42)	-7.64%	(1.71)	870
Jan-11	626	635	(9)	-1.35%	(0.35)	1,168
Feb-11	688	721	(33)	-4.63%	(1.35)	1,297
Mar-11	642	631	11	1.67%	0.43	1,091
Apr-11	512	541	(30)	-5.50%	(1.20)	800
May-11	380	389	(9)	-2.31%	(0.36)	395
Jun-11	326	308	18	5.77%	0.72	151
Jul-11	288	283	4	1.55%	0.18	42
Aug-11	267	270	(3)	-1.01%	(0.11)	0
Sep-11	274	282	(8)	-2.86%	(0.32)	16
Oct-11	297	293	4	1.46%	0.17	113
Nov-11	383	382	1	0.22%	0.03	472
Dec-11	447	437	10	2.35%	0.41	688
Jan-12	559	564	(5)	-0.85%	(0.19)	1,027
Feb-12	592	598	(6)	-1.02%	(0.24)	1,022
Mar-12	507	538	(32)	-5.87%	(1.27)	884
Apr-12	395	402	(7)	-1.64%	(0.27)	544
May-12	354	346	8	2.37%	0.33	351
Jun-12	285	269	16	5.76%	0.63	91
Jul-12	266	255	11	4.43%	0.46	22
Aug-12	240	250	(10)	-4.19%	(0.42)	-
Sep-12	255	250	6	2.32%	0.23	19
Oct-12	280	292	(12)	-4.04%	(0.48)	206
Nov-12	334	336	(3)	-0.75%	(0.10)	432
Dec-12	456	467	(11)	-2.39%	(0.45)	854
Jan-13	527	561	(34)	-6.09%	(1.38)	1,108
Feb-13	592	590	1	0.19%	0.05	1,155
Mar-13	578	524	55	10.45%	2.21	947
Apr-13	458	501	(43)	-8.53%	(1.72)	771
May-13		352				421
Jun-13		272				161
Jul-13		224				24
Aug-13		219				2
Sep-13		229				42
Oct-13		262				212
Nov-13		328				487
Dec-13		435				858
Jan-14		560				1,184
Feb-14		607				1,167
Mar-14		549				1,025
Apr-14		438				710
May-14		340				423
Jun-14		248				156
Jul-14		202				23
Aug-14		194				2
Sep-14		205				38
Oct-14		239				212
Nov-14		312				504
Dec-14		422				863
Jan-15		553				1,190
Feb-15		582				1,162

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>BDD</u>
Mar-15		524				1,001
Apr-15		433				742
May-15		311				391
Jun-15		230				161
Jul-15		182				25
Aug-15		173				2
Sep-15		186				47
Oct-15		237				267
Nov-15		310				555
Dec-15		424				916
Jan-16		523				1,160
Feb-16		559				1,150
Mar-16		493				964
Apr-16		414				743
May-16		280				360
Jun-16		203				142
Jul-16		159				19
Aug-16		152				3
Sep-16		170				58
Oct-16		219				275
Nov-16		282				532
Dec-16		400				905
Jan-17		522				1,212
Feb-17		518				1,087
Mar-17		474				966
Apr-17		393				738
May-17		255				345
Jun-17		186				151
Jul-17		139				18
Aug-17		132				3
Sep-17		149				58
Oct-17		194				261
Nov-17		272				558
Dec-17		365				861
Jan-18		500				1,205
Feb-18		516				1,141
Mar-18		453				963
Jul-18		118				17
Aug-18		112				3
Sep-18		128				55
Oct-18		170				251
Nov-18		259				581
Dec-18		346				864
Jan-19		477				1,197
Feb-19		500				1,152
Mar-19		432				961
Apr-19		333				680
May-19		230				386
Jun-19		144				146
Jul-19		98				17
Aug-19		91				3
Sep-19		108				57
Oct-19		150				250
Nov-19		227				546
Dec-19		343				913

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>					<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>BDD</u>	<u>EMFA</u>
Jan-05	1,140,875	1,163,048	(22,173)	-1.91%	(0.43)	1,227	59
Feb-05	1,140,277	1,305,160	(164,883)	-12.63%	(3.19)	1,249	59
Mar-05	1,081,835	1,216,733	(134,898)	-11.09%	(2.61)	1,114	59
Apr-05	856,947	915,410	(58,463)	-6.39%	(1.13)	711	59
May-05	685,520	744,126	(58,606)	-7.88%	(1.13)	421	59
Jun-05	633,489	601,654	31,835	5.29%	0.62	227	59
Jul-05	569,487	483,016	86,471	17.90%	1.67	32	59
Aug-05	523,094	499,693	23,401	4.68%	0.45	2	59
Sep-05	569,353	553,239	16,114	2.91%	0.31	9	59
Oct-05	556,912	654,671	(97,759)	-14.93%	(1.89)	162	59
Nov-05	694,015	689,243	4,772	0.69%	0.09	491	59
Dec-05	967,927	935,039	32,888	3.52%	0.64	953	58
Jan-06	1,150,858	1,218,195	(67,337)	-5.53%	(1.30)	1,161	58
Feb-06	1,027,718	1,079,398	(51,680)	-4.79%	(1.00)	984	58
Mar-06	1,078,558	1,129,630	(51,072)	-4.52%	(0.99)	1,059	58
Apr-06	886,714	916,792	(30,078)	-3.28%	(0.58)	640	58
May-06	682,074	771,415	(89,341)	-11.58%	(1.73)	390	58
Jun-06	631,306	647,078	(15,772)	-2.44%	(0.31)	173	58
Jul-06	590,680	558,210	32,470	5.82%	0.63	17	57
Aug-06	554,530	566,386	(11,856)	-2.09%	(0.23)	4	57
Sep-06	541,683	552,221	(10,538)	-1.91%	(0.20)	65	57
Oct-06	685,395	614,587	70,808	11.52%	1.37	240	57
Nov-06	659,879	736,620	(76,741)	-10.42%	(1.48)	502	57
Dec-06	884,967	851,831	33,136	3.89%	0.64	729	57
Jan-07	1,059,625	1,079,183	(19,558)	-1.81%	(0.38)	1,003	57
Feb-07	1,290,160	1,221,956	68,204	5.58%	1.32	1,289	57
Mar-07	1,243,038	1,202,379	40,659	3.38%	0.79	1,154	57
Apr-07	902,730	947,440	(44,710)	-4.72%	(0.86)	785	57
May-07	698,104	707,432	(9,328)	-1.32%	(0.18)	380	57
Jun-07	581,447	570,364	11,083	1.94%	0.21	125	57
Jul-07	505,065	520,227	(15,162)	-2.91%	(0.29)	23	57
Aug-07	491,224	497,202	(5,978)	-1.20%	(0.12)	6	57
Sep-07	516,363	538,332	(21,969)	-4.08%	(0.42)	48	57
Oct-07	501,103	526,957	(25,854)	-4.91%	(0.50)	148	57
Nov-07	649,545	666,286	(16,741)	-2.51%	(0.32)	517	57
Dec-07	968,737	974,876	(6,139)	-0.63%	(0.12)	1,073	57
Jan-08	1,102,522	1,120,046	(17,524)	-1.56%	(0.34)	1,205	57
Feb-08	1,145,034	1,104,142	40,892	3.70%	0.79	1,168	57
Mar-08	1,059,764	1,029,342	30,422	2.96%	0.59	1,037	57
Apr-08	883,978	889,058	(5,080)	-0.57%	(0.10)	762	57
May-08	683,508	686,733	(3,225)	-0.47%	(0.06)	382	56
Jun-08	599,072	525,558	73,514	13.99%	1.42	123	56
Jul-08	488,476	492,025	(3,549)	-0.72%	(0.07)	11	56
Aug-08	481,825	463,824	18,001	3.88%	0.35	3	55
Sep-08	508,598	472,574	36,024	7.62%	0.70	39	55
Oct-08	561,171	536,652	24,519	4.57%	0.47	244	54
Nov-08	650,961	628,694	22,267	3.54%	0.43	524	54
Dec-08	915,048	900,383	14,665	1.63%	0.28	985	53
Jan-09	1,130,984	1,103,408	27,576	2.50%	0.53	1,282	52
Feb-09	1,089,518	1,074,963	14,555	1.35%	0.28	1,229	52
Mar-09	946,156	931,873	14,283	1.53%	0.28	951	51
Apr-09	721,537	765,912	(44,375)	-5.79%	(0.86)	681	51
May-09	594,963	593,702	1,261	0.21%	0.02	298	50
Jun-09	526,396	480,811	45,585	9.48%	0.88	143	50
Jul-09	488,105	437,870	50,235	11.47%	0.97	46	49
Aug-09	432,605	417,327	15,278	3.66%	0.30	4	49
Sep-09	441,694	449,685	(7,991)	-1.78%	(0.15)	66	49
Oct-09	520,640	512,692	7,948	1.55%	0.15	301	48
Nov-09	584,753	550,216	34,537	6.28%	0.67	494	48
Dec-09	692,388	743,268	(50,880)	-6.85%	(0.98)	759	48
Jan-10	1,080,239	1,022,956	57,283	5.60%	1.11	1,247	48

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Volumes

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> %	<u>Independent Variable</u>		
					<u>Standard Residual</u>	<u>BDD</u>	<u>EMFA</u>
Feb-10	928,782	937,713	(8,931)	-0.95%	(0.17)	1,116	48
Mar-10	804,878	773,284	31,594	4.09%	0.61	803	48
Apr-10	642,018	634,781	7,237	1.14%	0.14	489	48
May-10	521,397	530,239	(8,842)	-1.67%	(0.17)	304	48
Jun-10	460,512	417,807	42,705	10.22%	0.83	84	48
Jul-10	433,465	408,019	25,446	6.24%	0.49	17	48
Aug-10	382,407	391,014	(8,607)	-2.20%	(0.17)	1	48
Sep-10	405,143	385,150	19,993	5.19%	0.39	24	48
Oct-10	424,905	386,834	38,071	9.84%	0.74	60	48
Nov-10	548,993	508,951	40,042	7.87%	0.77	419	48
Dec-10	705,720	761,892	(56,172)	-7.37%	(1.09)	870	48
Jan-11	868,354	899,031	(30,677)	-3.41%	(0.59)	1,168	48
Feb-11	876,202	942,001	(65,799)	-6.99%	(1.27)	1,297	48
Mar-11	838,163	826,482	11,681	1.41%	0.23	1,091	48
Apr-11	691,334	699,602	(8,268)	-1.18%	(0.16)	800	48
May-11	493,472	505,465	(11,993)	-2.37%	(0.23)	395	48
Jun-11	417,430	401,023	16,407	4.09%	0.32	151	48
Jul-11	384,214	365,798	18,416	5.03%	0.36	42	48
Aug-11	342,047	345,611	(3,564)	-1.03%	(0.07)	0	48
Sep-11	348,807	362,352	(13,545)	-3.74%	(0.26)	16	48
Oct-11	381,273	378,739	2,534	0.67%	0.05	113	48
Nov-11	485,785	464,459	21,326	4.59%	0.41	472	48
Dec-11	589,069	574,945	14,124	2.46%	0.27	688	48
Jan-12	737,112	772,838	(35,726)	-4.62%	(0.69)	1,027	48
Feb-12	723,183	755,958	(32,775)	-4.34%	(0.63)	1,022	48
Mar-12	656,400	678,120	(21,720)	-3.20%	(0.42)	884	48
Apr-12	498,418	505,611	(7,193)	-1.42%	(0.14)	544	48
May-12	442,660	438,093	4,567	1.04%	0.09	351	48
Jun-12	362,988	336,596	26,392	7.84%	0.51	91	48
Jul-12	320,591	315,160	5,431	1.72%	0.11	22	48
Aug-12	303,851	308,001	(4,150)	-1.35%	(0.08)	-	48
Sep-12	311,452	310,621	831	0.27%	0.02	19	48
Oct-12	329,992	359,860	(29,868)	-8.30%	(0.58)	206	48
Nov-12	383,188	391,623	(8,435)	-2.15%	(0.16)	432	48
Dec-12	585,518	595,246	(9,728)	-1.63%	(0.19)	854	48
Jan-13	686,376	729,444	(43,068)	-5.90%	(0.83)	1,108	47
Feb-13	715,501	721,210	(5,709)	-0.79%	(0.11)	1,155	47
Mar-13	694,200	632,361	61,839	9.78%	1.20	947	47
Apr-13	557,939	598,443	(40,504)	-6.77%	(0.78)	771	47
May-13		422,462				421	47
Jun-13		326,505				161	47
Jul-13		267,482				24	47
Aug-13		259,933				2	47
Sep-13		270,888				42	47
Oct-13		310,282				212	47
Nov-13		365,244				487	47
Dec-13		530,654				858	47
Jan-14		704,946				1,184	47
Feb-14		707,284				1,167	47
Mar-14		637,684				1,025	47
Apr-14		508,099				710	47
May-14		392,505				423	47
Jun-14		285,277				156	47
Jul-14		232,127				23	47
Aug-14		221,634				2	47
Sep-14		233,456				38	47
Oct-14		271,420				212	47
Nov-14		333,075				504	47
Dec-14		495,549				863	47
Jan-15		671,315				1,190	47
Feb-15		652,116				1,162	47

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Volumes

<u>Actual, Projected, Residual (Therms)</u>			<u>Independent Variable</u>				
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>BDD</u>	<u>EMFA</u>
Mar-15		585,895				1,001	47
Apr-15		482,462				742	47
May-15		344,893				391	47
Jun-15		254,677				161	47
Jul-15		200,612				25	47
Aug-15		189,889				2	47
Sep-15		204,297				47	47
Oct-15		258,802				267	47
Nov-15		318,004				555	47
Dec-15		479,235				916	47
Jan-16		612,668				1,160	47
Feb-16		602,310				1,150	47
Mar-16		529,407				964	47
Apr-16		443,694				743	47
May-16		299,277				360	47
Jun-16		216,054				142	47
Jul-16		168,834				19	47
Aug-16		160,592				3	47
Sep-16		178,301				58	47
Oct-16		229,743				275	47
Nov-16		277,056				532	47
Dec-16		434,619				905	47
Jan-17		587,553				1,212	47
Feb-17		534,182				1,087	47
Mar-17		487,705				966	47
Apr-17		402,970				738	47
May-17		260,500				345	47
Jun-17		189,422				151	47
Jul-17		140,594				18	47
Aug-17		132,870				3	47
Sep-17		149,998				58	47
Oct-17		194,106				261	47
Nov-17		253,274				558	47
Dec-17		378,654				861	46
Jan-18		537,932				1,205	46
Feb-18		507,686				1,141	46
Mar-18		443,907				963	46
Apr-18		354,322				709	46
May-18		235,289				365	46
Jun-18		159,914				148	46
Jul-18		113,944				17	46
Aug-18		106,919				3	46
Sep-18		122,031				55	46
Oct-18		161,884				251	46
Nov-18		228,772				581	46
Dec-18		341,462				864	46
Jan-19		489,125				1,197	46
Feb-19		466,464				1,152	46
Mar-19		401,472				961	46
Apr-19		307,879				680	46
May-19		211,249				386	46
Jun-19		132,208				146	45
Jul-19		89,227				17	45
Aug-19		82,955				3	45
Sep-19		97,911				57	45
Oct-19		135,049				250	45
Nov-19		188,723				546	45
Dec-19		320,841				913	45

Plan Year Actual Projected BDD EMFA

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Sales Volumes

	<u>Actual, Projected, Residual (Therms)</u>			<u>Project Error</u> <u>%</u>	<u>Independent Variable</u>		
	<u>Date</u>	<u>Actual</u>	<u>Projected</u>		<u>Residual</u>	<u>Standard Residual</u>	<u>BDD</u>
PY2005		9,301,120	9,817,739			6,562	710
PY2006		9,491,458	9,678,194			6,177	693
PY2007		9,333,705	9,399,924			6,192	683
PY2008		9,132,229	8,961,116			6,564	674
PY2009		8,458,607	8,297,320			6,511	607
PY2010		7,360,887	7,181,282			5,396	576
PY2011		6,896,009	6,996,947			6,362	580
PY2012		5,761,501	5,820,261			5,328	577
PY2013			5,525,878			6,131	567
PY2014			5,090,331			6,284	562
PY2015			4,673,581			6,355	562
PY2016			4,238,119			6,344	564
PY2017			3,791,575			6,276	562
PY2018			3,375,755			6,277	555
PY2019			2,983,774			6,292	546
Growth							
PY2006		190,338	(139,545)			(385)	(17)
PY2007		(157,753)	(278,270)			15	(10)
PY2008		(201,476)	(438,808)			372	(10)
PY2009		(673,622)	(663,796)			(53)	(67)
PY2010		(1,097,720)	(1,116,038)			(1,115)	(31)
PY2011		(464,878)	(184,334)			965	4
PY2012		(1,134,508)	(1,176,687)			(1,034)	(3)
PY2013			(294,383)			804	(10)
PY2014			(435,547)			153	(5)
PY2015			(416,750)			70	0
PY2016			(435,462)			(11)	2
PY2017			(446,544)			(68)	(2)
PY2018			(415,819)			0	(7)
PY2019			(391,981)			15	(8)
Growth Rate (%)							
PY2006		2.0%	-1.4%			-5.9%	-2.4%
PY2007		-1.7%	-2.9%			0.2%	-1.4%
PY2008		-2.2%	-4.7%			6.0%	-1.4%
PY2009		-7.4%	-7.4%			-0.8%	-9.9%
PY2010		-13.0%	-13.5%			-17.1%	-5.1%
PY2011		-6.3%	-2.6%			17.9%	0.7%
PY2012		-16.5%	-16.8%			-16.3%	-0.5%
PY2013			-5.1%			15.1%	-1.7%
PY2014			-7.9%			2.5%	-0.9%
PY2015			-8.2%			1.1%	0.1%
PY2016			-9.3%			-0.2%	0.3%
PY2017			-10.5%			-1.1%	-0.4%
PY2018			-11.0%			0.0%	-1.2%
PY2019			-11.6%			0.2%	-1.5%

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Customers

Dependent Variable: CHT_CUS
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	(9,276.17)	257.96	(35.96)	0.00
DT	1	0.56	0.01	39.73	0.00
dm1	1	62.47	16.60	3.76	0.00
dm3	1	34.78	16.28	2.14	0.04
dm11	1	(72.00)	17.95	(4.01)	0.00
AR1	1	(0.45)	0.11	(4.10)	0.00

Model Fitness:

Regress R-Square	0.96
Total R-Square	0.99
SSE	152,044.29
MSE	2,172.06
SBC	819.58
MAE	36.84
MAPE	4.41
Durbin-Watson	1.91
Root MSE	46.61
AIC	805.59
AICC	806.81
HQC	811.18

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Customers

<u>Actual, Projected, Residual</u>				<u>Project Error</u>	<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>DT</u>
Jan-05	268	283	(15)	-5.43%	(0.40)	16,437
Feb-05	298	226	72	31.84%	1.87	16,468
Mar-05	288	263	25	9.31%	0.64	16,496
Apr-05	290	268	22	8.28%	0.58	16,527
May-05	287	266	21	7.73%	0.54	16,557
Jun-05	289	267	22	8.26%	0.57	16,588
Jul-05	258	261	(3)	-1.25%	(0.08)	16,618
Aug-05	264	282	(17)	-6.09%	(0.45)	16,649
Sep-05	297	316	(19)	-6.16%	(0.51)	16,680
Oct-05	296	307	(11)	-3.63%	(0.29)	16,710
Nov-05	303	280	23	8.29%	0.60	16,741
Dec-05	319	322	(3)	-0.94%	(0.08)	16,771
Jan-06	344	363	(20)	-5.43%	(0.51)	16,802
Feb-06	320	243	77	31.84%	2.01	16,833
Mar-06	311	284	26	9.31%	0.69	16,861
Apr-06	321	296	25	8.28%	0.64	16,892
May-06	315	292	23	7.73%	0.59	16,922
Jun-06	315	291	24	8.26%	0.63	16,953
Jul-06	327	331	(4)	-1.25%	(0.11)	16,983
Aug-06	310	330	(20)	-6.09%	(0.52)	17,014
Sep-06	327	348	(21)	-6.16%	(0.56)	17,045
Oct-06	300	312	(11)	-3.63%	(0.29)	17,075
Nov-06	263	243	20	8.29%	0.52	17,106
Dec-06	363	366	(3)	-0.94%	(0.09)	17,136
Jan-07	366	387	(21)	-5.43%	(0.55)	17,167
Feb-07	438	332	106	31.84%	2.76	17,198
Mar-07	476	435	41	9.31%	1.06	17,226
Apr-07	447	412	34	8.28%	0.89	17,257
May-07	456	424	33	7.73%	0.85	17,287
Jun-07	474	438	36	8.26%	0.94	17,318
Jul-07	449	455	(6)	-1.25%	(0.15)	17,348
Aug-07	426	454	(28)	-6.09%	(0.72)	17,379
Sep-07	425	453	(28)	-6.16%	(0.73)	17,410
Oct-07	444	461	(17)	-3.63%	(0.44)	17,440
Nov-07	442	408	34	8.29%	0.88	17,471
Dec-07	515	520	(5)	-0.94%	(0.13)	17,501
Jan-08	533	593	(59)	-10.03%	(1.55)	17,532
Feb-08	552	520	32	6.14%	0.83	17,563
Mar-08	678	600	78	13.05%	2.04	17,592
Apr-08	557	616	(59)	-9.52%	(1.53)	17,623
May-08	569	586	(17)	-2.93%	(0.45)	17,653
Jun-08	580	601	(21)	-3.50%	(0.55)	17,684
Jul-08	605	615	(10)	-1.68%	(0.27)	17,714
Aug-08	603	636	(33)	-5.19%	(0.86)	17,745
Sep-08	622	645	(24)	-3.66%	(0.62)	17,776
Oct-08	611	662	(51)	-7.72%	(1.33)	17,806
Nov-08	624	595	29	4.86%	0.75	17,837
Dec-08	681	715	(33)	-4.67%	(0.87)	17,867
Jan-09	829	780	49	6.24%	1.27	17,898
Feb-09	750	765	(16)	-2.03%	(0.40)	17,929
Mar-09	781	801	(20)	-2.53%	(0.53)	17,957
Apr-09	761	774	(13)	-1.66%	(0.34)	17,988
May-09	847	790	56	7.12%	1.47	18,018
Jun-09	846	839	8	0.92%	0.20	18,049
Jul-09	931	847	83	9.84%	2.17	18,079
Aug-09	859	895	(36)	-4.03%	(0.94)	18,110
Sep-09	850	872	(22)	-2.58%	(0.59)	18,141
Oct-09	886	877	9	1.01%	0.23	18,171
Nov-09	819	831	(12)	-1.44%	(0.31)	18,202
Dec-09	929	915	14	1.57%	0.37	18,232
Jan-10	1,052	1,004	49	4.83%	1.26	18,263

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Customers

<u>Actual, Projected, Residual</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Feb-10	944	978	(34)	-3.52%	(0.90)	18,294
Mar-10	948	1,000	(53)	-5.26%	(1.37)	18,322
Apr-10	963	962	1	0.11%	0.03	18,353
May-10	953	993	(40)	-4.07%	(1.05)	18,383
Jun-10	1,030	999	31	3.12%	0.81	18,414
Jul-10	1,147	1,042	104	10.02%	2.72	18,444
Aug-10	973	1,104	(131)	-11.88%	(3.42)	18,475
Sep-10	992	1,036	(44)	-4.28%	(1.16)	18,506
Oct-10	976	1,054	(78)	-7.40%	(2.03)	18,536
Nov-10	989	984	5	0.51%	0.13	18,567
Dec-10	1,151	1,103	47	4.30%	1.24	18,597
Jan-11	1,170	1,216	(46)	-3.81%	(1.21)	18,628
Feb-11	1,105	1,143	(39)	-3.38%	(1.01)	18,659
Mar-11	1,136	1,185	(49)	-4.13%	(1.27)	18,687
Apr-11	1,185	1,159	26	2.27%	0.69	18,718
May-11	1,170	1,206	(36)	-2.95%	(0.93)	18,748
Jun-11	1,192	1,209	(17)	-1.40%	(0.44)	18,779
Jul-11	1,223	1,227	(4)	-0.32%	(0.10)	18,809
Aug-11	1,207	1,251	(45)	-3.57%	(1.16)	18,840
Sep-11	1,238	1,253	(15)	-1.20%	(0.39)	18,871
Oct-11	1,253	1,277	(24)	-1.86%	(0.62)	18,901
Nov-11	1,231	1,221	10	0.83%	0.26	18,932
Dec-11	1,370	1,325	45	3.41%	1.18	18,962
Jan-12	1,393	1,427	(33)	-2.35%	(0.87)	18,993
Feb-12	1,297	1,356	(59)	-4.37%	(1.55)	19,024
Mar-12	1,452	1,384	67	4.87%	1.75	19,053
Apr-12	1,439	1,413	26	1.83%	0.67	19,084
May-12	1,466	1,433	34	2.34%	0.87	19,114
Jun-12	1,511	1,454	57	3.93%	1.49	19,145
Jul-12	1,506	1,484	22	1.48%	0.57	19,175
Aug-12	1,563	1,491	72	4.84%	1.88	19,206
Sep-12	1,531	1,526	5	0.33%	0.13	19,237
Oct-12	1,488	1,521	(33)	-2.16%	(0.86)	19,267
Nov-12	1,444	1,439	5	0.33%	0.12	19,298
Dec-12	1,622	1,533	89	5.81%	2.32	19,328
Jan-13	1,688	1,653	35	2.14%	0.92	19,359
Feb-13	1,559	1,601	(42)	-2.64%	(1.10)	19,390
Mar-13	1,572	1,614	(43)	-2.64%	(1.11)	19,418
Apr-13	1,613	1,580	33	2.08%	0.86	19,449
May-13		1,623				19,479
Jun-13		1,637				19,510
Jul-13		1,653				19,540
Aug-13		1,669				19,571
Sep-13		1,686				19,602
Oct-13		1,703				19,632
Nov-13		1,648				19,663
Dec-13		1,737				19,693
Jan-14		1,817				19,724
Feb-14		1,772				19,755
Mar-14		1,822				19,783
Apr-14		1,805				19,814
May-14		1,822				19,844
Jun-14		1,839				19,875
Jul-14		1,856				19,905
Aug-14		1,873				19,936
Sep-14		1,890				19,967
Oct-14		1,907				19,997
Nov-14		1,852				20,028
Dec-14		1,941				20,058
Jan-15		2,021				20,089
Feb-15		1,976				20,120

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Customers

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>Independent Variable</u> <u>DT</u>
Mar-15		2,026				20,148
Apr-15		2,009				20,179
May-15		2,026				20,209
Jun-15		2,043				20,240
Jul-15		2,060				20,270
Aug-15		2,077				20,301
Sep-15		2,094				20,332
Oct-15		2,111				20,362
Nov-15		2,057				20,393
Dec-15		2,145				20,423
Jan-16		2,225				20,454
Feb-16		2,180				20,485
Mar-16		2,231				20,514
Apr-16		2,214				20,545
May-16		2,230				20,575
Jun-16		2,248				20,606
Jul-16		2,264				20,636
Aug-16		2,282				20,667
Sep-16		2,299				20,698
Oct-16		2,316				20,728
Nov-16		2,261				20,759
Dec-16		2,350				20,789
Jan-17		2,430				20,820
Feb-17		2,385				20,851
Mar-17		2,435				20,879
Apr-17		2,418				20,910
May-17		2,435				20,940
Jun-17		2,452				20,971
Jul-17		2,469				21,001
Aug-17		2,486				21,032
Sep-17		2,503				21,063
Oct-17		2,520				21,093
Nov-17		2,465				21,124
Dec-17		2,554				21,154
Jan-18		2,634				21,185
Feb-18		2,589				21,216
Mar-18		2,639				21,244
Jul-18		2,673				21,366
Aug-18		2,690				21,397
Sep-18		2,707				21,428
Oct-18		2,724				21,458
Nov-18		2,670				21,489
Dec-18		2,758				21,519
Jan-19		2,838				21,550
Feb-19		2,793				21,581
Mar-19		2,843				21,609
Apr-19		2,826				21,640
May-19		2,843				21,670
Jun-19		2,860				21,701
Jul-19		2,877				21,731
Aug-19		2,894				21,762
Sep-19		2,912				21,793
Oct-19		2,928				21,823
Nov-19		2,874				21,854
Dec-19		2,962				21,884

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Use per Customer

Dependent Variable: CHT_UPC
Method AutoReg
Observations 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
HDD	1	1.81	0.31	5.88	0.00
dm2	1	600.14	110.86	5.41	0.00
dm3	1	444.92	126.04	3.53	0.00
dm4	1	639.07	112.76	5.67	0.00
AR1	1	(0.55)	0.07	(8.08)	0.00
AR7	1	0.24	0.08	2.89	0.00
AR8	1	(0.28)	0.09	(3.28)	0.00
AR12	1	(0.37)	0.07	(5.10)	0.00

Model Fitness:

Regress R-Square	-
Total R-Square	0.98
SSE	6,493,718.99
MSE	64,294.25
SBC	1,550.53
MAE	194.30
MAPE	19.77
Durbin-Watson	1.76
Root MSE	253.56
AIC	1,529.00
AICC	1,530.44
HQC	1,537.73

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u>	<u>Standard</u>	<u>HDD</u>
				<u>%</u>	<u>Residual</u>	
Jan-05	2,713	2,135	579	27.11%	1.84	1246
Feb-05	2,916	2,979	(63)	-2.11%	(0.20)	1059
Mar-05	2,692	2,602	90	3.45%	0.29	911
Apr-05	2,526	2,265	260	11.48%	0.83	516
May-05	1,248	1,398	(151)	-10.79%	(0.48)	238
Jun-05	1,012	776	236	30.36%	0.75	52
Jul-05	747	767	(20)	-2.62%	(0.06)	3
Aug-05	408	294	114	38.67%	0.36	5
Sep-05	232	515	(283)	-54.98%	(0.90)	108
Oct-05	624	704	(81)	-11.44%	(0.26)	422
Nov-05	1,039	1,079	(40)	-3.71%	(0.13)	708
Dec-05	1,652	1,677	(25)	-1.47%	(0.08)	1060
Jan-06	2,503	2,285	218	9.55%	0.69	1246
Feb-06	2,143	2,877	(734)	-25.50%	(2.33)	1059
Mar-06	2,511	2,221	290	13.08%	0.92	911
Apr-06	1,961	2,253	(291)	-12.93%	(0.92)	516
May-06	1,101	985	115	11.70%	0.37	238
Jun-06	1,195	814	381	46.85%	1.21	52
Jul-06	581	873	(292)	-33.46%	(0.93)	3
Aug-06	331	333	(2)	-0.64%	(0.01)	5
Sep-06	468	545	(78)	-14.22%	(0.25)	108
Oct-06	630	654	(25)	-3.75%	(0.08)	422
Nov-06	1,362	1,143	219	19.15%	0.70	708
Dec-06	1,456	1,812	(356)	-19.63%	(1.13)	1060
Jan-07	1,947	2,015	(67)	-3.35%	(0.21)	1246
Feb-07	2,765	2,384	381	15.98%	1.21	1059
Mar-07	2,695	2,466	229	9.28%	0.73	911
Apr-07	2,620	2,068	552	26.71%	1.75	516
May-07	994	1,356	(363)	-26.74%	(1.15)	238
Jun-07	600	746	(146)	-19.59%	(0.46)	52
Jul-07	393	626	(234)	-37.30%	(0.74)	3
Aug-07	388	282	106	37.43%	0.34	5
Sep-07	422	354	68	19.13%	0.22	108
Oct-07	400	762	(363)	-47.58%	(1.15)	422
Nov-07	1,025	1,027	(2)	-0.21%	(0.01)	708
Dec-07	2,122	1,769	353	19.99%	1.12	1060
Jan-08	2,792	2,290	503	21.95%	1.60	1246
Feb-08	2,974	3,022	(48)	-1.58%	(0.15)	1099
Mar-08	2,766	2,541	225	8.86%	0.71	911
Apr-08	2,602	2,374	228	9.60%	0.72	516
May-08	1,367	1,350	16	1.22%	0.05	238
Jun-08	932	749	183	24.43%	0.58	52
Jul-08	557	482	75	15.53%	0.24	3
Aug-08	454	375	79	21.11%	0.25	5
Sep-08	498	580	(81)	-14.05%	(0.26)	108
Oct-08	640	741	(101)	-13.62%	(0.32)	422
Nov-08	1,486	1,060	426	40.18%	1.35	708
Dec-08	2,333	2,168	166	7.64%	0.53	1060
Jan-09	3,102	2,738	364	13.29%	1.16	1246
Feb-09	3,648	3,222	425	13.20%	1.35	1059
Mar-09	3,011	3,004	8	0.25%	0.02	911
Apr-09	2,182	2,502	(320)	-12.78%	(1.02)	516
May-09	1,324	1,220	103	8.44%	0.33	238
Jun-09	697	803	(106)	-13.16%	(0.34)	52
Jul-09	403	493	(90)	-18.17%	(0.28)	3
Aug-09	396	300	95	31.79%	0.30	5
Sep-09	393	482	(88)	-18.36%	(0.28)	108
Oct-09	611	923	(312)	-33.76%	(0.99)	422
Nov-09	1,435	1,384	51	3.66%	0.16	708
Dec-09	1,693	2,108	(415)	-19.69%	(1.32)	1060
Jan-10	2,821	2,547	274	10.75%	0.87	1246

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>HDD</u>
Feb-10	3,087	3,312	(225)	-6.79%	(0.71)	1059
Mar-10	2,474	2,759	(284)	-10.31%	(0.90)	911
Apr-10	1,670	2,064	(395)	-19.12%	(1.25)	516
May-10	1,094	902	192	21.22%	0.61	238
Jun-10	607	596	11	1.78%	0.03	52
Jul-10	368	528	(160)	-30.33%	(0.51)	3
Aug-10	301	147	154	104.81%	0.49	5
Sep-10	318	448	(130)	-28.98%	(0.41)	108
Oct-10	421	844	(423)	-50.08%	(1.34)	422
Nov-10	1,040	1,234	(194)	-15.75%	(0.62)	708
Dec-10	1,711	1,570	141	8.97%	0.45	1060
Jan-11	2,692	2,411	281	11.64%	0.89	1246
Feb-11	3,286	3,020	266	8.81%	0.85	1059
Mar-11	2,806	2,684	122	4.56%	0.39	911
Apr-11	2,216	2,050	166	8.11%	0.53	516
May-11	1,217	1,142	75	6.61%	0.24	238
Jun-11	653	672	(20)	-2.92%	(0.06)	52
Jul-11	417	425	(8)	-1.84%	(0.02)	3
Aug-11	271	176	96	54.63%	0.30	5
Sep-11	354	320	34	10.62%	0.11	108
Oct-11	360	769	(409)	-53.18%	(1.30)	422
Nov-11	943	1,018	(75)	-7.38%	(0.24)	708
Dec-11	1,352	1,648	(297)	-18.01%	(0.94)	1060
Jan-12	2,059	2,191	(132)	-6.03%	(0.42)	1246
Feb-12	2,467	2,821	(354)	-12.56%	(1.12)	1099
Mar-12	2,107	2,340	(233)	-9.95%	(0.74)	911
Apr-12	1,439	1,851	(412)	-22.23%	(1.31)	516
May-12	974	788	186	23.64%	0.59	238
Jun-12	576	563	13	2.25%	0.04	52
Jul-12	330	460	(131)	-28.37%	(0.41)	3
Aug-12	255	169	86	50.97%	0.27	5
Sep-12	293	362	(69)	-19.16%	(0.22)	108
Oct-12	401	632	(230)	-36.46%	(0.73)	422
Nov-12	819	996	(177)	-17.73%	(0.56)	708
Dec-12	1,686	1,289	397	30.76%	1.26	1060
Jan-13	2,081	2,093	(12)	-0.59%	(0.04)	1246
Feb-13	2,731	2,434	297	12.19%	0.94	1059
Mar-13	2,442	2,247	195	8.66%	0.62	911
Apr-13	1,784	1,760	24	1.36%	0.08	516
May-13		864				240
Jun-13		514				52
Jul-13		279				3
Aug-13		237				12
Sep-13		275				123
Oct-13		637				423
Nov-13		1,093				710
Dec-13		1,697				1067
Jan-14		2,048				1227
Feb-14		2,502				1031
Mar-14		2,220				886
Apr-14		1,793				516
May-14		757				240
Jun-14		434				52
Jul-14		293				3
Aug-14		233				12
Sep-14		299				123
Oct-14		729				423
Nov-14		1,190				710
Dec-14		1,777				1067
Jan-15		2,082				1227
Feb-15		2,430				1031

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>				<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual HDD</u>
Mar-15		2,121			886
Apr-15		1,734			516
May-15		671			240
Jun-15		360			52
Jul-15		266			3
Aug-15		231			12
Sep-15		335			123
Oct-15		785			423
Nov-15		1,242			710
Dec-15		1,839			1067
Jan-16		2,122			1227
Feb-16		2,472			1065
Mar-16		2,068			886
Apr-16		1,675			516
May-16		603			240
Jun-16		299			52
Jul-16		223			3
Aug-16		215			12
Sep-16		354			123
Oct-16		824			423
Nov-16		1,282			710
Dec-16		1,883			1067
Jan-17		2,156			1227
Feb-17		2,416			1031
Mar-17		2,043			886
Apr-17		1,630			516
May-17		550			240
Jun-17		250			52
Jul-17		180			3
Aug-17		190			12
Sep-17		356			123
Oct-17		847			423
Nov-17		1,313			710
Dec-17		1,916			1067
Jan-18		2,183			1227
Feb-18		2,429			1031
Mar-18		2,035			886
Jul-18		143			3
Aug-18		163			12
Sep-18		347			123
Oct-18		856			423
Nov-18		1,333			710
Dec-18		1,941			1067
Jan-19		2,206			1227
Feb-19		2,443			1031
Mar-19		2,036			886
Apr-19		1,586			516
May-19		483			240
Jun-19		176			52
Jul-19		112			3
Aug-19		138			12
Sep-19		333			123
Oct-19		855			423
Nov-19		1,344			710
Dec-19		1,959			1067

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>				
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u>	<u>Standard</u>	<u>HDD</u>	<u>DT</u>	
				<u>%</u>	<u>Residual</u>			
Jan-05	727,259	604,972	122,287	20.21%	0.62	1,246	16,437	
Feb-05	867,697	672,318	195,379	29.06%	0.99	1,059	16,468	
Mar-05	774,697	685,074	89,623	13.08%	0.46	911	16,496	
Apr-05	733,474	607,621	125,853	20.71%	0.64	516	16,527	
May-05	357,496	372,000	(14,504)	-3.90%	(0.07)	238	16,557	
Jun-05	292,094	206,963	85,132	41.13%	0.43	52	16,588	
Jul-05	192,473	200,141	(7,668)	-3.83%	(0.04)	3	16,618	
Aug-05	107,850	82,824	25,026	30.22%	0.13	5	16,649	
Sep-05	68,905	163,082	(94,177)	-57.75%	(0.48)	108	16,680	
Oct-05	184,362	216,003	(31,642)	-14.65%	(0.16)	422	16,710	
Nov-05	314,569	301,680	12,889	4.27%	0.07	708	16,741	
Dec-05	526,620	539,597	(12,977)	-2.40%	(0.07)	1,060	16,771	
Jan-06	860,035	830,106	29,929	3.61%	0.15	1,246	16,802	
Feb-06	685,382	697,791	(12,410)	-1.78%	(0.06)	1,059	16,833	
Mar-06	779,813	630,889	148,924	23.61%	0.76	911	16,861	
Apr-06	628,833	666,981	(38,148)	-5.72%	(0.19)	516	16,892	
May-06	346,333	287,829	58,504	20.33%	0.30	238	16,922	
Jun-06	376,400	236,760	139,640	58.98%	0.71	52	16,953	
Jul-06	190,036	289,220	(99,184)	-34.29%	(0.50)	3	16,983	
Aug-06	102,656	110,020	(7,364)	-6.69%	(0.04)	5	17,014	
Sep-06	152,812	189,833	(37,021)	-19.50%	(0.19)	108	17,045	
Oct-06	189,146	203,913	(14,767)	-7.24%	(0.08)	422	17,075	
Nov-06	358,369	277,743	80,626	29.03%	0.41	708	17,106	
Dec-06	528,095	663,378	(135,283)	-20.39%	(0.69)	1,060	17,136	
Jan-07	712,551	779,550	(66,999)	-8.59%	(0.34)	1,246	17,167	
Feb-07	1,211,524	792,361	419,163	52.90%	2.13	1,059	17,198	
Mar-07	1,282,674	1,073,791	208,882	19.45%	1.06	911	17,226	
Apr-07	1,169,967	852,725	317,242	37.20%	1.61	516	17,257	
May-07	453,576	574,756	(121,181)	-21.08%	(0.62)	238	17,287	
Jun-07	284,408	326,706	(42,299)	-12.95%	(0.21)	52	17,318	
Jul-07	176,463	284,977	(108,515)	-38.08%	(0.55)	3	17,348	
Aug-07	165,107	127,933	37,174	29.06%	0.19	5	17,379	
Sep-07	179,304	160,386	18,918	11.80%	0.10	108	17,410	
Oct-07	177,584	351,546	(173,963)	-49.48%	(0.88)	422	17,440	
Nov-07	452,775	418,971	33,804	8.07%	0.17	708	17,471	
Dec-07	1,092,748	919,411	173,337	18.85%	0.88	1,060	17,501	
Jan-08	1,489,020	1,357,145	131,875	9.72%	0.67	1,246	17,532	
Feb-08	1,641,381	1,571,237	70,144	4.46%	0.36	1,099	17,563	
Mar-08	1,874,677	1,523,356	351,320	23.06%	1.79	911	17,592	
Apr-08	1,449,638	1,461,965	(12,327)	-0.84%	(0.06)	516	17,623	
May-08	777,784	791,587	(13,803)	-1.74%	(0.07)	238	17,653	
Jun-08	540,728	450,352	90,376	20.07%	0.46	52	17,684	
Jul-08	336,948	296,648	40,300	13.59%	0.20	3	17,714	
Aug-08	274,156	238,758	35,398	14.83%	0.18	5	17,745	
Sep-08	309,644	373,948	(64,305)	-17.20%	(0.33)	108	17,776	
Oct-08	391,326	490,949	(99,623)	-20.29%	(0.51)	422	17,806	
Nov-08	928,077	631,356	296,721	47.00%	1.51	708	17,837	
Dec-08	1,589,655	1,549,206	40,449	2.61%	0.21	1,060	17,867	
Jan-09	2,571,265	2,136,442	434,823	20.35%	2.21	1,246	17,898	
Feb-09	2,735,511	2,466,527	268,984	10.91%	1.37	1,059	17,929	
Mar-09	2,350,332	2,405,174	(54,842)	-2.28%	(0.28)	911	17,957	
Apr-09	1,661,690	1,937,468	(275,778)	-14.23%	(1.40)	516	17,988	
May-09	1,120,675	964,749	155,926	16.16%	0.79	238	18,018	
Jun-09	589,707	672,918	(83,211)	-12.37%	(0.42)	52	18,049	
Jul-09	375,231	417,477	(42,246)	-10.12%	(0.21)	3	18,079	
Aug-09	339,813	268,653	71,161	26.49%	0.36	5	18,110	
Sep-09	334,217	420,226	(86,009)	-20.47%	(0.44)	108	18,141	
Oct-09	541,834	809,752	(267,918)	-33.09%	(1.36)	422	18,171	
Nov-09	1,175,726	1,150,794	24,932	2.17%	0.13	708	18,202	
Dec-09	1,573,249	1,928,727	(355,478)	-18.43%	(1.81)	1,060	18,232	
Jan-10	2,968,840	2,556,957	411,883	16.11%	2.09	1,246	18,263	

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Volumes

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> %	<u>Independent Variable</u>		
					<u>Standard Residual</u>	<u>HDD</u>	<u>DT</u>
Feb-10	2,914,035	3,240,300	(326,265)	-10.07%	(1.66)	1,059	18,294
Mar-10	2,344,669	2,759,331	(414,662)	-15.03%	(2.11)	911	18,322
Apr-10	1,607,907	1,985,849	(377,942)	-19.03%	(1.92)	516	18,353
May-10	1,042,514	896,509	146,006	16.29%	0.74	238	18,383
Jun-10	624,649	595,115	29,534	4.96%	0.15	52	18,414
Jul-10	421,947	550,456	(128,510)	-23.35%	(0.65)	3	18,444
Aug-10	293,039	162,366	130,674	80.48%	0.66	5	18,475
Sep-10	315,893	464,649	(148,756)	-32.01%	(0.76)	108	18,506
Oct-10	410,956	889,003	(478,048)	-53.77%	(2.43)	422	18,536
Nov-10	1,028,444	1,214,559	(186,115)	-15.32%	(0.95)	708	18,567
Dec-10	1,969,397	1,732,704	236,694	13.66%	1.20	1,060	18,597
Jan-11	3,148,393	2,931,919	216,474	7.38%	1.10	1,246	18,628
Feb-11	3,630,618	3,453,362	177,256	5.13%	0.90	1,059	18,659
Mar-11	3,188,407	3,180,592	7,815	0.25%	0.04	911	18,687
Apr-11	2,627,217	2,376,170	251,047	10.57%	1.28	516	18,718
May-11	1,424,539	1,376,933	47,606	3.46%	0.24	238	18,748
Jun-11	777,989	812,752	(34,763)	-4.28%	(0.18)	52	18,779
Jul-11	509,958	521,205	(11,247)	-2.16%	(0.06)	3	18,809
Aug-11	327,539	219,667	107,872	49.11%	0.55	5	18,840
Sep-11	438,616	401,318	37,298	9.29%	0.19	108	18,871
Oct-11	451,406	982,313	(530,907)	-54.05%	(2.70)	422	18,901
Nov-11	1,160,825	1,242,957	(82,132)	-6.61%	(0.42)	708	18,932
Dec-11	1,851,201	2,183,392	(332,191)	-15.21%	(1.69)	1,060	18,962
Jan-12	2,869,075	3,126,493	(257,419)	-8.23%	(1.31)	1,246	18,993
Feb-12	3,199,561	3,826,372	(626,811)	-16.38%	(3.19)	1,099	19,024
Mar-12	3,058,602	3,239,067	(180,464)	-5.57%	(0.92)	911	19,053
Apr-12	2,071,766	2,616,253	(544,486)	-20.81%	(2.77)	516	19,084
May-12	1,428,411	1,128,799	299,612	26.54%	1.52	238	19,114
Jun-12	870,024	818,707	51,317	6.27%	0.26	52	19,145
Jul-12	496,428	682,908	(186,480)	-27.31%	(0.95)	3	19,175
Aug-12	399,144	252,175	146,969	58.28%	0.75	5	19,206
Sep-12	448,336	552,811	(104,475)	-18.90%	(0.53)	108	19,237
Oct-12	597,109	960,574	(363,465)	-37.84%	(1.85)	422	19,267
Nov-12	1,183,325	1,433,527	(250,202)	-17.45%	(1.27)	708	19,298
Dec-12	2,734,462	1,976,407	758,055	38.36%	3.85	1,060	19,328
Jan-13	3,512,261	3,459,165	53,096	1.53%	0.27	1,246	19,359
Feb-13	4,258,072	3,898,447	359,626	9.22%	1.83	1,059	19,390
Mar-13	3,837,857	3,627,654	210,203	5.79%	1.07	911	19,418
Apr-13	2,877,693	2,781,242	96,451	3.47%	0.49	516	19,449
May-13		1,401,800				240	19,479
Jun-13		841,641				52	19,510
Jul-13		460,859				3	19,540
Aug-13		396,406				12	19,571
Sep-13		463,101				123	19,602
Oct-13		1,085,464				423	19,632
Nov-13		1,802,039				710	19,663
Dec-13		2,947,186				1,067	19,693
Jan-14		3,721,247				1,227	19,724
Feb-14		4,433,900				1,031	19,755
Mar-14		4,045,874				886	19,783
Apr-14		3,235,122				516	19,814
May-14		1,378,729				240	19,844
Jun-14		797,807				52	19,875
Jul-14		544,307				3	19,905
Aug-14		436,796				12	19,936
Sep-14		566,064				123	19,967
Oct-14		1,390,232				423	19,997
Nov-14		2,204,503				710	20,028
Dec-14		3,449,491				1,067	20,058
Jan-15		4,207,579				1,227	20,089
Feb-15		4,801,058				1,031	20,120

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Volumes

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Independent Variable</u>	
					<u>Standard Residual</u>	<u>HDD</u> <u>DT</u>
Mar-15		4,298,597			886	20,148
Apr-15		3,483,987			516	20,179
May-15		1,358,941			240	20,209
Jun-15		735,472			52	20,240
Jul-15		548,187			3	20,270
Aug-15		480,489			12	20,301
Sep-15		700,998			123	20,332
Oct-15		1,657,598			423	20,362
Nov-15		2,554,736			710	20,393
Dec-15		3,945,751			1,067	20,423
Jan-16		4,721,380			1,227	20,454
Feb-16		5,389,556			1,065	20,485
Mar-16		4,612,951			886	20,514
Apr-16		3,706,884			516	20,545
May-16		1,345,377			240	20,575
Jun-16		672,770			52	20,606
Jul-16		504,373			3	20,636
Aug-16		490,235			12	20,667
Sep-16		814,958			123	20,698
Oct-16		1,908,525			423	20,728
Nov-16		2,898,584			710	20,759
Dec-16		4,425,391			1,067	20,789
Jan-17		5,238,670			1,227	20,820
Feb-17		5,761,153			1,031	20,851
Mar-17		4,973,894			886	20,879
Apr-17		3,940,081			516	20,910
May-17		1,339,271			240	20,940
Jun-17		611,939			52	20,971
Jul-17		445,050			3	21,001
Aug-17		471,777			12	21,032
Sep-17		892,202			123	21,063
Oct-17		2,134,245			423	21,093
Nov-17		3,236,007			710	21,124
Dec-17		4,894,051			1,067	21,154
Jan-18		5,751,316			1,227	21,185
Feb-18		6,288,325			1,031	21,216
Mar-18		5,369,991			886	21,244
Apr-18		4,198,629			516	21,275
May-18		1,346,572			240	21,305
Jun-18		554,306			52	21,336
Jul-18		382,608			3	21,366
Aug-18		438,479			12	21,397
Sep-18		939,754			123	21,428
Oct-18		2,331,315			423	21,458
Nov-18		3,559,189			710	21,489
Dec-18		5,354,171			1,067	21,519
Jan-19		6,260,570			1,227	21,550
Feb-19		6,824,595			1,031	21,581
Mar-19		5,788,247			886	21,609
Apr-19		4,482,955			516	21,640
May-19		1,372,484			240	21,670
Jun-19		504,064			52	21,701
Jul-19		321,225			3	21,731
Aug-19		398,441			12	21,762
Sep-19		968,651			123	21,793
Oct-19		2,503,718			423	21,823
Nov-19		3,863,179			710	21,854
Dec-19		5,802,558			1,067	21,884

Plan Year Actual Projected HDD DT

Modeling Results
Liberty Utilities
Commercial and Industrial Heating Transportation Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HDD</u>	<u>DT</u>
PY2005	5,083,081	4,723,240				6,328	198,512
PY2006	5,152,635	4,984,619				6,328	202,892
PY2007	6,699,621	6,265,855				6,328	207,272
PY2008	10,630,825	9,894,329				6,368	211,660
PY2009	15,138,007	14,679,948				6,328	216,044
PY2010	15,693,425	17,180,057				6,328	220,424
PY2011	19,522,523	19,203,494				6,328	224,804
PY2012	18,450,483	20,630,509				6,368	229,192
PY2013		21,825,712				6,353	233,576
PY2014		25,299,302				6,290	237,956
PY2015		27,926,901				6,290	242,336
PY2016		30,667,496				6,324	246,724
PY2017		33,132,256				6,290	251,108
PY2018		35,731,352				6,290	255,488
PY2019		38,338,310				6,290	259,868
Growth							
PY2006	69,555	261,380				-	4,380
PY2007	1,546,986	1,281,235				-	4,380
PY2008	3,931,204	3,628,474				40	4,388
PY2009	4,507,183	4,785,620				(40)	4,384
PY2010	555,418	2,500,109				-	4,380
PY2011	3,829,098	2,023,437				-	4,380
PY2012	(1,072,040)	1,427,014				40	4,388
PY2013		1,195,204				(15)	4,384
PY2014		3,473,590				(63)	4,380
PY2015		2,627,599				-	4,380
PY2016		2,740,595				34	4,388
PY2017		2,464,760				(34)	4,384
PY2018		2,599,096				-	4,380
PY2019		2,606,958				-	4,380
Growth Rate (%)							
PY2006	1.4%	5.5%				0.0%	2.2%
PY2007	30.0%	25.7%				0.0%	2.2%
PY2008	58.7%	57.9%				0.6%	2.1%
PY2009	42.4%	48.4%				-0.6%	2.1%
PY2010	3.7%	17.0%				0.0%	2.0%
PY2011	24.4%	11.8%				0.0%	2.0%
PY2012	-5.5%	7.4%				0.6%	2.0%
PY2013		5.8%				-0.2%	1.9%
PY2014		15.9%				-1.0%	1.9%
PY2015		10.4%				0.0%	1.8%
PY2016		9.8%				0.5%	1.8%
PY2017		8.0%				-0.5%	1.8%
PY2018		7.8%				0.0%	1.7%
PY2019		7.3%				0.0%	1.7%

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Customers

Dependent Variable: CNT_CUS
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	(2,825.29)	61.42	(46.00)	-
DT	1	0.17	0.00	50.08	-
dm1	1	23.88	2.82	8.46	0.00
dm11	1	(10.87)	3.46	(3.14)	0.00
dm12	1	8.37	3.61	2.32	0.02
AR1	1	(0.60)	0.07	(8.72)	0.00
ARCH0	1	23.61	18.92	1.25	0.21
ARCH2	1	1.14	0.50	2.26	0.02

Model Fitness:

Regress R-Square	-
Total R-Square	0.99
SSE	6,703.76
MSE	104.75
SBC	497.91
MAE	7.85
MAPE	3.30
Durbin-Watson	-
Root MSE	-
AIC	0.99
AICC	480.64
HQC	483.26

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Customers

<u>Actual, Projected, Residual</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Jan-05	98	102	(5)	-4.45%	(0.56)	16,437
Feb-05	111	93	18	19.46%	2.20	16,468
Mar-05	96	88	9	9.71%	1.04	16,496
Apr-05	104	113	(10)	-8.47%	(1.17)	16,527
May-05	100	99	1	0.68%	0.08	16,557
Jun-05	103	101	2	1.98%	0.25	16,588
Jul-05	91	88	2	2.75%	0.30	16,618
Aug-05	88	87	1	0.58%	0.06	16,649
Sep-05	99	100	(1)	-0.93%	(0.11)	16,680
Oct-05	113	119	(6)	-4.95%	(0.72)	16,710
Nov-05	106	106	0	0.27%	0.03	16,741
Dec-05	108	114	(6)	-5.49%	(0.77)	16,771
Jan-06	111	116	(5)	-4.45%	(0.63)	16,802
Feb-06	101	84	16	19.46%	2.01	16,833
Mar-06	99	90	9	9.71%	1.07	16,861
Apr-06	105	114	(10)	-8.47%	(1.18)	16,892
May-06	105	104	1	0.68%	0.09	16,922
Jun-06	107	105	2	1.98%	0.25	16,953
Jul-06	103	100	3	2.75%	0.34	16,983
Aug-06	98	97	1	0.58%	0.07	17,014
Sep-06	97	98	(1)	-0.93%	(0.11)	17,045
Oct-06	102	107	(5)	-4.95%	(0.65)	17,075
Nov-06	102	102	0	0.27%	0.03	17,106
Dec-06	108	114	(6)	-5.49%	(0.76)	17,136
Jan-07	110	115	(5)	-4.45%	(0.62)	17,167
Feb-07	102	85	17	19.46%	2.03	17,198
Mar-07	113	103	10	9.71%	1.22	17,226
Apr-07	107	117	(10)	-8.47%	(1.22)	17,257
May-07	113	112	1	0.68%	0.09	17,287
Jun-07	114	111	2	1.98%	0.27	17,318
Jul-07	107	104	3	2.75%	0.35	17,348
Aug-07	108	108	1	0.58%	0.08	17,379
Sep-07	106	107	(1)	-0.93%	(0.12)	17,410
Oct-07	103	108	(5)	-4.95%	(0.66)	17,440
Nov-07	104	104	0	0.27%	0.03	17,471
Dec-07	111	117	(6)	-5.49%	(0.79)	17,501
Jan-08	117	122	(5)	-4.45%	(0.67)	17,532
Feb-08	120	100	20	19.46%	2.39	17,563
Mar-08	130	118	11	9.71%	1.40	17,592
Apr-08	116	126	(11)	-8.47%	(1.31)	17,623
May-08	121	120	1	0.68%	0.10	17,653
Jun-08	127	125	2	1.98%	0.30	17,684
Jul-08	135	131	4	2.75%	0.44	17,714
Aug-08	138	137	1	0.58%	0.10	17,745
Sep-08	140	142	(1)	-0.93%	(0.16)	17,776
Oct-08	138	145	(7)	-4.95%	(0.88)	17,806
Nov-08	135	135	0	0.27%	0.04	17,837
Dec-08	152	161	(9)	-5.49%	(1.08)	17,867
Jan-09	181	177	5	2.56%	0.55	17,898
Feb-09	172	163	8	4.94%	0.99	17,929
Mar-09	169	173	(5)	-2.80%	(0.59)	17,957
Apr-09	167	174	(7)	-4.29%	(0.91)	17,988
May-09	177	175	2	1.14%	0.24	18,018
Jun-09	188	183	5	2.99%	0.67	18,049
Jul-09	195	192	3	1.40%	0.33	18,079
Aug-09	201	198	4	1.85%	0.45	18,110
Sep-09	196	204	(8)	-4.12%	(1.03)	18,141
Oct-09	202	202	(0)	-0.07%	(0.02)	18,171
Nov-09	186	198	(12)	-6.01%	(1.45)	18,202
Dec-09	211	215	(4)	-2.02%	(0.53)	18,232
Jan-10	241	237	5	1.93%	0.56	18,263

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Customers

<u>Date</u>	<u>Actual, Projected, Residual</u>			<u>Project Error</u> %	<u>Independent Variable</u>	
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>DT</u>
Feb-10	216	224	(8)	-3.54%	(0.97)	18,294
Mar-10	209	224	(16)	-6.97%	(1.91)	18,322
Apr-10	219	222	(4)	-1.78%	(0.48)	18,353
May-10	218	230	(12)	-5.21%	(1.47)	18,383
Jun-10	225	232	(7)	-3.11%	(0.88)	18,414
Jul-10	270	238	32	13.40%	3.91	18,444
Aug-10	255	267	(13)	-4.72%	(1.54)	18,475
Sep-10	258	260	(3)	-1.00%	(0.32)	18,506
Oct-10	246	264	(18)	-6.81%	(2.20)	18,536
Nov-10	259	248	11	4.48%	1.36	18,567
Dec-10	281	284	(3)	-0.97%	(0.34)	18,597
Jan-11	289	303	(14)	-4.73%	(1.75)	18,628
Feb-11	276	277	(1)	-0.34%	(0.11)	18,659
Mar-11	274	285	(11)	-3.72%	(1.29)	18,687
Apr-11	291	286	5	1.68%	0.59	18,718
May-11	288	298	(10)	-3.25%	(1.19)	18,748
Jun-11	290	299	(8)	-2.84%	(1.04)	18,779
Jul-11	299	302	(3)	-0.95%	(0.35)	18,809
Aug-11	304	309	(5)	-1.67%	(0.63)	18,840
Sep-11	310	314	(4)	-1.31%	(0.50)	18,871
Oct-11	321	320	1	0.26%	0.10	18,901
Nov-11	314	317	(3)	-0.97%	(0.38)	18,932
Dec-11	345	341	4	1.15%	0.48	18,962
Jan-12	358	366	(8)	-2.09%	(0.94)	18,993
Feb-12	336	343	(7)	-1.95%	(0.82)	19,024
Mar-12	365	345	20	5.76%	2.43	19,053
Apr-12	380	365	15	3.99%	1.78	19,084
May-12	385	376	9	2.39%	1.10	19,114
Jun-12	401	381	20	5.35%	2.49	19,145
Jul-12	388	393	(5)	-1.30%	(0.63)	19,175
Aug-12	407	387	20	5.15%	2.43	19,206
Sep-12	396	400	(4)	-1.12%	(0.55)	19,237
Oct-12	383	395	(13)	-3.18%	(1.54)	19,267
Nov-12	374	379	(5)	-1.41%	(0.65)	19,298
Dec-12	429	401	28	6.97%	3.42	19,328
Jan-13	443	441	3	0.57%	0.31	19,359
Feb-13	415	418	(3)	-0.82%	(0.42)	19,390
Mar-13	413	417	(3)	-0.81%	(0.41)	19,418
Apr-13	424	418	6	1.35%	0.69	19,449
May-13		427				19,479
Jun-13		430				19,510
Jul-13		435				19,540
Aug-13		439				19,571
Sep-13		444				19,602
Oct-13		449				19,632
Nov-13		443				19,663
Dec-13		467				19,693
Jan-14		488				19,724
Feb-14		469				19,755
Mar-14		474				19,783
Apr-14		479				19,814
May-14		484				19,844
Jun-14		489				19,875
Jul-14		494				19,905
Aug-14		499				19,936
Sep-14		505				19,967
Oct-14		510				19,997
Nov-14		504				20,028
Dec-14		528				20,058
Jan-15		549				20,089
Feb-15		530				20,120

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Customers

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>Independent Variable</u> <u>DT</u>
Mar-15		535				20,148
Apr-15		540				20,179
May-15		545				20,209
Jun-15		550				20,240
Jul-15		555				20,270
Aug-15		560				20,301
Sep-15		565				20,332
Oct-15		570				20,362
Nov-15		565				20,393
Dec-15		589				20,423
Jan-16		610				20,454
Feb-16		591				20,485
Mar-16		596				20,514
Apr-16		601				20,545
May-16		606				20,575
Jun-16		611				20,606
Jul-16		616				20,636
Aug-16		621				20,667
Sep-16		626				20,698
Oct-16		631				20,728
Nov-16		626				20,759
Dec-16		650				20,789
Jan-17		671				20,820
Feb-17		652				20,851
Mar-17		657				20,879
Apr-17		662				20,910
May-17		667				20,940
Jun-17		672				20,971
Jul-17		677				21,001
Aug-17		682				21,032
Sep-17		687				21,063
Oct-17		692				21,093
Nov-17		687				21,124
Dec-17		711				21,154
Jan-18		731				21,185
Feb-18		713				21,216
Mar-18		717				21,244
Jul-18		738				21,366
Aug-18		743				21,397
Sep-18		748				21,428
Oct-18		753				21,458
Nov-18		747				21,489
Dec-18		772				21,519
Jan-19		792				21,550
Feb-19		774				21,581
Mar-19		778				21,609
Apr-19		783				21,640
May-19		789				21,670
Jun-19		794				21,701
Jul-19		799				21,731
Aug-19		804				21,762
Sep-19		809				21,793
Oct-19		814				21,823
Nov-19		808				21,854
Dec-19		833				21,884

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Use per Customer

Dependent Variable: CNT_UPC
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
HH	1	16.45	2.95	5.58	0.00
HDD_1	1	1.28	0.20	6.46	0.00
DT	1	(0.26)	0.06	(4.30)	0.00
AR6	1	0.20	0.09	2.13	0.04
AR8	1	0.21	0.10	2.12	0.04

Model Fitness:

Regress R-Square	0.96
Total R-Square	0.92
SSE	41,800,863.64
MSE	401,931.38
SBC	1,734.84
MAE	468.45
MAPE	24.08
Durbin-Watson	2.08
Root MSE	633.98
AIC	1,721.38
AICC	1,721.96
HQC	1,726.84

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Use per Customer

<u>Date</u>	<u>Actual, Projected, Residual (Therms/ Customer)</u>			<u>Project Error %</u>	<u>Independent Variable</u>		
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
Jan-05	2,479	2,970	(491)	-16.53%	(0.73)	357	1,060
Feb-05	3,089	3,284	(194)	-5.92%	(0.29)	358	1,246
Mar-05	2,355	3,013	(658)	-21.84%	(0.98)	358	1,059
Apr-05	3,785	2,967	818	27.55%	1.22	358	911
May-05	1,900	2,426	(526)	-21.67%	(0.78)	358	516
Jun-05	1,758	2,271	(512)	-22.57%	(0.76)	359	238
Jul-05	2,166	1,881	286	15.18%	0.43	359	52
Aug-05	3,137	1,850	1,288	69.62%	1.92	359	3
Sep-05	2,909	1,825	1,084	59.38%	1.62	359	5
Oct-05	958	1,549	(590)	-38.12%	(0.88)	360	108
Nov-05	2,054	2,327	(273)	-11.71%	(0.41)	360	422
Dec-05	1,436	2,309	(872)	-37.78%	(1.30)	360	708
Jan-06	4,022	2,911	1,111	38.17%	1.66	361	1,060
Feb-06	2,788	2,891	(103)	-3.56%	(0.15)	361	1,246
Mar-06	2,544	2,559	(15)	-0.60%	(0.02)	361	1,059
Apr-06	3,144	2,570	574	22.35%	0.86	361	911
May-06	2,915	1,967	949	48.23%	1.42	362	516
Jun-06	2,041	2,236	(195)	-8.72%	(0.29)	362	238
Jul-06	1,155	1,417	(263)	-18.52%	(0.39)	362	52
Aug-06	1,802	1,850	(48)	-2.60%	(0.07)	362	3
Sep-06	1,005	1,403	(398)	-28.38%	(0.59)	362	5
Oct-06	3,228	1,675	1,554	92.77%	2.32	363	108
Nov-06	2,544	2,015	530	26.28%	0.79	363	422
Dec-06	1,357	2,314	(956)	-41.34%	(1.43)	363	708
Jan-07	1,306	2,830	(1,524)	-53.86%	(2.27)	363	1,060
Feb-07	2,919	3,025	(106)	-3.49%	(0.16)	363	1,246
Mar-07	3,010	3,074	(65)	-2.10%	(0.10)	363	1,059
Apr-07	3,059	2,307	752	32.58%	1.12	363	911
May-07	2,778	2,179	600	27.52%	0.89	363	516
Jun-07	2,232	1,693	539	31.84%	0.80	364	238
Jul-07	1,786	1,774	12	0.68%	0.02	364	52
Aug-07	1,260	1,749	(490)	-27.99%	(0.73)	364	3
Sep-07	1,503	1,782	(279)	-15.68%	(0.42)	364	5
Oct-07	1,236	1,573	(336)	-21.38%	(0.50)	364	108
Nov-07	1,454	1,854	(399)	-21.55%	(0.60)	364	422
Dec-07	1,803	2,201	(398)	-18.08%	(0.59)	365	708
Jan-08	1,907	2,640	(733)	-27.76%	(1.09)	365	1,060
Feb-08	3,822	3,003	819	27.26%	1.22	365	1,246
Mar-08	2,128	2,803	(675)	-24.07%	(1.01)	365	1,099
Apr-08	3,504	2,731	773	28.30%	1.15	365	911
May-08	1,747	2,205	(459)	-20.80%	(0.68)	365	516
Jun-08	4,453	1,928	2,525	130.97%	3.77	366	238
Jul-08	1,372	1,790	(418)	-23.36%	(0.62)	366	52
Aug-08	1,184	1,385	(201)	-14.48%	(0.30)	366	3
Sep-08	1,173	1,755	(582)	-33.15%	(0.87)	366	5
Oct-08	1,194	1,204	(10)	-0.84%	(0.02)	366	108
Nov-08	1,179	2,162	(984)	-45.49%	(1.47)	366	422
Dec-08	1,361	1,566	(205)	-13.09%	(0.31)	366	708
Jan-09	3,694	2,842	853	30.00%	1.27	366	1,060
Feb-09	3,342	2,459	883	35.91%	1.32	366	1,246
Mar-09	2,513	2,805	(292)	-10.40%	(0.44)	366	1,059
Apr-09	3,863	2,655	1,208	45.51%	1.80	366	911
May-09	1,995	2,227	(232)	-10.43%	(0.35)	367	516
Jun-09	1,662	1,922	(260)	-13.52%	(0.39)	367	238
Jul-09	1,615	1,382	233	16.86%	0.35	367	52
Aug-09	1,667	1,468	199	13.56%	0.30	367	3
Sep-09	945	1,189	(244)	-20.55%	(0.36)	367	5
Oct-09	971	1,125	(155)	-13.74%	(0.23)	367	108
Nov-09	1,956	1,916	40	2.08%	0.06	367	422
Dec-09	1,266	1,949	(683)	-35.03%	(1.02)	367	708
Jan-10	2,917	2,636	281	10.64%	0.42	367	1,060

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Use per Customer

<u>Date</u>	<u>Actual, Projected, Residual (Therms/ Customer)</u>			<u>Project Error %</u>	<u>Independent Variable</u>		
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
Feb-10	4,583	2,838	1,745	61.48%	2.60	368	1,246
Mar-10	2,088	2,697	(609)	-22.57%	(0.91)	368	1,059
Apr-10	3,428	2,497	932	37.31%	1.39	368	911
May-10	1,766	2,015	(249)	-12.37%	(0.37)	368	516
Jun-10	1,696	1,885	(190)	-10.06%	(0.28)	368	238
Jul-10	1,417	1,275	142	11.11%	0.21	368	52
Aug-10	690	1,135	(445)	-39.18%	(0.66)	368	3
Sep-10	1,711	1,333	379	28.41%	0.57	368	5
Oct-10	872	850	22	2.56%	0.03	368	108
Nov-10	1,399	1,944	(545)	-28.02%	(0.81)	368	422
Dec-10	2,565	1,924	641	33.28%	0.96	368	708
Jan-11	2,503	2,613	(111)	-4.23%	(0.16)	368	1,060
Feb-11	2,682	2,916	(233)	-8.00%	(0.35)	368	1,246
Mar-11	2,311	2,469	(159)	-6.44%	(0.24)	368	1,059
Apr-11	3,488	2,603	884	33.97%	1.32	368	911
May-11	1,493	1,850	(357)	-19.29%	(0.53)	368	516
Jun-11	1,886	1,525	361	23.69%	0.54	368	238
Jul-11	1,782	1,354	428	31.65%	0.64	369	52
Aug-11	819	1,127	(308)	-27.34%	(0.46)	369	3
Sep-11	1,640	1,253	387	30.91%	0.58	369	5
Oct-11	1,019	1,112	(94)	-8.43%	(0.14)	369	108
Nov-11	1,621	1,833	(212)	-11.54%	(0.32)	369	422
Dec-11	1,462	1,755	(293)	-16.68%	(0.44)	369	708
Jan-12	2,182	2,479	(297)	-11.97%	(0.44)	369	1,060
Feb-12	2,335	2,734	(399)	-14.61%	(0.60)	369	1,246
Mar-12	2,593	2,344	249	10.62%	0.37	369	1,099
Apr-12	1,814	2,434	(620)	-25.47%	(0.93)	369	911
May-12	1,444	1,709	(265)	-15.51%	(0.40)	370	516
Jun-12	1,596	1,606	(10)	-0.64%	(0.02)	370	238
Jul-12	1,363	1,263	100	7.92%	0.15	370	52
Aug-12	1,078	1,318	(240)	-18.20%	(0.36)	370	3
Sep-12	1,420	1,165	255	21.88%	0.38	370	5
Oct-12	1,027	1,414	(387)	-27.37%	(0.58)	370	108
Nov-12	1,075	1,687	(612)	-36.28%	(0.91)	370	422
Dec-12	1,858	2,053	(195)	-9.51%	(0.29)	370	708
Jan-13	2,181	2,465	(284)	-11.53%	(0.42)	370	1,060
Feb-13	2,837	2,632	205	7.78%	0.31	370	1,246
Mar-13	2,412	2,314	97	4.20%	0.15	370	1,059
Apr-13	2,618	2,267	351	15.48%	0.52	370	911
May-13		1,753				370	516
Jun-13		1,415				370	240
Jul-13		1,264				370	52
Aug-13		1,020				371	3
Sep-13		1,087				371	12
Oct-13		1,053				371	123
Nov-13		1,539				371	423
Dec-13		1,812				371	710
Jan-14		2,317				371	1,067
Feb-14		2,546				371	1,227
Mar-14		2,257				371	1,031
Apr-14		2,136				371	886
May-14		1,622				372	516
Jun-14		1,316				372	240
Jul-14		1,037				372	52
Aug-14		981				372	3
Sep-14		983				372	12
Oct-14		1,100				372	123
Nov-14		1,493				373	423
Dec-14		1,831				373	710
Jan-15		2,297				373	1,067
Feb-15		2,484				373	1,227

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Use per Customer

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Independent Variable</u>	
					<u>Standard Residual</u>	<u>HH</u>
						HDD_1
Mar-15		2,237			373	1,031
Apr-15		2,048			374	886
May-15		1,568			374	516
Jun-15		1,220			374	240
Jul-15		969			374	52
Aug-15		909			374	3
Sep-15		912			375	12
Oct-15		1,052			375	123
Nov-15		1,430			375	423
Dec-15		1,791			375	710
Jan-16		2,245			375	1,067
Feb-16		2,441			376	1,227
Mar-16		2,231			376	1,065
Apr-16		1,995			376	886
May-16		1,518			376	516
Jun-16		1,160			376	240
Jul-16		914			377	52
Aug-16		848			377	3
Sep-16		854			377	12
Oct-16		993			377	123
Nov-16		1,372			377	423
Dec-16		1,735			378	710
Jan-17		2,187			378	1,067
Feb-17		2,387			378	1,227
Mar-17		2,132			378	1,031
Apr-17		1,941			378	886
May-17		1,463			379	516
Jun-17		1,104			379	240
Jul-17		859			379	52
Aug-17		791			379	3
Sep-17		797			379	12
Oct-17		935			379	123
Nov-17		1,314			380	423
Dec-17		1,677			380	710
Jan-18		2,128			380	1,067
Feb-18		2,328			380	1,227
Mar-18		2,072			380	1,031
Jul-18		798			381	52
Aug-18		730			381	3
Sep-18		736			381	12
Oct-18		873			381	123
Nov-18		1,252			382	423
Dec-18		1,614			382	710
Jan-19		2,066			382	1,067
Feb-19		2,266			382	1,227
Mar-19		2,010			382	1,031
Apr-19		1,819			382	886
May-19		1,340			383	516
Jun-19		981			383	240
Jul-19		735			383	52
Aug-19		667			383	3
Sep-19		673			383	12
Oct-19		810			383	123
Nov-19		1,189			384	423
Dec-19		1,551			384	710

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Volumes

<u>Date</u>	<u>Actual, Projected, Residual (Therms)</u>			<u>Project Error</u> %	<u>Independent Variable</u>		
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
Jan-05	242,725	304,344	(61,619)	-20.25%	(0.61)	357	1,060
Feb-05	341,713	304,039	37,674	12.39%	0.38	358	1,246
Mar-05	226,685	264,359	(37,674)	-14.25%	(0.38)	358	1,059
Apr-05	393,060	336,663	56,398	16.75%	0.56	358	911
May-05	189,916	240,829	(50,913)	-21.14%	(0.51)	358	516
Jun-05	181,929	230,386	(48,457)	-21.03%	(0.48)	359	238
Jul-05	196,263	165,823	30,440	18.36%	0.30	359	52
Aug-05	275,450	161,463	113,987	70.60%	1.14	359	3
Sep-05	288,962	183,014	105,947	57.89%	1.06	359	5
Oct-05	107,946	183,539	(75,593)	-41.19%	(0.75)	360	108
Nov-05	218,399	246,710	(28,311)	-11.48%	(0.28)	360	422
Dec-05	155,173	263,889	(108,716)	-41.20%	(1.08)	360	708
Jan-06	447,672	339,074	108,598	32.03%	1.08	361	1,060
Feb-06	281,132	244,025	37,107	15.21%	0.37	361	1,246
Mar-06	251,437	230,556	20,880	9.06%	0.21	361	1,059
Apr-06	329,048	293,823	35,225	11.99%	0.35	361	911
May-06	305,891	204,971	100,920	49.24%	1.01	362	516
Jun-06	218,903	235,147	(16,244)	-6.91%	(0.16)	362	238
Jul-06	118,689	141,766	(23,077)	-16.28%	(0.23)	362	52
Aug-06	176,451	180,113	(3,663)	-2.03%	(0.04)	362	3
Sep-06	97,545	137,487	(39,942)	-29.05%	(0.40)	362	5
Oct-06	329,628	179,896	149,732	83.23%	1.49	363	108
Nov-06	259,098	204,620	54,478	26.62%	0.54	363	422
Dec-06	146,021	263,359	(117,338)	-44.55%	(1.17)	363	708
Jan-07	143,128	324,625	(181,497)	-55.91%	(1.81)	363	1,060
Feb-07	298,057	258,535	39,522	15.29%	0.39	363	1,246
Mar-07	339,177	315,784	23,393	7.41%	0.23	363	1,059
Apr-07	328,853	270,985	57,869	21.35%	0.58	363	911
May-07	314,520	244,996	69,524	28.38%	0.69	363	516
Jun-07	253,798	188,769	65,028	34.45%	0.65	364	238
Jul-07	191,197	184,819	6,378	3.45%	0.06	364	52
Aug-07	136,649	188,664	(52,015)	-27.57%	(0.52)	364	3
Sep-07	159,314	190,708	(31,394)	-16.46%	(0.31)	364	5
Oct-07	127,481	170,598	(43,117)	-25.27%	(0.43)	364	108
Nov-07	151,812	192,994	(41,182)	-21.34%	(0.41)	364	422
Dec-07	199,487	257,668	(58,181)	-22.58%	(0.58)	365	708
Jan-08	222,858	322,854	(99,996)	-30.97%	(1.00)	365	1,060
Feb-08	458,155	301,367	156,788	52.03%	1.56	365	1,246
Mar-08	275,983	331,268	(55,286)	-16.69%	(0.55)	365	1,099
Apr-08	405,233	345,067	60,166	17.44%	0.60	365	911
May-08	210,713	264,265	(53,552)	-20.26%	(0.53)	365	516
Jun-08	567,629	240,990	326,639	135.54%	3.26	366	238
Jul-08	184,699	234,527	(49,828)	-21.25%	(0.50)	366	52
Aug-08	163,724	190,345	(26,621)	-13.99%	(0.27)	366	3
Sep-08	164,654	248,632	(83,978)	-33.78%	(0.84)	366	5
Oct-08	164,351	174,376	(10,025)	-5.75%	(0.10)	366	108
Nov-08	159,042	291,006	(131,964)	-45.35%	(1.32)	366	422
Dec-08	206,607	251,540	(44,933)	-17.86%	(0.45)	366	708
Jan-09	669,873	502,417	167,457	33.33%	1.67	366	1,060
Feb-09	573,197	401,895	171,302	42.62%	1.71	366	1,246
Mar-09	423,643	486,434	(62,790)	-12.91%	(0.63)	366	1,059
Apr-09	643,397	461,997	181,400	39.26%	1.81	366	911
May-09	352,519	389,109	(36,590)	-9.40%	(0.37)	367	516
Jun-09	313,237	351,715	(38,479)	-10.94%	(0.38)	367	238
Jul-09	314,382	265,302	49,081	18.50%	0.49	367	52
Aug-09	335,812	290,334	45,477	15.66%	0.45	367	3
Sep-09	184,800	242,587	(57,787)	-23.82%	(0.58)	367	5
Oct-09	196,259	227,674	(31,415)	-13.80%	(0.31)	367	108
Nov-09	363,280	378,652	(15,372)	-4.06%	(0.15)	367	422
Dec-09	267,303	419,922	(152,618)	-36.34%	(1.52)	367	708
Jan-10	703,846	624,125	79,721	12.77%	0.80	367	1,060

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Volumes

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> %	<u>Independent Variable</u>		
					<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
Feb-10	989,138	635,046	354,093	55.76%	3.53	368	1,246
Mar-10	435,917	605,162	(169,246)	-27.97%	(1.69)	368	1,059
Apr-10	749,174	555,481	193,693	34.87%	1.93	368	911
May-10	385,463	464,068	(78,605)	-16.94%	(0.78)	368	516
Jun-10	381,648	437,937	(56,289)	-12.85%	(0.56)	368	238
Jul-10	382,808	303,809	78,999	26.00%	0.79	368	52
Aug-10	175,862	303,469	(127,607)	-42.05%	(1.27)	368	3
Sep-10	441,117	346,989	94,127	27.13%	0.94	368	5
Oct-10	214,423	224,337	(9,914)	-4.42%	(0.10)	368	108
Nov-10	362,960	482,598	(119,638)	-24.79%	(1.19)	368	422
Dec-10	721,272	546,452	174,820	31.99%	1.74	368	708
Jan-11	722,948	792,302	(69,354)	-8.75%	(0.69)	368	1,060
Feb-11	739,549	806,565	(67,015)	-8.31%	(0.67)	368	1,246
Mar-11	633,250	702,931	(69,681)	-9.91%	(0.70)	368	1,059
Apr-11	1,014,370	744,666	269,703	36.22%	2.69	368	911
May-11	430,516	551,345	(120,828)	-21.92%	(1.21)	368	516
Jun-11	547,251	455,358	91,892	20.18%	0.92	368	238
Jul-11	532,554	408,421	124,133	30.39%	1.24	369	52
Aug-11	248,790	348,206	(99,416)	-28.55%	(0.99)	369	3
Sep-11	508,504	393,606	114,899	29.19%	1.15	369	5
Oct-11	326,467	355,587	(29,120)	-8.19%	(0.29)	369	108
Nov-11	509,443	581,555	(72,112)	-12.40%	(0.72)	369	422
Dec-11	504,604	598,763	(94,159)	-15.73%	(0.94)	369	708
Jan-12	781,680	906,954	(125,274)	-13.81%	(1.25)	369	1,060
Feb-12	784,260	936,661	(152,401)	-16.27%	(1.52)	369	1,246
Mar-12	947,015	809,468	137,546	16.99%	1.37	369	1,099
Apr-12	688,678	888,627	(199,948)	-22.50%	(2.00)	369	911
May-12	555,332	641,913	(86,581)	-13.49%	(0.86)	370	516
Jun-12	640,420	611,793	28,628	4.68%	0.29	370	238
Jul-12	528,415	496,094	32,320	6.51%	0.32	370	52
Aug-12	438,329	509,619	(71,290)	-13.99%	(0.71)	370	3
Sep-12	561,912	466,234	95,678	20.52%	0.95	370	5
Oct-12	393,344	559,365	(166,021)	-29.68%	(1.66)	370	108
Nov-12	401,826	639,582	(237,756)	-37.17%	(2.37)	370	422
Dec-12	797,693	824,073	(26,380)	-3.20%	(0.26)	370	708
Jan-13	966,794	1,086,564	(119,770)	-11.02%	(1.20)	370	1,060
Feb-13	1,176,399	1,100,584	75,815	6.89%	0.76	370	1,246
Mar-13	996,892	964,547	32,344	3.35%	0.32	370	1,059
Apr-13	1,110,148	948,507	161,641	17.04%	1.61	370	911
May-13		747,772				370	516
Jun-13		608,835				370	240
Jul-13		549,165				370	52
Aug-13		448,166				371	3
Sep-13		482,508				371	12
Oct-13		472,526				371	123
Nov-13		681,834				371	423
Dec-13		846,662				371	710
Jan-14		1,130,363				371	1,067
Feb-14		1,194,466				371	1,227
Mar-14		1,069,527				371	1,031
Apr-14		1,023,141				371	886
May-14		785,117				372	516
Jun-14		643,877				372	240
Jul-14		512,456				372	52
Aug-14		490,013				372	3
Sep-14		495,989				372	12
Oct-14		560,494				372	123
Nov-14		752,236				373	423
Dec-14		966,756				373	710
Jan-15		1,260,558				373	1,067
Feb-15		1,316,505				373	1,227

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
Mar-15		1,196,019				373	1,031
Apr-15		1,105,728				374	886
May-15		854,487				374	516
Jun-15		670,822				374	240
Jul-15		537,735				374	52
Aug-15		509,480				374	3
Sep-15		515,498				375	12
Oct-15		599,993				375	123
Nov-15		807,506				375	423
Dec-15		1,054,641				375	710
Jan-16		1,368,364				375	1,067
Feb-16		1,442,459				376	1,227
Mar-16		1,329,331				376	1,065
Apr-16		1,198,937				376	886
May-16		919,807				376	516
Jun-16		708,707				376	240
Jul-16		563,377				377	52
Aug-16		526,917				377	3
Sep-16		535,068				377	12
Oct-16		626,980				377	123
Nov-16		858,279				377	423
Dec-16		1,127,763				378	710
Jan-17		1,466,865				378	1,067
Feb-17		1,556,162				378	1,227
Mar-17		1,399,877				378	1,031
Apr-17		1,284,481				378	886
May-17		975,372				379	516
Jun-17		741,902				379	240
Jul-17		581,379				379	52
Aug-17		539,575				379	3
Sep-17		548,099				379	12
Oct-17		647,214				379	123
Nov-17		902,026				380	423
Dec-17		1,191,723				380	710
Jan-18		1,556,919				380	1,067
Feb-18		1,659,388				380	1,227
Mar-18		1,486,861				380	1,031
Apr-18		1,359,556				380	886
May-18		1,020,551				381	516
Jun-18		764,860				381	240
Jul-18		588,746				381	52
Aug-18		542,279				381	3
Sep-18		550,695				381	12
Oct-18		657,583				381	123
Nov-18		935,742				382	423
Dec-18		1,245,778				382	710
Jan-19		1,637,152				382	1,067
Feb-19		1,752,808				382	1,227
Mar-19		1,564,380				382	1,031
Apr-19		1,425,088				382	886
May-19		1,056,552				383	516
Jun-19		778,697				383	240
Jul-19		587,235				383	52
Aug-19		536,289				383	3
Sep-19		544,700				383	12
Oct-19		659,583				383	123
Nov-19		961,126				384	423
Dec-19		1,291,655				384	710

Plan Year Actual Projected HH HDD_1

Modeling Results
Liberty Utilities
Commercial and Industrial Non-Heat Transportation Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>HH</u>	<u>HDD_1</u>
PY2005	2,766,277	2,880,016				4,299	6,328
PY2006	2,929,967	2,697,456				4,337	6,328
PY2007	2,697,293	2,806,462				4,360	6,328
PY2008	3,169,297	3,104,354				4,383	6,368
PY2009	4,372,769	4,162,009				4,398	6,328
PY2010	5,489,979	5,298,997				4,414	6,328
PY2011	6,788,431	6,588,036				4,421	6,328
PY2012	7,333,432	8,007,045				4,433	6,368
PY2013		8,872,830				4,444	6,352
PY2014		9,433,939				4,458	6,290
PY2015		10,285,817				4,485	6,290
PY2016		11,082,095				4,514	6,324
PY2017		11,726,968				4,542	6,290
PY2018		12,281,185				4,567	6,290
PY2019		12,724,004				4,590	6,290
Growth							
PY2006	163,690	(182,560)				38	-
PY2007	(232,674)	109,006				24	-
PY2008	472,003	297,892				23	40
PY2009	1,203,472	1,057,656				15	(40)
PY2010	1,117,211	1,136,988				16	-
PY2011	1,298,452	1,289,039				7	-
PY2012	545,001	1,419,009				12	40
PY2013		865,784				11	(16)
PY2014		561,109				14	(62)
PY2015		851,878				26	-
PY2016		796,278				29	34
PY2017		644,873				28	(34)
PY2018		554,217				25	-
PY2019		442,819				23	-
Growth Rate (%)							
PY2006	5.9%	-6.3%				0.9%	0.0%
PY2007	-7.9%	4.0%				0.5%	0.0%
PY2008	17.5%	10.6%				0.5%	0.6%
PY2009	38.0%	34.1%				0.3%	-0.6%
PY2010	25.5%	27.3%				0.4%	0.0%
PY2011	23.7%	24.3%				0.2%	0.0%
PY2012	8.0%	21.5%				0.3%	0.6%
PY2013		10.8%				0.2%	-0.3%
PY2014		6.3%				0.3%	-1.0%
PY2015		9.0%				0.6%	0.0%
PY2016		7.7%				0.6%	0.5%
PY2017		5.8%				0.6%	-0.5%
PY2018		4.7%				0.6%	0.0%
PY2019		3.6%				0.5%	0.0%

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Customers

Dependent Variable: CHZ_CUS
Method: AutoReg
Observations: 111

Variables	DF	Estimate	Standard Error	t Value	Approx Pr > t
DT	1	0.00	0.00	6.30	0.00
dm1	1	0.91	0.13	6.96	0.00
AR1	1	(0.95)	0.07	(14.29)	0.00
AR6	1	(0.10)	0.09	(1.05)	0.30
AR12	1	0.05	0.07	0.76	0.44
ARCH0	1	0.74	0.12	6.18	0.00
ARCH1	1	0.44	0.15	2.88	0.00

Model Fitness:

Regress R-Square	-
Total R-Square	1.00
SSE	140.88
MSE	1.26
SBC	352.26
MAE	0.65
MAPE	1.73
Durbin-Watson	-
Root MSE	-
AIC	1.00
AICC	333.23
HQC	334.31

Correlation Matrix

TYPE	_NAME_	RHT	HH
CORR	RHT	1	0.962471552
CORR	HH	0.962471552	1

Heteroscedasticity Test

Order	Q	ProbQ	LM	ProbLM
1	3.79745	0.05133	1.95442	0.16211
2	4.83784	0.08902	3.32750	0.18943
3	6.77087	0.07957	4.04360	0.25679
4	7.59102	0.10776	4.44727	0.34885
5	9.03027	0.10786	5.47792	0.36037
6	9.93865	0.12726	6.07332	0.41503
7	10.80987	0.14713	6.94094	0.43506
8	14.00877	0.08154	8.02420	0.43111
9	14.38203	0.10937	8.28485	0.50571
10	14.83416	0.13823	9.07919	0.52460
11	16.78456	0.11441	9.90585	0.53888
12	16.90409	0.15324	10.33524	0.58658

Chow Test

Test	BreakPoint	NumDF	DenDF	FValue	ProbF	
Chow		37	2	70	37.736	0.000
Predictive Chow		37	38	34	2.238	0.010

Ex Post Projection

(Actual vs. Ex Post Forecast)

Date	Actual	Ex Post Forecast	Variance	Variance (%)
Apr-11	721	725	(4)	-0.50%
May-11	714	726	(12)	-1.66%
Jun-11	718	722	(4)	-0.59%
Jul-11	730	727	3	0.44%
Aug-11	736	737	(1)	-0.20%
Sep-11	735	743	(8)	-1.14%
Oct-11	733	744	(11)	-1.53%
Nov-11	739	744	(5)	-0.73%
Dec-11	765	751	14	1.93%
Jan-12	783	772	11	1.47%
Feb-12	790	786	4	0.45%
Mar-12	790	793	(3)	-0.40%

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Customers

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> <u>%</u>	<u>Standard</u> <u>Residual</u>	<u>Independent Variable</u> <u>DT</u>
Jan-05	43	44	(1)	-2.65%	(1.04)	16,437
Feb-05	42	42	(0)	-0.84%	(0.31)	16,468
Mar-05	42	42	(0)	-0.61%	(0.23)	16,496
Apr-05	43	42	1	1.74%	0.65	16,527
May-05	41	43	(2)	-5.01%	(1.91)	16,557
Jun-05	42	41	1	1.79%	0.65	16,588
Jul-05	42	42	(0)	-0.04%	(0.02)	16,618
Aug-05	42	42	(0)	-0.03%	(0.01)	16,649
Sep-05	42	42	(0)	-0.03%	(0.01)	16,680
Oct-05	42	42	(0)	-0.26%	(0.10)	16,710
Nov-05	41	42	(1)	-2.18%	(0.81)	16,741
Dec-05	40	41	(1)	-2.58%	(0.94)	16,771
Jan-06	41	41	(0)	-0.16%	(0.06)	16,802
Feb-06	41	40	1	1.86%	0.66	16,833
Mar-06	41	41	(0)	-0.26%	(0.09)	16,861
Apr-06	41	41	(0)	-0.15%	(0.05)	16,892
May-06	41	41	(0)	-0.16%	(0.06)	16,922
Jun-06	40	41	(1)	-2.24%	(0.81)	16,953
Jul-06	40	40	0	0.07%	0.02	16,983
Aug-06	40	40	(0)	-0.16%	(0.06)	17,014
Sep-06	40	40	(0)	-0.17%	(0.06)	17,045
Oct-06	40	40	(0)	-0.16%	(0.06)	17,075
Nov-06	40	40	(0)	-0.30%	(0.11)	17,106
Dec-06	40	40	(0)	-0.18%	(0.06)	17,136
Jan-07	39	41	(2)	-4.82%	(1.75)	17,167
Feb-07	38	38	(0)	-0.54%	(0.18)	17,198
Mar-07	37	38	(1)	-2.92%	(0.98)	17,226
Apr-07	37	37	(0)	-0.45%	(0.15)	17,257
May-07	38	37	1	2.25%	0.74	17,287
Jun-07	38	38	(0)	-0.45%	(0.15)	17,318
Jul-07	39	38	1	2.68%	0.90	17,348
Aug-07	39	39	0	0.19%	0.07	17,379
Sep-07	38	39	(1)	-2.14%	(0.73)	17,410
Oct-07	38	38	0	0.33%	0.11	17,440
Nov-07	37	38	(1)	-2.57%	(0.86)	17,471
Dec-07	37	37	(0)	-0.06%	(0.02)	17,501
Jan-08	38	38	(0)	-0.35%	(0.12)	17,532
Feb-08	39	37	2	4.51%	1.49	17,563
Mar-08	34	39	(5)	-13.00%	(4.50)	17,592
Apr-08	35	34	1	1.95%	0.59	17,623
May-08	34	35	(1)	-3.21%	(1.00)	17,653
Jun-08	35	34	1	2.40%	0.73	17,684
Jul-08	33	35	(2)	-5.94%	(1.85)	17,714
Aug-08	34	33	1	1.88%	0.55	17,745
Sep-08	34	34	0	0.34%	0.10	17,776
Oct-08	35	34	1	3.00%	0.90	17,806
Nov-08	35	35	0	0.32%	0.10	17,837
Dec-08	35	35	0	0.04%	0.01	17,867
Jan-09	35	36	(1)	-1.94%	(0.61)	17,898
Feb-09	30	34	(4)	-11.56%	(3.47)	17,929
Mar-09	36	30	6	18.87%	5.06	17,957
Apr-09	36	36	(0)	-0.13%	(0.04)	17,988
May-09	37	36	1	2.51%	0.80	18,018
Jun-09	36	37	(1)	-2.69%	(0.88)	18,049
Jul-09	36	36	(0)	-0.16%	(0.05)	18,079
Aug-09	36	36	0	1.11%	0.35	18,110
Sep-09	36	36	(0)	-0.55%	(0.18)	18,141
Oct-09	37	36	1	2.37%	0.76	18,171
Nov-09	37	37	(0)	-0.52%	(0.17)	18,202
Dec-09	37	37	(0)	-0.25%	(0.08)	18,232
Jan-10	37	38	(1)	-2.76%	(0.93)	18,263

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Customers

<u>Date</u>	<u>Actual, Projected, Residual</u>			<u>Project Error %</u>	<u>Independent Variable</u>	
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>DT</u>
Feb-10	37	36	1	1.38%	0.44	18,294
Mar-10	37	37	(0)	-0.10%	(0.03)	18,322
Apr-10	37	37	(0)	-0.39%	(0.13)	18,353
May-10	36	37	(1)	-2.93%	(0.96)	18,383
Jun-10	36	36	(0)	-0.53%	(0.17)	18,414
Jul-10	36	36	(0)	-0.28%	(0.09)	18,444
Aug-10	39	36	3	7.76%	2.48	18,475
Sep-10	40	39	1	2.44%	0.84	18,506
Oct-10	39	40	(1)	-2.36%	(0.84)	18,536
Nov-10	38	39	(1)	-2.31%	(0.79)	18,567
Dec-10	38	38	0	0.15%	0.05	18,597
Jan-11	38	39	(1)	-2.32%	(0.80)	18,628
Feb-11	38	37	1	1.66%	0.55	18,659
Mar-11	38	38	(0)	-0.87%	(0.29)	18,687
Apr-11	39	38	1	1.98%	0.67	18,718
May-11	39	39	(0)	-0.37%	(0.13)	18,748
Jun-11	39	39	(0)	-0.38%	(0.13)	18,779
Jul-11	38	39	(1)	-2.70%	(0.93)	18,809
Aug-11	38	38	(0)	-0.10%	(0.03)	18,840
Sep-11	39	38	1	2.67%	0.90	18,871
Oct-11	39	39	(0)	-0.22%	(0.08)	18,901
Nov-11	39	39	(0)	-0.36%	(0.13)	18,932
Dec-11	39	39	(0)	-0.36%	(0.12)	18,962
Jan-12	41	40	1	2.50%	0.89	18,993
Feb-12	39	40	(1)	-2.70%	(0.96)	19,024
Mar-12	39	39	(0)	-0.35%	(0.12)	19,053
Apr-12	39	39	(0)	-0.23%	(0.08)	19,084
May-12	39	39	(0)	-0.22%	(0.08)	19,114
Jun-12	40	39	1	2.33%	0.80	19,145
Jul-12	40	40	(0)	-0.50%	(0.18)	19,175
Aug-12	40	40	(0)	-0.24%	(0.08)	19,206
Sep-12	42	40	2	4.89%	1.73	19,237
Oct-12	41	42	(1)	-2.25%	(0.83)	19,267
Nov-12	41	41	0	0.01%	0.01	19,298
Dec-12	41	41	(0)	-0.22%	(0.08)	19,328
Jan-13	41	42	(1)	-2.25%	(0.83)	19,359
Feb-13	39	40	(1)	-3.06%	(1.09)	19,390
Mar-13	39	39	(0)	-0.97%	(0.34)	19,418
Apr-13	39	39	(0)	-0.74%	(0.26)	19,449
May-13		39				19,479
Jun-13		40				19,510
Jul-13		40				19,540
Aug-13		40				19,571
Sep-13		40				19,602
Oct-13		40				19,632
Nov-13		39				19,663
Dec-13		40				19,693
Jan-14		40				19,724
Feb-14		40				19,755
Mar-14		40				19,783
Apr-14		40				19,814
May-14		40				19,844
Jun-14		40				19,875
Jul-14		40				19,905
Aug-14		40				19,936
Sep-14		40				19,967
Oct-14		40				19,997
Nov-14		41				20,028
Dec-14		41				20,058
Jan-15		42				20,089
Feb-15		41				20,120

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Customers

<u>Actual</u> , <u>Projected</u> , <u>Residual</u>				<u>Project Error</u>	<u>Standard</u>	<u>Independent Variable</u>
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>%</u>	<u>Residual</u>	<u>DT</u>
Mar-15		41				20,148
Apr-15		41				20,179
May-15		41				20,209
Jun-15		41				20,240
Jul-15		41				20,270
Aug-15		41				20,301
Sep-15		41				20,332
Oct-15		42				20,362
Nov-15		42				20,393
Dec-15		42				20,423
Jan-16		43				20,454
Feb-16		42				20,485
Mar-16		42				20,514
Apr-16		42				20,545
May-16		42				20,575
Jun-16		42				20,606
Jul-16		42				20,636
Aug-16		43				20,667
Sep-16		43				20,698
Oct-16		43				20,728
Nov-16		43				20,759
Dec-16		43				20,789
Jan-17		44				20,820
Feb-17		43				20,851
Mar-17		43				20,879
Apr-17		43				20,910
May-17		43				20,940
Jun-17		44				20,971
Jul-17		44				21,001
Aug-17		44				21,032
Sep-17		44				21,063
Oct-17		44				21,093
Nov-17		44				21,124
Dec-17		44				21,154
Jan-18		45				21,185
Feb-18		44				21,216
Mar-18		44				21,244
Jul-18		45				21,366
Aug-18		45				21,397
Sep-18		45				21,428
Oct-18		45				21,458
Nov-18		45				21,489
Dec-18		45				21,519
Jan-19		46				21,550
Feb-19		45				21,581
Mar-19		46				21,609
Apr-19		46				21,640
May-19		46				21,670
Jun-19		46				21,701
Jul-19		46				21,731
Aug-19		46				21,762
Sep-19		46				21,793
Oct-19		46				21,823
Nov-19		46				21,854
Dec-19		46				21,884

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Use per Customer

Dependent Variable: CHZ_UPC
Method: AutoReg
Observations: 111

Variables	DF	Estimate	Standard Error	t Value	Approx Pr > t
RSL	1	0.02	0.00	4.79	0.00
dm1	1	1,182.79	141.36	8.37	0.00
dm2	1	1,068.93	141.53	7.55	0.00
dm3	1	912.12	122.90	7.42	0.00
dm4	1	499.78	91.10	5.49	0.00
dm5	1	210.40	51.54	4.08	0.00
dm10	1	327.29	51.27	6.38	0.00
dm11	1	628.09	91.59	6.86	0.00
dm12	1	1,003.51	122.82	8.17	0.00
AR1	1	(0.89)	0.06	(14.09)	0.00
AR4	1	0.15	0.06	2.55	0.01
AR11	1	(0.38)	0.10	(3.80)	0.00
AR12	1	0.27	0.11	2.52	0.01

Model Fitnes:

Regress R-Square	0.71
Total R-Square	0.99
SSE	1,511,419.12
MSE	15,743.95
SBC	1,413.15
MAE	92.68
MAPE	12.78
Durbin-Watson	2.06
Root MSE	125.47
AIC	1,378.16
AICC	1,381.99
HQC	1,392.35

Correlation Matrix

TYPE	_NAME_	RHT	BDD	date
CORR	RHT	1	0.985771625	0.13937887
CORR	BDD	0.985771625	1	-0.027601055
CORR	date	0.13937887	-0.027601055	1

Heteroscedastisity Test

Order	Q	ProbQ	LM	ProbLM
1	6.522	0.011	2.979	0.084
2	6.539	0.038	3.569	0.168
3	8.687	0.034	4.828	0.185
4	11.432	0.022	5.822	0.213
5	15.122	0.010	7.392	0.193
6	16.662	0.011	8.173	0.226
7	19.663	0.006	10.778	0.149
8	23.280	0.003	13.882	0.085
9	23.899	0.004	13.904	0.126
10	26.592	0.003	13.916	0.177
11	27.872	0.003	14.126	0.226
12	30.381	0.002	14.206	0.288

Chow Test

Test	BreakPoint	NumDF	DenDF	FValue	ProbF	
Chow		36	2	69	12.34	0.00
Predictive Chow		36	38	33	2.12	0.02

Ex Post Projection (Therms)

(Actual vs. Ex Post Forecast)

Date	Actual	Ex Post Forecast	Variance	Variance (%)
Apr-11	395	411	(17)	-4.04%
May-11	254	261	(6)	-2.40%
Jun-11	160	162	(2)	-1.03%
Jul-11	99	102	(3)	-3.23%
Aug-11	80	77	3	4.29%
Sep-11	78	82	(4)	-4.95%
Oct-11	95	101	(6)	-5.64%
Nov-11	218	209	8	3.98%
Dec-11	293	300	(7)	-2.25%
Jan-12	425	422	2	0.57%
Feb-12	439	446	(6)	-1.40%
Mar-12	433	421	12	2.89%

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>
Jan-05	1,692	1,579	113	7.17%	0.96	19,009
Feb-05	1,455	1,579	(124)	-7.86%	(1.06)	19,087
Mar-05	1,435	1,339	95	7.11%	0.81	19,166
Apr-05	849	987	(137)	-13.92%	(1.17)	19,248
May-05	779	613	166	27.11%	1.41	19,330
Jun-05	531	579	(48)	-8.22%	(0.40)	19,410
Jul-05	449	539	(90)	-16.70%	(0.77)	19,489
Aug-05	452	493	(41)	-8.34%	(0.35)	19,568
Sep-05	588	433	154	35.64%	1.31	19,642
Oct-05	679	863	(184)	-21.33%	(1.57)	19,714
Nov-05	924	981	(57)	-5.82%	(0.49)	19,783
Dec-05	1,392	1,356	36	2.63%	0.30	19,848
Jan-06	1,360	1,523	(163)	-10.67%	(1.38)	19,910
Feb-06	1,311	1,340	(30)	-2.22%	(0.25)	19,965
Mar-06	1,237	1,146	91	7.92%	0.77	20,015
Apr-06	719	925	(206)	-22.29%	(1.75)	20,062
May-06	545	499	46	9.15%	0.39	20,103
Jun-06	317	360	(43)	-11.93%	(0.37)	20,138
Jul-06	229	356	(127)	-35.78%	(1.08)	20,166
Aug-06	245	344	(99)	-28.80%	(0.84)	20,189
Sep-06	282	214	68	31.73%	0.58	20,206
Oct-06	490	619	(129)	-20.87%	(1.10)	20,219
Nov-06	614	877	(262)	-29.90%	(2.23)	20,228
Dec-06	822	986	(163)	-16.56%	(1.39)	20,234
Jan-07	1,111	1,092	19	1.75%	0.16	20,239
Feb-07	1,232	1,107	125	11.25%	1.06	20,243
Mar-07	1,094	1,123	(29)	-2.58%	(0.25)	20,247
Apr-07	816	825	(10)	-1.16%	(0.08)	20,252
May-07	437	602	(165)	-27.39%	(1.40)	20,259
Jun-07	314	248	66	26.52%	0.56	20,269
Jul-07	265	353	(89)	-25.15%	(0.76)	20,282
Aug-07	272	300	(27)	-9.17%	(0.23)	20,299
Sep-07	284	264	21	7.79%	0.17	20,316
Oct-07	471	553	(82)	-14.85%	(0.70)	20,331
Nov-07	837	719	118	16.35%	1.00	20,343
Dec-07	1,235	1,238	(4)	-0.29%	(0.03)	20,347
Jan-08	1,291	1,497	(205)	-13.72%	(1.75)	20,343
Feb-08	1,298	1,238	60	4.83%	0.51	20,328
Mar-08	1,340	1,225	115	9.40%	0.98	20,299
Apr-08	878	916	(38)	-4.15%	(0.32)	20,254
May-08	594	658	(63)	-9.64%	(0.54)	20,191
Jun-08	358	391	(33)	-8.37%	(0.28)	20,106
Jul-08	291	354	(63)	-17.84%	(0.54)	19,999
Aug-08	358	303	55	18.11%	0.47	19,868
Sep-08	416	304	112	36.81%	0.95	19,721
Oct-08	776	749	27	3.65%	0.23	19,563
Nov-08	1,074	1,079	(5)	-0.43%	(0.04)	19,399
Dec-08	1,420	1,388	31	2.27%	0.27	19,233
Jan-09	1,696	1,610	85	5.28%	0.72	19,069
Feb-09	1,839	1,622	216	13.34%	1.84	18,921
Mar-09	1,497	1,622	(125)	-7.73%	(1.07)	18,787
Apr-09	1,173	1,064	109	10.22%	0.92	18,667
May-09	606	828	(222)	-26.84%	(1.89)	18,572
Jun-09	379	313	66	20.91%	0.56	18,506
Jul-09	435	370	65	17.45%	0.55	18,475
Aug-09	348	413	(65)	-15.76%	(0.55)	18,480
Sep-09	409	373	36	9.73%	0.31	18,516
Oct-09	813	749	63	8.43%	0.54	18,581
Nov-09	890	1,100	(210)	-19.12%	(1.79)	18,671
Dec-09	1,476	1,335	141	10.57%	1.20	18,781
Jan-10	1,767	1,767	(0)	0.00%	(0.00)	18,909

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>
Feb-10	1,393	1,603	(210)	-13.10%	(1.79)	19,044
Mar-10	1,248	1,331	(83)	-6.24%	(0.71)	19,188
Apr-10	846	769	78	10.09%	0.66	19,342
May-10	554	542	12	2.28%	0.11	19,497
Jun-10	333	394	(62)	-15.69%	(0.53)	19,651
Jul-10	296	334	(38)	-11.31%	(0.32)	19,798
Aug-10	361	348	14	3.90%	0.12	19,940
Sep-10	468	419	48	11.48%	0.41	20,073
Oct-10	969	737	232	31.45%	1.97	20,199
Nov-10	1,561	1,340	221	16.48%	1.88	20,319
Dec-10	2,323	1,953	370	18.93%	3.15	20,433
Jan-11	2,538	2,332	206	8.82%	1.75	20,545
Feb-11	2,181	2,299	(118)	-5.15%	(1.01)	20,646
Mar-11	1,909	1,884	25	1.32%	0.21	20,745
Apr-11	1,206	1,308	(101)	-7.76%	(0.86)	20,843
May-11	748	750	(3)	-0.34%	(0.02)	20,939
Jun-11	467	414	53	12.89%	0.45	21,032
Jul-11	340	403	(63)	-15.54%	(0.53)	21,124
Aug-11	421	356	66	18.42%	0.56	21,217
Sep-11	391	491	(100)	-20.32%	(0.85)	21,307
Oct-11	981	868	113	13.04%	0.96	21,396
Nov-11	1,506	1,492	14	0.95%	0.12	21,485
Dec-11	1,862	1,966	(104)	-5.27%	(0.88)	21,574
Jan-12	2,047	2,029	18	0.89%	0.15	21,664
Feb-12	1,882	1,903	(21)	-1.10%	(0.18)	21,752
Mar-12	1,550	1,588	(38)	-2.36%	(0.32)	21,840
Apr-12	1,142	1,035	107	10.29%	0.91	21,930
May-12	942	768	174	22.72%	1.48	22,022
Jun-12	428	615	(187)	-30.37%	(1.59)	22,114
Jul-12	373	435	(62)	-14.23%	(0.53)	22,208
Aug-12	397	353	44	12.46%	0.37	22,305
Sep-12	391	470	(78)	-16.71%	(0.67)	22,401
Oct-12	997	853	145	16.95%	1.23	22,498
Nov-12	1,709	1,343	366	27.25%	3.11	22,594
Dec-12	1,898	2,090	(192)	-9.19%	(1.63)	22,689
Jan-13	2,047	2,082	(35)	-1.69%	(0.30)	22,785
Feb-13	1,882	1,848	35	1.88%	0.30	22,875
Mar-13	1,550	1,634	(84)	-5.11%	(0.71)	22,962
Apr-13	1,142	1,126	16	1.42%	0.14	23,050
May-13		704				23,134
Jun-13		429				23,214
Jul-13		421				23,291
Aug-13		405				23,364
Sep-13		521				23,433
Oct-13		1,045				23,499
Nov-13		1,340				23,563
Dec-13		1,752				23,627
Jan-14		1,935				23,691
Feb-14		1,742				23,753
Mar-14		1,565				23,817
Apr-14		1,070				23,884
May-14		723				23,955
Jun-14		487				24,030
Jul-14		463				24,109
Aug-14		503				24,195
Sep-14		593				24,283
Oct-14		949				24,374
Nov-14		1,294				24,468
Dec-14		1,696				24,563
Jan-15		1,855				24,660
Feb-15		1,732				24,753

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>
Mar-15		1,536				24,844
Apr-15		1,084				24,937
May-15		768				25,027
Jun-15		533				25,113
Jul-15		539				25,195
Aug-15		574				25,274
Sep-15		597				25,348
Oct-15		957				25,419
Nov-15		1,285				25,487
Dec-15		1,665				25,554
Jan-16		1,847				25,620
Feb-16		1,717				25,684
Mar-16		1,538				25,747
Apr-16		1,106				25,813
May-16		797				25,880
Jun-16		581				25,949
Jul-16		590				26,020
Aug-16		601				26,096
Sep-16		621				26,173
Oct-16		969				26,252
Nov-16		1,281				26,333
Dec-16		1,665				26,415
Jan-17		1,843				26,500
Feb-17		1,721				26,582
Mar-17		1,554				26,664
Apr-17		1,129				26,748
May-17		832				26,833
Jun-17		621				26,917
Jul-17		625				26,999
Aug-17		635				27,083
Sep-17		647				27,163
Oct-17		985				27,243
Nov-17		1,295				27,322
Dec-17		1,675				27,400
Jan-18		1,853				27,478
Feb-18		1,736				27,552
Mar-18		1,573				27,625
Jul-18		655				27,923
Aug-18		662				27,998
Sep-18		669				28,071
Oct-18		1,004				28,144
Nov-18		1,310				28,217
Dec-18		1,688				28,290
Jan-19		1,868				28,364
Feb-19		1,752				28,435
Mar-19		1,592				28,505
Apr-19		1,178				28,578
May-19		887				28,652
Jun-19		678				28,726
Jul-19		681				28,800
Aug-19		685				28,875
Sep-19		691				28,950
Oct-19		1,023				29,025
Nov-19		1,327				29,101
Dec-19		1,705				29,177

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Volumes

<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error</u> %	<u>Independent Variable</u>		
					<u>Standard Residual</u>	<u>RSL</u>	<u>DT</u>
Jan-05	72,755	69,740	3,015	4.32%	0.69	19,009	16,437
Feb-05	61,113	66,888	(5,774)	-8.63%	(1.31)	19,087	16,468
Mar-05	60,252	56,602	3,650	6.45%	0.83	19,166	16,496
Apr-05	36,522	41,706	(5,183)	-12.43%	(1.18)	19,248	16,527
May-05	31,933	26,448	5,486	20.74%	1.25	19,330	16,557
Jun-05	22,317	23,888	(1,571)	-6.58%	(0.36)	19,410	16,588
Jul-05	18,870	22,662	(3,792)	-16.73%	(0.86)	19,489	16,618
Aug-05	18,993	20,726	(1,733)	-8.36%	(0.39)	19,568	16,649
Sep-05	24,688	18,205	6,482	35.61%	1.47	19,642	16,680
Oct-05	28,525	36,351	(7,826)	-21.53%	(1.78)	19,714	16,710
Nov-05	37,894	41,131	(3,237)	-7.87%	(0.74)	19,783	16,741
Dec-05	55,685	55,694	(9)	-0.02%	(0.00)	19,848	16,771
Jan-06	55,767	62,530	(6,763)	-10.82%	(1.54)	19,910	16,802
Feb-06	53,735	53,950	(215)	-0.40%	(0.05)	19,965	16,833
Mar-06	50,699	47,102	3,597	7.64%	0.82	20,015	16,861
Apr-06	29,468	37,979	(8,511)	-22.41%	(1.93)	20,062	16,892
May-06	22,325	20,485	1,839	8.98%	0.42	20,103	16,922
Jun-06	12,693	14,743	(2,051)	-13.91%	(0.47)	20,138	16,953
Jul-06	9,154	14,244	(5,090)	-35.74%	(1.16)	20,166	16,983
Aug-06	9,799	13,785	(3,986)	-28.91%	(0.91)	20,189	17,014
Sep-06	11,278	8,576	2,702	31.51%	0.61	20,206	17,045
Oct-06	19,593	24,799	(5,206)	-20.99%	(1.18)	20,219	17,075
Nov-06	24,578	35,166	(10,588)	-30.11%	(2.41)	20,228	17,106
Dec-06	32,898	39,499	(6,601)	-16.71%	(1.50)	20,234	17,136
Jan-07	43,320	44,731	(1,412)	-3.16%	(0.32)	20,239	17,167
Feb-07	46,808	42,302	4,506	10.65%	1.02	20,243	17,198
Mar-07	40,483	42,806	(2,323)	-5.43%	(0.53)	20,247	17,226
Apr-07	30,183	30,675	(492)	-1.60%	(0.11)	20,252	17,257
May-07	16,615	22,380	(5,765)	-25.76%	(1.31)	20,259	17,287
Jun-07	11,930	9,472	2,458	25.95%	0.56	20,269	17,318
Jul-07	10,316	13,423	(3,107)	-23.15%	(0.71)	20,282	17,348
Aug-07	10,611	11,661	(1,050)	-9.00%	(0.24)	20,299	17,379
Sep-07	10,794	10,233	562	5.49%	0.13	20,316	17,410
Oct-07	17,901	20,953	(3,052)	-14.57%	(0.69)	20,331	17,440
Nov-07	30,951	27,304	3,647	13.36%	0.83	20,343	17,471
Dec-07	45,680	45,840	(160)	-0.35%	(0.04)	20,347	17,501
Jan-08	49,073	57,075	(8,002)	-14.02%	(1.82)	20,343	17,532
Feb-08	50,603	46,190	4,414	9.56%	1.00	20,328	17,563
Mar-08	45,555	47,864	(2,309)	-4.82%	(0.52)	20,299	17,592
Apr-08	30,733	31,452	(719)	-2.29%	(0.16)	20,254	17,623
May-08	20,202	23,098	(2,896)	-12.54%	(0.66)	20,191	17,653
Jun-08	12,542	13,368	(825)	-6.17%	(0.19)	20,106	17,684
Jul-08	9,611	12,437	(2,826)	-22.72%	(0.64)	19,999	17,714
Aug-08	12,178	10,121	2,057	20.33%	0.47	19,868	17,745
Sep-08	14,146	10,305	3,840	37.27%	0.87	19,721	17,776
Oct-08	27,161	25,441	1,720	6.76%	0.39	19,563	17,806
Nov-08	37,599	37,643	(44)	-0.12%	(0.01)	19,399	17,837
Dec-08	49,685	48,564	1,120	2.31%	0.25	19,233	17,867
Jan-09	59,343	57,484	1,859	3.23%	0.42	19,069	17,898
Feb-09	55,156	55,024	132	0.24%	0.03	18,921	17,929
Mar-09	53,883	49,124	4,759	9.69%	1.08	18,787	17,957
Apr-09	42,217	38,352	3,866	10.08%	0.88	18,667	17,988
May-09	22,417	29,892	(7,475)	-25.01%	(1.70)	18,572	18,018
Jun-09	13,644	11,597	2,047	17.65%	0.47	18,506	18,049
Jul-09	15,664	13,358	2,305	17.26%	0.52	18,475	18,079
Aug-09	12,516	14,695	(2,180)	-14.83%	(0.50)	18,480	18,110
Sep-09	14,741	13,508	1,234	9.13%	0.28	18,516	18,141
Oct-09	30,064	27,084	2,980	11.00%	0.68	18,581	18,171
Nov-09	32,913	40,909	(7,996)	-19.55%	(1.82)	18,671	18,202
Dec-09	54,600	49,505	5,095	10.29%	1.16	18,781	18,232
Jan-10	65,380	67,240	(1,860)	-2.77%	(0.42)	18,909	18,263

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>					<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>	<u>DT</u>
Feb-10	51,531	58,495	(6,965)	-11.91%	(1.58)	19,044	18,294
Mar-10	46,171	49,294	(3,123)	-6.33%	(0.71)	19,188	18,322
Apr-10	31,316	28,557	2,759	9.66%	0.63	19,342	18,353
May-10	19,962	20,107	(145)	-0.72%	(0.03)	19,497	18,383
Jun-10	11,971	14,275	(2,304)	-16.14%	(0.52)	19,651	18,414
Jul-10	10,665	12,059	(1,393)	-11.56%	(0.32)	19,798	18,444
Aug-10	14,098	12,592	1,506	11.96%	0.34	19,940	18,475
Sep-10	18,701	16,375	2,325	14.20%	0.53	20,073	18,506
Oct-10	37,774	29,432	8,342	28.34%	1.90	20,199	18,536
Nov-10	59,318	52,125	7,193	13.80%	1.63	20,319	18,567
Dec-10	88,270	74,106	14,164	19.11%	3.22	20,433	18,597
Jan-11	96,431	90,719	5,712	6.30%	1.30	20,545	18,628
Feb-11	82,877	85,948	(3,070)	-3.57%	(0.70)	20,646	18,659
Mar-11	72,526	72,210	316	0.44%	0.07	20,745	18,687
Apr-11	47,045	50,009	(2,965)	-5.93%	(0.67)	20,843	18,718
May-11	29,162	29,371	(208)	-0.71%	(0.05)	20,939	18,748
Jun-11	18,214	16,195	2,019	12.47%	0.46	21,032	18,779
Jul-11	12,929	15,734	(2,805)	-17.83%	(0.64)	21,124	18,809
Aug-11	16,001	13,525	2,476	18.30%	0.56	21,217	18,840
Sep-11	15,261	18,656	(3,395)	-18.20%	(0.77)	21,307	18,871
Oct-11	38,254	33,915	4,339	12.79%	0.99	21,396	18,901
Nov-11	58,738	58,394	343	0.59%	0.08	21,485	18,932
Dec-11	72,620	76,933	(4,313)	-5.61%	(0.98)	21,574	18,962
Jan-12	83,937	81,164	2,773	3.42%	0.63	21,664	18,993
Feb-12	73,413	76,296	(2,883)	-3.78%	(0.66)	21,752	19,024
Mar-12	60,466	62,148	(1,682)	-2.71%	(0.38)	21,840	19,053
Apr-12	44,537	40,473	4,064	10.04%	0.92	21,930	19,084
May-12	36,736	30,002	6,735	22.45%	1.53	22,022	19,114
Jun-12	17,130	24,042	(6,912)	-28.75%	(1.57)	22,114	19,145
Jul-12	14,932	17,497	(2,565)	-14.66%	(0.58)	22,208	19,175
Aug-12	15,865	14,140	1,725	12.20%	0.39	22,305	19,206
Sep-12	16,432	18,809	(2,377)	-12.64%	(0.54)	22,401	19,237
Oct-12	40,882	35,760	5,122	14.32%	1.16	22,498	19,267
Nov-12	70,056	55,045	15,012	27.27%	3.41	22,594	19,298
Dec-12	77,809	85,870	(8,061)	-9.39%	(1.83)	22,689	19,328
Jan-13	83,937	87,342	(3,405)	-3.90%	(0.77)	22,785	19,359
Feb-13	73,413	74,328	(916)	-1.23%	(0.21)	22,875	19,390
Mar-13	60,466	64,345	(3,880)	-6.03%	(0.88)	22,962	19,418
Apr-13	44,537	44,240	297	0.67%	0.07	23,050	19,449
May-13		27,651				23,134	19,479
Jun-13		16,943				23,214	19,510
Jul-13		16,673				23,291	19,540
Aug-13		16,041				23,364	19,571
Sep-13		20,602				23,433	19,602
Oct-13		41,273				23,499	19,632
Nov-13		52,924				23,563	19,663
Dec-13		69,208				23,627	19,693
Jan-14		78,349				23,691	19,724
Feb-14		69,192				23,753	19,755
Mar-14		62,310				23,817	19,783
Apr-14		42,743				23,884	19,814
May-14		28,925				23,955	19,844
Jun-14		19,509				24,030	19,875
Jul-14		18,590				24,109	19,905
Aug-14		20,249				24,195	19,936
Sep-14		23,890				24,283	19,967
Oct-14		38,331				24,374	19,997
Nov-14		52,436				24,468	20,028
Dec-14		68,886				24,563	20,058
Jan-15		77,208				24,660	20,089
Feb-15		70,697				24,753	20,120

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>	<u>DT</u>
Mar-15		62,795				24,844	20,148
Apr-15		44,413				24,937	20,179
May-15		31,541				25,027	20,209
Jun-15		21,953				25,113	20,240
Jul-15		22,265				25,195	20,270
Aug-15		23,772				25,274	20,301
Sep-15		24,757				25,348	20,332
Oct-15		39,806				25,419	20,362
Nov-15		53,563				25,487	20,393
Dec-15		69,541				25,554	20,423
Jan-16		79,001				25,620	20,454
Feb-16		72,082				25,684	20,485
Mar-16		64,720				25,747	20,514
Apr-16		46,661				25,813	20,545
May-16		33,698				25,880	20,575
Jun-16		24,598				25,949	20,606
Jul-16		25,066				26,020	20,636
Aug-16		25,593				26,096	20,667
Sep-16		26,498				26,173	20,698
Oct-16		41,423				26,252	20,728
Nov-16		54,900				26,333	20,759
Dec-16		71,529				26,415	20,789
Jan-17		81,030				26,500	20,820
Feb-17		74,271				26,582	20,851
Mar-17		67,202				26,664	20,879
Apr-17		48,940				26,748	20,910
May-17		36,141				26,833	20,940
Jun-17		27,061				26,917	20,971
Jul-17		27,268				26,999	21,001
Aug-17		27,758				27,083	21,032
Sep-17		28,372				27,163	21,063
Oct-17		43,270				27,243	21,093
Nov-17		57,024				27,322	21,124
Dec-17		73,904				27,400	21,154
Jan-18		83,654				27,478	21,185
Feb-18		76,947				27,552	21,216
Mar-18		69,853				27,625	21,244
Apr-18		51,397				27,700	21,275
May-18		38,476				27,775	21,305
Jun-18		29,136				27,849	21,336
Jul-18		29,363				27,923	21,366
Aug-18		29,723				27,998	21,397
Sep-18		30,107				28,071	21,428
Oct-18		45,266				28,144	21,458
Nov-18		59,205				28,217	21,489
Dec-18		76,458				28,290	21,519
Jan-19		86,476				28,364	21,550
Feb-19		79,694				28,435	21,581
Mar-19		72,576				28,505	21,609
Apr-19		53,799				28,578	21,640
May-19		40,613				28,652	21,670
Jun-19		31,096				28,726	21,701
Jul-19		31,303				28,800	21,731
Aug-19		31,568				28,875	21,762
Sep-19		31,875				28,950	21,793
Oct-19		47,303				29,025	21,823
Nov-19		61,517				29,101	21,854
Dec-19		79,190				29,177	21,884

Plan Year Actual Projected RSL DT

Modeling Results
Liberty Utilities
Commercial & Industrial Heating Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>			
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>RSL</u>	<u>DT</u>
PY2005	482,263	495,026				231,439	198,512
PY2006	368,089	395,019				240,602	202,892
PY2007	296,439	323,302				243,197	207,272
PY2008	348,435	350,494				241,364	211,660
PY2009	406,929	396,325				225,206	216,044
PY2010	395,081	398,840				233,093	220,424
PY2011	576,289	552,512				250,545	224,804
PY2012	535,688	535,658				263,792	229,192
PY2013		550,354				276,889	233,576
PY2014		524,220				287,283	237,956
PY2015		540,528				299,601	242,336
PY2016		562,445				310,276	246,724
PY2017		587,741				321,480	251,108
PY2018		614,849				332,837	255,488
PY2019		641,966				343,418	259,868
Growth							
PY2006	(114,174)	(100,008)				9,163	4,380
PY2007	(71,650)	(71,717)				2,595	4,380
PY2008	51,996	27,192				(1,833)	4,388
PY2009	58,494	45,831				(16,157)	4,384
PY2010	(11,848)	2,515				7,886	4,380
PY2011	181,208	153,672				17,452	4,380
PY2012	(40,601)	(16,854)				13,247	4,388
PY2013		14,696				13,098	4,384
PY2014		(26,134)				10,393	4,380
PY2015		16,308				12,319	4,380
PY2016		21,916				10,674	4,388
PY2017		25,297				11,204	4,384
PY2018		27,108				11,357	4,380
PY2019		27,117				10,581	4,380
Growth Rate (%)							
PY2006	-23.7%	-20.2%				4.0%	2.2%
PY2007	-19.5%	-18.2%				1.1%	2.2%
PY2008	17.5%	8.4%				-0.8%	2.1%
PY2009	16.8%	13.1%				-6.7%	2.1%
PY2010	-2.9%	0.6%				3.5%	2.0%
PY2011	45.9%	38.5%				7.5%	2.0%
PY2012	-7.0%	-3.1%				5.3%	2.0%
PY2013		2.7%				5.0%	1.9%
PY2014		-4.7%				3.8%	1.9%
PY2015		3.1%				4.3%	1.8%
PY2016		4.1%				3.6%	1.8%
PY2017		4.5%				3.6%	1.8%
PY2018		4.6%				3.5%	1.7%
PY2019		4.4%				3.2%	1.7%

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Customers

Dependent Variable: CNZ_CUS
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	(75.78)	32.47	(2.33)	0.02
DT	1	0.01	0.00	3.38	0.00
AR1	1	(0.90)	0.05	(17.36)	0.00

Model Fitness:

Regress R-Square	
Total R-Square	0.93
SSE	147.38
MSE	2.02
SBC	280.63
MAE	0.60
MAPE	1.81
Durbin-Watson	1.89
Root MSE	1.42
AIC	273.64
AICC	273.97
HQC	276.43

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Customers

<u>Actual, Projected, Residual</u>				<u>Project Error</u>	<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>DT</u>
Jan-05	28	29	(1)	-3.75%	(0.79)	16,437
Feb-05	27	27	(0)	-1.10%	(0.22)	16,468
Mar-05	26	26	(0)	-1.11%	(0.21)	16,496
Apr-05	26	25	1	2.56%	0.47	16,527
May-05	25	23	2	6.47%	1.11	16,557
Jun-05	25	25	(0)	-0.19%	(0.03)	16,588
Jul-05	25	28	(3)	-10.55%	(2.15)	16,618
Aug-05	26	26	(0)	-1.52%	(0.29)	16,649
Sep-05	27	27	(0)	-1.60%	(0.32)	16,680
Oct-05	28	28	(0)	-1.65%	(0.34)	16,710
Nov-05	27	27	(0)	-1.74%	(0.35)	16,741
Dec-05	27	27	(0)	-1.79%	(0.36)	16,771
Jan-06	26	27	(1)	-3.75%	(0.74)	16,802
Feb-06	26	26	(0)	-1.10%	(0.21)	16,833
Mar-06	26	26	(0)	-1.11%	(0.21)	16,861
Apr-06	26	25	1	2.56%	0.47	16,892
May-06	27	25	2	6.47%	1.20	16,922
Jun-06	27	27	(0)	-0.19%	(0.04)	16,953
Jul-06	27	30	(3)	-10.55%	(2.32)	16,983
Aug-06	26	26	(0)	-1.52%	(0.29)	17,014
Sep-06	26	26	(0)	-1.60%	(0.31)	17,045
Oct-06	26	26	(0)	-1.65%	(0.32)	17,075
Nov-06	27	27	(0)	-1.74%	(0.35)	17,106
Dec-06	27	27	(0)	-1.79%	(0.36)	17,136
Jan-07	26	27	(1)	-3.75%	(0.74)	17,167
Feb-07	26	26	(0)	-1.10%	(0.21)	17,198
Mar-07	26	26	(0)	-1.11%	(0.21)	17,226
Apr-07	27	26	1	2.56%	0.49	17,257
May-07	29	27	2	6.47%	1.29	17,287
Jun-07	29	29	(0)	-0.19%	(0.04)	17,318
Jul-07	26	29	(3)	-10.55%	(2.24)	17,348
Aug-07	26	26	(0)	-1.52%	(0.29)	17,379
Sep-07	26	26	(0)	-1.60%	(0.31)	17,410
Oct-07	26	26	(0)	-1.65%	(0.32)	17,440
Nov-07	26	26	(0)	-1.74%	(0.34)	17,471
Dec-07	26	26	(0)	-1.79%	(0.35)	17,501
Jan-08	26	26	(0)	-1.88%	(0.36)	17,532
Feb-08	27	27	0	1.82%	0.35	17,563
Mar-08	28	27	1	2.11%	0.42	17,592
Apr-08	29	28	1	2.30%	0.48	17,623
May-08	29	29	(0)	-0.88%	(0.19)	17,653
Jun-08	29	29	(0)	-0.96%	(0.21)	17,684
Jul-08	29	29	(0)	-1.00%	(0.21)	17,714
Aug-08	29	29	(0)	-1.09%	(0.23)	17,745
Sep-08	29	29	(0)	-1.15%	(0.25)	17,776
Oct-08	29	29	(0)	-1.20%	(0.26)	17,806
Nov-08	29	29	(0)	-1.28%	(0.27)	17,837
Dec-08	29	29	(0)	-1.32%	(0.28)	17,867
Jan-09	29	29	(0)	-1.41%	(0.30)	17,898
Feb-09	28	29	(1)	-4.87%	(1.05)	17,929
Mar-09	27	29	(2)	-5.39%	(1.12)	17,957
Apr-09	30	28	2	8.39%	1.70	17,988
May-09	30	30	(0)	-1.25%	(0.28)	18,018
Jun-09	30	30	(0)	-1.33%	(0.29)	18,049
Jul-09	30	30	(0)	-1.37%	(0.30)	18,079
Aug-09	41	30	11	34.68%	7.70	18,110
Sep-09	41	40	1	1.68%	0.49	18,141
Oct-09	41	40	1	1.65%	0.49	18,171
Nov-09	41	40	1	1.59%	0.47	18,202
Dec-09	40	40	(0)	-0.92%	(0.27)	18,232
Jan-10	40	40	0	1.26%	0.36	18,263

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Customers

<u>Date</u>	<u>Actual, Projected, Residual</u>			<u>Project Error %</u>	<u>Independent Variable</u>	
	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>		<u>Standard Residual</u>	<u>DT</u>
Feb-10	40	40	0	1.21%	0.35	18,294
Mar-10	40	40	0	1.21%	0.35	18,322
Apr-10	40	40	0	1.12%	0.32	18,353
May-10	40	40	0	1.09%	0.31	18,383
Jun-10	40	40	0	1.02%	0.30	18,414
Jul-10	40	40	0	0.99%	0.29	18,444
Aug-10	38	40	(2)	-4.12%	(1.19)	18,475
Sep-10	38	38	0	0.37%	0.10	18,506
Oct-10	38	38	0	0.34%	0.09	18,536
Nov-10	38	38	0	0.27%	0.08	18,567
Dec-10	38	38	0	0.24%	0.07	18,597
Jan-11	38	38	0	0.17%	0.05	18,628
Feb-11	38	38	0	0.12%	0.03	18,659
Mar-11	38	38	0	0.12%	0.03	18,687
Apr-11	38	38	0	0.03%	0.01	18,718
May-11	38	38	(0)	-0.01%	(0.00)	18,748
Jun-11	38	38	(0)	-0.07%	(0.02)	18,779
Jul-11	38	38	(0)	-0.11%	(0.03)	18,809
Aug-11	38	38	(0)	-0.17%	(0.05)	18,840
Sep-11	38	38	(0)	-0.22%	(0.06)	18,871
Oct-11	38	38	(0)	-0.26%	(0.07)	18,901
Nov-11	38	38	(0)	-0.32%	(0.09)	18,932
Dec-11	39	38	1	2.27%	0.63	18,962
Jan-12	38	39	(1)	-2.71%	(0.77)	18,993
Feb-12	38	38	(0)	-0.47%	(0.13)	19,024
Mar-12	38	38	(0)	-0.49%	(0.14)	19,053
Apr-12	38	38	(0)	-0.57%	(0.16)	19,084
May-12	38	38	(0)	-0.60%	(0.17)	19,114
Jun-12	38	38	(0)	-0.67%	(0.19)	19,145
Jul-12	38	38	(0)	-0.70%	(0.20)	19,175
Aug-12	38	38	(0)	-0.76%	(0.21)	19,206
Sep-12	38	38	(0)	-0.81%	(0.23)	19,237
Oct-12	38	38	(0)	-0.85%	(0.24)	19,267
Nov-12	38	38	(0)	-0.91%	(0.26)	19,298
Dec-12	38	38	(0)	-0.95%	(0.26)	19,328
Jan-13	38	38	(0)	-1.01%	(0.28)	19,359
Feb-13	38	38	(0)	-1.06%	(0.30)	19,390
Mar-13	38	38	(0)	-1.06%	(0.30)	19,418
Apr-13	38	38	(0)	-1.15%	(0.32)	19,449
May-13		38				19,479
Jun-13		39				19,510
Jul-13		39				19,540
Aug-13		40				19,571
Sep-13		40				19,602
Oct-13		40				19,632
Nov-13		41				19,663
Dec-13		41				19,693
Jan-14		41				19,724
Feb-14		42				19,755
Mar-14		42				19,783
Apr-14		42				19,814
May-14		42				19,844
Jun-14		43				19,875
Jul-14		43				19,905
Aug-14		43				19,936
Sep-14		43				19,967
Oct-14		44				19,997
Nov-14		44				20,028
Dec-14		44				20,058
Jan-15		44				20,089
Feb-15		44				20,120

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Customers

<u>Actual</u> , <u>Projected</u> , <u>Residual</u>				<u>Project Error</u>	<u>Standard</u>	<u>Independent Variable</u>
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>%</u>	<u>Residual</u>	<u>DT</u>
Mar-15		45				20,148
Apr-15		45				20,179
May-15		45				20,209
Jun-15		45				20,240
Jul-15		45				20,270
Aug-15		46				20,301
Sep-15		46				20,332
Oct-15		46				20,362
Nov-15		46				20,393
Dec-15		46				20,423
Jan-16		47				20,454
Feb-16		47				20,485
Mar-16		47				20,514
Apr-16		47				20,545
May-16		47				20,575
Jun-16		48				20,606
Jul-16		48				20,636
Aug-16		48				20,667
Sep-16		48				20,698
Oct-16		48				20,728
Nov-16		48				20,759
Dec-16		49				20,789
Jan-17		49				20,820
Feb-17		49				20,851
Mar-17		49				20,879
Apr-17		49				20,910
May-17		50				20,940
Jun-17		50				20,971
Jul-17		50				21,001
Aug-17		50				21,032
Sep-17		50				21,063
Oct-17		51				21,093
Nov-17		51				21,124
Dec-17		51				21,154
Jan-18		51				21,185
Feb-18		51				21,216
Mar-18		51				21,244
Jul-18		52				21,366
Aug-18		52				21,397
Sep-18		53				21,428
Oct-18		53				21,458
Nov-18		53				21,489
Dec-18		53				21,519
Jan-19		53				21,550
Feb-19		53				21,581
Mar-19		54				21,609
Apr-19		54				21,640
May-19		54				21,670
Jun-19		54				21,701
Jul-19		54				21,731
Aug-19		55				21,762
Sep-19		55				21,793
Oct-19		55				21,823
Nov-19		55				21,854
Dec-19		55				21,884

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Use per Customer

Dependent Variable: CNZ_UPC
Method: AutoReg
Observations: 111

<u>Variables</u>	<u>DF</u>	<u>Estimate</u>	<u>Standard Error</u>	<u>t Value</u>	<u>Approx Pr > t </u>
Intercept	1	9,400.42	1,804.70	5.21	0.00
DT	1	(0.25)	0.10	(2.59)	0.01
dm1	1	685.34	131.53	5.21	0.00
dm2	1	498.67	131.49	3.79	0.00
dm3	1	559.60	131.51	4.26	0.00
dm5	1	211.35	148.27	1.43	0.16
dm10	1	283.38	132.04	2.15	0.04
dm11	1	494.44	131.80	3.75	0.00
dm12	1	692.33	131.63	5.26	0.00

Model Fitness:

Regress R-Square	0.66
Total R-Square	0.66
SSE	1,881,119.84
MSE	55,327.05
SBC	615.39
MAE	169.69
MAPE	3.35
Durbin-Watson	2.25
Root MSE	235.22
AIC	599.53
AICC	604.99
HQC	605.38

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Jan-05	1,695	1,619	77	4.74%	0.46	16,437
Feb-05	1,516	1,666	(151)	-9.04%	(0.91)	16,468
Mar-05	1,699	1,670	29	1.74%	0.18	16,496
Apr-05	1,272	1,275	(3)	-0.27%	(0.02)	16,527
May-05	1,304	1,352	(48)	-3.59%	(0.29)	16,557
Jun-05	1,127	1,136	(9)	-0.82%	(0.06)	16,588
Jul-05	1,073	1,131	(58)	-5.14%	(0.35)	16,618
Aug-05	1,214	1,138	76	6.67%	0.46	16,649
Sep-05	1,376	1,375	1	0.04%	0.00	16,680
Oct-05	1,926	1,968	(42)	-2.13%	(0.25)	16,710
Nov-05	2,190	2,285	(96)	-4.18%	(0.58)	16,741
Dec-05	2,591	2,408	183	7.59%	1.10	16,771
Jan-06	2,682	2,560	121	4.74%	0.73	16,802
Feb-06	2,520	2,770	(251)	-9.04%	(1.51)	16,833
Mar-06	2,617	2,572	45	1.74%	0.27	16,861
Apr-06	1,888	1,894	(5)	-0.27%	(0.03)	16,892
May-06	1,937	2,010	(72)	-3.59%	(0.43)	16,922
Jun-06	1,816	1,831	(15)	-0.82%	(0.09)	16,953
Jul-06	1,662	1,753	(90)	-5.14%	(0.54)	16,983
Aug-06	1,883	1,766	118	6.67%	0.71	17,014
Sep-06	1,801	1,800	1	0.04%	0.00	17,045
Oct-06	2,139	2,186	(47)	-2.13%	(0.28)	17,075
Nov-06	2,447	2,554	(107)	-4.18%	(0.64)	17,106
Dec-06	2,830	2,630	200	7.59%	1.20	17,136
Jan-07	3,417	3,263	155	4.74%	0.93	17,167
Feb-07	3,348	3,681	(333)	-9.04%	(2.01)	17,198
Mar-07	3,159	3,105	54	1.74%	0.33	17,226
Apr-07	2,631	2,638	(7)	-0.27%	(0.04)	17,257
May-07	2,139	2,218	(80)	-3.59%	(0.48)	17,287
Jun-07	1,871	1,887	(15)	-0.82%	(0.09)	17,318
Jul-07	1,901	2,004	(103)	-5.14%	(0.62)	17,348
Aug-07	2,037	1,909	127	6.67%	0.77	17,379
Sep-07	2,047	2,046	1	0.04%	0.00	17,410
Oct-07	2,539	2,594	(55)	-2.13%	(0.33)	17,440
Nov-07	2,927	3,055	(128)	-4.18%	(0.77)	17,471
Dec-07	3,303	3,070	233	7.59%	1.40	17,501
Jan-08	3,862	3,687	175	4.74%	1.05	17,532
Feb-08	3,513	3,863	(349)	-9.04%	(2.10)	17,563
Mar-08	4,970	4,884	85	1.74%	0.51	17,592
Apr-08	4,994	5,007	(14)	-0.27%	(0.08)	17,623
May-08	4,785	4,963	(178)	-3.59%	(1.07)	17,653
Jun-08	4,157	4,191	(34)	-0.82%	(0.21)	17,684
Jul-08	4,154	4,379	(225)	-5.14%	(1.36)	17,714
Aug-08	4,172	3,911	261	6.67%	1.57	17,745
Sep-08	4,183	4,181	2	0.04%	0.01	17,776
Oct-08	4,583	4,683	(100)	-2.13%	(0.60)	17,806
Nov-08	4,916	5,131	(215)	-4.18%	(1.29)	17,837
Dec-08	5,398	5,017	381	7.59%	2.30	17,867
Jan-09	4,591	4,383	208	4.74%	1.25	17,898
Feb-09	4,120	4,529	(410)	-9.04%	(2.47)	17,929
Mar-09	3,963	3,895	68	1.74%	0.41	17,957
Apr-09	2,978	2,986	(8)	-0.27%	(0.05)	17,988
May-09	3,414	3,541	(127)	-3.59%	(0.76)	18,018
Jun-09	3,542	3,571	(29)	-0.82%	(0.18)	18,049
Jul-09	3,384	3,568	(183)	-5.14%	(1.10)	18,079
Aug-09	4,286	4,018	268	6.67%	1.62	18,110
Sep-09	4,608	4,606	2	0.04%	0.01	18,141
Oct-09	5,060	5,171	(110)	-2.13%	(0.66)	18,171
Nov-09	5,149	5,374	(225)	-4.18%	(1.35)	18,202
Dec-09	5,987	5,564	423	7.59%	2.55	18,232
Jan-10	5,813	5,550	263	4.74%	1.59	18,263

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>					<u>Independent Variable</u>	
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Feb-10	4,871	5,355	(484)	-9.04%	(2.92)	18,294
Mar-10	5,504	5,409	94	1.74%	0.57	18,322
Apr-10	4,829	4,842	(13)	-0.27%	(0.08)	18,353
May-10	4,865	5,046	(181)	-3.59%	(1.09)	18,383
Jun-10	4,787	4,827	(39)	-0.82%	(0.24)	18,414
Jul-10	4,572	4,819	(248)	-5.14%	(1.49)	18,444
Aug-10	5,133	4,812	321	6.67%	1.93	18,475
Sep-10	4,806	4,804	2	0.04%	0.01	18,506
Oct-10	5,272	5,080	192	3.78%	1.16	18,536
Nov-10	5,521	5,283	238	4.51%	1.44	18,567
Dec-10	5,187	5,474	(287)	-5.24%	(1.73)	18,597
Jan-11	5,091	5,459	(368)	-6.74%	(2.22)	18,628
Feb-11	5,332	5,265	68	1.29%	0.41	18,659
Mar-11	5,755	5,319	437	8.21%	2.63	18,687
Apr-11	4,882	4,751	130	2.74%	0.79	18,718
May-11	5,062	4,955	106	2.15%	0.64	18,748
Jun-11	4,782	4,736	46	0.98%	0.28	18,779
Jul-11	4,476	4,729	(252)	-5.33%	(1.52)	18,809
Aug-11	4,920	4,721	200	4.23%	1.20	18,840
Sep-11	4,652	4,713	(61)	-1.30%	(0.37)	18,871
Oct-11	5,055	4,989	66	1.32%	0.40	18,901
Nov-11	5,105	5,193	(87)	-1.68%	(0.53)	18,932
Dec-11	5,353	5,383	(30)	-0.55%	(0.18)	18,962
Jan-12	5,375	5,368	7	0.13%	0.04	18,993
Feb-12	5,337	5,174	163	3.15%	0.98	19,024
Mar-12	4,917	5,228	(311)	-5.94%	(1.87)	19,053
Apr-12	4,803	4,660	143	3.06%	0.86	19,084
May-12	4,939	4,864	74	1.53%	0.45	19,114
Jun-12	4,661	4,645	16	0.35%	0.10	19,145
Jul-12	4,395	4,638	(243)	-5.24%	(1.46)	19,175
Aug-12	4,612	4,630	(18)	-0.40%	(0.11)	19,206
Sep-12	4,406	4,622	(217)	-4.69%	(1.31)	19,237
Oct-12	4,750	4,898	(148)	-3.02%	(0.89)	19,267
Nov-12	5,175	5,102	74	1.44%	0.44	19,298
Dec-12	5,186	5,292	(106)	-2.01%	(0.64)	19,328
Jan-13	5,375	5,277	98	1.86%	0.59	19,359
Feb-13	5,337	5,083	254	4.99%	1.53	19,390
Mar-13	4,917	5,137	(220)	-4.28%	(1.33)	19,418
Apr-13	4,803	4,570	233	5.11%	1.41	19,449
May-13		4,774				19,479
Jun-13		4,555				19,510
Jul-13		4,547				19,540
Aug-13		4,539				19,571
Sep-13		4,532				19,602
Oct-13		4,808				19,632
Nov-13		5,011				19,663
Dec-13		5,201				19,693
Jan-14		5,187				19,724
Feb-14		4,992				19,755
Mar-14		5,046				19,783
Apr-14		4,479				19,814
May-14		4,683				19,844
Jun-14		4,464				19,875
Jul-14		4,456				19,905
Aug-14		4,449				19,936
Sep-14		4,441				19,967
Oct-14		4,717				19,997
Nov-14		4,920				20,028
Dec-14		5,111				20,058
Jan-15		5,096				20,089
Feb-15		4,902				20,120

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Use per Customer

<u>Actual, Projected, Residual (Therms/ Customer)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Mar-15		4,956				20,148
Apr-15		4,388				20,179
May-15		4,592				20,209
Jun-15		4,373				20,240
Jul-15		4,366				20,270
Aug-15		4,358				20,301
Sep-15		4,350				20,332
Oct-15		4,626				20,362
Nov-15		4,830				20,393
Dec-15		5,020				20,423
Jan-16		5,005				20,454
Feb-16		4,811				20,485
Mar-16		4,865				20,514
Apr-16		4,297				20,545
May-16		4,501				20,575
Jun-16		4,282				20,606
Jul-16		4,275				20,636
Aug-16		4,267				20,667
Sep-16		4,259				20,698
Oct-16		4,535				20,728
Nov-16		4,739				20,759
Dec-16		4,929				20,789
Jan-17		4,915				20,820
Feb-17		4,720				20,851
Mar-17		4,774				20,879
Apr-17		4,207				20,910
May-17		4,411				20,940
Jun-17		4,192				20,971
Jul-17		4,184				21,001
Aug-17		4,177				21,032
Sep-17		4,169				21,063
Oct-17		4,445				21,093
Nov-17		4,648				21,124
Dec-17		4,839				21,154
Jan-18		4,824				21,185
Feb-18		4,629				21,216
Mar-18		4,683				21,244
Jul-18		4,094				21,366
Aug-18		4,086				21,397
Sep-18		4,078				21,428
Oct-18		4,354				21,458
Nov-18		4,557				21,489
Dec-18		4,748				21,519
Jan-19		4,733				21,550
Feb-19		4,539				21,581
Mar-19		4,593				21,609
Apr-19		4,026				21,640
May-19		4,229				21,670
Jun-19		4,010				21,701
Jul-19		4,003				21,731
Aug-19		3,995				21,762
Sep-19		3,988				21,793
Oct-19		4,263				21,823
Nov-19		4,467				21,854
Dec-19		4,657				21,884

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Jan-05	47,472	47,085	387	0.82%	0.05	16,437
Feb-05	40,924	45,496	(4,572)	-10.05%	(0.60)	16,468
Mar-05	44,168	43,899	270	0.61%	0.04	16,496
Apr-05	33,066	32,329	736	2.28%	0.10	16,527
May-05	32,596	31,752	844	2.66%	0.11	16,557
Jun-05	28,168	28,453	(285)	-1.00%	(0.04)	16,588
Jul-05	26,828	31,618	(4,790)	-15.15%	(0.62)	16,618
Aug-05	31,558	30,042	1,516	5.05%	0.20	16,649
Sep-05	37,147	37,735	(589)	-1.56%	(0.08)	16,680
Oct-05	53,936	56,033	(2,096)	-3.74%	(0.27)	16,710
Nov-05	59,117	62,788	(3,671)	-5.85%	(0.48)	16,741
Dec-05	69,955	66,200	3,755	5.67%	0.49	16,771
Jan-06	69,720	69,152	568	0.82%	0.07	16,802
Feb-06	65,512	72,831	(7,319)	-10.05%	(0.95)	16,833
Mar-06	68,048	67,632	416	0.61%	0.05	16,861
Apr-06	49,097	48,004	1,093	2.28%	0.14	16,892
May-06	52,312	50,958	1,354	2.66%	0.18	16,922
Jun-06	49,044	49,540	(496)	-1.00%	(0.06)	16,953
Jul-06	44,887	52,900	(8,014)	-15.15%	(1.04)	16,983
Aug-06	48,966	46,614	2,352	5.05%	0.31	17,014
Sep-06	46,829	47,571	(742)	-1.56%	(0.10)	17,045
Oct-06	55,627	57,789	(2,162)	-3.74%	(0.28)	17,075
Nov-06	66,067	70,169	(4,103)	-5.85%	(0.53)	17,106
Dec-06	76,410	72,309	4,101	5.67%	0.53	17,136
Jan-07	88,854	88,131	724	0.82%	0.09	17,167
Feb-07	87,060	96,786	(9,726)	-10.05%	(1.27)	17,198
Mar-07	82,129	81,628	502	0.61%	0.07	17,226
Apr-07	71,044	69,462	1,582	2.28%	0.21	17,257
May-07	62,027	60,421	1,605	2.66%	0.21	17,287
Jun-07	54,272	54,821	(549)	-1.00%	(0.07)	17,318
Jul-07	49,418	58,240	(8,823)	-15.15%	(1.15)	17,348
Aug-07	52,955	50,411	2,544	5.05%	0.33	17,379
Sep-07	53,214	54,057	(843)	-1.56%	(0.11)	17,410
Oct-07	66,017	68,583	(2,566)	-3.74%	(0.33)	17,440
Nov-07	76,115	80,841	(4,727)	-5.85%	(0.62)	17,471
Dec-07	85,890	81,280	4,610	5.67%	0.60	17,501
Jan-08	100,423	97,709	2,714	2.78%	0.35	17,532
Feb-08	94,862	102,428	(7,566)	-7.39%	(0.99)	17,563
Mar-08	139,149	133,934	5,215	3.89%	0.68	17,592
Apr-08	144,817	141,941	2,876	2.03%	0.37	17,623
May-08	138,762	145,194	(6,433)	-4.43%	(0.84)	17,653
Jun-08	120,552	122,722	(2,170)	-1.77%	(0.28)	17,684
Jul-08	120,475	128,289	(7,814)	-6.09%	(1.02)	17,714
Aug-08	120,974	114,654	6,320	5.51%	0.82	17,745
Sep-08	121,302	122,671	(1,369)	-1.12%	(0.18)	17,776
Oct-08	132,909	137,447	(4,539)	-3.30%	(0.59)	17,806
Nov-08	142,568	150,719	(8,152)	-5.41%	(1.06)	17,837
Dec-08	156,531	147,436	9,095	6.17%	1.19	17,867
Jan-09	133,139	128,923	4,217	3.27%	0.55	17,898
Feb-09	115,352	133,314	(17,961)	-13.47%	(2.34)	17,929
Mar-09	106,994	111,151	(4,157)	-3.74%	(0.54)	17,957
Apr-09	89,331	82,638	6,693	8.10%	0.87	17,988
May-09	102,422	107,573	(5,151)	-4.79%	(0.67)	18,018
Jun-09	106,261	108,577	(2,316)	-2.13%	(0.30)	18,049
Jul-09	101,533	108,520	(6,988)	-6.44%	(0.91)	18,079
Aug-09	175,738	122,320	53,418	43.67%	6.96	18,110
Sep-09	188,932	185,738	3,194	1.72%	0.42	18,141
Oct-09	207,474	208,553	(1,079)	-0.52%	(0.14)	18,171
Nov-09	211,114	216,888	(5,774)	-2.66%	(0.75)	18,202
Dec-09	239,473	224,647	14,826	6.60%	1.93	18,232
Jan-10	232,516	219,216	13,300	6.07%	1.73	18,263

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Feb-10	194,836	211,641	(16,805)	-7.94%	(2.19)	18,294
Mar-10	220,140	213,781	6,359	2.97%	0.83	18,322
Apr-10	193,150	191,531	1,619	0.85%	0.21	18,353
May-10	194,597	199,664	(5,067)	-2.54%	(0.66)	18,383
Jun-10	191,496	191,115	381	0.20%	0.05	18,414
Jul-10	182,868	190,883	(8,016)	-4.20%	(1.05)	18,444
Aug-10	195,043	190,697	4,346	2.28%	0.57	18,475
Sep-10	182,617	181,871	746	0.41%	0.10	18,506
Oct-10	200,340	192,384	7,955	4.14%	1.04	18,536
Nov-10	209,816	200,216	9,600	4.79%	1.25	18,567
Dec-10	197,101	207,505	(10,404)	-5.01%	(1.36)	18,597
Jan-11	193,450	207,083	(13,633)	-6.58%	(1.78)	18,628
Feb-11	202,627	199,811	2,816	1.41%	0.37	18,659
Mar-11	218,694	201,866	16,828	8.34%	2.19	18,687
Apr-11	185,500	180,502	4,998	2.77%	0.65	18,718
May-11	192,342	188,314	4,029	2.14%	0.53	18,748
Jun-11	181,735	180,106	1,629	0.90%	0.21	18,779
Jul-11	170,105	179,885	(9,780)	-5.44%	(1.28)	18,809
Aug-11	186,979	179,708	7,271	4.05%	0.95	18,840
Sep-11	176,782	179,505	(2,724)	-1.52%	(0.36)	18,871
Oct-11	192,093	190,080	2,013	1.06%	0.26	18,901
Nov-11	194,004	197,956	(3,951)	-2.00%	(0.52)	18,932
Dec-11	208,783	205,287	3,497	1.70%	0.46	18,962
Jan-12	204,261	209,671	(5,410)	-2.58%	(0.71)	18,993
Feb-12	202,799	197,541	5,258	2.66%	0.69	19,024
Mar-12	186,843	199,630	(12,787)	-6.41%	(1.67)	19,053
Apr-12	182,520	178,106	4,414	2.48%	0.58	19,084
May-12	187,670	185,963	1,707	0.92%	0.22	19,114
Jun-12	177,135	177,703	(568)	-0.32%	(0.07)	19,145
Jul-12	167,004	177,479	(10,475)	-5.90%	(1.37)	19,175
Aug-12	175,244	177,298	(2,055)	-1.16%	(0.27)	19,206
Sep-12	167,414	177,092	(9,678)	-5.47%	(1.26)	19,237
Oct-12	180,512	187,728	(7,216)	-3.84%	(0.94)	19,267
Nov-12	196,662	195,648	1,014	0.52%	0.13	19,298
Dec-12	197,064	203,021	(5,957)	-2.93%	(0.78)	19,328
Jan-13	204,261	202,587	1,674	0.83%	0.22	19,359
Feb-13	202,799	195,224	7,575	3.88%	0.99	19,390
Mar-13	186,843	197,303	(10,460)	-5.30%	(1.36)	19,418
Apr-13	182,520	175,676	6,844	3.90%	0.89	19,449
May-13		183,577				19,479
Jun-13		177,130				19,510
Jul-13		178,670				19,540
Aug-13		180,116				19,571
Sep-13		181,463				19,602
Oct-13		194,147				19,632
Nov-13		204,010				19,663
Dec-13		213,368				19,693
Jan-14		214,328				19,724
Feb-14		207,740				19,755
Mar-14		211,301				19,783
Apr-14		188,751				19,814
May-14		198,535				19,844
Jun-14		190,375				19,875
Jul-14		191,126				19,905
Aug-14		191,860				19,936
Sep-14		192,567				19,967
Oct-14		205,582				19,997
Nov-14		215,549				20,028
Dec-14		224,988				20,058
Jan-15		225,446				20,089
Feb-15		217,894				20,120

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
Mar-15		221,248				20,148
Apr-15		196,834				20,179
May-15		206,896				20,209
Jun-15		197,918				20,240
Jul-15		198,436				20,270
Aug-15		198,958				20,301
Sep-15		199,471				20,332
Oct-15		213,007				20,362
Nov-15		223,317				20,393
Dec-15		233,071				20,423
Jan-16		233,361				20,454
Feb-16		225,228				20,485
Mar-16		228,621				20,514
Apr-16		202,784				20,545
May-16		213,238				20,575
Jun-16		203,678				20,606
Jul-16		204,110				20,636
Aug-16		204,551				20,667
Sep-16		204,987				20,698
Oct-16		219,095				20,728
Nov-16		229,812				20,759
Dec-16		239,945				20,789
Jan-17		240,154				20,820
Feb-17		231,542				20,851
Mar-17		234,998				20,879
Apr-17		207,862				20,910
May-17		218,735				20,940
Jun-17		208,656				20,971
Jul-17		209,041				21,001
Aug-17		209,436				21,032
Sep-17		209,828				21,063
Oct-17		224,518				21,093
Nov-17		235,657				21,124
Dec-17		246,185				21,154
Jan-18		246,336				21,185
Feb-18		237,272				21,216
Mar-18		240,826				21,244
Apr-18		212,421				21,275
May-18		223,721				21,305
Jun-18		213,140				21,336
Jul-18		213,489				21,366
Aug-18		213,847				21,397
Sep-18		214,203				21,428
Oct-18		229,479				21,458
Nov-18		241,044				21,489
Dec-18		251,969				21,519
Jan-19		252,069				21,550
Feb-19		242,562				21,581
Mar-19		246,217				21,609
Apr-19		216,552				21,640
May-19		228,281				21,670
Jun-19		217,202				21,701
Jul-19		217,518				21,731
Aug-19		217,842				21,762
Sep-19		218,162				21,793
Oct-19		234,025				21,823
Nov-19		246,017				21,854
Dec-19		257,342				21,884

Plan Year Actual Projected DT

Modeling Results
Liberty Utilities
Commercial & Industrial Non-Heat Zero Capacity Volumes

<u>Actual, Projected, Residual (Therms)</u>				<u>Independent Variable</u>		
<u>Date</u>	<u>Actual</u>	<u>Projected</u>	<u>Residual</u>	<u>Project Error %</u>	<u>Standard Residual</u>	<u>DT</u>
PY2005	456,527	465,032				198,512
PY2006	679,114	691,980				202,892
PY2007	809,468	825,019				207,272
PY2008	1,396,229	1,409,110				211,660
PY2009	1,626,277	1,595,463				216,044
PY2010	2,438,191	2,424,319				220,424
PY2011	2,307,224	2,294,581				224,804
PY2012	2,234,190	2,271,454				229,192
PY2013		2,264,562				233,576
PY2014		2,409,545				237,956
PY2015		2,516,645				242,336
PY2016		2,596,042				246,724
PY2017		2,664,528				251,108
PY2018		2,726,576				255,488
PY2019		2,783,442				259,868
Growth						
PY2006	222,586	226,947				4,380
PY2007	130,354	133,039				4,380
PY2008	586,761	584,091				4,388
PY2009	230,048	186,352				4,384
PY2010	811,914	828,856				4,380
PY2011	(130,966)	(129,738)				4,380
PY2012	(73,034)	(23,127)				4,388
PY2013		(6,892)				4,384
PY2014		144,982				4,380
PY2015		107,100				4,380
PY2016		79,397				4,388
PY2017		68,486				4,384
PY2018		62,048				4,380
PY2019		56,866				4,380
Growth Rate (%)						
PY2006	48.8%	48.8%				2.2%
PY2007	19.2%	19.2%				2.2%
PY2008	72.5%	70.8%				2.1%
PY2009	16.5%	13.2%				2.1%
PY2010	49.9%	52.0%				2.0%
PY2011	-5.4%	-5.4%				2.0%
PY2012	-3.2%	-1.0%				2.0%
PY2013		-0.3%				1.9%
PY2014		6.4%				1.9%
PY2015		4.4%				1.8%
PY2016		3.2%				1.8%
PY2017		2.6%				1.8%
PY2018		2.3%				1.7%
PY2019		2.1%				1.7%

Appendix B.1: Base Case Design Year: Resource Mix Results

RESOURCE MIX RESULTS

Units: MDT

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	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
Segments	ENGDawn2Wadd	NOV 2017	OCT 2039	0.00	6.00	4.08
	ENGIGTS	NOV 2017	OCT 2039	0.00	5.00	4.04
	ENGTGPANE	NOV 2017	OCT 2039	0.00	4.00	4.00
	ENGTGPBND	NOV 2017	OCT 2039	0.00	3.12	3.12
	ENGTGPProd	NOV 2017	OCT 2039	0.00	23.75	22.53
	ENGTGP_NEX	NOV 2017	OCT 2039	0.00	90.00	90.00

	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
DSM	2013_14-EE	NOV 2013	OCT 2039	0.00	100.00	100.00
	2014_15-EE	NOV 2014	OCT 2039	0.00	100.00	100.00
	2015_16-EE	NOV 2015	OCT 2039	0.00	100.00	100.00
	2016_17-EE	NOV 2016	OCT 2039	0.00	100.00	100.00
	2017_18-EE	NOV 2017	OCT 2039	0.00	100.00	100.00

Appendix B.2: Base Case Design Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1461.3	2305.4	2667.4	2243.2	1888.8	1064.4	597.0	397.7	312.6	332.2	470.8	891.4	14632.1
Total Demand	1461.3	2305.4	2667.4	2243.2	1888.8	1064.4	597.0	397.7	312.6	332.2	470.8	891.4	14632.1
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.3	49.1	50.1	44.7	43.7	13.0	18.6	21.2	19.6	4.9	17.2	12.3	330.7
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	0.0	6.5	3.7	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.8	50.7	52.3	46.6	46.0	15.3	25.7	28.1	25.9	4.9	23.7	16.0	375.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	15.6	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	0.0	132.6	3.6	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	0.0	40.0	14.3	215.6
ENGLNG	2.8	2.9	79.3	7.9	6.9	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	125.2	30.9	6.9	193.1	545.3	518.9	507.6	13.7	510.3	268.0	3056.3
Total Req	1812.5	2382.0	2844.9	2320.7	1941.7	1272.8	1168.0	944.6	846.2	350.8	1004.8	1175.4	18064.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	242.2	547.2	529.6	517.5	0.0	517.2	276.8	6031.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	398.2	311.8	331.7	0.0	11.5	1053.2

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	273.3	197.2	358.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	828.9
ENG-Z6-SW-MN	647.5	0.0	0.0	0.0	600.1	919.5	593.2	0.0	0.0	0.0	467.2	876.0	4103.6
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	79.3	7.9	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1553.5	1607.6	1910.3	1655.7	1542.0	1266.7	1165.0	941.8	843.2	347.8	1002.0	1172.4	15008.0
=====													
Storage Withdrawals													
ENGFSMA	245.1	530.5	479.1	396.0	151.5	3.3	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	22.9	27.1	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	135.8	184.8	161.2	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	11.0	59.3	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	85.9	7.9	4.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	259.0	774.3	934.7	665.0	399.7	6.2	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
=====													
Total Supply	1812.5	2382.0	2844.9	2320.7	1941.7	1272.8	1168.0	944.6	846.2	350.8	1004.8	1175.4	18064.3
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1030	551	155	3	0	318	625	943	943	1251	1498
ENGDominion	103	103	80	53	28	5	32	60	87	87	87	103	103
ENGNFG	671	671	535	350	189	0	128	265	398	535	535	667	671
ENGHON	246	235	176	115	63	31	69	111	151	192	192	232	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2659	1911	1101	467	74	261	804	1320	1824	1835	2342	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1492.6	2356.3	2726.6	2292.9	1930.0	1076.6	603.7	403.0	316.9	336.8	476.7	901.3	14913.5
Total Demand	1492.6	2356.3	2726.6	2292.9	1930.0	1076.6	603.7	403.0	316.9	336.8	476.7	901.3	14913.5
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	20.0	28.6	32.5	27.5	24.3	15.3	8.7	4.2	3.0	3.3	5.8	13.2	186.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.4	49.5	50.6	44.9	43.6	29.0	18.7	21.3	12.7	5.0	17.6	26.4	355.5
Injection	4.5	0.0	0.0	0.0	0.0	1.9	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.9	51.1	52.8	46.8	45.8	30.9	25.7	28.2	16.4	5.0	24.4	32.8	400.7
Storage Injections													
ENGFSMA	307.3	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.3
ENGDominion	0.0	0.0	0.0	0.0	0.0	14.7	28.2	27.2	0.0	0.0	27.2	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	14.3	0.0	40.0	41.3	215.6
ENGLNG	2.8	2.9	67.4	17.6	9.3	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.2	25.9	113.3	40.5	9.3	181.5	533.7	518.5	276.6	13.7	528.3	504.7	3056.0
Total Req	1843.6	2433.2	2892.7	2380.3	1985.1	1289.0	1163.2	949.7	609.9	355.5	1029.3	1438.8	18370.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	670.4	547.2	529.6	276.8	0.0	529.6	517.5	6472.4
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	403.7	316.3	336.3	0.0	715.6	1771.9

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	309.6	254.5	395.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	959.5
ENG-Z6-SW-MN	679.9	0.0	0.0	0.0	671.6	506.4	600.0	0.0	0.0	0.0	473.1	189.1	3120.0
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	67.4	17.6	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1585.8	1643.9	1955.6	1702.3	1615.9	1281.8	1160.2	946.8	607.0	352.5	1026.5	1435.8	15314.2
Storage Withdrawals													
ENGFSMA	244.9	549.1	491.0	397.2	118.7	4.3	0.0	0.0	0.0	0.0	0.0	0.0	1805.3
ENGDominion	0.0	22.7	27.3	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	131.3	187.1	163.3	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	10.0	60.3	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	73.9	17.6	6.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	257.8	789.3	937.1	678.0	369.2	7.2	2.9	2.9	2.9	2.9	2.9	2.9	3056.0
Total Supply	1843.6	2433.2	2892.7	2380.3	1985.1	1289.0	1163.2	949.7	609.9	355.5	1029.3	1438.8	18370.3
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1011	520	123	4	0	318	625	873	873	1180	1498
ENGDominion	103	103	80	53	28	5	20	48	75	75	75	103	103
ENGNFG	671	671	539	352	189	0	128	265	398	401	401	534	671
ENGHON	246	236	176	115	63	31	69	111	151	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2660	1897	1073	435	75	250	780	1296	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1510.6	2386.3	2761.7	2430.0	1954.2	1100.2	616.8	412.7	324.6	344.9	487.6	920.9	15250.4
Total Demand	1510.6	2386.3	2761.7	2430.0	1954.2	1100.2	616.8	412.7	324.6	344.9	487.6	920.9	15250.4
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	13.1	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	85.4
2014_15-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2015_16-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	30.8	44.2	50.2	44.4	37.5	23.6	13.5	6.4	4.7	5.0	9.0	20.4	289.9
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.5	49.7	50.9	46.6	41.5	13.5	18.7	21.5	19.8	13.6	17.4	4.4	336.2
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	1.5	2.2	2.2	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.6	51.9	53.1	48.5	41.7	15.7	25.8	28.3	26.1	17.3	24.1	4.4	381.5
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	31.5	40.0	0.0	232.8
ENGLNG	2.8	2.9	55.4	29.1	9.7	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	101.3	52.0	9.7	193.1	545.3	518.9	507.6	296.0	515.7	2.9	3078.8
Total Req	1865.6	2464.0	2916.1	2530.6	2005.5	1309.0	1187.9	959.8	858.4	658.2	1027.4	928.3	18710.7
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	129.2	129.2	120.9	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	637.0
ENGUSGC	675.8	698.3	698.3	653.3	698.3	248.8	547.2	529.6	517.5	294.5	522.9	0.0	6084.4
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	413.4	324.1	344.6	0.0	15.4	1097.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	332.6	294.4	462.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1089.0
ENG-Z6-SW-MN	497.7	0.0	0.0	0.0	905.0	946.1	613.2	0.0	0.0	0.0	484.1	901.8	4347.8
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	55.4	29.1	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1403.6	1666.9	1983.6	1825.7	1849.7	1299.9	1184.9	957.0	855.4	655.3	1024.5	925.3	15631.9
Storage Withdrawals													
ENGFSMA	245.1	523.4	500.4	435.6	94.7	6.3	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	6.1	28.0	23.2	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	127.2	181.1	187.8	160.7	14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.7	58.2	34.6	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.8
ENGLNG	2.8	2.9	61.9	27.0	9.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	96.1	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	461.9	797.1	932.5	704.9	155.8	9.1	2.9	2.9	2.9	2.9	2.9	2.9	3078.8
Total Supply	1865.6	2464.0	2916.1	2530.6	2005.5	1309.0	1187.9	959.8	858.4	658.2	1027.4	928.3	18710.7
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1037	537	101	6	0	318	625	943	1190	1498	1498
ENGDominion	103	75	69	41	17	0	26	54	82	82	82	103	103
ENGNFG	671	544	363	175	14	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	34	13	52	93	133	175	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	9	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	27	26	26	26	37	49	60	72	77	77
Total Inv	2608	2456	1685	854	201	55	239	781	1297	1802	2095	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1544.8	2441.7	2826.1	2376.4	1999.1	1118.0	626.7	420.2	330.6	351.3	496.0	935.6	15466.5
Total Demand	1544.8	2441.7	2826.1	2376.4	1999.1	1118.0	626.7	420.2	330.6	351.3	496.0	935.6	15466.5
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	41.7	59.8	68.0	57.5	50.7	32.0	18.3	8.7	6.4	6.8	12.2	27.6	389.6
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.8	50.1	51.3	45.1	41.5	13.7	18.8	21.6	19.9	13.7	17.5	4.5	336.4
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	1.7	2.0	2.2	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.0	52.1	53.6	46.9	41.6	15.9	25.8	28.4	26.2	17.4	24.2	4.5	381.7
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	25.7	28.2	27.2	0.0	0.0	21.6	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	30.3	40.0	0.0	231.6
ENGLNG	2.8	2.9	67.5	20.9	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	113.4	43.8	5.8	192.5	533.7	507.4	496.1	283.3	511.1	2.9	3026.4
Total Req	1900.2	2519.7	2993.1	2467.2	2046.6	1326.3	1186.3	955.9	853.0	652.0	1031.2	943.1	18874.6
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	251.4	547.2	529.6	517.5	293.3	523.6	0.0	6064.0
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	421.0	330.2	351.1	0.0	17.3	1119.6

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	377.0	342.8	473.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1193.2
ENG-Z6-SW-MN	518.5	0.0	0.0	0.0	952.2	959.4	623.1	0.0	0.0	0.0	492.5	914.7	4460.3
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	67.5	20.9	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1424.4	1711.3	2044.0	1783.7	1892.9	1315.8	1183.4	953.1	850.0	649.0	1028.4	940.1	15776.2
Storage Withdrawals													
ENGFSMA	245.1	546.8	514.6	414.1	77.2	7.7	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	6.8	28.2	23.9	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	141.0	168.2	189.0	156.1	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.7	58.2	33.4	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.6
ENGLNG	2.8	2.9	74.1	20.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	85.0	35.1	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	475.8	808.3	949.0	683.5	153.6	10.6	2.9	2.9	2.9	2.9	2.9	2.9	3098.4
Total Supply	1900.2	2519.7	2993.1	2467.2	2046.6	1326.3	1186.3	955.9	853.0	652.0	1031.2	943.1	18874.6
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1014	499	85	8	0	318	625	943	1190	1498	1498
ENGDominion	103	75	68	40	16	0	26	54	81	81	81	103	103
ENGNFG	671	530	362	173	16	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	35	15	53	95	135	176	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	38	26	5	5	5	5	5	5	5	77
Total Inv	2608	2442	1660	824	184	37	218	749	1254	1747	2027	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1570.8	2484.3	2875.8	2418.1	2033.7	1134.2	635.7	427.0	336.2	357.2	503.6	949.0	15725.6
Total Demand	1570.8	2484.3	2875.8	2418.1	2033.7	1134.2	635.7	427.0	336.2	357.2	503.6	949.0	15725.6
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
Total DSM	52.6	75.4	85.7	72.4	63.9	40.3	23.1	11.0	8.0	8.6	15.4	34.8	491.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	9.3	13.1	22.7	17.9	9.7	7.3	14.7	12.7	12.4	2.6	12.8	4.4	139.7
Injection	0.9	0.0	0.0	0.0	0.0	0.3	5.4	4.7	4.7	0.3	4.5	0.0	20.9
Withdrawal	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Fuel	10.2	13.1	22.9	18.1	9.7	7.6	20.1	17.5	17.1	3.0	17.4	4.4	160.9
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	22.2	307.6	0.0	1335.3
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	26.9	0.0	0.0	0.0	0.0	0.0	0.0	26.9
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	10.3	40.0	0.0	213.0
ENGLNG	2.8	2.9	2.5	2.7	89.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.9	2.5	2.7	89.0	66.9	393.1	355.3	359.1	34.7	356.9	2.9	1731.5
Total Req	1646.3	2500.3	2901.2	2438.8	2132.4	1208.7	1048.9	799.8	712.4	394.8	877.9	956.3	17618.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	4.0	0.0	9.5	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8
ENGDawn	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
ENGUSGC	65.2	0.0	35.0	14.2	0.0	69.3	404.4	370.8	374.7	33.8	362.6	0.0	1730.0
Marcellus	1555.7	2330.8	2047.7	1797.0	1886.5	1130.4	632.1	423.7	332.4	353.4	500.2	945.3	13935.1
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.9	2.5	2.7	89.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1636.0	2344.9	2111.2	1830.7	1985.1	1205.8	1046.0	797.0	709.5	391.9	875.1	953.4	15886.5
=====													
Storage Withdrawals													
ENGFSMA	0.0	91.9	677.2	538.2	28.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1335.3
ENGDominion	1.9	0.0	29.0	4.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	1.7	0.0	14.2	10.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.9
ENGHON	3.9	60.7	60.7	52.3	35.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.0
ENGLNG	2.8	2.9	9.1	2.7	82.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	10.3	155.5	790.0	608.1	147.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1731.5
=====													
Total Supply	1646.3	2500.3	2901.2	2438.8	2132.4	1208.7	1048.9	799.8	712.4	394.8	877.9	956.3	17618.0
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1469	791	253	225	225	543	850	1168	1190	1498	1498
ENGDominion	103	101	101	72	68	67	67	95	103	103	103	103	103
ENGNFG	671	669	669	655	644	644	671	671	671	671	671	671	671
ENGHON	246	242	182	121	69	33	73	115	155	196	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2590	2438	1650	1045	987	1051	1441	1793	2150	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.3: Base Case Design Year: Annual Design Day

JAN 19, 2014

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	141.7		ENGPNGTS	0.40	ENGFSMA		19.62			747	48	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		420	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG					7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		25.57			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane	30.57	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	141.7		Total	89.48	Total		54.17	0.07		1401		Total		1.79

JAN 19, 2015

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	144.9		ENGPNGTS	0.40	ENGFSMA		19.62			719	46	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		424	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG					7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		29.58			40	52	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	4.17								ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane	33.75	
			ENG-OPR									ENGC3Truck	4.17	
												ENGTGPAES		
Total	144.9		Total	88.65	Total		58.19	0.07		1391		Total		1.79

JAN 19, 2016

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	146.8		ENGPNGTS	0.40	ENGFSMA		19.62			740	47	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			51	50	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNGFG		6.10	0.07		247	37	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		24.13			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	29.13	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	146.8		Total	89.48	Total		59.27	0.07		1159		Total		1.79

JAN 19, 2017

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	150.3		ENGPNGTS	0.40	ENGFSMA		19.62			706	45	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			50	49	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		246	37	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		27.60			28	36	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	32.60	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	150.3		Total	89.48	Total		62.73	0.07		1125		Total		1.79

JAN 19, 2018

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	153.0		ENGPNGTS	0.40	ENGFSMA		21.84			1054	68	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			83	81	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		3.85	0.05		658	98	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			144	59	ENGTGPANE	4.00	0.04
			Marcellus	90.00	ENGLNG		4.82			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane					5	100	ENGTGPProd	22.53	
			ENG-Z6-BLDJF									ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX	90.00	
			ENG-Z6-Peak									ENGTGPShort	28.11	0.42
			DLiqWinter	1.40								ENGTGPDracut	89.59	0.41
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	6.22	
			ENGAES									ENGPropane		
			ENG-OPR									ENGC3Truck		
												ENGTGPAES		
Total	153.0		Total	121.6	Total		33.40	0.05		1950		Total		1.97

Appendix B.4: Base Case Normal Year: Resource Mix Results

RESOURCE MIX RESULTS

Units: MDT

=====

	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
Segments	ENGDawn2Wadd	NOV 2017	OCT 2039	0.00	6.00	4.08
	ENGIGTS	NOV 2017	OCT 2039	0.00	5.00	4.04
	ENGTGPANE	NOV 2017	OCT 2039	0.00	4.00	4.00
	ENGTGPBND	NOV 2017	OCT 2039	0.00	3.12	3.12
	ENGTGPProd	NOV 2017	OCT 2039	0.00	23.75	22.53
	ENGTGP_NEX	NOV 2017	OCT 2039	0.00	90.00	90.00

	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
DSM	2013_14-EE	NOV 2013	OCT 2039	0.00	100.00	100.00
	2014_15-EE	NOV 2014	OCT 2039	0.00	100.00	100.00
	2015_16-EE	NOV 2015	OCT 2039	0.00	100.00	100.00
	2016_17-EE	NOV 2016	OCT 2039	0.00	100.00	100.00
	2017_18-EE	NOV 2017	OCT 2039	0.00	100.00	100.00

Appendix B.5: Base Case Normal Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1308.5	2078.8	2401.3	2021.0	1699.9	958.1	558.6	388.0	312.2	331.5	453.2	808.1	13319.2
Total Demand	1308.5	2078.8	2401.3	2021.0	1699.9	958.1	558.6	388.0	312.2	331.5	453.2	808.1	13319.2
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.0	47.0	48.0	43.2	44.5	12.0	18.5	21.1	19.6	4.9	17.1	11.8	323.6
Injection	4.5	0.0	0.0	0.0	0.0	2.3	7.1	6.8	6.3	0.0	6.6	3.6	37.2
Withdrawal	0.3	1.9	2.0	1.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.9	48.8	50.0	45.0	46.5	14.3	25.5	27.9	25.9	4.9	23.7	15.4	368.8
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.8	0.0	98.5
ENGNFG	0.0	0.0	0.0	0.0	0.0	131.7	137.0	132.6	137.0	0.0	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	0.0	40.0	17.5	220.1
ENGLNG	2.8	2.9	78.0	10.4	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	123.9	33.3	5.8	198.0	545.3	518.9	507.6	13.7	511.5	267.7	3062.0
Total Req	1659.8	2153.6	2575.2	2099.3	1752.2	1170.4	1129.4	934.8	845.8	350.1	988.3	1091.2	16750.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.0	129.1	109.6	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	621.5
ENGUSGC	675.8	698.3	698.3	630.6	698.3	229.4	547.2	529.6	517.5	0.0	518.5	276.4	6019.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	388.4	311.5	330.9	0.0	2.5	1033.4

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	144.4	21.1	158.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	324.2
ENG-Z6-SW-MN	448.2	0.0	0.0	0.0	244.9	833.1	554.6	0.0	0.0	0.0	449.5	801.2	3331.5
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	78.0	10.4	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1354.2	1474.6	1732.8	1451.1	1185.6	1167.5	1126.4	932.0	842.9	347.1	985.5	1088.3	13688.0
=====													
Storage Withdrawals													
ENGFSMA	245.1	408.5	414.6	393.0	344.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	28.0	25.7	23.1	21.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.5
ENGNFG	28.2	157.8	167.7	151.7	165.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	29.4	58.7	52.7	47.0	32.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	220.1
ENGLNG	2.8	2.9	84.6	10.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	305.6	678.9	842.4	648.1	566.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3062.0
=====													
Total Supply	1659.8	2153.6	2575.2	2099.3	1752.2	1170.4	1129.4	934.8	845.8	350.1	988.3	1091.2	16750.0
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1152	737	344	0	0	318	625	943	943	1251	1498
ENGDominion	103	103	75	49	26	4	31	59	86	86	86	103	103
ENGNFG	671	643	485	317	165	0	132	269	401	538	538	671	671
ENGHON	246	217	158	105	58	26	66	107	147	189	189	229	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2612	1959	1241	626	65	260	803	1319	1823	1834	2343	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1336.2	2124.5	2454.3	2065.5	1736.8	968.8	564.8	393.3	316.6	336.1	458.8	817.0	13572.8
Total Demand	1336.2	2124.5	2454.3	2065.5	1736.8	968.8	564.8	393.3	316.6	336.1	458.8	817.0	13572.8
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	18.4	26.3	29.8	25.2	22.3	14.1	8.2	4.0	3.0	3.2	5.5	12.2	172.3
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	35.7	47.4	48.4	43.6	44.6	28.1	18.5	21.2	12.8	5.0	17.5	25.9	348.6
Injection	4.5	0.0	0.0	0.0	0.0	1.9	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.0	1.9	2.0	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.3	49.4	50.4	45.4	46.8	30.1	25.6	28.0	16.5	5.0	24.3	32.2	393.8
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	15.3	28.2	27.2	0.0	0.0	27.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	17.7	0.0	40.0	41.3	219.0
ENGLNG	2.8	2.9	83.5	4.9	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.4	25.9	129.4	27.8	5.8	182.1	533.7	518.5	280.0	13.7	528.3	504.7	3060.3
Total Req	1686.9	2199.7	2634.2	2138.7	1789.3	1181.0	1124.1	939.8	613.0	354.7	1011.4	1353.9	17026.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.9	129.2	111.4	129.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	620.2
ENGUSGC	675.8	698.3	698.3	630.7	698.3	665.9	547.2	529.6	280.3	0.0	529.6	517.5	6471.4
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	393.8	315.9	335.6	0.0	696.3	1741.6

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	169.0	45.1	197.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	411.6
ENG-Z6-SW-MN	516.0	0.0	0.0	0.0	297.3	411.4	560.9	0.0	0.0	0.0	455.2	123.5	2364.3
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	83.5	4.9	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1422.0	1500.0	1762.4	1486.4	1238.0	1178.2	1121.2	936.9	610.1	351.8	1008.6	1350.9	13966.6
Storage Withdrawals													
ENGFSMA	245.1	423.3	432.9	397.4	306.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	28.0	24.7	23.2	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	0.0	163.8	167.7	152.6	186.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	16.9	58.7	59.2	51.2	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0
ENGLNG	2.8	2.9	90.1	4.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	264.9	699.7	871.7	652.3	551.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3060.3
Total Supply	1686.9	2199.7	2634.2	2138.7	1789.3	1181.0	1124.1	939.8	613.0	354.7	1011.4	1353.9	17026.9
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1137	704	307	0	0	318	625	873	873	1180	1498
ENGDominion	103	103	75	50	27	5	20	48	75	75	75	103	103
ENGNFG	671	671	507	339	187	0	128	265	398	401	401	534	671
ENGHON	246	229	171	111	60	27	66	107	147	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2653	1979	1237	612	67	246	777	1293	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1352.1	2151.3	2485.6	2186.8	1758.2	989.8	577.1	402.7	324.3	344.2	469.4	834.6	13876.2
Total Demand	1352.1	2151.3	2485.6	2186.8	1758.2	989.8	577.1	402.7	324.3	344.2	469.4	834.6	13876.2
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	12.0	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.9
2014_15-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2015_16-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	28.4	40.6	46.0	40.7	34.5	21.9	12.7	6.2	4.7	5.0	8.6	18.9	268.0
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.1	47.7	48.7	45.0	42.5	12.2	18.5	21.3	19.8	13.7	17.2	3.9	328.6
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.5	0.0	37.2
Withdrawal	1.9	0.7	1.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.6	48.4	49.9	46.9	44.7	14.4	25.6	28.1	26.1	17.4	23.7	3.9	373.8
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	34.0	40.0	0.0	235.3
ENGLNG	2.8	2.9	85.7	2.8	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	131.5	25.7	5.8	193.1	545.3	518.9	507.6	298.5	510.9	2.9	3076.6
Total Req	1707.1	2225.5	2667.1	2259.4	1808.7	1197.4	1148.0	949.8	858.0	660.1	1004.1	841.5	17326.5
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	126.4	129.0	117.7	129.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0	628.6
ENGUSGC	675.8	698.3	698.3	653.3	698.3	231.6	547.2	529.6	517.5	297.1	517.9	0.0	6064.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	403.3	323.7	343.9	0.0	4.4	1075.3

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	183.9	62.0	295.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	541.7
ENG-Z6-SW-MN	305.9	0.0	0.0	0.0	532.2	860.2	573.2	0.0	0.0	0.0	465.8	826.0	3563.4
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	85.7	2.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1211.9	1515.5	1781.3	1629.9	1472.9	1194.5	1145.0	946.9	855.1	657.2	1001.2	838.5	14249.9
=====													
Storage Withdrawals													
ENGFSMA	245.1	550.4	526.9	381.5	101.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	17.4	6.3	24.2	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	160.5	57.6	104.6	160.6	187.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	58.7	58.6	37.6	21.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	235.3
ENGLNG	2.8	2.9	92.2	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	495.2	710.0	885.8	629.5	335.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3076.6
=====													
Total Supply	1707.1	2225.5	2667.1	2259.4	1808.7	1197.4	1148.0	949.8	858.0	660.1	1004.1	841.5	17326.5
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1010	483	102	0	0	318	625	943	1190	1498	1498
ENGDominion	103	75	57	51	27	5	31	59	86	86	86	103	103
ENGNFG	671	510	453	348	188	0	128	265	398	535	538	671	671
ENGHON	246	188	129	70	33	11	50	91	131	172	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2423	1739	984	381	51	241	783	1299	1804	2099	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1382.4	2201.0	2543.3	2140.3	1798.4	1005.7	586.4	410.1	330.3	350.6	477.5	847.8	14073.8
Total Demand	1382.4	2201.0	2543.3	2140.3	1798.4	1005.7	586.4	410.1	330.3	350.6	477.5	847.8	14073.8
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	38.4	54.9	62.3	52.7	46.7	29.6	17.1	8.4	6.3	6.7	11.6	25.5	360.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.4	48.1	49.1	43.7	42.3	12.4	18.6	21.4	19.9	13.8	17.2	4.0	328.7
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.5	0.0	37.2
Withdrawal	2.0	0.8	1.2	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.9	48.9	50.3	45.4	44.5	14.6	25.7	28.3	26.2	17.5	23.7	4.0	373.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	15.6	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	34.0	40.0	0.0	235.3
ENGLNG	2.8	2.9	85.8	2.7	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	131.6	25.6	5.8	193.1	533.7	507.4	496.1	287.0	505.1	2.9	3024.7
Total Req	1737.7	2275.7	2725.2	2211.3	1848.7	1213.4	1145.8	945.7	852.6	655.1	1006.3	854.8	17472.4
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.4	129.2	115.4	129.2	3.1	0.0	0.0	0.0	0.0	0.0	0.0	626.8
ENGUSGC	675.8	698.3	698.3	630.7	698.3	233.4	547.2	529.6	517.5	297.1	517.2	0.0	6043.4
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	410.8	329.8	350.4	0.0	5.3	1096.3

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	211.4	106.1	310.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	628.0
ENG-Z6-SW-MN	326.7	0.0	0.0	0.0	580.2	873.2	582.6	0.0	0.0	0.0	473.9	838.4	3674.9
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	85.8	2.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1232.7	1542.0	1825.6	1601.1	1520.9	1210.6	1142.8	942.8	849.7	652.1	1003.5	851.8	14375.7
Storage Withdrawals													
ENGFSMA	245.1	564.0	546.0	378.5	71.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	18.2	8.4	20.5	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	170.4	65.1	97.3	149.7	188.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	35.9	21.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	235.3
ENGLNG	2.8	2.9	92.3	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	505.1	733.7	899.6	610.2	327.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3096.7
Total Supply	1737.7	2275.7	2725.2	2211.3	1848.7	1213.4	1145.8	945.7	852.6	655.1	1006.3	854.8	17472.4
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	996	450	72	0	0	318	625	943	1190	1498	1498
ENGDominion	103	75	56	48	28	5	32	60	87	87	87	103	103
ENGNFG	671	500	435	338	188	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	33	11	50	91	131	172	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	5	5	5	5	5	5	5	77
Total Inv	2608	2413	1705	937	353	30	221	752	1256	1749	2033	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1405.5	2239.2	2587.8	2177.6	1829.2	1020.1	594.8	416.8	335.8	356.5	484.9	859.8	14307.9
Total Demand	1405.5	2239.2	2587.8	2177.6	1829.2	1020.1	594.8	416.8	335.8	356.5	484.9	859.8	14307.9
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
Total DSM	48.5	69.3	78.5	66.5	58.8	37.3	21.6	10.5	8.0	8.5	14.6	32.2	454.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	8.4	11.1	20.7	16.5	8.5	6.2	14.5	12.7	10.7	1.9	12.8	4.0	128.1
Injection	0.9	0.0	0.0	0.0	0.0	0.1	5.4	4.7	3.9	0.0	4.5	0.0	19.6
Withdrawal	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Fuel	9.3	11.1	20.8	16.5	8.5	6.4	19.9	17.4	14.6	1.9	17.3	4.0	147.7
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	262.1	0.0	307.6	0.0	1257.4
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0	10.2
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	9.0	40.0	0.0	211.6
ENGLNG	2.8	2.0	0.0	0.0	95.1	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.0	0.0	0.0	95.1	50.1	393.1	355.3	303.4	11.2	356.9	2.9	1635.5
Total Req	1480.1	2252.3	2608.6	2194.1	1932.9	1076.6	1007.8	789.6	653.8	369.6	859.1	866.7	16091.2
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
ENGDawn	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
ENGUSGC	65.2	0.0	22.5	0.0	0.0	51.8	404.4	370.8	316.4	9.3	362.6	0.0	1603.1
Marcellus	1401.0	2162.4	1792.6	1554.9	1698.6	1015.7	591.0	413.4	332.0	352.7	481.4	855.7	12651.4
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.0	0.0	0.0	95.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1477.2	2175.5	1831.2	1565.5	1803.3	1073.7	1004.8	786.7	650.9	366.7	856.3	863.8	14455.7
=====													
Storage Withdrawals													
ENGFSMA	0.0	13.2	677.2	563.6	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1257.4
ENGDominion	0.0	0.0	29.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	7.7	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2
ENGHON	0.0	60.7	60.7	52.9	37.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.6
ENGLNG	2.8	2.9	2.9	2.7	88.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	2.8	76.8	777.4	628.6	129.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1635.5
=====													
Total Supply	1480.1	2252.3	2608.6	2194.1	1932.9	1076.6	1007.8	789.6	653.8	369.6	859.1	866.7	16091.2
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1547	870	306	303	303	621	928	1190	1190	1498	1498
ENGDominion	103	103	103	74	67	67	67	95	103	103	103	103	103
ENGNFG	671	671	671	663	661	661	671	671	671	671	671	671	671
ENGHON	246	246	186	125	72	35	75	116	156	197	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	12	9	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2598	2523	1746	1117	1083	1130	1520	1873	2173	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.6: High Case Design Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1483.8	2340.8	2708.5	2277.7	1917.8	1060.5	594.8	396.2	311.4	330.9	469.0	888.0	14779.4
Total Demand	1483.8	2340.8	2708.5	2277.7	1917.8	1060.5	594.8	396.2	311.4	330.9	469.0	888.0	14779.4
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.3	49.4	50.4	44.8	43.6	13.0	18.6	21.2	19.6	4.9	17.2	12.3	331.3
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	0.0	6.5	3.7	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.9	51.0	52.7	46.7	45.9	15.2	25.7	28.1	25.9	4.9	23.7	15.9	376.5
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	15.6	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	0.0	132.6	3.6	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	0.0	40.0	14.3	215.6
ENGLNG	2.8	2.9	70.5	15.2	8.5	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	116.4	38.1	8.5	193.1	545.3	518.9	507.6	13.7	510.3	268.0	3056.3
Total Req	1835.0	2417.7	2877.5	2362.6	1972.2	1268.8	1165.7	943.1	845.0	349.5	1003.0	1172.0	18212.2
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	241.5	547.2	529.6	517.5	0.0	517.2	276.8	6031.2
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	396.7	310.7	330.4	0.0	11.0	1048.8

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	298.2	239.6	384.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	922.6
ENG-Z6-SW-MN	670.8	0.0	0.0	0.0	648.4	916.4	591.0	0.0	0.0	0.0	465.4	873.1	4165.1
ENG-Z6-Peak	0.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0
DLiqWinter	2.8	2.9	70.5	15.2	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1576.7	1632.5	1941.6	1689.3	1591.9	1263.0	1162.8	940.3	842.0	346.6	1000.2	1169.1	15155.9
Storage Withdrawals													
ENGFSMA	245.1	543.9	487.4	395.6	130.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	22.9	27.1	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	132.5	186.5	162.7	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	10.3	60.0	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	77.0	15.2	5.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	258.3	785.2	935.9	673.3	380.3	5.9	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
Total Supply	1835.0	2417.7	2877.5	2362.6	1972.2	1268.8	1165.7	943.1	845.0	349.5	1003.0	1172.0	18212.2
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1016	529	134	3	0	318	625	943	943	1251	1498
ENGDominion	103	103	80	53	28	5	32	60	87	87	87	103	103
ENGNFG	671	671	538	352	189	0	128	265	398	535	535	667	671
ENGHON	246	236	176	115	63	31	69	111	151	192	192	232	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2660	1900	1081	446	74	261	804	1320	1824	1835	2342	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1526.5	2409.8	2788.6	2345.1	1973.9	1090.5	611.5	408.2	321.0	341.1	482.8	913.0	15212.1
Total Demand	1526.5	2409.8	2788.6	2345.1	1973.9	1090.5	611.5	408.2	321.0	341.1	482.8	913.0	15212.1
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	20.0	28.6	32.5	27.5	24.3	15.3	8.7	4.2	3.0	3.3	5.8	13.2	186.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.5	49.9	51.1	45.1	43.4	29.1	18.7	21.4	12.8	5.0	17.6	26.5	357.1
Injection	4.5	0.0	0.0	0.0	0.0	2.0	7.1	6.8	3.7	0.0	6.8	6.3	37.3
Withdrawal	0.0	1.7	2.2	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	41.0	51.6	53.3	47.0	45.6	31.1	25.8	28.2	16.4	5.0	24.4	32.9	402.4
Storage Injections													
ENGFSMA	305.2	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1803.2
ENGDominion	0.0	0.0	0.0	0.0	0.0	19.2	28.2	27.2	0.0	0.0	27.2	0.0	101.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	14.3	0.0	40.0	41.3	215.6
ENGLNG	2.8	2.9	61.6	22.9	9.7	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	308.1	25.9	107.5	45.8	9.7	186.0	533.7	518.5	276.6	13.7	528.3	504.7	3058.5
Total Req	1875.6	2487.3	2949.4	2437.9	2029.2	1307.6	1171.0	954.9	614.1	359.8	1035.5	1450.5	18673.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	671.6	547.2	529.6	276.8	0.0	529.6	517.5	6473.6
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	408.9	320.4	340.7	0.0	719.8	1789.8

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	350.9	312.3	432.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1096.0
ENG-Z6-SW-MN	714.0	0.0	0.0	0.0	744.2	522.8	607.8	0.0	0.0	0.0	479.3	196.6	3264.7
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	61.6	22.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1620.0	1685.3	2007.7	1744.9	1688.9	1299.3	1168.1	952.1	611.1	356.9	1032.6	1447.6	15614.5
=====													
Storage Withdrawals													
ENGFSMA	242.8	540.2	504.0	413.5	97.3	5.4	0.0	0.0	0.0	0.0	0.0	0.0	1803.2
ENGDominion	0.0	29.0	29.0	24.7	19.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101.9
ENGNFG	0.0	146.7	187.5	154.4	182.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	10.0	60.3	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	68.2	20.9	8.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	92.4	27.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	255.6	802.1	941.7	693.0	340.4	8.3	2.9	2.9	2.9	2.9	2.9	2.9	3058.5
=====													
Total Supply	1875.6	2487.3	2949.4	2437.9	2029.2	1307.6	1171.0	954.9	614.1	359.8	1035.5	1450.5	18673.0
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1020	516	103	5	0	318	625	873	873	1180	1498
ENGDominion	103	103	74	45	20	1	20	48	75	75	75	103	103
ENGNFG	671	671	524	337	182	0	128	265	398	401	401	534	671
ENGHON	246	236	176	115	63	31	69	111	151	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	9	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	30	26	26	26	26	37	48	60	71	77
Total Inv	2608	2660	1884	1050	402	72	250	780	1296	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1565.1	2472.2	2861.1	2517.5	2024.6	1117.5	626.6	419.2	329.7	350.3	495.3	935.4	15714.6
Total Demand	1565.1	2472.2	2861.1	2517.5	2024.6	1117.5	626.6	419.2	329.7	350.3	495.3	935.4	15714.6
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	13.1	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	85.4
2014_15-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2015_16-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	30.8	44.2	50.2	44.4	37.5	23.6	13.5	6.4	4.7	5.0	9.0	20.4	289.9
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.4	50.1	51.7	47.0	41.8	13.6	18.8	21.6	19.9	13.7	17.5	4.5	338.6
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	1.4	2.2	2.2	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.3	52.3	53.9	49.0	42.0	15.9	25.8	28.4	26.2	17.4	24.2	4.5	384.0
Storage Injections													
ENGFSMA	307.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.4
ENGDominion	0.0	0.0	0.0	0.0	0.0	25.8	28.2	27.2	0.0	0.0	21.5	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	32.0	40.0	0.0	233.3
ENGLNG	2.8	2.9	50.1	31.4	12.7	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.3	25.9	96.0	54.4	12.7	192.6	545.3	518.9	507.6	296.5	516.2	2.9	3079.2
Total Req	1919.7	2550.4	3011.0	2620.9	2079.4	1326.0	1197.7	966.4	863.6	664.2	1035.6	942.9	19177.8
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	129.2	129.2	120.9	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	637.0
ENGUSGC	675.8	698.3	698.3	653.3	698.3	251.2	547.2	529.6	517.5	295.0	523.5	0.0	6087.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	420.0	329.2	350.1	0.0	17.2	1116.6

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	419.0	394.8	524.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1338.6
ENG-Z6-SW-MN	587.9	0.0	0.0	0.0	965.9	959.3	622.9	0.0	0.0	0.0	491.8	914.6	4542.4
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	50.1	31.4	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1493.9	1753.3	2078.7	1890.7	1913.6	1315.5	1194.7	963.6	860.6	661.3	1032.8	939.9	16098.6
Storage Withdrawals													
ENGFSMA	245.0	497.9	521.8	441.1	92.0	7.6	0.0	0.0	0.0	0.0	0.0	0.0	1805.4
ENGDominion	4.2	28.0	28.9	23.3	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	115.0	184.7	189.0	163.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.7	58.2	35.1	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	233.3
ENGLNG	2.8	2.9	56.6	30.9	10.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	77.8	36.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	425.8	797.1	932.3	730.2	165.8	10.5	2.9	2.9	2.9	2.9	2.9	2.9	3079.2
Total Supply	1919.7	2550.4	3011.0	2620.9	2079.4	1326.0	1197.7	966.4	863.6	664.2	1035.6	942.9	19177.8
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1062	541	100	8	0	318	625	943	1190	1498	1498
ENGDominion	103	98	70	42	18	0	26	54	81	81	81	103	103
ENGNFG	671	556	371	182	19	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	34	13	52	93	133	174	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	45	31	26	26	37	49	60	72	77	77
Total Inv	2608	2492	1721	884	209	55	238	780	1296	1801	2094	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1614.1	2551.1	2952.6	2482.9	2088.8	1152.0	645.8	432.8	340.6	361.9	511.0	964.1	16097.8
Total Demand	1614.1	2551.1	2952.6	2482.9	2088.8	1152.0	645.8	432.8	340.6	361.9	511.0	964.1	16097.8
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	41.7	59.8	68.0	57.5	50.7	32.0	18.3	8.7	6.4	6.8	12.2	27.6	389.6
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.4	50.5	52.2	45.7	42.2	14.1	18.9	21.8	20.0	13.9	17.6	4.7	339.9
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	1.1	2.2	2.2	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.0	52.7	54.5	47.6	42.7	16.2	25.9	28.6	26.4	17.6	24.3	4.7	385.2
Storage Injections													
ENGFSMA	304.3	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1802.3
ENGDominion	0.0	0.0	0.0	0.0	0.0	25.4	28.2	27.2	0.0	0.0	21.9	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	126.3	137.0	132.6	137.0	5.4	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	31.3	40.0	0.0	232.6
ENGLNG	2.8	2.9	66.1	22.3	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	94.2
Total Inj	307.2	25.9	112.0	45.3	5.8	190.4	536.2	507.4	496.1	286.1	511.4	2.9	3026.5
Total Req	1965.3	2629.7	3119.1	2575.7	2137.3	1358.6	1207.9	968.8	863.1	665.6	1046.6	971.7	19509.5
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	256.9	547.2	529.6	517.5	296.2	523.9	0.0	6072.6
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	433.9	340.3	361.8	0.0	22.9	1158.9

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	497.4	448.0	544.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1489.8
ENG-Z6-SW-MN	657.2	0.0	0.0	0.0	1006.5	983.5	642.3	0.0	0.0	0.0	507.6	937.8	4734.9
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	66.1	22.3	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	2.4
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	4.3	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
Total Take	1563.1	1831.7	2152.2	1864.9	1947.3	1345.4	1205.0	966.0	860.1	662.7	1043.8	968.8	16411.0
=====													
Storage Withdrawals													
ENGFSMA	241.9	497.2	539.0	428.4	85.4	10.4	0.0	0.0	0.0	0.0	0.0	0.0	1802.3
ENGDominion	4.2	28.0	29.0	24.1	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	94.7	188.1	189.0	158.5	40.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.6	58.7	58.7	35.9	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.6
ENGLNG	2.8	2.9	72.6	22.3	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	78.5	41.6	23.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.1
Total With	402.2	797.9	966.9	710.9	190.0	13.2	2.9	2.9	2.9	2.9	2.9	2.9	3098.5
=====													
Total Supply	1965.3	2629.7	3119.1	2575.7	2137.3	1358.6	1207.9	968.8	863.1	665.6	1046.6	971.7	19509.5
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1063	524	96	10	0	318	625	943	1190	1498	1498
ENGDominion	103	99	71	42	17	0	25	54	81	81	81	103	103
ENGNFG	671	576	388	199	40	0	126	263	396	533	538	671	671
ENGHON	246	188	129	70	34	14	52	94	134	175	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	44	26	2	2	5	5	5	5	5	77
Total Inv	2608	2513	1740	886	220	36	213	746	1251	1744	2027	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1657.4	2620.9	3033.8	2551.0	2145.6	1182.4	662.8	445.0	350.3	372.2	525.0	989.4	16535.8
Total Demand	1657.4	2620.9	3033.8	2551.0	2145.6	1182.4	662.8	445.0	350.3	372.2	525.0	989.4	16535.8
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
Total DSM	52.6	75.4	85.7	72.4	63.9	40.3	23.1	11.0	8.0	8.6	15.4	34.8	491.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	9.8	14.4	24.2	19.0	10.5	8.3	14.8	12.8	12.5	4.5	12.9	4.6	148.3
Injection	0.9	0.0	0.0	0.0	0.0	0.7	5.4	4.7	4.7	1.2	4.5	0.0	22.1
Withdrawal	0.1	0.0	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Total Fuel	10.9	14.4	24.5	19.2	10.5	9.0	20.2	17.5	17.2	5.7	17.5	4.6	171.1
Storage Injections													
ENGFSMA	63.5	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	81.8	307.6	0.0	1396.1
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0	54.0
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	11.0	40.0	0.0	213.6
ENGLNG	2.8	2.9	6.8	2.7	84.7	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.6	0.0	0.7	0.0	0.0	2.0
Total Inj	66.3	2.9	6.8	2.7	84.7	94.0	393.8	355.9	359.1	95.7	356.9	2.9	1822.0
Total Req	1734.7	2638.2	3065.1	2572.8	2240.8	1285.4	1076.8	818.5	726.6	473.6	899.4	996.9	18528.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	7.2	0.0	14.6	9.5	0.6	1.8	0.0	0.0	0.0	0.0	0.0	0.0	33.7
ENGDawn	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
ENGUSGC	66.4	0.0	51.8	31.5	0.0	97.5	404.4	370.8	374.7	96.8	362.6	0.0	1856.5
Marcellus	1628.9	2404.4	2164.9	1928.2	1984.0	1177.0	659.3	441.7	346.6	368.5	521.6	985.8	14611.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DliqWinter	2.8	2.9	6.8	2.7	84.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DliqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.6	0.0	0.7	0.0	0.0	2.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Total Take	1713.5	2418.5	2256.8	1982.4	2079.0	1282.5	1073.9	815.6	723.7	470.7	896.5	993.9	16706.9
Storage Withdrawals													
ENGFSMA	1.1	154.1	677.2	521.4	42.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1396.1
ENGDominion	2.3	0.9	29.0	2.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	9.1	1.1	26.2	11.5	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.0
ENGHON	5.9	60.7	60.7	52.1	34.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.6
ENGLNG	2.8	2.9	13.4	2.7	78.2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Total With	21.2	219.8	808.4	590.5	161.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1822.0
Total Supply	1734.7	2638.2	3065.1	2572.8	2240.8	1285.4	1076.8	818.5	726.6	473.6	899.4	996.9	18528.9
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1406	729	208	165	165	483	791	1109	1190	1498	1498
ENGDominion	103	100	99	70	68	67	67	95	103	103	103	103	103
ENGNFG	671	662	661	634	623	617	671	671	671	671	671	671	671
ENGHON	246	240	180	119	67	33	73	114	154	195	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	3	3	3	3	3	4	4	5	5	5
Total Inv	2536	2581	2364	1562	975	897	989	1379	1732	2089	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.7: High Case Design Year: Annual Design Day

JAN 19, 2014

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	143.9		ENGPNGTS	0.40	ENGFSMA		19.62			727	47	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		423	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG					7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		30.00			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	27.97								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	47.75	0.22
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane	35.00	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	143.9		Total	87.21	Total		58.61	0.07		1384		Total		1.78

JAN 19, 2015

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	148.2	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			718	46	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			56	55	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		408	61	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		25.52			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	30.52	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	148.2	0.00	Total	89.48	Total		60.66	0.07		1353	Total			1.79

JAN 19, 2016

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	152.1	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			749	48	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			53	51	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		255	38	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.34			7	51	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		29.61			28	37	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.34	
			ENGAES									ENGPropane	34.61	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	152.1	0.00	Total	89.48	Total		64.55	0.07		1182	Total			1.79

JAN 19, 2017

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	157.0	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			738	47	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			53	51	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		272	41	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			92	37	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		30.00			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	35.00	
			ENG-OPR	4.33								ENGC3Truck	5.00	
												ENGTGPAES		
Total	157.0	0.00	Total	93.80	Total		65.14	0.07		1186	Total			1.79

JAN 19, 2018

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	161.4	0.00	ENGPNGTS	0.40	ENGFSMA		21.84			991	64	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			82	80	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		3.85	0.05		649	97	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			143	58	ENGTGPANE	4.00	0.04
			Marcellus	90.00	ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		2.00			3	58	ENGTGPProd	22.53	
			ENG-Z6-BLDJF									ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX	90.00	
			ENG-Z6-Peak									ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	89.59	0.41
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	2.00	
			ENG-OPR	2.09								ENGC3Truck		
												ENGTGPAES		
Total	161.4	0.00	Total	126.3	Total		37.11	0.05		1874	Total			1.97

Appendix B.8: High Case Normal Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1328.6	2110.8	2438.2	2052.1	1726.0	954.5	556.5	386.6	311.1	330.2	451.5	805.1	13451.2
Total Demand	1328.6	2110.8	2438.2	2052.1	1726.0	954.5	556.5	386.6	311.1	330.2	451.5	805.1	13451.2
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	35.7	47.3	48.3	43.4	44.7	12.0	18.4	21.1	19.6	4.9	17.1	11.7	324.2
Injection	4.5	0.0	0.0	0.0	0.0	2.3	7.1	6.8	6.3	0.0	6.5	3.6	37.2
Withdrawal	0.0	2.0	2.0	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.2	49.3	50.3	45.2	46.9	14.2	25.5	27.9	25.9	4.9	23.6	15.4	369.3
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.1	0.0	97.8
ENGNFG	0.0	0.0	0.0	0.0	0.0	131.7	137.0	132.6	137.0	0.0	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	0.0	40.0	16.3	219.0
ENGLNG	2.8	2.9	81.8	6.6	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	127.7	29.6	5.8	198.0	545.3	518.9	507.6	13.7	510.8	266.5	3060.2
Total Req	1679.3	2185.9	2616.2	2126.9	1778.7	1166.8	1127.2	933.4	844.6	348.8	985.9	1087.0	16880.7
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.6	129.2	110.8	129.2	3.9	0.0	0.0	0.0	0.0	0.0	0.0	623.2
ENGUSGC	675.8	698.3	698.3	630.7	698.3	229.2	547.2	529.6	517.5	0.0	517.8	275.2	6017.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	386.9	310.3	329.7	0.0	2.3	1029.3

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	161.3	54.8	186.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	402.3
ENG-Z6-SW-MN	507.7	0.0	0.0	0.0	271.2	829.9	552.5	0.0	0.0	0.0	447.8	798.4	3407.5
ENG-Z6-Peak	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
DLiqWinter	2.8	2.9	81.8	6.6	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1413.7	1492.1	1753.1	1476.4	1211.9	1163.9	1124.3	930.5	841.7	345.9	983.1	1084.0	13820.5
Storage Withdrawals													
ENGFSMA	245.1	415.7	427.6	394.6	322.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	28.0	24.7	23.2	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.8
ENGNFG	0.0	165.6	166.7	151.9	186.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	17.6	58.7	58.6	51.2	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0
ENGLNG	2.8	2.9	88.3	6.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	265.6	693.9	863.1	650.5	566.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3060.2
Total Supply	1679.3	2185.9	2616.2	2126.9	1778.7	1166.8	1127.2	933.4	844.6	348.8	985.9	1087.0	16880.7
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1145	717	323	0	0	318	625	943	943	1251	1498
ENGDominion	103	103	75	50	27	5	31	59	87	87	87	103	103
ENGNFG	671	671	505	339	187	0	132	269	401	538	538	671	671
ENGHON	246	229	170	111	60	27	67	109	149	190	190	230	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2652	1984	1249	628	67	262	805	1321	1825	1836	2344	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1366.7	2172.8	2510.1	2112.5	1776.3	981.3	572.1	398.4	320.7	340.4	464.8	827.6	13843.6
Total Demand	1366.7	2172.8	2510.1	2112.5	1776.3	981.3	572.1	398.4	320.7	340.4	464.8	827.6	13843.6
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	18.4	26.3	29.8	25.2	22.3	14.1	8.2	4.0	3.0	3.2	5.5	12.2	172.3
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	35.9	47.9	48.9	43.9	44.3	28.3	18.5	21.2	12.9	5.0	17.5	25.9	350.2
Injection	4.5	0.0	0.0	0.0	0.0	1.9	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.0	1.9	2.1	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.4	49.7	50.9	45.7	46.5	30.2	25.6	28.1	16.5	5.0	24.3	32.3	395.4
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	15.3	28.2	27.2	0.0	0.0	27.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	17.7	0.0	40.0	41.3	219.0
ENGLNG	2.8	2.9	85.8	2.7	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.4	25.9	131.6	25.6	5.8	182.1	533.7	518.5	280.0	13.7	528.3	504.7	3060.3
Total Req	1717.5	2248.4	2692.7	2183.8	1828.6	1193.7	1131.5	944.9	617.2	359.1	1017.4	1364.5	17299.2
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	126.8	129.2	113.5	129.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	624.2
ENGUSGC	675.8	698.3	698.3	630.7	698.3	667.2	547.2	529.6	280.3	0.0	529.6	517.5	6472.7
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	398.9	320.0	340.0	0.0	700.2	1759.1

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	195.5	78.1	243.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	516.8
ENG-Z6-SW-MN	548.0	0.0	0.0	0.0	379.3	421.7	568.2	0.0	0.0	0.0	461.1	130.2	2508.6
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	85.8	2.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1453.9	1527.4	1797.7	1531.9	1320.1	1190.8	1128.5	942.1	614.2	356.2	1014.5	1361.6	14238.9
Storage Withdrawals													
ENGFSMA	245.1	452.4	447.8	396.9	263.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	27.8	24.7	23.5	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	0.0	156.2	172.4	154.6	187.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	15.5	58.7	60.7	51.2	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0
ENGLNG	2.8	2.9	92.3	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	263.5	721.0	895.1	651.9	508.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3060.3
Total Supply	1717.5	2248.4	2692.7	2183.8	1828.6	1193.7	1131.5	944.9	617.2	359.1	1017.4	1364.5	17299.2
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1108	660	263	0	0	318	625	873	873	1180	1498
ENGDominion	103	103	75	50	27	5	20	48	75	75	75	103	103
ENGNFG	671	671	515	342	188	0	128	265	398	401	401	534	671
ENGHON	246	231	172	111	60	27	66	107	147	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2654	1959	1196	570	67	246	777	1293	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1400.9	2228.8	2575.1	2265.6	1821.6	1005.5	586.2	409.0	329.4	349.6	476.8	847.8	14296.4
Total Demand	1400.9	2228.8	2575.1	2265.6	1821.6	1005.5	586.2	409.0	329.4	349.6	476.8	847.8	14296.4
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	12.0	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.9
2014_15-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2015_16-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	28.4	40.6	46.0	40.7	34.5	21.9	12.7	6.2	4.7	5.0	8.6	18.9	268.0
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.5	48.4	49.4	45.6	41.9	12.3	18.6	21.4	19.9	13.7	17.4	4.0	331.0
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	2.1	0.8	1.5	1.8	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.1	49.2	50.9	47.4	43.6	14.6	25.6	28.2	26.2	17.4	24.0	4.0	376.4
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	32.6	40.0	0.0	233.9
ENGLNG	2.8	2.9	85.7	2.8	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	131.5	25.7	5.8	193.1	545.3	518.9	507.6	297.1	515.7	2.9	3080.0
Total Req	1756.5	2303.9	2757.6	2338.7	1871.1	1213.2	1157.1	956.2	863.2	664.2	1016.5	854.7	17752.8
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	126.0	129.2	120.8	129.2	3.0	0.0	0.0	0.0	0.0	0.0	0.0	632.6
ENGUSGC	675.8	698.3	698.3	653.3	698.3	233.2	547.2	529.6	517.5	295.7	522.9	0.0	6070.0
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	409.8	328.9	349.4	0.0	5.3	1093.3

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	226.8	125.4	362.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	714.5
ENG-Z6-SW-MN	338.8	0.0	0.0	0.0	680.2	873.2	582.4	0.0	0.0	0.0	473.2	838.4	3786.3
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	85.7	2.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1244.8	1557.9	1844.8	1699.5	1621.0	1210.3	1154.2	953.3	860.2	661.2	1013.6	851.8	14672.8
Storage Withdrawals													
ENGFSMA	245.1	571.0	520.3	406.0	63.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	19.0	16.0	21.4	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	177.0	69.6	128.6	150.5	145.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	35.6	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	233.9
ENGLNG	2.8	2.9	92.2	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	511.7	746.0	912.8	639.1	250.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3080.0
Total Supply	1756.5	2303.9	2757.6	2338.7	1871.1	1213.2	1157.1	956.2	863.2	664.2	1016.5	854.7	17752.8
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	989	469	63	0	0	318	625	943	1190	1498	1498
ENGDominion	103	75	56	40	18	0	26	54	82	82	82	103	103
ENGNFG	671	494	424	296	145	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	33	12	51	92	132	174	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2406	1686	905	291	47	237	780	1296	1801	2095	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1444.5	2299.6	2657.3	2236.2	1879.1	1036.3	604.2	422.5	340.3	361.2	492.0	873.7	14646.7
Total Demand	1444.5	2299.6	2657.3	2236.2	1879.1	1036.3	604.2	422.5	340.3	361.2	492.0	873.7	14646.7
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	38.4	54.9	62.3	52.7	46.7	29.6	17.1	8.4	6.3	6.7	11.6	25.5	360.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.7	49.0	50.0	44.2	41.7	12.7	18.7	21.6	20.0	13.9	17.4	4.1	332.1
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	2.1	0.9	1.7	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.4	49.9	51.7	45.9	43.3	14.9	25.7	28.4	26.4	17.6	24.1	4.1	377.4
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	31.5	40.0	0.0	232.7
ENGLNG	2.8	2.9	76.6	11.8	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	122.5	34.7	5.8	193.1	533.7	507.4	496.1	284.4	510.5	2.9	3027.5
Total Req	1800.4	2375.4	2831.4	2316.8	1928.2	1244.4	1163.7	958.3	862.7	663.2	1026.5	880.7	18051.7
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	127.3	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	631.0
ENGUSGC	675.8	698.3	698.3	630.7	698.3	237.0	547.2	529.6	517.5	294.4	522.9	0.0	6050.1
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	423.4	339.9	361.1	0.0	7.1	1131.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	273.0	199.7	382.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	854.7
ENG-Z6-SW-MN	380.3	0.0	0.0	0.0	748.8	898.0	600.5	0.0	0.0	0.0	488.5	862.5	3978.6
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	76.6	11.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1286.3	1605.4	1910.0	1683.2	1689.5	1240.1	1160.8	955.4	859.8	660.2	1023.7	877.8	14952.2
Storage Withdrawals													
ENGFSMA	245.1	584.1	525.9	406.6	42.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	21.5	15.4	19.5	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	179.3	78.0	141.3	138.3	133.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	34.4	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.7
ENGLNG	2.8	2.9	83.1	11.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	514.1	770.0	921.4	633.6	238.7	4.3	2.9	2.9	2.9	2.9	2.9	2.9	3099.5
Total Supply	1800.4	2375.4	2831.4	2316.8	1928.2	1244.4	1163.7	958.3	862.7	663.2	1026.5	880.7	18051.7
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	976	450	44	1	0	318	625	943	1190	1498	1498
ENGDominion	103	75	53	38	18	0	26	54	82	82	82	103	103
ENGNFG	671	491	413	272	134	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	34	14	52	93	133	175	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	5	5	5	5	5	5	5	77
Total Inv	2608	2404	1660	861	262	29	218	749	1253	1746	2028	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1483.1	2362.4	2730.0	2297.3	1930.0	1063.5	620.1	434.4	350.0	371.5	505.4	896.4	15044.0
Total Demand	1483.1	2362.4	2730.0	2297.3	1930.0	1063.5	620.1	434.4	350.0	371.5	505.4	896.4	15044.0
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
Total DSM	48.5	69.3	78.5	66.5	58.8	37.3	21.6	10.5	8.0	8.5	14.6	32.2	454.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	8.8	12.1	21.7	17.1	9.1	6.6	14.6	12.8	11.8	2.0	12.9	4.2	133.4
Injection	0.9	0.0	0.0	0.0	0.0	0.2	5.4	4.7	4.3	0.0	4.5	0.0	20.1
Withdrawal	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Fuel	9.7	12.1	21.8	17.1	9.1	6.8	20.0	17.5	16.1	2.0	17.4	4.2	153.7
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	294.3	0.0	307.6	0.0	1289.7
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	15.4
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	9.7	40.0	0.0	212.3
ENGLNG	2.8	2.9	0.6	2.7	90.9	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.9	0.6	2.7	90.9	55.4	393.1	355.3	335.6	11.9	356.9	2.9	1673.6
Total Req	1558.1	2377.4	2752.4	2317.1	2030.0	1125.6	1033.2	807.2	701.7	385.4	879.7	903.5	16871.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	0.6	0.0	6.3	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
ENGDawn	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
ENGUSGC	65.2	0.0	26.2	2.0	0.0	57.2	404.4	370.8	350.1	10.0	362.6	0.0	1648.7
Marcellus	1475.5	2253.2	1921.1	1674.2	1795.6	1059.4	616.4	431.0	346.2	367.8	502.0	892.5	13334.9
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.9	0.6	2.7	90.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1552.3	2267.3	1970.8	1695.0	1896.2	1122.8	1030.3	804.4	698.7	382.4	876.9	900.6	15197.7
Storage Withdrawals													
ENGFSMA	0.0	46.4	677.2	553.1	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1289.7
ENGDominion	0.9	0.0	29.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	7.7	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4
ENGHON	2.0	60.7	60.7	52.6	36.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	212.3
ENGLNG	2.8	2.9	7.2	2.7	84.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	5.7	110.0	781.6	622.1	133.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1673.6
Total Supply	1558.1	2377.4	2752.4	2317.1	2030.0	1125.6	1033.2	807.2	701.7	385.4	879.7	903.5	16871.3
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1514	837	284	271	271	589	896	1190	1190	1498	1498
ENGDominion	103	102	102	73	67	67	67	95	103	103	103	103	103
ENGNFG	671	671	671	663	655	655	671	671	671	671	671	671	671
ENGHON	246	244	184	123	70	34	74	115	155	197	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2595	2488	1707	1088	1045	1097	1487	1840	2173	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.9: Low Case Design Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1454.6	2294.9	2655.3	2233.0	1880.2	1039.6	583.1	388.4	305.3	324.4	459.8	870.6	14489.4
Total Demand	1454.6	2294.9	2655.3	2233.0	1880.2	1039.6	583.1	388.4	305.3	324.4	459.8	870.6	14489.4
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.2	49.0	50.0	44.6	43.7	12.7	18.6	21.1	19.5	4.8	17.1	12.2	329.6
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	0.0	6.5	3.7	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.7	50.7	52.2	46.6	46.0	15.0	25.6	27.9	25.8	4.8	23.7	15.8	374.8
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	15.6	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	0.0	132.6	3.6	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	0.0	40.0	14.3	215.6
ENGLNG	2.8	2.9	83.3	4.5	6.5	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	129.1	27.4	6.5	193.1	545.3	518.9	507.6	13.7	510.3	268.0	3056.3
Total Req	1805.8	2371.4	2836.7	2307.0	1932.6	1247.7	1154.0	935.2	838.8	342.9	993.8	1154.5	17920.4
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	237.9	547.2	529.6	517.5	0.0	517.2	276.8	6027.6
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	388.8	304.5	323.8	0.0	8.8	1025.9

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	266.0	184.0	349.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	799.2
ENG-Z6-SW-MN	640.7	0.0	0.0	0.0	586.5	900.6	579.2	0.0	0.0	0.0	456.2	857.8	4021.0
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	83.3	4.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1546.6	1600.3	1901.0	1643.1	1528.0	1243.5	1151.0	932.4	835.9	340.0	990.9	1151.5	14864.1
=====													
Storage Withdrawals													
ENGFSMA	245.1	526.3	476.7	399.1	156.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	23.0	27.1	25.0	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	136.7	184.3	160.7	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	11.2	59.1	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	89.8	4.5	3.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	259.2	771.1	935.7	664.0	404.7	4.2	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
=====													
Total Supply	1805.8	2371.4	2836.7	2307.0	1932.6	1247.7	1154.0	935.2	838.8	342.9	993.8	1154.5	17920.4
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1034	557	158	1	0	318	625	943	943	1251	1498
ENGDominion	103	103	80	53	28	5	32	60	87	87	87	103	103
ENGNFG	671	671	534	350	189	0	128	265	398	535	535	667	671
ENGHON	246	235	176	115	63	31	69	111	151	192	192	232	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2659	1914	1107	470	72	261	804	1320	1824	1835	2342	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1467.1	2316.1	2680.2	2253.9	1897.1	1048.0	587.7	392.4	308.6	327.8	464.0	877.4	14620.1
Total Demand	1467.1	2316.1	2680.2	2253.9	1897.1	1048.0	587.7	392.4	308.6	327.8	464.0	877.4	14620.1
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	20.0	28.6	32.5	27.5	24.3	15.3	8.7	4.2	3.0	3.3	5.8	13.2	186.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.3	49.2	50.2	44.7	43.7	28.7	18.6	21.2	12.6	4.8	17.5	26.2	353.7
Injection	4.5	0.0	0.0	0.0	0.0	1.9	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.8	50.8	52.4	46.6	45.9	30.6	25.7	28.0	16.3	4.8	24.3	32.6	398.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	14.7	28.2	27.2	0.0	0.0	27.2	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	14.3	0.0	40.0	41.3	215.6
ENGLNG	2.8	2.9	77.1	9.6	7.4	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.4	25.9	123.0	32.6	7.4	181.5	533.7	518.5	276.6	13.7	528.3	504.7	3056.3
Total Req	1818.3	2392.8	2855.6	2333.1	1950.5	1260.1	1147.1	938.8	601.4	346.4	1016.6	1414.6	18075.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	667.5	547.2	529.6	276.8	0.0	529.6	517.5	6469.5
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	392.8	307.7	327.3	0.0	707.1	1734.9

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	281.0	209.2	365.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	856.1
ENG-Z6-SW-MN	653.6	0.0	0.0	0.0	614.2	482.7	583.8	0.0	0.0	0.0	460.4	173.4	2968.1
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	77.1	9.6	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1559.5	1615.4	1920.1	1664.8	1556.6	1255.1	1144.1	936.0	598.5	343.5	1013.8	1411.7	15019.0
Storage Withdrawals													
ENGFSMA	245.1	534.3	481.6	397.2	145.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	22.9	27.1	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	134.8	185.3	161.6	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	10.8	59.5	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	83.7	9.6	4.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	258.8	777.4	935.5	668.3	393.9	4.9	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
Total Supply	1818.3	2392.8	2855.6	2333.1	1950.5	1260.1	1147.1	938.8	601.4	346.4	1016.6	1414.6	18075.3
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1026	544	147	2	0	318	625	873	873	1180	1498
ENGDominion	103	103	80	53	28	5	20	48	75	75	75	103	103
ENGNFG	671	671	536	351	189	0	128	265	398	401	401	534	671
ENGHON	246	235	176	115	63	31	69	111	151	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2659	1908	1095	459	73	250	780	1296	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1474.0	2328.6	2695.0	2371.3	1906.9	1052.4	590.0	394.9	310.6	330.0	466.5	880.9	14801.1
Total Demand	1474.0	2328.6	2695.0	2371.3	1906.9	1052.4	590.0	394.9	310.6	330.0	466.5	880.9	14801.1
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	13.1	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	85.4
2014_15-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2015_16-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	30.8	44.2	50.2	44.4	37.5	23.6	13.5	6.4	4.7	5.0	9.0	20.4	289.9
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.9	49.3	50.4	46.3	41.2	12.9	18.6	21.2	19.6	13.4	17.3	4.2	333.2
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	2.1	1.5	2.2	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.5	50.8	52.6	48.1	41.5	15.1	25.7	28.0	25.9	17.1	24.0	4.2	378.5
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	31.6	40.0	0.0	232.9
ENGLNG	2.8	2.9	65.6	19.4	9.2	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	111.4	42.4	9.2	193.1	545.3	518.9	507.6	296.1	515.7	2.9	3079.0
Total Req	1830.0	2405.3	2859.0	2461.8	1957.6	1260.6	1161.0	941.8	844.2	643.3	1006.1	888.0	18258.6
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	128.4	129.2	120.9	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	636.2
ENGUSGC	675.8	698.3	698.3	653.3	698.3	240.4	547.2	529.6	517.5	294.6	522.9	0.0	6076.2
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	395.4	309.9	329.5	0.0	10.3	1045.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	290.0	232.2	424.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	947.0
ENG-Z6-SW-MN	409.6	0.0	0.0	0.0	863.9	909.8	586.2	0.0	0.0	0.0	462.9	866.6	4099.1
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	65.6	19.4	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1315.6	1623.6	1931.5	1778.7	1808.2	1255.3	1158.0	938.9	841.2	640.3	1003.3	885.1	15179.7
Storage Withdrawals													
ENGFSMA	245.1	560.3	486.7	425.5	85.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	7.0	27.1	23.2	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	179.7	128.0	185.9	157.5	19.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	34.6	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.9
ENGLNG	2.8	2.9	72.1	19.4	6.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	514.4	781.7	927.4	683.1	149.5	5.4	2.9	2.9	2.9	2.9	2.9	2.9	3079.0
Total Supply	1830.0	2405.3	2859.0	2461.8	1957.6	1260.6	1161.0	941.8	844.2	643.3	1006.1	888.0	18258.6
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1000	513	88	3	0	318	625	943	1190	1498	1498
ENGDominion	103	75	68	41	17	0	26	54	82	82	82	103	103
ENGNFG	671	491	363	177	20	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	34	13	52	93	133	175	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2404	1648	832	191	51	239	781	1297	1802	2095	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1489.5	2354.6	2725.3	2291.7	1927.8	1062.9	595.8	399.6	314.5	334.1	471.6	889.5	14857.0
Total Demand	1489.5	2354.6	2725.3	2291.7	1927.8	1062.9	595.8	399.6	314.5	334.1	471.6	889.5	14857.0
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	41.7	59.8	68.0	57.5	50.7	32.0	18.3	8.7	6.4	6.8	12.2	27.6	389.6
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	39.0	49.5	50.6	44.6	41.4	13.0	18.6	21.3	19.6	13.5	17.3	4.2	332.6
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	2.1	1.2	2.2	1.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.6	50.7	52.8	46.4	42.0	15.3	25.7	28.1	26.0	17.1	24.0	4.2	377.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	30.9	40.0	0.0	232.2
ENGLNG	2.8	2.9	68.4	20.0	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	114.3	42.9	5.8	193.1	533.7	507.4	496.1	283.9	510.5	2.9	3027.0
Total Req	1845.6	2431.2	2892.4	2381.1	1975.5	1271.3	1155.3	935.1	836.6	635.2	1006.1	896.7	18261.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	128.9	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.6
ENGUSGC	675.8	698.3	698.3	630.7	698.3	242.5	547.2	529.6	517.5	293.9	522.9	0.0	6055.0
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	400.2	313.8	333.7	0.0	11.5	1059.1

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	308.7	252.6	416.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	977.5
ENG-Z6-SW-MN	424.4	0.0	0.0	0.0	856.2	917.6	592.1	0.0	0.0	0.0	468.1	874.1	4132.4
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	68.4	20.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1330.4	1642.7	1954.8	1725.5	1797.0	1265.0	1152.3	932.2	833.6	632.3	1003.3	893.7	15162.9
=====													
Storage Withdrawals													
ENGFSMA	245.1	592.8	492.7	403.6	67.9	3.4	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	7.8	27.2	22.2	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	180.5	101.5	187.1	152.9	48.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	33.9	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.2
ENGLNG	2.8	2.9	75.0	20.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	515.2	788.5	937.6	655.5	178.5	6.2	2.9	2.9	2.9	2.9	2.9	2.9	3099.0
=====													
Total Supply	1845.6	2431.2	2892.4	2381.1	1975.5	1271.3	1155.3	935.1	836.6	635.2	1006.1	896.7	18261.9
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	968	475	71	3	0	318	625	943	1190	1498	1498
ENGDominion	103	75	67	40	17	0	26	54	82	82	82	103	103
ENGNFG	671	490	389	202	49	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	35	14	53	94	134	175	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	5	5	5	5	5	5	5	77
Total Inv	2608	2403	1640	817	204	32	218	749	1254	1747	2028	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1498.1	2369.7	2743.2	2306.6	1939.7	1068.5	598.9	402.5	316.9	336.7	474.6	893.9	14949.5
Total Demand	1498.1	2369.7	2743.2	2306.6	1939.7	1068.5	598.9	402.5	316.9	336.7	474.6	893.9	14949.5
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
Total DSM	52.6	75.4	85.7	72.4	63.9	40.3	23.1	11.0	8.0	8.6	15.4	34.8	491.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	8.9	12.1	21.8	17.1	9.1	6.7	14.5	12.6	11.6	1.8	12.7	4.1	133.1
Injection	0.9	0.0	0.0	0.0	0.0	0.2	5.4	4.7	4.3	0.0	4.5	0.0	20.1
Withdrawal	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Fuel	9.8	12.1	21.9	17.2	9.1	6.9	19.9	17.3	16.0	1.8	17.2	4.1	153.5
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	294.9	0.0	307.6	0.0	1290.3
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	9.7	40.0	0.0	212.3
ENGLNG	2.8	2.0	0.0	0.0	95.1	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.0	0.0	0.0	95.1	58.0	393.1	355.3	336.2	11.9	356.9	2.9	1676.9
Total Req	1573.2	2383.8	2765.1	2323.8	2044.0	1133.4	1011.9	775.2	669.1	350.4	848.8	901.0	16779.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	0.3	0.0	6.3	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8
ENGDawn	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
ENGUSGC	65.2	0.0	27.2	3.0	0.0	60.0	404.4	370.8	350.8	10.0	362.6	0.0	1654.0
Marcellus	1490.9	2259.3	1935.9	1685.1	1799.7	1064.4	595.1	399.1	313.0	332.9	471.0	890.0	13236.5
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.0	0.0	0.0	95.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1567.5	2272.5	1985.0	1703.9	1904.5	1130.6	1009.0	772.4	666.2	347.5	845.9	898.1	15103.0
=====													
Storage Withdrawals													
ENGFSMA	0.0	47.7	677.2	550.9	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1290.3
ENGDominion	0.9	0.0	29.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	10.3	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
ENGHON	2.0	60.7	60.7	52.6	36.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	212.3
ENGLNG	2.8	2.9	2.9	2.7	88.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	5.7	111.4	780.1	619.9	139.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1676.9
=====													
Total Supply	1573.2	2383.8	2765.1	2323.8	2044.0	1133.4	1011.9	775.2	669.1	350.4	848.8	901.0	16779.9
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1513	835	285	270	270	588	895	1190	1190	1498	1498
ENGDominion	103	102	102	73	67	67	67	95	103	103	103	103	103
ENGNFG	671	671	671	660	653	653	671	671	671	671	671	671	671
ENGHON	246	244	184	123	70	34	74	115	155	197	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	12	9	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2595	2486	1706	1086	1041	1097	1487	1839	2173	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.10: Low Case Design Year: Annual Design Day

JAN 19, 2014

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	141.1		ENGPNGTS	0.40	ENGFSMA		19.62			753	48	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		420	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		22.52			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	0.87								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	23.39	
			ENG-OPR									ENGC3Truck	0.87	
												ENGTGPAES		
Total	141.1		Total	85.35	Total		57.66	0.07		1406		Total		1.79

JAN 19, 2015

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	142.5	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			741	47	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		421	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		3.91			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		22.38			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	7.91	
			ENGAES									ENGPropane	27.38	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	142.5	0.00	Total	89.48	Total		54.89	0.07		1396		Total		1.79

JAN 19, 2016

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	143.3	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			713	46	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			51	50	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		248	37	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG					7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		27.11			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane	32.11	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	143.3	0.00	Total	89.48	Total		55.72	0.07		1133	Total			1.79

JAN 19, 2017

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	145.0	0.00	ENGPNGTS	0.40	ENGFSMA		19.62			676	43	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			50	49	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		273	41	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG					7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		28.77			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane	33.77	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	145.0	0.00	Total	89.48	Total		57.38	0.07		1121	Total			1.79

JAN 19, 2018

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	145.9	0.00	ENGPNGTS	0.40	ENGFSMA		21.84			1098	70	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			84	82	ENGDawn2Wadd	3.15	0.06
			ENGDawn	3.21	ENGNFG		3.85	0.05		660	98	ENGIGTS	3.12	0.03
			ENGUSGC	22.53	ENGHON		1.96			146	59	ENGTGPANE	3.08	0.03
			Marcellus	90.00	ENGLNG		0.09			10	79	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane					5	100	ENGTGPProd	22.53	
			ENG-Z6-BLDJF									ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX	90.00	
			ENG-Z6-Peak									ENGTGPShort	28.11	0.42
			DLiqWinter									ENGTGPDracut	89.59	0.41
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	0.09	
			ENGAES									ENGPropane		
			ENG-OPR									ENGC3Truck		
												ENGTGPAES		
Total	145.9	0.00	Total	119.2	Total		28.68	0.05		2004	Total			1.93

Appendix B.11: Low Case Normal Year: Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1302.5	2069.4	2390.4	2011.8	1692.2	935.8	545.5	379.0	305.0	323.7	442.6	789.3	13187.2
Total Demand	1302.5	2069.4	2390.4	2011.8	1692.2	935.8	545.5	379.0	305.0	323.7	442.6	789.3	13187.2
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.2	46.9	47.9	43.1	44.5	11.8	18.4	21.0	19.5	4.8	17.1	11.8	322.7
Injection	4.5	0.0	0.0	0.0	0.0	2.3	7.1	6.8	6.3	0.0	6.5	3.6	37.2
Withdrawal	0.4	1.8	2.0	1.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	41.1	48.7	49.9	44.9	46.4	14.1	25.5	27.8	25.8	4.8	23.6	15.4	367.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	131.7	137.0	132.6	137.0	0.0	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	0.0	40.0	20.9	223.5
ENGLNG	2.8	2.9	76.9	11.5	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	122.8	34.4	5.8	198.0	545.3	518.9	507.6	13.7	510.9	271.0	3064.8
Total Req	1654.0	2144.0	2563.1	2091.1	1744.4	1147.8	1116.3	925.7	838.4	342.2	977.2	1075.8	16619.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.0	128.8	109.7	129.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0	619.6
ENGUSGC	675.8	698.2	698.3	630.7	698.3	228.0	547.2	529.6	517.5	0.0	517.9	279.9	6021.3
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	379.3	304.1	323.1	0.0	1.3	1007.8

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	139.9	30.2	153.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	323.3
ENG-Z6-SW-MN	423.4	0.0	0.0	0.0	238.5	813.7	541.5	0.0	0.0	0.0	438.9	783.5	3239.6
ENG-Z6-Peak	0.0	0.0	16.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.2
DLiqWinter	2.8	2.9	76.9	11.5	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1329.4	1469.9	1726.5	1447.0	1179.3	1145.0	1113.3	922.8	835.5	339.3	974.3	1072.8	13555.1
Storage Withdrawals													
ENGFSMA	245.1	407.7	410.9	394.3	347.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	28.0	24.7	23.2	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	29.6	153.7	169.5	153.9	163.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	47.0	58.7	50.8	38.3	28.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	223.5
ENGLNG	2.8	2.9	83.5	11.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	324.6	674.1	836.5	644.2	565.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3064.8
Total Supply	1654.0	2144.0	2563.1	2091.1	1744.4	1147.8	1116.3	925.7	838.4	342.2	977.2	1075.8	16619.9
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1153	742	347	0	0	318	625	943	943	1251	1498
ENGDominion	103	103	75	50	27	5	31	59	86	86	86	103	103
ENGNFG	671	641	487	318	164	0	132	269	401	538	538	671	671
ENGHON	246	199	141	90	52	23	63	104	144	185	185	225	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2593	1945	1231	622	62	258	800	1316	1821	1831	2339	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1313.4	2088.3	2412.5	2030.3	1707.1	943.1	549.8	382.9	308.2	327.2	446.7	795.3	13304.7
Total Demand	1313.4	2088.3	2412.5	2030.3	1707.1	943.1	549.8	382.9	308.2	327.2	446.7	795.3	13304.7
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	18.4	26.3	29.8	25.2	22.3	14.1	8.2	4.0	3.0	3.2	5.5	12.2	172.3
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	35.9	47.1	48.1	43.3	44.6	27.9	18.4	21.0	12.6	4.8	17.4	25.7	346.7
Injection	4.5	0.0	0.0	0.0	0.0	2.0	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.1	2.0	2.0	1.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.5	49.1	50.1	45.1	46.6	29.9	25.5	27.9	16.3	4.8	24.3	32.0	391.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	15.9	28.2	27.2	0.0	0.0	27.2	0.0	98.5
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.8	137.0	132.6	2.9	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	16.3	0.0	40.0	41.3	219.0
ENGLNG	2.8	2.9	79.2	9.2	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.4	25.9	125.1	32.1	5.8	184.6	533.7	518.5	278.0	13.7	528.3	504.7	3060.8
Total Req	1664.4	2163.2	2587.7	2107.5	1759.5	1157.5	1109.1	929.2	602.5	345.7	999.2	1332.0	16757.5
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.2	129.2	109.8	129.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	617.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	663.1	547.2	529.6	278.2	0.0	529.6	517.5	6466.5
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	383.2	307.4	326.6	0.0	688.1	1705.3

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	149.3	26.1	166.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	341.9
ENG-Z6-SW-MN	469.2	0.0	0.0	0.0	249.0	390.8	545.8	0.0	0.0	0.0	443.0	109.7	2207.5
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	79.2	9.2	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1375.1	1479.7	1739.1	1458.1	1189.8	1154.7	1106.1	926.4	599.5	342.8	996.3	1329.0	13696.7
Storage Withdrawals													
ENGFSMA	245.1	403.1	418.5	394.6	344.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	28.0	25.5	23.3	21.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.5
ENGNFG	11.9	167.9	170.8	152.3	168.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	29.4	58.7	50.9	47.2	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	219.0
ENGLNG	2.8	2.9	85.7	9.2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	289.2	683.5	848.6	649.4	569.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3060.8
Total Supply	1664.4	2163.2	2587.7	2107.5	1759.5	1157.5	1109.1	929.2	602.5	345.7	999.2	1332.0	16757.5
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1157	739	344	0	0	318	625	873	873	1180	1498
ENGDominion	103	103	75	49	26	4	20	48	75	75	75	103	103
ENGNFG	671	659	491	320	168	0	129	266	398	401	401	534	671
ENGHON	246	217	158	107	60	27	67	109	149	165	165	205	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2629	1971	1248	630	66	248	779	1295	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1319.4	2099.3	2425.5	2134.0	1715.7	946.8	552.0	385.3	310.3	329.4	449.1	798.3	13465.1
Total Demand	1319.4	2099.3	2425.5	2134.0	1715.7	946.8	552.0	385.3	310.3	329.4	449.1	798.3	13465.1
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	12.0	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.9
2014_15-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2015_16-EE	10.0	14.3	16.2	14.4	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	94.6
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	28.4	40.6	46.0	40.7	34.5	21.9	12.7	6.2	4.7	5.0	8.6	18.9	268.0
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	37.9	47.2	48.2	44.7	42.9	11.8	18.4	21.1	19.6	13.4	17.1	3.7	325.8
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.5	0.0	37.2
Withdrawal	1.8	0.6	1.5	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.2	47.8	49.6	46.5	45.1	14.0	25.5	27.9	25.9	17.1	23.6	3.7	371.0
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.4	137.0	132.6	137.0	3.3	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	32.4	40.0	0.0	235.0
ENGLNG	2.8	2.9	80.6	7.9	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	126.4	30.8	5.8	194.8	545.3	518.9	507.6	296.6	510.9	2.9	3076.3
Total Req	1673.9	2172.9	2601.6	2211.3	1766.6	1155.6	1122.8	932.1	843.8	643.1	983.7	805.0	16912.5
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	125.4	128.9	115.5	129.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	623.5
ENGUSGC	675.8	698.3	698.3	653.3	698.3	228.9	547.2	529.6	517.5	295.1	517.9	0.0	6060.2
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	385.7	309.5	328.8	0.0	2.0	1026.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	155.4	32.0	239.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	426.8
ENG-Z6-SW-MN	283.8	0.0	0.0	0.0	431.3	823.0	548.1	0.0	0.0	0.0	445.4	791.9	3323.6
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	80.6	7.9	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1189.8	1486.0	1746.1	1576.4	1372.1	1152.8	1119.9	929.3	840.9	640.1	980.8	802.0	13836.1
Storage Withdrawals													
ENGFSMA	245.1	533.9	483.1	383.3	160.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	14.7	9.1	24.1	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	149.4	53.8	122.7	158.1	186.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	58.7	56.3	38.6	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	235.0
ENGLNG	2.8	2.9	87.1	7.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	484.1	687.0	855.5	635.0	394.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3076.3
Total Supply	1673.9	2172.9	2601.6	2211.3	1766.6	1155.6	1122.8	932.1	843.8	643.1	983.7	805.0	16912.5
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
Start of Month Inventory													
ENGFSMA	1498	1560	1027	543	160	0	0	318	625	943	1190	1498	1498
ENGDominion	103	75	60	51	27	5	31	59	86	86	86	103	103
ENGNFG	671	521	468	345	187	0	128	265	398	535	538	671	671
ENGHON	246	188	129	73	34	11	51	93	133	174	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2434	1773	1044	440	51	243	785	1301	1806	2099	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1332.9	2122.4	2452.6	2063.9	1734.2	956.1	557.5	390.0	314.2	333.5	454.1	806.0	13517.4
Total Demand	1332.9	2122.4	2452.6	2063.9	1734.2	956.1	557.5	390.0	314.2	333.5	454.1	806.0	13517.4
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	38.4	54.9	62.3	52.7	46.7	29.6	17.1	8.4	6.3	6.7	11.6	25.5	360.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.0	47.4	48.4	43.1	42.8	11.9	18.5	21.1	19.6	13.6	17.1	3.8	325.3
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.5	0.0	37.2
Withdrawal	1.8	0.7	1.5	1.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	44.3	48.0	49.8	45.0	45.1	14.1	25.5	28.0	26.0	17.2	23.7	3.8	370.5
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	16.2	0.0	98.0
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	39.5	41.3	40.0	41.3	34.9	40.0	0.0	237.0
ENGLNG	2.8	2.9	83.3	5.1	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	129.2	28.1	5.8	194.0	533.7	507.4	496.1	287.9	505.7	2.9	3027.1
Total Req	1687.7	2196.4	2631.6	2136.9	1785.0	1164.2	1116.7	925.4	836.3	638.7	983.5	812.7	16915.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	125.8	128.4	112.3	129.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	620.2
ENGUSGC	675.8	698.3	698.3	630.7	698.3	229.6	547.2	529.6	517.5	298.0	517.9	0.0	6041.2
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	390.5	313.4	333.0	0.0	2.5	1039.4

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	168.4	44.6	237.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	450.8
ENG-Z6-SW-MN	293.4	0.0	0.0	0.0	430.6	830.9	553.5	0.0	0.0	0.0	450.4	799.1	3357.9
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	83.3	5.1	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1199.3	1499.3	1760.8	1528.0	1371.4	1161.3	1113.8	922.5	833.3	635.7	980.6	809.8	13815.9
Storage Withdrawals													
ENGFSMA	245.1	541.7	494.8	367.6	156.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	15.7	9.0	23.2	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.0
ENGNFG	153.6	55.0	122.0	153.1	187.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	58.7	58.0	36.9	24.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237.0
ENGLNG	2.8	2.9	89.8	5.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	488.3	697.0	870.8	609.0	413.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3099.1
Total Supply	1687.7	2196.4	2631.6	2136.9	1785.0	1164.2	1116.7	925.4	836.3	638.7	983.5	812.7	16915.0
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1019	524	156	0	0	318	625	943	1190	1498	1498
ENGDominion	103	75	59	50	27	5	31	59	86	86	86	103	103
ENGNFG	671	517	462	340	187	0	128	265	398	535	538	671	671
ENGHON	246	188	129	71	34	9	49	90	130	171	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	5	5	5	5	5	5	5	77
Total Inv	2608	2430	1758	1017	436	28	219	750	1255	1748	2033	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1340.4	2135.8	2468.4	2077.1	1744.7	960.9	560.3	392.9	316.6	336.1	457.0	809.9	13600.1
Total Demand	1340.4	2135.8	2468.4	2077.1	1744.7	960.9	560.3	392.9	316.6	336.1	457.0	809.9	13600.1
DSM Forecast													
2013_14-EE	8.4	12.0	13.6	11.5	10.2	6.4	3.7	1.8	1.4	1.5	2.5	5.6	78.4
2014_15-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2015_16-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2016_17-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
2017_18-EE	10.0	14.3	16.2	13.7	12.2	7.7	4.5	2.2	1.6	1.8	3.0	6.7	93.9
Total DSM	48.5	69.3	78.5	66.5	58.8	37.3	21.6	10.5	8.0	8.5	14.6	32.2	454.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	8.1	10.6	19.9	16.0	8.1	5.8	14.3	12.6	10.3	1.8	12.6	3.8	123.8
Injection	0.9	0.0	0.0	0.0	0.0	0.0	5.4	4.7	3.7	0.0	4.5	0.0	19.3
Withdrawal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Fuel	9.0	10.6	19.9	16.0	8.1	5.8	19.7	17.3	13.9	1.8	17.2	3.8	143.1
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	249.5	0.0	307.6	0.0	1244.9
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	3.8
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	9.0	40.0	0.0	211.6
ENGLNG	2.8	2.0	0.0	0.0	95.1	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.0	0.0	0.0	95.1	43.8	393.1	355.3	290.9	11.2	356.9	2.9	1616.7
Total Req	1414.7	2148.4	2488.3	2093.1	1847.9	1010.6	973.1	765.6	621.4	349.1	831.1	816.6	15359.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
ENGDawn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGUSGC	65.2	0.0	16.0	0.0	0.0	45.2	404.4	370.8	303.3	9.3	362.6	0.0	1576.9
Marcellus	1335.6	2069.7	1683.2	1454.2	1617.1	956.3	556.4	389.4	312.7	332.2	453.3	805.6	11965.7
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Sources of Supply													
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.0	0.0	0.0	95.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1411.8	2082.8	1714.7	1464.8	1721.9	1007.7	970.2	762.7	618.5	346.2	828.2	813.7	13743.2
Storage Withdrawals													
ENGFSMA	0.0	2.0	677.2	565.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1244.9
ENGDominion	0.0	0.0	29.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
ENGHON	0.0	60.7	60.7	52.9	37.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.6
ENGLNG	2.8	2.9	2.9	2.7	88.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	2.8	65.6	773.6	628.3	126.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1616.7
Total Supply	1414.7	2148.4	2488.3	2093.1	1847.9	1010.6	973.1	765.6	621.4	349.1	831.1	816.6	15359.9
=====													
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0
=====													
Start of Month Inventory													
ENGFSMA	1498	1560	1558	881	315	315	315	633	941	1190	1190	1498	1498
ENGDominion	103	103	103	74	67	67	67	95	103	103	103	103	103
ENGNFG	671	671	671	667	667	667	671	671	671	671	671	671	671
ENGHON	246	246	186	125	72	35	75	116	156	197	206	246	246

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGLNG	13	13	12	9	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2598	2534	1761	1133	1102	1143	1533	1885	2173	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.12: Base Case Design Year (Enhanced EE): Resource Mix Results

RESOURCE MIX RESULTS

Units: MDT

=====

	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
Segments	ENGDawn2Wadd	NOV 2017	OCT 2039	0.00	6.00	4.08
	ENGIGTS	NOV 2017	OCT 2039	0.00	5.00	4.04
	ENGTGPANE	NOV 2017	OCT 2039	0.00	4.00	4.00
	ENGTGPBND	NOV 2017	OCT 2039	0.00	3.12	3.12
	ENGTGPProd	NOV 2017	OCT 2039	0.00	23.75	22.53
	ENGTGP_NEX	NOV 2017	OCT 2039	0.00	90.00	90.00

	Contract	Start Date	End Date	Min Level	Max Level	Result MDQ
DSM	2013_14-EE	NOV 2013	OCT 2039	0.00	100.00	100.00
	2014_15-EE	NOV 2014	OCT 2039	0.00	100.00	100.00
	2014_15-EE2	NOV 2014	OCT 2039	0.00	100.00	100.00
	2014_15-Good	NOV 2014	OCT 2039	0.00	100.00	100.00
	2014_15-Bttr	NOV 2014	OCT 2039	0.00	100.00	0.00
	2014_15-Best	NOV 2014	OCT 2039	0.00	100.00	0.00
	2015_16-EE	NOV 2015	OCT 2039	0.00	100.00	100.00
	2015_16-EE2	DEC 2015	OCT 2039	0.00	100.00	100.00
	2015_16-Good	NOV 2015	OCT 2039	0.00	100.00	100.00
	2015_16-Bttr	NOV 2015	OCT 2039	0.00	100.00	0.00
	2015_16-Best	NOV 2015	OCT 2039	0.00	100.00	0.00
	2016_17-EE	NOV 2016	OCT 2039	0.00	100.00	100.00
	2016_17-EE2	NOV 2016	OCT 2039	0.00	100.00	100.00
	2016_17-Good	NOV 2016	OCT 2039	0.00	100.00	100.00
	2016_17-Bttr	NOV 2016	OCT 2039	0.00	100.00	0.00
	2016_17-Best	NOV 2016	OCT 2039	0.00	100.00	0.00
	2017_18-EE	NOV 2017	OCT 2039	0.00	100.00	100.00
	2017_18-EE2	NOV 2017	OCT 2039	0.00	100.00	100.00
	2017_18-Good	NOV 2017	OCT 2039	0.00	100.00	100.00
	2017_18-Bttr	NOV 2017	OCT 2039	0.00	100.00	0.00
	2017_18-Best	NOV 2017	OCT 2039	0.00	100.00	0.00

Appendix B.13: Base Case Design Year (Enhanced EE): Monthly Resources and Requirements

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Forecast Demand													
SCCDemand	1461.3	2305.4	2667.4	2243.2	1888.8	1064.4	597.0	397.7	312.6	332.2	470.8	891.4	14632.1
Total Demand	1461.3	2305.4	2667.4	2243.2	1888.8	1064.4	597.0	397.7	312.6	332.2	470.8	891.4	14632.1
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.3	49.1	50.1	44.7	43.7	13.0	18.6	21.2	19.6	4.9	17.2	12.3	330.7
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	0.0	6.5	3.7	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.8	50.7	52.3	46.6	46.0	15.3	25.7	28.1	25.9	4.9	23.7	16.0	375.9
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	0.0	307.6	247.2	1805.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
=====													
Storage Injections													
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	15.6	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	0.0	132.6	3.6	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	0.0	40.0	14.3	215.6
ENGLNG	2.8	2.9	79.3	7.9	6.9	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	125.2	30.9	6.9	193.1	545.3	518.9	507.6	13.7	510.3	268.0	3056.3
Total Req	1812.5	2382.0	2844.9	2320.7	1941.7	1272.8	1168.0	944.6	846.2	350.8	1004.8	1175.4	18064.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	242.2	547.2	529.6	517.5	0.0	517.2	276.8	6031.9
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	398.2	311.8	331.7	0.0	11.5	1053.2
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	273.3	208.2	358.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	839.9
ENG-Z6-SW-MN	647.5	0.0	0.0	0.0	600.1	919.5	593.2	0.0	0.0	0.0	467.2	876.0	4103.6
ENG-Z6-Peak	0.0	0.0	19.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.2
DLiqWinter	2.8	2.9	79.3	7.9	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1553.5	1607.6	1910.3	1655.7	1542.0	1266.7	1165.0	941.8	843.2	347.8	1002.0	1172.4	15008.0
Storage Withdrawals													
ENGFSMA	245.1	530.5	479.1	396.0	151.5	3.3	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	22.9	27.1	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	135.8	184.8	161.2	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	11.0	59.3	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	85.9	7.9	4.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	259.0	774.3	934.7	665.0	399.7	6.2	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
Total Supply	1812.5	2382.0	2844.9	2320.7	1941.7	1272.8	1168.0	944.6	846.2	350.8	1004.8	1175.4	18064.3
=====													

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	OCT 2014	Total
Start of Month Inventory													
ENGFSMA	1498	1560	1030	551	155	3	0	318	625	943	943	1251	1498
ENGDominion	103	103	80	53	28	5	32	60	87	87	87	103	103
ENGNFG	671	671	535	350	189	0	128	265	398	535	535	667	671
ENGHON	246	235	176	115	63	31	69	111	151	192	192	232	246
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	37	49	60	72	77	77
Total Inv	2608	2659	1911	1101	467	74	261	804	1320	1824	1835	2342	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Forecast Demand													
SCCDemand	1487.4	2348.8	2718.2	2285.8	1923.8	1072.7	601.6	402.2	316.4	336.1	475.3	898.0	14866.3
Total Demand	1487.4	2348.8	2718.2	2285.8	1923.8	1072.7	601.6	402.2	316.4	336.1	475.3	898.0	14866.3
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2014_15-EE2	2.0	2.8	3.2	2.7	2.4	1.5	0.9	0.4	0.3	0.3	0.6	1.3	18.5
2014_15-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2014_15-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	25.1	36.0	41.0	34.7	30.5	19.2	10.9	5.1	3.6	3.9	7.2	16.5	233.6
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	36.4	49.5	50.5	44.8	43.6	28.9	18.7	21.3	12.7	5.0	17.6	26.4	355.3
Injection	4.5	0.0	0.0	0.0	0.0	1.9	7.1	6.8	3.7	0.0	6.8	6.3	37.2
Withdrawal	0.0	1.6	2.2	1.9	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	40.9	51.0	52.7	46.8	45.8	30.9	25.7	28.1	16.4	5.0	24.4	32.7	400.5
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	247.2	0.0	307.6	317.8	1805.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
=====													
Storage Injections													
ENGDominion	0.0	0.0	0.0	0.0	0.0	14.7	28.2	27.2	0.0	0.0	27.2	0.0	97.3
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	3.6	0.0	132.6	137.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	14.3	0.0	40.0	41.3	215.6
ENGLNG	2.8	2.9	68.8	16.5	8.9	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	143.0
Total Inj	310.4	25.9	114.7	39.4	8.9	181.5	533.7	518.5	276.6	13.7	528.3	504.7	3056.3
Total Req	1838.7	2425.7	2885.6	2372.0	1978.5	1285.0	1161.1	948.8	609.3	354.8	1028.0	1435.5	18323.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	669.9	547.2	529.6	276.8	0.0	529.6	517.5	6472.0
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	402.8	315.7	335.7	0.0	714.4	1768.5
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	304.1	247.3	390.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	941.8
ENG-Z6-SW-MN	674.6	0.0	0.0	0.0	660.4	503.2	597.8	0.0	0.0	0.0	471.8	186.9	3094.8
ENG-Z6-Peak	0.0	0.0	29.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.5
DLiqWinter	2.8	2.9	68.8	16.5	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	11.5	11.5	11.5	5.6	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1580.6	1638.4	1949.2	1696.2	1604.3	1278.1	1158.1	945.9	606.4	351.9	1025.1	1432.5	15266.7
Storage Withdrawals													
ENGFSMA	245.1	546.6	489.2	396.5	124.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	0.0	22.9	27.1	25.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.3
ENGNFG	0.0	131.8	186.9	163.0	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	10.2	60.1	60.7	51.8	32.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.6
ENGLNG	2.8	2.9	75.3	16.5	6.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	97.1	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	258.2	787.3	936.4	675.8	374.2	6.9	2.9	2.9	2.9	2.9	2.9	2.9	3056.3
Total Supply	1838.7	2425.7	2885.6	2372.0	1978.5	1285.0	1161.1	948.8	609.3	354.8	1028.0	1435.5	18323.0
=====													

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2014	DEC 2014	JAN 2015	FEB 2015	MAR 2015	APR 2015	MAY 2015	JUN 2015	JUL 2015	AUG 2015	SEP 2015	OCT 2015	Total
Start of Month Inventory													
ENGFSMA	1498	1560	1014	525	128	4	0	318	625	873	873	1180	1498
ENGDominion	103	103	80	53	28	5	20	48	75	75	75	103	103
ENGNFG	671	671	539	352	189	0	128	265	398	401	401	534	671
ENGHON	246	236	176	115	63	31	69	111	151	165	165	205	246
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	26	26	26	26	26	37	48	60	71	77
Total Inv	2608	2660	1898	1077	440	75	250	780	1296	1570	1580	2106	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Forecast Demand													
SCCDemand	1502.3	2368.5	2741.5	2412.2	1939.2	1090.9	611.7	410.5	323.2	343.3	484.3	913.0	15140.6
Total Demand	1502.3	2368.5	2741.5	2412.2	1939.2	1090.9	611.7	410.5	323.2	343.3	484.3	913.0	15140.6
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	13.1	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	85.4
2014_15-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2014_15-EE2	2.0	2.8	3.2	2.8	2.4	1.5	0.9	0.4	0.3	0.3	0.6	1.3	18.6
2014_15-Good	3.2	4.6	5.3	4.6	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	29.0
2014_15-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	10.9	15.6	17.7	15.7	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	102.3
2015_16-EE2	0.0	5.7	6.4	5.7	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	33.2
2015_16-Good	3.2	4.6	5.3	4.6	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	29.0
2015_16-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	39.1	61.9	70.4	62.2	52.4	32.9	18.6	8.6	6.2	6.6	12.3	28.3	399.7
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	38.8	49.6	50.7	46.5	41.3	13.4	18.7	21.4	19.8	13.6	17.4	4.4	335.5
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	1.9	1.8	2.2	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.3	51.4	53.0	48.4	41.4	15.6	25.8	28.3	26.1	17.3	24.1	4.4	380.8
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
=====													
Storage Injections													
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	31.1	40.0	0.0	232.4
ENGLNG	2.8	2.9	57.0	27.6	9.7	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	143.0
Total Inj	310.4	25.9	102.8	50.5	9.7	193.1	545.3	518.9	507.6	295.6	515.7	2.9	3078.4
Total Req	1858.0	2445.8	2897.3	2511.0	1990.3	1299.6	1182.8	957.6	856.9	656.2	1024.1	920.3	18599.9
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	11.0	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.5
ENGNiagara	94.7	97.8	97.8	91.5	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	574.3
ENGDawn	124.5	129.1	129.2	120.9	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	637.0
ENGUSGC	675.8	698.3	698.3	653.3	698.3	247.3	547.2	529.6	517.5	294.1	522.9	0.0	6082.6
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	411.2	322.6	343.0	0.0	14.5	1091.2
ENG-Z6-BLDJF	0.0	372.0	620.0	435.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1427.0
ENG-Z6-SWDJF	0.0	319.3	277.6	452.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1049.4
ENG-Z6-SW-MN	456.6	0.0	0.0	0.0	906.2	938.8	608.0	0.0	0.0	0.0	480.8	894.8	4285.2
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	57.0	27.6	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	11.5	5.2	0.0	51.3
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1362.5	1653.6	1968.3	1814.7	1850.8	1291.2	1179.8	954.8	854.0	653.3	1021.2	917.3	15521.5
Storage Withdrawals													
ENGFSMA	245.1	549.0	496.0	429.1	80.7	5.6	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	6.5	27.5	23.2	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	160.7	150.3	187.4	159.8	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.5	58.5	34.1	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	232.4
ENGLNG	2.8	2.9	63.5	26.2	8.2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	96.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.0
Total With	495.5	792.3	929.0	696.3	139.5	8.4	2.9	2.9	2.9	2.9	2.9	2.9	3078.4
Total Supply	1858.0	2445.8	2897.3	2511.0	1990.3	1299.6	1182.8	957.6	856.9	656.2	1024.1	920.3	18599.9
=====													

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2015	DEC 2015	JAN 2016	FEB 2016	MAR 2016	APR 2016	MAY 2016	JUN 2016	JUL 2016	AUG 2016	SEP 2016	OCT 2016	Total
Start of Month Inventory													
ENGFSMA	1498	1560	1011	515	86	6	0	318	625	943	1190	1498	1498
ENGDominion	103	75	68	41	17	0	26	54	82	82	82	103	103
ENGNFG	671	510	360	172	13	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	34	14	53	94	134	175	206	246	246
ENGLNG	13	13	13	7	8	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	27	26	26	26	37	49	60	72	77	77
Total Inv	2608	2422	1656	830	184	54	239	781	1297	1802	2095	2608	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Forecast Demand													
SCCDemand	1525.4	2413.7	2794.2	2349.5	1975.5	1103.3	618.7	416.7	328.3	348.7	490.8	923.1	15287.9
Total Demand	1525.4	2413.7	2794.2	2349.5	1975.5	1103.3	618.7	416.7	328.3	348.7	490.8	923.1	15287.9
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2014_15-EE2	2.0	2.8	3.2	2.7	2.4	1.5	0.9	0.4	0.3	0.3	0.6	1.3	18.5
2014_15-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2014_15-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE2	4.0	5.7	6.4	5.4	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	36.9
2015_16-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2015_16-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE2	4.0	5.7	6.4	5.4	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	36.9
2016_17-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2016_17-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Good	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	61.1	87.8	99.9	84.4	74.3	46.6	26.4	12.2	8.7	9.4	17.4	40.1	568.2
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	39.0	49.9	51.1	44.9	41.3	13.5	18.7	21.5	19.8	13.7	17.4	4.4	335.4
Injection	4.5	0.0	0.0	0.0	0.0	2.2	7.1	6.8	6.3	3.7	6.7	0.0	37.3
Withdrawal	2.0	1.8	2.2	1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
Total Fuel	45.5	51.7	53.3	46.8	41.3	15.7	25.8	28.4	26.2	17.3	24.1	4.4	380.7
Storage Injections													
ENGFSMA	307.6	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	247.2	307.6	0.0	1805.5

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
=====													
Storage Injections													
ENGDominion	0.0	0.0	0.0	0.0	0.0	26.3	28.2	27.2	0.0	0.0	21.0	0.0	102.7
ENGNFG	0.0	0.0	0.0	0.0	0.0	128.1	137.0	132.6	137.0	3.6	132.6	0.0	670.8
ENGHON	0.0	0.0	0.0	0.0	0.0	38.7	41.3	40.0	41.3	30.3	40.0	0.0	231.6
ENGLNG	2.8	2.9	67.5	20.9	5.8	0.0	9.5	0.0	0.0	2.2	9.4	2.9	124.0
ENGPropane	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
Total Inj	310.4	25.9	113.4	43.8	5.8	193.1	533.7	507.4	496.1	283.3	510.5	2.9	3026.4
Total Req	1881.3	2491.3	2960.9	2440.1	2022.6	1312.2	1178.2	952.4	850.6	649.3	1025.4	930.5	18695.0
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	94.7	97.8	97.8	88.4	97.8	94.7	0.0	0.0	0.0	0.0	0.0	0.0	571.1
ENGDawn	124.5	129.2	129.2	116.7	129.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	632.9
ENGUSGC	675.8	698.3	698.3	630.7	698.3	249.8	547.2	529.6	517.5	293.3	522.9	0.0	6061.7
Marcellus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	417.5	327.8	348.5	0.0	15.9	1109.6
ENG-Z6-BLDJF	0.0	372.0	620.0	420.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1412.0
ENG-Z6-SWDJF	0.0	354.4	314.4	453.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1122.5
ENG-Z6-SW-MN	472.9	0.0	0.0	0.0	937.0	947.9	615.0	0.0	0.0	0.0	487.3	903.5	4363.6
ENG-Z6-Peak	0.0	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.2
DLiqWinter	2.8	2.9	67.5	20.9	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	2.2	9.4	2.9	24.0
ENGC3Winter	0.0	22.9	45.9	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1378.9	1688.8	2015.7	1763.9	1877.8	1302.7	1175.3	949.5	847.6	646.4	1022.5	927.5	15596.6
Storage Withdrawals													
ENGFSMA	245.1	555.3	507.4	411.6	79.4	6.7	0.0	0.0	0.0	0.0	0.0	0.0	1805.5
ENGDominion	28.0	7.0	28.0	23.9	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.7
ENGNFG	167.8	153.7	188.5	155.3	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	670.8
ENGHON	58.7	60.7	58.2	33.4	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	231.6
ENGLNG	2.8	2.9	74.1	20.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	124.0
ENGPropane	0.0	22.9	89.1	31.0	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.7
Total With	502.5	802.6	945.2	676.2	144.9	9.5	2.9	2.9	2.9	2.9	2.9	2.9	3098.4
Total Supply	1881.3	2491.3	2960.9	2440.1	2022.6	1312.2	1178.2	952.4	850.6	649.3	1025.4	930.5	18695.0
=====													

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2016	DEC 2016	JAN 2017	FEB 2017	MAR 2017	APR 2017	MAY 2017	JUN 2017	JUL 2017	AUG 2017	SEP 2017	OCT 2017	Total
Start of Month Inventory													
ENGFSMA	1498	1560	1005	498	86	7	0	318	625	943	1190	1498	1498
ENGDominion	103	75	68	40	16	0	26	54	82	82	82	103	103
ENGNFG	671	503	349	161	5	0	128	265	398	535	538	671	671
ENGHON	246	188	127	69	35	15	53	95	135	176	206	246	246
ENGLNG	13	13	13	7	7	9	7	13	10	7	7	13	13
ENGPropane	77	77	77	34	26	5	5	5	5	5	5	5	77
Total Inv	2608	2415	1639	807	175	35	219	750	1254	1748	2028	2536	2608
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Forecast Demand													
SCCDemand	1544.4	2446.1	2832.1	2381.3	2001.4	1114.1	624.7	422.2	332.9	353.6	496.6	931.8	15481.3
Total Demand	1544.4	2446.1	2832.1	2381.3	2001.4	1114.1	624.7	422.2	332.9	353.6	496.6	931.8	15481.3
DSM Forecast													
2013_14-EE	9.1	13.0	14.8	12.5	11.0	7.0	4.0	1.9	1.4	1.5	2.7	6.0	84.8
2014_15-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2014_15-EE2	2.0	2.8	3.2	2.7	2.4	1.5	0.9	0.4	0.3	0.3	0.6	1.3	18.5
2014_15-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2014_15-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014_15-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2015_16-EE2	4.0	5.7	6.4	5.4	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	36.9
2015_16-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2015_16-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015_16-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2016_17-EE2	4.0	5.7	6.4	5.4	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	36.9
2016_17-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2016_17-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016_17-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-EE	10.9	15.6	17.7	15.0	13.2	8.3	4.8	2.3	1.7	1.8	3.2	7.2	101.6
2017_18-EE2	4.0	5.7	6.4	5.4	4.8	3.0	1.7	0.8	0.6	0.6	1.2	2.6	36.9
2017_18-Good	3.2	4.6	5.3	4.4	3.9	2.4	1.2	0.5	0.3	0.3	0.8	2.0	28.8
2017_18-Bttr	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017_18-Best	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total DSM	79.0	113.6	129.3	109.3	96.2	60.4	34.1	15.8	11.2	12.1	22.5	51.9	735.5
Forecast Rt Mrktr Imbalance													
Total Imbal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Consumed													
Transport	9.1	12.7	22.4	17.7	9.5	7.0	14.6	12.7	12.4	2.2	12.8	4.3	137.6
Injection	0.9	0.0	0.0	0.0	0.0	0.3	5.4	4.7	4.7	0.1	4.5	0.0	20.7
Withdrawal	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Fuel	10.1	12.7	22.5	17.8	9.5	7.3	20.0	17.4	17.1	2.4	17.3	4.3	158.5
Storage Injections													
ENGFSMA	62.4	0.0	0.0	0.0	0.0	0.0	317.8	307.6	317.8	9.7	307.6	0.0	1322.9

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
=====													
Storage Injections													
ENGDominion	0.0	0.0	0.0	0.0	0.0	0.0	28.2	7.8	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.0	0.0	0.0	0.0	0.0	21.3	0.0	0.0	0.0	0.0	0.0	0.0	21.3
ENGHON	0.0	0.0	0.0	0.0	0.0	40.0	41.3	40.0	41.3	10.3	40.0	0.0	213.0
ENGLNG	2.8	2.9	0.3	2.7	91.2	0.0	5.8	0.0	0.0	2.2	9.4	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Inj	65.3	2.9	0.3	2.7	91.2	61.3	393.1	355.3	359.1	22.3	356.9	2.9	1713.5
Total Req	1619.7	2461.8	2855.0	2401.7	2102.1	1182.7	1037.8	795.0	709.2	378.3	870.8	939.1	17353.3
=====													
Sources of Supply													
ENGPNGTS	8.2	11.1	12.3	10.6	9.6	6.2	3.6	2.5	2.4	2.4	2.9	5.2	77.2
ENGNiagara	3.2	0.0	8.9	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3
ENGDawn	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
ENGUSGC	65.2	0.0	31.5	10.2	0.0	63.4	404.4	370.8	374.7	20.8	362.6	0.0	1703.7
Marcellus	1532.0	2307.5	2011.9	1757.9	1856.6	1110.2	621.0	418.8	329.1	349.9	493.1	928.0	13716.1
ENG-Z4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-BLDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SWDJF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-SW-MN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-Z6-Peak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DLiqWinter	2.8	2.9	0.3	2.7	91.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
DLiqSummer	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	2.2	9.4	2.9	20.3
ENGC3Winter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGC3Summer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENGAES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENG-OPR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Take	1611.4	2321.6	2069.1	1787.7	1957.5	1179.9	1034.9	792.2	706.2	375.4	868.0	936.2	15639.8
Storage Withdrawals													
ENGFSMA	0.0	76.6	677.2	544.6	24.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1322.9
ENGDominion	1.3	0.0	29.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9
ENGNFG	0.2	0.0	12.3	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3
ENGHON	3.9	60.7	60.7	52.3	35.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.0
ENGLNG	2.8	2.9	6.8	2.7	84.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	120.3
ENGPropane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total With	8.3	140.2	785.9	614.1	144.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	1713.5
Total Supply	1619.7	2461.8	2855.0	2401.7	2102.1	1182.7	1037.8	795.0	709.2	378.3	870.8	939.1	17353.3
=====													

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Net Storage Inv. Adj.													
ENGFSMA	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGDominion	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGNFG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGHON	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGLNG	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGPropane	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Inv Adj	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural Gas Supply VS. Requirements

Units: MDT

	NOV 2017	DEC 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	Total
Start of Month Inventory													
ENGFSMA	1498	1560	1484	807	262	237	237	555	863	1181	1190	1498	1498
ENGDominion	103	101	101	72	67	67	67	95	103	103	103	103	103
ENGNFG	671	671	671	658	649	649	671	671	671	671	671	671	671
ENGHON	246	242	182	121	69	33	73	115	155	196	206	246	246
ENGLNG	13	13	13	7	7	13	10	13	10	7	7	13	13
ENGPropane	5	5	5	5	5	5	5	5	5	5	5	5	5
Total Inv	2536	2593	2455	1670	1058	1005	1063	1453	1806	2162	2181	2536	2536
Unsupplied Demand													
SCCDemand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Unsupp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix B.14: Base Case Design Year (Enhanced EE): Annual Peak Day

JAN 19, 2014

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	141.7		ENGPNGTS	0.40	ENGFSMA		19.62			747	48	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		420	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		35.00			29	38	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	19.22								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	39.04	0.18
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	35.00	
			ENG-OPR									ENGC3Truck		
												ENGTGPAES		
Total	141.7		Total	73.46	Total		70.14	0.07		1404		Total		1.74

JAN 19, 2015

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	144.5		ENGPNGTS	0.40	ENGFSMA		19.62			723	46	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			63	61	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		423	63	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			139	56	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		27.48			28	36	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	29.54								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	49.31	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	27.48	
			ENG-OPR									ENGC3Truck		
												ENGTGPAES		
Total	144.5		Total	83.79	Total		62.62	0.07		1382		Total		1.78

JAN 19, 2016

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	145.8		ENGPNGTS	0.40	ENGFSMA		19.62			717	46	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			51	50	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		244	36	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		23.10			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	28.10	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	145.8		Total	89.48	Total		58.23	0.07		1134		Total		1.79

JAN 19, 2017

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	148.7		ENGPNGTS	0.40	ENGFSMA		19.62			703	45	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			50	49	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		6.10	0.07		233	35	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			90	36	ENGTGPANE	4.00	0.04
			Marcellus		ENGLNG		6.53			7	50	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane		25.97			26	33	ENGTGPProd	22.53	
			ENG-Z6-BLDJF	20.00								ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX		
			ENG-Z6-Peak	30.23								ENGTGPShort	28.11	0.42
			DLiqWinter	4.00								ENGTGPDracut	50.00	0.23
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter	5.00								ENGDOMLiq		
			ENGC3Summer									ENGLNG	10.53	
			ENGAES									ENGPropane	30.97	
			ENG-OPR									ENGC3Truck	5.00	
												ENGTGPAES		
Total	148.7		Total	89.48	Total		61.10	0.07		1108		Total		1.79

JAN 19, 2018

Daily System Activity

Units: MDT

Demand	Suppl.	Unsup.	Supplies	Take	Storages	Adj (-With)	With. (-Inj)	With Fuel	Inj Fuel	Ending Inv.	% Full	Transport	Deliv.	Fuel
--- Served ---														
SCCDemand	150.8		ENGPNGTS	0.40	ENGFSMA		21.84			1069	68	ENGPNGTS	0.39	0.00
			ENGNiagara	3.16	ENGDominion		0.93			84	81	ENGDawn2Wadd	4.08	0.08
			ENGDawn	4.17	ENGNFG		3.85	0.05		659	98	ENGIGTS	4.04	0.04
			ENGUSGC	22.53	ENGHON		1.96			144	59	ENGTGPANE	4.00	0.04
			Marcellus	90.00	ENGLNG		4.00			7	56	ENGTGPBND	3.12	0.03
			ENG-Z4		ENGPropane					5	100	ENGTGPProd	22.53	
			ENG-Z6-BLDJF									ENGTGP2Stg		
			ENG-Z6-SWDJF									ENGTGPLong	21.60	0.93
			ENG-Z6-SW-MN									ENGTGP_NEX	90.00	
			ENG-Z6-Peak									ENGTGPShort	28.11	0.42
			DLiqWinter									ENGTGPDracut	89.59	0.41
			DLiqSummer									ENGTGPConLat		
			ENGC3Winter									ENGDOMLiq		
			ENGC3Summer									ENGLNG	4.00	
			ENGAES									ENGPropane		
			ENG-OPR									ENGC3Truck		
												ENGTGPAES		
Total	150.8		Total	120.2	Total		32.58	0.05		1968		Total		1.97

**NEW HAMPSHIRE ELECTRIC UTILITIES
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**

**2013-2014 CORE New Hampshire
Energy Efficiency Programs**

Granite State Electric Company d/b/a Liberty Utilities
New Hampshire Electric Cooperative, Inc.
Public Service Company of New Hampshire
Unitil Energy Systems, Inc.
EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities
Northern Utilities, Inc.

**NHPUC Docket No.
DE 12-262**

**SEPTEMBER 17, 2012
REVISED DECEMBER 14, 2012
REVISED DECEMBER 17, 2012
REVISED DECEMBER 20, 2012**

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I. INTRODUCTION

This filing for the 2013-2014 CORE Energy Efficiency Programs is being made jointly by Granite State Electric Company d/b/a Liberty Utilities, New Hampshire Electric Cooperative, Inc., Public Service Company of New Hampshire and Unutil Energy Systems, Inc. (referred to throughout the remainder of this document as the “NH Electric Utilities”) and EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities and Northern Utilities, Inc. (referred to as the “NH Gas Utilities”) or collectively as the “NH CORE Utilities”. The Introduction section of this filing provides an overview of the programs and highlights the results achieved to date along with the overarching operational proposals for the coming year. The remainder of this filing includes descriptions of the programs, individual program budgets and goals and utility specific program offerings.

This is the second time the NH Electric Utilities are filing for a two-year period and the first time the NH Gas Utilities and NH Electric Utilities are submitting programs jointly for approval. The NH CORE Utilities recognize that a number of changes will occur over the next year, including changes resulting from an updated Avoided Energy Supply Cost Study planned for 2013, measurement and verification studies, program measure changes, a June 1 discount rate adjustment, budget changes resulting from differences in actual kilowatt-hour sales from the estimated kilowatt-hours sales used to estimate overall program funding, and carryover adjustments. These changes may require that the attachments containing 2014 information be revised in 2013 to accurately reflect program goals and results. If necessary, the NH CORE Utilities will file updates by September 30, 2013.

A. Overview of CORE Energy Efficiency Programs

The CORE Electric Energy Efficiency Programs were born out of the Energy Efficiency Working Group recommendations (Docket No. DR 96-150) that were developed between May 1998 and June 1999 and largely approved by the Commission in November 2000. Thereafter, the NH Electric Utilities, the Commission’s Staff and other interested parties held numerous technical sessions and settlement discussions and made many filings before final approval was received from the Commission in May 2002 to launch the CORE Electric Programs. This represented the first time that a coordinated effort had been made by the electric utilities to offer the same programs statewide.

The NH Gas Utilities began offering energy efficiency programs in 1993. These programs were suspended in 1999 during the restructuring of the gas industry to allow for a comprehensive review of the energy efficiency programs. In January 2003, the NH Gas Utilities resumed offering energy efficiency programs which were designed to increase customer awareness of the benefits of energy efficient products and services.

This 2013-2014 filing is the result of additional coordinated planning efforts between the NH Electric Utilities and the NH Gas Utilities. Specifically, the customer programs (both gas and electric) have been brought together into one coordinated filing, as was contemplated by the Commission in Orders 24,636 and 24,968. These programs are collectively referred to throughout the remainder of this document as the “CORE Programs”.

The CORE Programs provide products and services tailored for business, residential and income-eligible customers or members¹. In addition, there are utility-specific programs that are typically utilized to test new technologies, to pilot new programs before offering the program statewide or to offer a program that may be pertinent to the customers of a particular utility. Each year the NH CORE Utilities work together to review the CORE Programs, make adjustments and improvements as needed or suggested by customers, interested parties, the Commission's Staff and program administrators.

The CORE Programs in place today have been thoughtfully developed and enhanced by many different parties. As shown in Table I.1, the results of the CORE Electric Programs since their inception in June 2002 have been exceptional. Key benchmarks highlighting these exceptional results include:

- ❑ The programs have saved 8.7 billion lifetime kilowatt-hours – enough energy to power the city of Concord for 22 years!
- ❑ Saving 8.7 billion kilowatt-hours is equivalent to saving \$1.2 billion at today's average² cost of 13.171 ¢/kWh – benefiting both customers and the NH economy. Based on CORE Program expenditures, this represents a return for customers of \$7 for every program dollar invested.
- ❑ We have provided customers with 795,000 efficiency products or services and reached customers in every city and town served by the NH Electric Utilities. In addition we have provided training and information through customer seminars, point-of-sale displays, brochures, and catalogs to tens of thousands more.
- ❑ Reducing customers' energy needs has the added benefit of reducing power plant emissions. Based on the regional dispatch of plants, we will reduce emissions of CO₂, SO₂, and NO_x by 4.9 million tons – equivalent to the annual emissions of more than 1 million cars.
- ❑ Overall, the programs have saved energy at an average cost of approximately 2.1 cents per lifetime kWh – as compared to the average retail price of 13.171 cents/kWh³.

¹ Hereinafter the word "customer" will be understood to mean both customers and NHEC members.

² OEP's average fuel prices as of August 13, 2012. <http://www.nh.gov/oep/programs/energy/fuelprice/details2.php?pid=264>

³ OEP's average fuel price as of August 13, 2012, <http://www.nh.gov/oep/programs/energy/fuelprice/details2.php?pid=264>

New Hampshire CORE Electric Energy Efficiency Programs					
Results Summary					
	Lifetime GWH Savings (Million)	Customers Served	Dollars Saved (Million)	Emissions Reductions (Tons)	Lifetime kWh Cost (Cents)
2003	1,368	59,467	\$163.4	1,036,277	1.74
2004	925	54,323	\$108.5	546,431	1.86
2005	1,022	81,581	\$117.6	603,754	1.96
2006	973	86,555	\$133.0	539,520	1.96
2007	986	86,113	\$139.8	547,009	1.89
2008	812	109,155	\$128.0	403,248	2.36
2009	806	90,664	\$117.4	405,136	2.32
2010	793	109,104	\$113.8	382,673	2.49
2010 RGGI	249	17,275	\$35.8	120,278	2.23
2011	754	100,397	\$149.6	355,615	2.67
Total	8,688	794,634	\$1,206.9	4,939,941	

Table I.1 – CORE Electric Program Results Summary⁴

The results of the CORE Gas Programs since their inception were not readily available for this filing. The results from 2009 to 2011 are summarized on Table I.2. Key benchmarks highlighting the success of the CORE Gas Programs since 2009 include:

- The programs have saved 5.7 million lifetime MMBTU – enough energy to heat 3,850 homes for 20 years.
- Saving 5.7 million lifetime MMBTU is equivalent to saving \$57.5 million at today’s average cost of \$1.0556 /therm⁵ - benefiting both customers and the NH economy.
- We have provided customers with 11,809 efficiency products or services and reached customers in every city and town served by the NH Gas Utilities. The NH Gas Utilities have also conducted training for trade allies.
- Reducing customers’ energy needs has the added benefit of reducing 6.3 tons of N₂O; 334,943 tons of CO₂; 6.6 tons of CH₄; with GHG Equivalent reduction of 337,021 tons, equivalent to the annual emissions of 2,925 cars for 20 years.
- Overall, the programs have saved energy at an average cost of approximately \$0.3853 per lifetime therm - as compared to the average Tier 2 retail price of \$1.0556/therm.⁶

⁴ C&I Measure Life adjustments were made in 2008, decreasing the Lifetime kWh Savings and increasing the Lifetime kWh Costs (e.g., New Construction measure life went from 20 to 15 years).

⁵ OEP’s average Tier 2 natural gas prices as of September 3, 2012.
<http://www.nh.gov/oep/programs/energy/fuelprice/details2.php?pid=265>

⁶ OEP’s average Tier 2 natural gas prices as of September 3, 2012.
<http://www.nh.gov/oep/programs/energy/fuelprice/details2.php?pid=265>

New Hampshire CORE Gas Energy Efficiency Programs					
Results Summary					
	Lifetime MMBTU Savings	Customers Served	Dollars Saved (Million)	Emissions Reductions (Tons)	Lifetime MMBTU Cost (Cents)
2009/2010	4,115,049	9,351	\$41.3	241,995	\$3.73
2011	1,615,879	2,458	\$16.2	95,026	\$4.17
Total	5,730,928	11,809	\$57.5	337,021	\$3.85

Table I.2 – CORE Gas Program Results Summary

While the NH CORE Utilities are proud of the results achieved to-date, they are very much aware of the need to work with the Commission’s Staff and other interested parties to continue to find opportunities to improve the quality and effectiveness of the CORE Programs.

B. Program Funding

Initially, the CORE Electric Programs were funded solely by a portion of the System Benefits Charge (SBC) on customers’ bills. In recent years, the program budgets have been supplemented by funds obtained by the utilities from the ISO-NE’s Forward Capacity Market, the Regional Greenhouse Gas Emissions Reductions Fund and the American Reinvestment and Recovery Act. In addition, any unspent funds from prior program years are carried forward to the following year’s budget, including interest based on the prime rate.

The CORE Gas Programs are funded by the Local Distribution Adjustment Charge (LDAC) on customers’ bills. Any unspent funds from prior program years are carried forward to the following year’s budget, including interest based on the prime rate.

ISO-NE Forward Capacity Market⁷ Overview

On June 16, 2006, the FERC approved a Settlement Agreement that addressed the future capacity needs of New England and laid the groundwork for the Forward Capacity Market. Effective December 1, 2006, under the Forward Capacity Market Transition Period rules, the ISO-NE was obligated to pay for qualified capacity reductions in accordance with a determined rate schedule from December 1, 2006 to May 31, 2010. All generation and demand resources installed after June 16, 2006, have been eligible to receive capacity payments in accordance with ISO-NE’s Market Rules. June 1, 2010 marked the end of the Forward Capacity Market Transition Period and the beginning of ISO-NE Forward Capacity Market.

The first Commitment Period of the Forward Capacity Market was June 1, 2010 through May 31, 2011. New Hampshire CORE Energy Efficiency Program capacity reductions continue to receive capacity payments under the Forward Capacity Market. The NH Electric Utilities have capacity supply obligations for their CORE program capacity reductions through the sixth Forward Capacity Market which ends on May 31, 2016. The NH Electric Utilities recently submitted

⁷ http://www.iso-ne.com/markets/othrmkts_data/fcm/index.html

Qualification Packages to participate in the upcoming seventh Forward Capacity Auction, scheduled to commence on February 4, 2013. The NH Electric Utilities intend to take all necessary steps to continue to qualify capacity supply obligations from the CORE program capacity reductions in future Forward Capacity Markets.

As the Forward Capacity Market matures, ISO-NE continues to identify additional reporting requirements, resulting in increased workload on the NH Electric Utilities to continue to qualify energy efficiency program obligations in the market. In addition to the annual submission of the qualification package and monthly reporting of the performance values of energy efficiency assets, the utilities are now required to submit an annual certification based on an audit performed by an external auditor, provide historical energy efficiency data to allow ISO-NE to develop more accurate forecasts, provide a detailed data base of all energy efficiency measures and their expiration dates and respond to an increasing number of data requests.

Estimated ISO-NE payments for 2013 and 2014 are included in the 2013-2014 CORE Energy Efficiency Program budgets. In each year, 15% of the total payment amount was allocated to the residential Home Energy Assistance program. Of the remaining amount, 70% was allocated to the C&I programs and 30% was allocated to the Residential programs.

As approved by the Commission in 2008, the NH Electric Utilities will continue the policy of reporting to ISO-NE the demand savings achieved via these energy efficiency programs in the Forward Capacity Market. Customers who participate in these energy efficiency programs must agree to forego any associated ISO-NE qualifying capacity payments and allow their electric utility to report demand savings and collect the capacity payments on behalf of all customers. All ISO-NE capacity payments received will be used to supplement the utilities' energy efficiency program budgets which will provide additional energy efficiency opportunities for NH electric customers.

House Bill 1490, Regional Greenhouse Gas Energy Efficiency Fund Overview

On June 23, 2012, Chapter 281 of the Laws of 2012 (House Bill 1490) became law. This law amended RSA Chapter 125-O (Multiple Pollutant Reduction Program) to require a portion of the Regional Greenhouse Gas Initiative (RGGI) auction proceeds to be used as an additional source of funding to electric distribution companies for CORE energy efficiency programs that are funded by the system benefits charge funds effective January 1, 2013. On July 13, 2012, the Commission issued a Supplemental Order of Notice Relative to Electric Utilities in Docket No. DE 10-188. In its Supplemental Order of Notice, the Commission indicated the level of RGGI funds expected to be available after January 1, 2013 would be in the range of \$3 million to \$6 million and directed the electric utilities to include proposed uses for these additional RGGI funds in their 2013-2014 CORE energy efficiency program filing. As shown in the following Table I.3 (CORE Electric Program Funding 2013-2014), the NH Electric Utilities have based the 2013-2014 CORE energy efficiency program plan on \$6 million in RGGI program funding in both 2013 and 2014. The RGGI funds were distributed among low-income, residential, and commercial/industrial sectors as was done for the System Benefits Charge funds. These funds enabled the NH Electric Utilities to increase funding over prior years for programs with high demand, add new energy savings measures, and provide for additional financing of energy efficiency projects. Although the actual

annual RGGI allowance proceeds will be based on the number of allowances and the price of the allowances sold at auction, the \$6 million annual estimate is reasonable given the current number of New Hampshire RGGI allowances available to be sold and the current price of New Hampshire RGGI allowances.

The following tables (Table I.3 and Table I.4) summarize the 2013 and 2014 program funding by source for the CORE Electric Programs and the CORE Gas Programs, respectively.

New Hampshire CORE Electric Energy Efficiency Programs					
2013 Program Funding					
	LU-Electric	NHEC	PSNH	Until	Total
System Benefits Charge (SBC)	\$1,703,215	\$1,343,123	\$13,830,881	\$2,208,943	\$19,086,162
Carryforward & Interest	-\$90,690	\$232,563	\$18,386	-\$96,737	\$63,522
RGGI	\$511,311	\$417,157	\$4,382,093	\$689,721	\$6,000,282
Estimated ISO-NE FCM Proceeds	\$140,000	\$60,000	\$1,900,000	\$165,937	\$2,265,937
Total Energy Efficiency Funding	\$2,263,836	\$2,052,843	\$20,131,360	\$2,967,864	\$27,415,903
New Hampshire CORE Energy Electric Efficiency Programs					
2014 Program Funding					
	LU-Electric	NHEC	PSNH	Until	Total
System Benefits Charge (SBC)	\$1,746,036	\$1,358,316	\$14,065,211	\$2,227,477	\$19,397,040
Carryforward & Interest	\$0	\$232,563	\$0	-\$1,262	\$231,301
RGGI	\$511,311	\$417,157	\$4,382,093	\$689,658	\$6,000,219
Estimated ISO-NE FCM Proceeds	\$140,000	\$60,000	\$2,090,000	\$174,234	\$2,464,234
Total Energy Efficiency Funding	\$2,397,347	\$2,068,036	\$20,537,304	\$3,090,107	\$28,092,794

Table I.3 – CORE Electric Program Funding 2013 – 2014

New Hampshire CORE Gas Energy Efficiency Programs			
2013 Program Funding			
	LU-Gas	Northern Utilities	Total
Local Distribution Adjustment Charge (LDAC)	\$2,326,799	\$1,317,487	\$3,644,286
Carryforward & Interest	\$2,727,601	-\$61,915	\$2,665,686
Total Energy Efficiency Funding	\$5,054,400	\$1,255,572	\$6,309,972
New Hampshire CORE Gas Energy Efficiency Programs			
2014 Program Funding			
	LU-Gas	Northern Utilities	Total
Local Distribution Adjustment Charge (LDAC)	\$5,307,120	\$1,322,890	\$6,630,010
Carryforward & Interest	\$0	\$6,048	\$6,048
Total Energy Efficiency Funding	\$5,307,120	\$1,328,938	\$6,636,058

Table I.4 – CORE Gas Program Funding 2013 – 2014

C. Additional Value of the CORE Programs

As summarized below, NH has an additional funding mechanism under the Electric Renewable Portfolio Standard that has somewhat different, yet similar, goals as the System Benefits Charge energy efficiency funding mechanism. The distribution of the funding under the Electric Renewable Portfolio Standard is managed by the NHPUC's Sustainable Energy Division. The NH Electric Utilities stand ready to assist the NHPUC as needed to help deliver additional services and bring additional value to NH's residents.

Electric Renewable Portfolio Standard⁸

The NH Electric Utilities believe they can play a significant role in the efficient use of the incentives that are available for renewable energy systems. The effectiveness and scope of the benefits produced by the renewable energy fund can be increased through the combination of renewable energy systems with end-use efficiency measures that are typically more cost-effective to implement. End-use efficiency improvements, when combined with renewable energy systems, have the potential to drive customers toward net zero energy consumption. A combined programmatic approach has the potential to raise customer awareness and participation in projects which include both energy efficiency measures and renewable energy systems. In addition, this combined approach offers the opportunity to expand the number of customers who can be served by the renewable energy fund. This is because the end-use efficiency improvements can reduce energy demand resulting in smaller renewable system capacity requirements.

In addition, the NH CORE Utilities seek collaboration opportunities to provide efficient and effective solutions for New Hampshire, as highlighted by the BetterBuildings Program / Home Performance with ENERGY STAR Program Collaboration and the State Energy Efficient Appliance Rebate Program / Home Performance with ENERGY STAR Program Collaboration as described below.

BetterBuildings Program / Home Performance with ENERGY STAR Program Collaboration

During 2012, Public Service Company of New Hampshire, Unitil Energy Systems, Inc. and the New Hampshire Electric Cooperative each entered into collaboration agreements with the New Hampshire Community Development Finance Authority (CDFA). The CDFA is responsible for operating the BetterBuildings Program. In that role, the CDFA received an \$8.5 million grant through the New Hampshire Office of Energy and Planning from the Department of Energy. The primary goal of the BetterBuildings program is to promote weatherization services in residential buildings and to provide homeowner loans for that purpose. For residents enrolled in the utilities' HPwES program, an energy professional analyzes their home and provides a customized list of upgrades and improvements. Homeowners can receive a 50% rebate up to \$4,000 to pay for the renovation costs. Half of the rebate is funded through the system benefits charge, while the other half of the rebate is funded through the BetterBuildings program. In addition, BetterBuildings provides funding for on-bill financing of HPwES projects. Through these collaborative efforts, the NH Electric Utilities made commitments to use their best efforts to deliver an additional \$1.8 million in program services to residential customers throughout each utilities' service territory through April 30, 2013, which is the duration of the Department of Energy grant period. The NH Electric Utilities will continue to seek these collaboration opportunities so as to provide efficient

⁸ <http://www.gencourt.state.nh.us/legislation/2008/hb1628.html>

and effective solutions for NH's citizens.

State Energy Efficient Appliance Rebate Program / Home Performance with ENERGY STAR Program Collaboration

In 2009, the NH Electric Utilities worked with the Office of Energy & Planning and the Commission's Staff to discuss opportunities for collaboration on American Recovery and Reinvestment Act (ARRA) funded projects. In February 2010, the NH Electric Utilities were awarded \$731,000 in ARRA – State Energy Efficient Appliance Rebate Program (SEEARP) funds to provide rebates for the replacement of fossil heating systems with new energy efficient water heaters, furnaces and boiler systems. The goals of this ARRA program were to create and retain jobs, expand the market of available energy efficient heating systems, increase the sales and installation of energy efficient heating and hot water systems, reduce fossil-fuel use for home heating and reduce emissions from fossil fuels. The NH Electric Utilities expanded the Home Performance with ENERGY STAR Program (HPwES) to include ENERGY STAR heating and hot water appliance rebates. All ARRA program funds were committed by November 2010, significantly ahead of the February 2012 end of program date. The program successfully met its goals and objectives by providing 1,494 rebates and thus replacing 1,494 less energy efficient appliances. In addition, 1,130 fossil heating systems were recycled, jobs equivalent to five full time equivalents (FTEs) were created and the program saved 11,981 annual MMBTU and 25,700 annual kWh.

D. Evolving Nature of the CORE Programs

The CORE Programs continue to evolve in response to changing technology, market conditions, program evaluations and new standards, as well as input from customers and other interested parties as illustrated in the following examples.

- ❑ Independent Study of Energy Policy Issues. Pursuant to NH Chapter 335 of the Laws of 2010 ("SB 323") the New Hampshire Public Utilities Commission contracted with Vermont Energy Investment Corporation (VEIC) to conduct an Independent Study of Energy Policy Issues. VEIC issued its Final Report on September 30, 2011. The law also directed the state's Energy Efficiency and Sustainable Energy Board (EESB Board) to review the comprehensive study and to provide its recommendations as soon as practicable. As of this writing, the EESB Board expects to make its recommendations public in November 2012. Utility representatives have been fully engaged in the review process, and they have included program and process changes to the CORE Programs in response to recommendations in the Final Report. Examples of these changes include:
 - ✓ *Coordinate Planning and Delivery of Training Activities For HEA Program*
The NH Office of Energy and Planning and the utilities are working together to plan and deliver training programs applicable to the home weatherization staff. Training includes BPI certification as well as programs to maintain competency and currency in home weatherization technology. [Status: Recommendation Implemented]

- ✓ *Develop Shared IT Resources and Common Reporting Standards For HEA Program*
The NH Office of Energy and Planning (OEP) and the utilities are working to implement a common weatherization projects database and shared software for assessing energy savings potential, program administration, and reporting. OEP, the Community Action Agencies, and the utility program administrators will all have secured access to the system with functionality to support their specific needs. [Status: Scheduled Implementation January 1, 2013]

- ✓ *Set Higher Performance Goals*
The VEIC Study recommended setting more aggressive program goals. A new energy-savings goal-setting process has been established by the NH Public Utilities Commission and is underway. The process was intended to more closely align goals with past results, and it was used for the first time in development of the 2012 CORE Program savings goals. The process uses historical kilowatt-hour savings trends as a baseline. This baseline is then adjusted for relevant factors including: available funding, changes in measure costs, measure life, measure mix, and energy codes. The baseline and all adjustments are documented, reviewed by the Commission's Staff and any interested parties, and then presented to the Commission for final review and approval. [Status: Recommendation Implemented]

- ✓ *Increase Maximum Length of an Energy Performance Contract*
With the passage of Senate Bill 252⁹, state agencies and municipalities can now enter into an energy performance contract (EPC) with a term lasting up to 20 years. Core program account executives should prepare to assist local governments in understanding and taking advantage of this legislative change to take on more and larger energy projects. [Status: Scheduled Implementation January 1, 2013]

- ✓ *Better Align and Coordinate Programs*
With this filing the NH CORE Utilities are making progress towards better alignment and coordination. Differences between the programs offered by the gas utilities will be eliminated in 2013, and customers will receive services and incentives seamlessly from both the gas and electric programs. Also, all utility Account Executives will be trained on the full suite of electric and gas programs. Each utility's Account Executives provide a range of services in addition to energy efficiency and are the single point of contact between the utility and the customer within that utility's boundaries or franchise. Rather than assigning a single Account Executive to customers with facilities in multiple franchise areas, as was suggested in the VEIC report, the assigned Account Executives from the affected utilities will coordinate with each other when working with cross-franchise customers in order to serve their needs and eliminate duplication. [Status: Scheduled Implementation January 1, 2013]

⁹ [NH Senate Bill 252](#) (2012 Session), signed into law on June 7, 2012.

✓ *Provide Education and Training Programs*

A full complement of education and training programs are proposed in this filing to complement the programs and to inform the public on energy efficiency topics. Some of these topics were specifically identified in the VEIC Study including: new home construction techniques supporting the new ENERGY STAR 3.0 standard and energy code training. [Status: Ongoing]

✓ *Include Consideration For Multi-family Dwellings and Fuel Neutral Products/Programs*

The NH CORE Utilities are proposing the inclusion of multi-family dwellings in both the Home Performance with ENERGY STAR (HPwES) and ENERGY STAR Homes Programs. The HPwES Program will focus on electrically heated multi-family homes whereas the ENERGY STAR Homes Program is fuel neutral. In addition the NH CORE Utilities are also proposing to offer fuel neutral high efficiency heating, cooling, hot water, and control system measures to both residential and business customers. [Status: Scheduled Implementation January 1, 2013]

In addition to these programmatic proposals, this filing is responsive to a recommendation repeated throughout the VEIC Study to increase funding – particularly for low-income programs. As a result of the passage of HB 1490, beginning in January 2013, a portion of future RGGI auction proceeds will be allocated to the electric distribution utilities for the CORE Programs. Accordingly the NH Electric Utilities have increased their budgets by \$6 million annually. Also, in response to the VEIC recommendation, the NH Electric Utilities are proposing that 15% of these funds be budgeted for the low-income Home Energy Assistance Program. This compares to a 10% low-income set-aside of RGGI funds in previous years.

- Climate Action Plan. In August 2006, Governor John Lynch announced the State of New Hampshire's 25 x '25 Renewable Energy Initiative, which set a goal for New Hampshire to obtain 25% of its energy from clean, renewable sources by the year 2025 and directed the Office of Energy and Planning to develop a plan to meet this goal. The Office of Energy and Planning noted that it will be easier to meet the overall goal for renewable energy if demand for energy is reduced by means of energy efficiency and conservation. The New Hampshire Climate Change Policy Task Force was assembled and the report entitled "The New Hampshire Climate Action Plan" was issued by the Department of Environmental Services in March 2009. The Task Force recommended 10 overarching strategies to comprehensively address the causes and impacts of climate change; the first of which is maximizing energy efficiency in buildings. Specifically, the Task Force noted that the state can realize substantial reductions in its energy consumption for heating buildings and power utilized by buildings by maximizing the thermal and electrical efficiency of all future buildings and extensively retrofitting existing residential, commercial, industrial and municipal buildings.

In the residential existing building sector, a goal was set to retrofit 30,000 homes annually in order to reduce their net energy consumption by 60%. To meet this goal, the Task Force recommended utilizing a program that includes the following elements: 1) building shell and window upgrades, including instrumented air sealing and thermographic inspections; 2) space conditioning equipment upgrades/replacements, including ductwork and duct

sealing; 3) domestic hot water system upgrades; 4) ENERGY STAR lighting; 5) water saving measures; 6) ENERGY STAR appliances; and 7) use of renewable energy systems. Program elements one through six are currently offered to residential customers who qualify for service under the Home Performance with ENERGY STAR Program or the Home Energy Assistance Program. Program element four and program element 6 are offered to all residential customers under the ENERGY STAR Lighting Program and the ENERGY STAR Appliance Program, respectively. In addition, the NH CORE Utilities are proposing to expand the ENERGY STAR Appliance Program to include fuel neutral incentives for ENERGY STAR heating, cooling and hot water heating appliances. Incentives will be offered to customers who purchase more efficient ENERGY STAR heating, cooling and water heating equipment over standard models. As a result, customers who may not qualify to receive services under the Home Performance with ENERGY STAR Program or the Home Energy Assistance Program will be eligible to receive services related to space and water heating systems and air conditioning systems under the ENERGY STAR Appliance Program. As evidenced by the success under a similar ARRA-funded program offered in 2010, the NH CORE Utilities are confident that a fuel-neutral heating, cooling and water heating program will meet an identified need for home energy efficiency and weatherization in the State of New Hampshire. Finally, the Commission's recent Order No. 25,402, approved the Home Performance with ENERGY STAR Program as a permanent CORE program, which will allow the electric utilities to continue to operate this program as a fuel neutral program.

In the residential and commercial and industrial new construction sector, the NH Climate Action Plan recommends new construction should incorporate state of the art energy efficiency and renewable energy systems into the design of the building envelope, operating systems (HVAC in particular), and energy consuming appliances and devices. The Residential ENERGY STAR Homes Program, as well as, the Residential Lighting and Appliance Programs meet these objectives. As described in Section II.A.1, the EPA recently introduced new standards for the federal ENERGY STAR Homes Program, which have been incorporated into the program offered by the NH Electric Utilities. In addition, the Large and Small Business Energy Solutions Programs help to meet the energy efficiency objectives by offering energy efficiency incentives to customers with new construction projects. The Large and Small Business Energy Solutions Programs' incentives are more fully described in Sections II.C.1 and II.C.2.

In the commercial and industrial existing building sector, a goal was set to reduce existing buildings net energy consumption by 50% by 2030. To meet this goal, the Task Force recommended utilizing a program that includes the following elements: 1) lighting; 2) heating, ventilating and air conditioning (HVAC) systems; 3) processes (e.g., air compressor equipment and variable frequency drives; 4) control equipment and technologies; 5) refrigeration equipment; 6) building shell and window upgrades; 7) hot water system upgrades; 8) reduced water usage; and 9) use of renewable energy systems. Program elements one through seven are currently offered to commercial and industrial customers under both the Large and Small Business Energy Solutions Programs. In addition, the NH CORE Utilities are proposing to expand the Large and Small Business Energy Solutions

Programs to include fuel neutral incentives for heating, cooling and hot water heating equipment, as described in Sections II.C.1 and II.C.2. Incentives will be offered to customers who purchase more efficient heating, cooling and water heating equipment over standard models.

The energy efficiency programs as proposed by the NH CORE Utilities are well positioned to assist the State of New Hampshire in meeting its energy policy goals and objectives.

- The State Building Code Review Board adopted the 2009 International Energy Conservation Code with amendments, effective April 1, 2010. The NH CORE Utilities have reviewed the energy conservation code revisions to identify provisions that may require more stringent measure qualification criteria or revisions to baseline efficiency assumptions governing energy savings calculations. For example, the ENERGY STAR Homes Program encourages better building techniques in accordance with ENERGY STAR guidelines by offering incentives to build homes that are at least 20% more efficient than homes built to the 2009 International Energy Conservation Code (IECC). The NH Electric Utilities will work to provide the necessary training for builders, HVAC contractors, and HERS raters as described in Section II.A.1.
- Light emitting diodes (LEDs) have been used to retrofit traffic lights and exit signs for over a decade. Today the number of LED lighting applications is growing rapidly and can be applied to almost all lighting applications. The NH Electric Utilities are using the U.S. Environmental Protection Agency’s ENERGY STAR as a qualifier to receive program incentives. For commercial applications, the NH Electric Utilities use the Design Lights Consortium qualifying list of commercial lighting products to determine eligibility for program incentives. LED retrofits are being considered as custom measures in the commercial programs, and ENERGY STAR LED lamps and fixtures are included in the NHSaves lighting catalog.
- As a result of The Energy Independence and Security Act of 2007 the standards for residential lighting products in the United States will begin to change today’s incandescent lamps. Phase 1 began on January 1, 2012 as shown in the table below. The lumen per watt (LPW) rating for incandescent bulbs will be raised so that these lights become 28% more efficient.

Standards Change Schedule		
Current Bulb	New Bulb	Effective Date of Change
100 watt	72 watts or less	January 1, 2012
75 watt	53 watts or less	January 1, 2013
60 watt	43 watts or less	January 1, 2014
40 watt	29 watts or less	January 1, 2014

- In response to product improvements, the ENERGY STAR appliance standards continue to ratchet upwards. For example, the efficiency standard for clothes washers was increased 36% in January 2007, 5% in July 2009 and increased another 11% in 2011. A new efficiency standard is expected to be announced that will increase the Modified Energy Factor (MEF) to

≥ 2.6 and decrease the Water Factor (WF) to ≤ 3.7 . No announcement date has been determined as of this filing. The changing standards and the introduction of new models by manufacturers result in continual changes to the list of ENERGY STAR labeled washers. In response to these changes, the utilities are working with retailers to ensure accuracy in point of sale labeling and are monitoring program cost-effectiveness.

- ❑ Technical Potential Study: During 2008 and into 2009, the Commission employed an independent consultant to conduct a Technical Potential Study in order to determine remaining energy efficiency opportunities¹⁰ in New Hampshire. The results of the study indicate that *“there is still significant savings potential in New Hampshire for cost effective electric and gas energy-efficiency measures and practices (and associated oil and propane savings)”*. The study also determined that the current CORE Energy Efficiency Programs *“have been successful and have saved a substantial amount of energy”* and *“Many of the programs have and are continuing to perform quite well in terms of cost per unit of energy saved and customer participation.”* These comments suggest that the CORE Energy Efficiency Programs are well positioned to capture energy savings because they possess the breadth and depth to address the full range of potential opportunities to cost-effectively install energy efficiency measures. Indeed, it was found that *“nearly all of the most cost effective energy efficiency measures are included in current programs in some manner”*.

In addition to these positive comments about the CORE Energy Efficiency Programs, the report goes on to make the following recommendation: *“Expanding the number and types of products and services available through the existing residential energy efficiency programs, and promotion of those programs to include a larger number of potential participants may lead to increased overall energy savings.”*

The Technical Potential Study is an important resource that is used to assist the utilities in the identification of cost-effective energy saving measures with significant market potential that can be potentially realized through strategic program market interventions. Examples of such measures include LED lighting, second refrigerator recycling, and expanded weatherization services for non-electrically heated homes.

- ❑ The Home Performance with ENERGY STAR program, a pilot program offered by PSNH and Unitil from 2009 to 2012, will now be offered by all the NH CORE Utilities in 2013 and 2014. Based on Commission Order No. 25,402 issued on August 23, 2012, all four electric utilities will provide fuel neutral services through this weatherization program, and the gas utilities will continue to serve their gas customers in this program. Please refer to Section E, entitled “Proposed Resolutions for the Directives Contained in the Commission’s Home Performance with ENERGY STAR Program Order No. 25,402” for additional information.
- ❑ CORE Home Energy Assistance and Federal Weatherization Assistance Program. In April 2009, the Office of Energy and Planning (OEP) was awarded approximately \$23 million in ARRA funding through the Federal Weatherization Assistance Program (WAP). The OEP

¹⁰ The study, Additional Opportunities for Energy Efficiency in New Hampshire, can be found at the NH PUC website at <http://www.puc.state.nh.us/>.

subcontracts with the New Hampshire's Community Action Agencies (CAAs) to operate and deliver weatherization services at the local level. Whenever possible, the OEP and CAAs collaborate with the electric and gas utilities' energy efficiency programs to provide weatherization services to low income households in New Hampshire. With the ARRA funded program closing in September 2012 and federal weatherization funding anticipated to be below pre-ARRA levels, weatherization funding will not be sufficient to provide the same, in-depth weatherization services to eligible households. In order to provide the same level of weatherization services to low-income households, the NH Electric Utilities have allocated 15% of the total program budget (which now includes RGGI funds) to the Home Energy Assistance (HEA) Program. Although collaboration of funds will continue, the NH Electric Utilities expect to pay a higher percentage of the project costs for Home Energy Assistance programs due to this reduction in Federal WAP funding.

- Federal Tax Credits. Federal tax credits are available at 30% of the cost, with no upper limit through 2016 (for existing homes & new construction) for: Geothermal Heat Pumps; Small Wind Turbines (Residential) and Solar Energy Systems. Customers in both the Weatherization Programs and the ENERGY STAR Homes New Construction Program are being made aware of the additional benefits of this tax credit. Customers are also being informed of the renewable energy incentives offered through the NHPUC's Sustainable Energy Division. The NH CORE Utilities always encourage customers to seek advice from a tax expert regarding tax credits.

E. Proposed Resolutions for the Directives Contained in the Commission's Home Performance with ENERGY STAR Program Order No. 25,402

On August 23, 2012, the Commission issued Order No. 25,402 (Order on Home Performance with ENERGY STAR Program). In its Order, the Commission provided conditional approval to continue the fuel neutral Home Performance with ENERGY STAR Program in 2012 and to include the program in the utilities 2013-2014 CORE program filing. The Commission's conditional approval is subject to eight directives, which are summarized below along with the NH Electric Utilities' proposed resolution for each directive.

- 1) Study the drivers of the increasing air conditioning load in both residential and C&I customer classes and to begin to develop cost-effective energy efficiency programs to reduce this load. Included in this analysis should be window unit air conditioners and their installation, as well as central air conditioning systems.

Proposed Resolution

Complete a market assessment study of air conditioning equipment in both the residential and C&I customer sectors that will focus on opportunities for program interventions to reduce the rate of increase of air conditioning energy and peak demand.

- 2) Further develop peak demand as a factor when calculating cost/benefit tests of proposed energy efficiency measures.

Proposed Resolution

The NH Electric Utilities interpret this directive to mean that attention should be focused on an accurate quantification of the benefit of summer peak demand savings in cost/benefit tests of air conditioning measures and programs. The NH Electric Utilities propose to include this as an additional requirement of the market assessment study noted in directive #1.

- 3) Include additional measures or programs that target peak demand in the 2013-2014 CORE program filing.

Proposed Resolution

This filing includes incentives for new central air conditioning and air source heat pumps in both the residential and C&I customer sectors.

- 4) Include ancillary electric savings data from non-electric energy efficiency measures, as well as, a description of the reliability and accuracy of the data in the form of a report in the 2013-2014 CORE program filing.

Proposed Resolution

The NH Electric Utilities filed a Request for Extension of Time with the Commission on September 11, 2012. As specified in the Request for Extension of Time, the NH Electric Utilities are in the process of hiring a consultant to conduct a thorough review of the data and to provide assurance that an independent third party has verified the information upon which future CORE program expenditures will be based. On September 14, 2012, the Commission granted the NH Electric Utilities' request for an extension of time and directed the NH Electric Utilities to file a report with the Commission no later than March 29, 2013.

- 5) Perform outreach to electric space heating customers and give such customers priority.

Proposed Resolution

The NH Electric Utilities will continue to identify and perform outreach on an ongoing basis to customers/landlords that are likely to utilize electricity to heat their homes/multi-family buildings. In addition, the NH Electric Utilities will conduct a targeted marketing campaign during the time period October 2012 – December 2014 and will give priority to electric heat customers via the Home Heating Index screening tool by allowing them to qualify for the program at a lower BTU/Square Foot threshold¹¹.

¹¹ Per page 25 of Residential Energy, Cost Savings and Comfort for Existing Buildings, 4th edition, by John Krigger and Chris Dorsi.

- 6) Develop cost/benefit tools to measure energy savings in multi-family buildings and to give priority to multi-unit buildings which utilize electricity for space heating.

Proposed Resolution

The NH CORE Utilities are in the process of implementing a common statewide energy modeling software program for residential programs that will have the capability to more easily calculate energy savings in multi-family buildings and are on track to implement this software beginning in 2013.

As described in #5 above, the NH Electric Utilities will also perform outreach and give priority to landlords whose multi-family buildings are likely to utilize electricity for space heating.

- 7) Include an alternative cost benefit analysis approach for electrically heated multi-family projects in the 2013-2014 CORE program filing.

Proposed Resolution

The NH Electric Utilities interpret this to mean that an alternative approach to the Home Heating Index is required for screening multi-family buildings. The NH Electric Utilities plan to conduct audits of electrically heated multi-family projects to determine the cost-effectiveness of these projects.

- 8) Convene a working group immediately, for the purpose of developing a performance incentive proposal for non-electric savings. The existing performance incentive will remain in place until a new methodology is approved by the Commission.

Proposed Resolution

A Performance Incentive Working Group meeting is currently scheduled for October 3, 2012 to begin addressing this issue.

F. Customer Comments

While aggregate measures of success such as kilowatt-hours saved, customers served, and emissions reduced provide a sense of the overall impact of the CORE programs, it is also important to recognize the tangible impact of the programs on individual residents and businesses. The following comments from customers who have participated in the energy efficiency programs illustrate the impact these programs have had on New Hampshire families and businesses. These are just a few examples of the comments that participants in the New Hampshire energy efficiency programs have shared.



EMD Millipore was recognized as the New Hampshire State and Business Leader for Energy Efficiency at the Northeast Energy Efficiency Summit held by the Northeast Energy Efficiency Partnership on June 14, 2012. Its Jaffrey, New Hampshire facility undertook 30 projects over the past 9 years with the help of incentives and technical assistance from the Large Business Energy Solutions Program. The projects will save the Company 1.5 million kWh per year, resulting in annual savings of over \$161,000.

BAE Systems' Electronic Solutions Division was recognized as one of the Business Leaders for Energy Efficiency by the Northeast Energy Efficiency Partnership in 2011. Their New Hampshire facilities have completed 243 energy efficiency projects over the past 9 years in partnership with the Large Business Energy Solutions Program, resulting in over 9.3 million annual kWh savings and saving nearly \$1.2 million in annual power costs.



St. Paul's School in Concord, NH was recognized as one of the Business Leaders for Energy Efficiency by the Northeast Energy Efficiency Partnership in 2011. Environmental responsibility is a core value of the school's strategic plan. Their energy efficiency partnership with the Large Business Energy Solutions Program has resulted in savings of 1.5 million kWh in energy since 2006, as well as reductions in greenhouse gas emissions and maintenance costs.

- ✓ *Recently we participated in [NH Saves] Energy Efficiency program which offers rebates to customers who replace equipment at their facility with more energy efficient equipment. [NH Saves] provided the financial incentives and technical assistance we needed to install a new HVAC system with the highest energy efficient equipment available. We have already noticed a decrease in our monthly electric bills and have greatly benefited by this program. Wall Industries, Exeter, NH*
- ✓ *The NH Saves program has provided the catalyst for several large energy saving improvement projects in NH. The technical and financial support has been invaluable for several of our clients that have wanted to do the right thing (improve their energy efficiency) but have struggled with longer paybacks or finding advice on where to start the process. With great partner utilities participation in the NH Saves program, NH businesses and residents have a wonderful resource for planning and implementing positive changes in their energy use. Keith McBrien, GDS Associates.*

- ✓ *If you were to look at the two BCTV lighting projects, you'll see that not only did BCTV receive over \$35,000 in rebates for this \$150k project, but the additional savings in kilowatt hours is significant and translates into real money. The town meeting room annual savings is \$7,000 and the studio annual savings is \$4,500; that's a total of \$11,500 in annual energy savings per year. Over time that is going to add up to a huge savings. It definitely was a worthwhile investment for us." Bill Jennings, Bedford Community TV (as quoted in the Bedford Patch)*
- ✓ *I had a great experience with [NH Saves]. I was amazed with their rebate program. We worked very hard to keep our new facility's environmental impact to a minimum and feel that we have done a good job with it. I look forward to working with you again on an addition to our new facility as well as renovations to one of our older facilities. M. Powers Properties Director - YMCA of Greater Nashua*
- ✓ *I think it is a wonderful program that gives low income people like me something we could never afford to pay for on our own. It was the BEST Christmas present I ever received, for 10 years my house was really cold and that made the winter season longer, but now I come in from the cold and house is nice and warm. I hope other people like me have the same opportunity and want to thank all the people that make this program to be "One in a Million" so great, thank you so much. Maria-Nashua, NH*

Home Performance with ENERGY STAR survey responses:

- ✓ *This was a great opportunity and so glad I was able to qualify. Great work, great team, great program. Thank you. The program has made our house more comfortable. When children and grandchildren visited from Arizona in the past I couldn't keep my house warm enough. This past year I had to turn the heat down because it got too warm in the back bedrooms which had always been cold.*
- ✓ *This program enabled us to stop wasting oil. We are very grateful for the expertise and financial initiative. The entire team was great to work with. Thank you.*
- ✓ *All people we came into contact with from beginning to end were courteous, knowledgeable and helpful. They all went beyond what was necessary to be polite. It was a pleasure to have them in our home.*
- ✓ *Thank you - I hope you continue to offer this. Many people in our town have taken advantage of this because of the job and experience of their neighbors.*
- ✓ *It was a great experience that I recommend to anyone who will listen. Very satisfied with the results and noticed the changes right away.*

G. Statewide Consistency and Coordinated Program Management

The uniform planning, delivery, evaluation and access to energy efficiency programs will continue under the proposed 2013 - 2014 CORE NH Energy Efficiency Programs. To the extent practicable, the efficient delivery of services will not depend on the community in which the customer resides or does business. CORE Program offerings are designed to be consistent throughout the State with equal access

for any eligible customer subject to available budget. Each utility will continue to have flexibility in its implementation strategies and may deliver its programs in a particular way. However, from a customer's perspective, the programs will continue to look virtually the same in all service territories:

The first Settlement Agreement in Docket No. DE 01-057 provided:

The Utilities will establish a CORE Program Management Team (the "Management Team") to oversee all CORE Program activities and to resolve problems as they arise. The Management Team will be comprised of representatives from each utility and will make decisions by consensus with one member specifically designated as the liaison with the Parties and Staff. The Management Team will meet at least quarterly to review program progress and to resolve problems. [October 3, 2001, Section 5, page 11]

The Management Team will continue to fulfill its responsibilities to coordinate and oversee statewide activities, recognize problems in program delivery early on, communicate those problems among the NH CORE Utilities, identify corrective actions, and provide quarterly status reports to the Commission's Staff and interested parties.

Steps continue to be taken to more closely align the CORE Programs with efficiency programs offered to New Hampshire's natural gas customers. Program administrators from both the gas and electric utilities work together throughout the year to collaborate on these efficiency programs. In addition, gas program representatives will continue to be included in Quarterly CORE Programs Review Meetings with interested Parties and the Commission's Staff throughout 2013-2014. Finally, from a customer's perspective, dual fuel customers are offered an opportunity to participate in both the gas and electric programs.

H. Administrative Costs

The NH CORE Utilities, the Commission's Staff, and other interested parties have spent considerable time and effort setting up uniform program administration and reporting protocols, as well as joint marketing and coordinated monitoring and evaluation for all of the CORE Programs. The NH CORE Utilities will continue to direct their limited time and resources to successful program implementation. The Commission's Staff and other interested parties will be able to judge each utility's performance relative to agreed-upon program performance goals that are clear and measurable.

Cost-control measures are in place in the performance incentive mechanism, in that an inefficiently managed and administered program will likely fail to meet its cost-effectiveness and energy savings goals. On the other hand, the level of administrative costs that are spent on successful programs will vary from program to program and utility to utility for valid reasons. For example, a small utility and a large utility will generate unequal amounts of System Benefits Charge revenue and have unequal program budgets. However, what matters is that each utility devotes sufficient resources to operate the CORE Programs effectively in their service territory, as demonstrated by the outcomes of the programs and measured through the performance criteria (i.e., cost-effectiveness and energy savings).

I. Performance Incentive

The NH CORE Utilities are proposing that all programs in this filing, other than the non-electric energy savings associated with the Home Performance with ENERGY STAR Program, be included in the determination of the performance incentive. The NH CORE Electric Utilities will not include the non-electric energy savings associated with the Home Performance with ENERGY STAR Program in compliance with the Commission's recent Order No. 25,402 issued August 23, 2012. The NH Electric CORE Utilities will continue to utilize the approved performance incentive mechanism based on actual spending instead of budget spending to avoid potential double counting of budgets in the calculation of the performance incentive as detailed in Commission Order No. 25,189. The current incentive mechanism fosters efficient program implementation efforts and the achievement of program goals while retaining most funding for program efforts. The performance incentive also serves as a motivating factor for the NH Electric and Gas Utilities and holds each utility accountable for meeting their individual program goals. If any individual utility does not meet its program goals, it will not earn its target incentive.

The Commission recently indicated in its Order No. 25,402, that the record is not sufficiently developed to make a determination on an incentive methodology for the non-electric energy savings related to the Home Performance with ENERGY STAR Program and directed the parties to collaborate in a working group for the purpose of developing a performance incentive proposal for non-electric savings. A working group meeting is currently scheduled for October 3, 2012 to begin addressing this issue.

Further information regarding the performance incentive methodology can be found in Section V and detailed calculations for each utility are included in the Attachment section of this filing.

J. Multi-year Project Approval

In 2003 the Commission authorized what was termed "multi-year approval" – a process whereby customers with multi-year projects could receive a commitment assuring program continuity and funding for long term projects. The NH CORE Utilities seek to continue multi-year approval and specifically request authorization to make customer commitments during 2013 and 2014 for projects to be completed in 2013-2016. All customer classes currently eligible to participate in the CORE Programs will be eligible. The remainder of this section provides background and support for continuing this policy.

Customers of the NH CORE Utilities often plan and budget for large capital projects with multi-year lead times. Construction projects, renovations and replacement of existing equipment for 2013 and 2014 will be developed in 2012, and the resources necessary to fund such projects need to be arranged when these customers' decisions are made. Large commercial and industrial customers sometimes have two-year planning horizons for large capital expenditures, which are essential to the growth of the NH economy. Home builders will plan construction starts for the following year based on many factors, including the availability of the ENERGY STAR Homes Program. With pre-approval of the number of households that can be served by the Home Energy Assistance Program, the Community Action Agencies or other contractors delivering these services can better plan for the number of crews that will be needed and can better coordinate with the Department of Energy home weatherization jobs.

The NH CORE Utilities will make commitments to customers who have presented definitive plans for projects to be completed in the subsequent two years. The energy efficiency measures will include those measures that are approved under the then existing CORE Programs and utility-specific programs. All 2013-2014 program guidelines and rules will apply to future year commitments. Customers receiving commitments in 2013-2014 will not be barred from participating in any new programs introduced in 2015-2016 which supplement or supplant the existing programs. The funds for future projects will be paid out of the budget for the year the project was implemented; however, the commitment to the customer will be made contingent upon the continuation of funding.

The total of all customer commitments, in any given program, in any given future year, will not exceed 40% of the amount budgeted for that program in 2013 or 2014 for Customer Rebates and Services without prior concurrence of the Parties and the Commission's Staff. Any such commitments will be monitored and reported in the NH CORE Utilities' quarterly reports. All customer commitments will be made contingent upon the continuation of the program funding.

K. Interim Changes in Program Budgets

The NH CORE Utilities recommend continuation of the budget adjustment guidelines currently in place. Specifically,

- Once the budgets are approved, there will be no movement of funds between the residential and commercial industrial sectors unless specifically approved by the Commission.
- Budget transfers to or from individual programs of 20% of the individual program's budget or less can be made without consultation and without Commission approval. Notice to the Commission's Staff and interested parties is required.
- Budget transfers to or from individual programs greater than 20% of the individual program's budget shall be filed with the Commission. The Commission's Staff and interested parties may file any comments with the Commission within two weeks of the filing. If no action has been taken by the Commission's Staff and interested parties, the budget transfer request shall be deemed approved unless the Commission notifies the company of the need for a more in-depth review within thirty (30) days of the filing.
- Notwithstanding the 2nd and 3rd bullets above, no funds shall be transferred out of the Home Energy Assistance Program without prior approval by the Commission.

II. CORE PROGRAM OFFERINGS

A. Residential Program Descriptions

Overcoming Market Barriers and Changing Market Conditions

Key market barriers in the residential sector are generally grouped on the demand side of the efficiency market, though there are barriers impacting the supply infrastructure as well. The central barrier addressed by the CORE residential programs is the general lack of customer awareness¹ regarding energy efficiency services and equipment. More specifically, customer's limited knowledge of energy efficiency measures, uncertainty regarding the energy and cost savings of premium efficiency equipment, as well as lack of awareness of available programs are important barriers to achieving the programs' participation and energy savings goals. Another key factor is the current economic climate and homeowner's competing needs for capital coupled with the high up-front cost of energy efficiency services and equipment installation presents an additional barrier, and often causes homeowner's to choose less expensive, and less efficient, weatherization measures, lighting, and appliances.


The market barriers to achieving the residential programs' goals are the lack of builder/contractor and retailer awareness of the benefits of energy efficiency, perceptions of lack of demand for premium efficiency equipment, and the availability of technical services. These barriers are also addressed by the suite of residential programs. The ENERGY STAR programs educate builders, contractors, and retailers on the benefits and profitability of marketing energy efficient products.

In order to address these barriers, the utilities offer a variety of programs targeting specific areas where the energy efficiency of the New Hampshire housing stock can be improved. The ENERGY STAR programs promote the benefits of energy efficient lighting, appliances and homes through a variety of marketing techniques. Aligned with national efforts developed by the U.S. Environmental Protection Agency, the CORE Programs provide educational materials to customers, and promote energy efficient equipment through trade ally organizations, retailers and the NHSaves catalog and website.

The suite of residential CORE programs offer a variety of incentives for premium efficiency equipment and homes, in order to reduce the high installation costs for customers, while increasing the demand for energy efficiency services, lighting, appliances and homes. This is particularly necessary for weatherization projects that tend to have high initial costs and long simple pay-backs while yielding potentially significant lifetime energy savings. To address these barriers, financial incentives are offered by programs specifically tailored to promote weatherization projects and efficient lighting and appliances.

¹ GDS, (2009), Additional Opportunities for Energy Efficiency in New Hampshire, p19, "About half of the households surveyed are aware of their utility offering energy efficiency programs, and 30% have participated in them in some way."

The incentives for customers, coupled with builder, contractor and retailer education and training, foster the development of strong relationships between the efficiency market and the energy consumers. This joint approach addresses a large portion of the efficiency market and will allow the programs to continue to assist both customers and retailers in understanding factors affecting home energy use. In addition, it will increase the supply of efficiency service providers and knowledgeable contractors, and ultimately will help to achieve the programs' energy savings and participation goals.

Efficiency Market	Market Barrier	Program Intervention	Program Objective
Customer Demand  Supply Infrastructure	Lack of customer awareness of the benefits of energy efficient appliances/performance uncertainties	Promotion of energy efficient appliances at point of purchase, through product labeling and educational materials Education on the benefits of energy efficiency Joint promotion w/program allies Promotion through websites, bill inserts, catalogues, trade and home shows and retail advertising	Increase demand for energy efficient appliances.
	High cost of efficient homes and technology	Incentives via rebate Information about Federal tax credits	Decrease the cost barrier and increase market share of energy efficient rated lights, appliances and homes
	Retailer uncertainty about product performance and profit potential for providing energy efficiency services	Retailer training and recruitment	Increase visibility and availability of energy efficient appliances
	Lack of builder/contractor awareness, experience and availability	Builder/trade ally training and education Coordination between residential programs	Demonstrate the benefits and value of efficiency certifications Provide builders with the resources necessary to meet energy efficiency standards.
	Perceived lack of demand for premium efficiency homes, equipment and services	Increased customer demand through incentives, education and promotion	Increased supply of energy efficiency services, and premium efficiency equipment and homes

1. ENERGY STAR Homes Program

Overview:

The New Hampshire ENERGY STAR homes program is designed to be a market driving program, encouraging both builders and homeowners to build a new home with energy efficiency in mind. The program provides incentives in the form of rebates and services to help offset the cost of building to a more energy efficient standard using the Home Energy Rating System (HERS). The utilities will continue to offer financial incentives based on the HERS performance rating of a particular home and the energy efficient lighting, appliances and HVAC equipment installed. The HERS performance rating encourages builders and homebuyers to build an even higher performing home, all the way down to a HERS Rating of 0, which would represent a zero energy home. In addition to this home performance incentive, the cost of HERS rater services are covered by this program to help the builder/consumer ensure that the home meets the ENERGY STAR standards and to also assist in incorporating the best building practices in the design. All new, residential single family or multifamily construction projects are eligible to participate in this program, as are complete rehabs of existing structures if the amount of rehab work meets the ENERGY STAR guidelines.

This program encourages better building techniques in accordance with the ENERGY STAR guidelines by offering incentives to build homes that are at least 15% more efficient than homes built to the 2009 International Energy Conservation Code (IECC)². The program is fuel neutral and aligned with a national effort developed by the U.S. Environmental Protection Agency (EPA). The New Hampshire ENERGY STAR Homes program provides builders with technical assistance, financial incentives and instruction needed to ensure that homes meet stringent ENERGY STAR technical standards. The program provides incentives for home certification, upgrades to ENERGY STAR products, and a sliding scale performance based incentive designed to encourage builders to improve efficiency levels above the minimum required by the national program. The program also addresses market transformation by providing a Home Energy Rating (HERS)³ - a nationally recognized index for measuring a home's energy efficiency.

The utilities' staff coordinates program delivery to ensure that consistent services are provided to home builders and homebuyers across the state. In addition, the electric utilities continue to collaborate with the New Hampshire gas utilities to incorporate their rebates for high efficiency gas HVAC equipment. On July 1, 2012 the EPA made changes to the federal ENERGY STAR Homes Program standards and the NH utilities have incorporated these new standards into this program.

² The State Building Code Review Board has adopted the International Energy Conservation Code 2009 with amendments, effective April 1, 2010, and which the utilities have incorporated into this program.

³ Since 2007, an ENERGY STAR home must meet the Home Energy Rating System (HERS) index in accordance with the *Mortgage Industry National Home Energy Rating Standards* administered by the Residential Energy Services Network (RESNET). This HERS index is recognized by the US Environmental Protection Agency as the qualification for ENERGY STAR home designation.

Beginning in mid-2012, the new standards resulted in the following changes to the program:

- ✓ Thermal Enclosure System Rater Checklist
- ✓ HVAC System Quality Installation Contractor Checklist
- ✓ HVAC System Quality Installation Rater Checklist
- ✓ Water Management System Builder Checklist (or Indoor airPLUS Verification Checklist)
- ✓ Increased Rater, builder, and HVAC contractor training

Continuing into 2013, the focus will be to continue educating builders on the national Version 3.0 program changes and assisting them as they work to meet these new requirements. Efforts will also include educating consumers on the benefits of building to the ENERGY STAR level and beyond. The NH electric utilities will continue to work with the Home Builders & Remodelers Association of NH, customers, and building trade allies (e.g., insulation and HVAC contractors) to encourage the construction of ENERGY STAR homes in the state.

Marketing & Education:

Marketing for the ENERGY STAR Homes Program focuses on direct builder contact by program administrators and Home Energy Raters. In addition, utilities plan to participate in trade shows such as the NH Home Builders & Remodelers Association Annual Home Show (March), will provide outreach to realtor groups and HVAC contractors, and will present at home builder and home buyer seminars, promoting energy code training, and directing customers/members and builders to NHSaves and utility web sites. If appropriate and funds are available, the utilities may also co-market ENERGY STAR developments with builders.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$1,312,375	443	22,532,774 kWhs
Gas	\$ 170,000	53	39,065 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$1,343,602	459	22,893,400 kWhs
Gas	\$ 194,500	58	38,133 MMBTUs

The energy savings for this program are developed using lighting and appliance energy savings, historical savings, along with heating, cooling and ventilation energy savings adjusted to reflect changes in the Energy Code and the baseline home.

Measures of Success & Market Transition Strategy:

Success factors for this program include: the number of homes completed versus goal, the energy savings achieved, and the benefit/cost ratio. We expect that increased awareness of and demand for “ENERGY STAR Homes” may eventually decrease the need for incentives. New technologies may change the types of products that are eligible for rebates in the future. Evaluations will help determine program changes, if needed, over time to address market barriers.

2. Home Performance with ENERGY STAR Program

Overview:

Transitioning from a pilot program to a statewide CORE program in Commission Order No. 25,402 issued on August 23, 2012. The Home Performance with ENERGY STAR (HPwES) program will continue to improve the efficiency of the existing housing stock (single and multi-family⁴) in NH by assisting customers with improvements to the energy efficiency of their home. Basic services include air sealing, insulation, and cost effective appliance and lighting upgrades. Participating customers can receive approximately 50% of the cost of weatherization services up to a \$4,000 cap in program services. In addition to these services, additional incentives are available for high efficiency heating and hot water system replacements if recommended by the energy auditor. New for 2013-2014 will be incentives for replacement of air conditioning equipment (central air conditioners, air source heat pumps, mini split systems). Energy auditors also refer customers to the ENERGY STAR Appliance program as appropriate. Co-payments are required by the customer and are determined based on the measures installed. The program also has a strong educational component designed to help customers better understand their home and the factors that affect energy use.

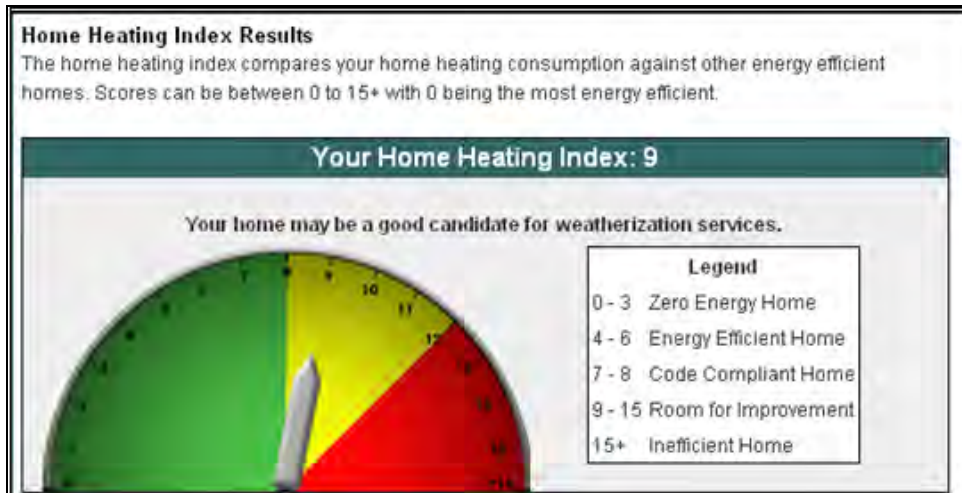
All four electric utilities offer this program to their electric heat customers and other customers looking to improve the energy efficiency of their homes. Both gas companies offer this program to their gas heat customers. The electric and gas utilities have been using the Home Heating Index (HHI) tool to identify single family homes that are good candidates for weatherization measures. In some cases, the program coordinator can waive the HHI if the project coordinator determines the project will have significant savings and will likely pass the benefit/cost test. With just three pieces of information (zip code, conditioned square footage of home and annual heating fuel usage) this tool creates a tailored Home Heating Index. The utilities are using this tool to screen for qualified weatherization candidates (i.e., the higher the score, the more energy used per square foot, and therefore the more opportunity for energy savings.). Qualified customers then complete a simple application form and provide two years of heating fuel data to enroll in the program.

Electrically heated multi-family buildings may bypass the standard HHI score qualification. The utilities will perform an assessment of multi-family buildings to determine energy efficiency opportunities. Improvements for these buildings will be modeled and evaluated for cost effectiveness using the standard program avoided cost B/C testing.

Customers may also be eligible to participate in the electric utilities' on-bill financing program (funded through the Regional Greenhouse Gas Initiative) to cover the cost of the customer co-pay. Utilizing this service, customers can finance a new heating system (if recommended for replacement by the home performance contractor), or additional weatherization measures at 0% interest and repay the loan through their monthly utility bill.

⁴ Some Multi-family buildings have central heating and/or water heating systems that are on commercial rates. Any measures conducted on these systems will be charged to the appropriate C&I program.

Customers whose homes are already code compliant or better are given links to educational material and other energy-related web sites. As the higher use customers are served, the qualifications can be lowered over time. A customer completing the Home Heating Index on NHSaves.com would see the following screen:



In early 2011, the New Hampshire HPwES program was recognized with a national ENERGY STAR award from the program’s national sponsor, the Environmental Protection Agency (EPA), which cited the New Hampshire program’s effective screening tool, “exceptional” audit-to-implementation closure rate, trained and competent contracting work force, appropriate financial incentives, and simple on-bill financing option.

Based on Commission Order No 25,402, issued August 23, 2012, all 4 electric utilities will provide fuel neutral services through this weatherization program for 2013 and 2014. The gas utilities will continue to serve their gas customers in this program.

Gas customers participating in the HPwES program can receive an incentive of 50% up to \$4,000 from their electric company in addition to the \$4,000 incentive from their gas company. This would apply after they reach their \$4,000 maximum from their gas company. The goal is to provide gas customers with an opportunity for deeper savings and to allow gas customers to take advantage of their paying into the electric SBC fund. This would also allow the gas and electric utilities to determine customer interest in doing “deep retrofits”.

Marketing & Education:

Marketing for the HPwES program will focus on referrals from the utilities’ customer service representatives, 211NH.org referrals, referrals from customer participants, and customers/members who have self-qualified via the NHSaves.com Home Heating Index screening tool. The NH Electric Utilities will continue to identify and perform outreach on an ongoing basis to customers/landlords that are likely to utilize electricity to heat their homes/multi-family buildings. In addition, the NH Electric Utilities will conduct a targeted

marketing campaign during the time period October 2012 – December 2014. The utilities also give priority to electric heat customers via the Home Heating Index screening tool by allowing them to qualify for the program at a lower BTU/Square Foot threshold⁵. Program information will also be handed out at special events (e.g., home shows) and mailed out upon request. Home Energy Auditors will also market the program as necessary to meet participation goals, and the utilities may include articles in their bill inserts. While piloting and then ramping this program up during 2009-2012, some new marketing approaches were tested that may also be used in the future, including Twitter and Facebook messages about the program, articles in trade ally newsletters, promotion in senior citizen seminars/newsletters, working directly with towns, interviews on radio shows, and working with realtor groups.

Delivery:

NH Electric and Gas Utility personnel will administer the program and will contract for the delivery of program services with qualified energy auditors. Additionally, customers will be educated and informed about opportunities for installing renewable energy technologies.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$2,500,808	1,292	5,709,958 kWhs
Gas	\$ 865,000	593	404,077 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$2,538,986	1,307	5,775,464 kWhs
Gas	\$ 916,500	624	427,530 MMBTUs

Measures of Success & Market Transition Strategy:

Success factors for this program include attaining the planned participation and energy savings goals. New technologies may change the types of products that are eligible for rebates in the future. Evaluations will help determine program changes, if needed, over time to address the residential market barriers.

⁵ Per page 25 of Residential Energy, Cost Savings and Comfort for Existing Buildings, 4th edition, by John Krigger and Chris Dorsi.

3. ENERGY STAR Lighting Program

Overview:

This program will continue to increase the use and availability of energy efficient lighting products in New Hampshire. The program is open to all residential customers and will (1) offer rebates for interior and exterior ENERGY STAR labeled bulbs and fixtures, (2) promote the efficiency and environmental benefits of the latest lighting technologies, and (3) leverage the ENERGY STAR branding across three programs - Lighting, Homes, and Appliances.

Program delivery will be through New Hampshire retailers, mail order catalogs, and utility web sites. Contractors will continue to provide retailer training and to work with the 130 retailers to ensure the availability and visibility of ENERGY STAR lighting products. Services will also include rebate processing and the development and placement of cooperative advertising with participating retailers. Instant rebate coupons for qualifying bulbs and fixtures will make these products more affordable at participating retailers.

The program catalog is designed to raise customers' awareness of the products, to inform them of the new technologies being developed (e.g., light emitting diodes), and to make it easy to purchase products. The NH Electric Utilities will continue promoting energy efficient lighting via special events with retailers and directly with customers via Energy Fairs, Trade Shows, etc.

Marketing & Education:

Marketing for the ENERGY STAR Lighting Program will include the NHSaves catalog, which will be handed out at events, available at utility offices, and mailed upon request or via targeted mailings. Additionally, marketing will be provided by the utilities' circuit rider who will train sales staff on selling features of ENERGY STAR lighting products, and will update point-of-purchase materials and rebate forms at stores. Utilities may also include articles in newsletters and bill inserts and/or co-market with retailers on special promotions. The overall goal of the program is to raise the visibility and availability of ENERGY STAR lighting products in order to build customer demand and retailer supply.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$1,280,081	300,882	31,498,890 kWhs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$1,316,613	313,275	32,848,269 kWhs

Measures of Success & Market Transition Strategy:

Program success factors will include attaining the planned participation and energy saving goals, increased market share, and customer awareness and acceptance of the ENERGY STAR brand. Evaluations will help determine program changes, as needed, over time to address market barriers.

4. ENERGY STAR Appliance Program

Overview:

This program will increase the use and availability of energy efficient appliances in New Hampshire. It will be tailored to the needs of New Hampshire customers, but coordinated with similar national or regional initiatives. A prime objective is to raise awareness and educate consumers on the benefits of ENERGY STAR rated appliances through joint marketing, promotional, and educational materials.

The program is open to all residential customers and will feature:

ENERGY STAR Appliance Incentives	Mail-in Rebate
Clothes Washers:	\$30
Refrigerator:	\$30
Room Air Conditioner:	\$20
Smart Power Strips:	\$10
Room Air Cleaner:	\$15
2 nd Refrigerator/Freezer pickup/recycling:	\$30

Via this program, the Gas Utilities offer incentives on ENERGY STAR heating, hot water equipment and controls. With the addition of Regional Greenhouse Gas Initiative funding, the NH Electric Utilities have expanded this program to oil, liquid propane and electric equipment. This CORE program will encourage customers to choose the ENERGY STAR high efficiency options by providing incentives on the following equipment:

ENERGY STAR Hot Water & Heating System Incentives (Gas, LP, Oil)

Tankless Water Heaters (EF ≥ 0.82)	\$ 500
Indirect Water Heaters (on ES boiler)	\$ 400
Standalone Storage Water Heater (EF ≥ 0.67)	\$ 100
Furnace w/ECM (AFUE $\geq 95\%$, Oil $\geq 85\%$)	\$ 300
Furnace w/ECM (AFUE $\geq 97\%$)	\$ 450
Combo Boiler w/water heater (AFUE $\geq 90\%$)	\$1,200
Boiler (AFUE $\geq 96\%$)	\$1,500
Boiler (AFUE $\geq 90\%$)	\$1,000
7-Day Programmable Thermostat	\$ 25
Boiler Reset Controls	\$ 225
Central Air Conditioner (SEER ≥ 14.5)	\$ 200
Air Source Heat Pump Split Sys (SEER ≥ 14.5)	\$ 900

The equipment and rebate levels above may be adjusted to meet current market conditions.

Contractors will continue to provide services including retailer retention and recruitment, training, point of purchase promotional materials, and product labeling for the more than 90 participating retailers. Services will also include rebate processing and the development and placement of cooperative advertising with participating retailers. For heating and cooling system rebates, contractors and installers will be the main distribution channel for product promotion and installations. In addition, the NH CORE Utilities will seek opportunities to collaborate with manufacturers on matching rebate programs.

Marketing & Education:

Marketing for the ENERGY STAR Appliances Program will be conducted by the utilities’ circuit rider who will train sales staff on selling features of the ENERGY STAR models and will update point-of-purchase materials and rebate forms at stores. Utilities may also include articles in newsletters and bill inserts and/or co-market with retailers on special promotions.

The overall goal of the program is to raise the visibility and availability of ENERGY STAR appliances in order to build customer demand and retailer supply.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$2,790,500	21,797	40,121,509 kWhs
Gas	\$1,005,000	2,866	253,857 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$2,861,423	23,101	42,948,787 kWhs
Gas	\$1,066,500	3,011	286,841 MMBTUs

Measures of Success & Market Transition Strategy:

Program success factors will include attaining the planned participation and energy saving goals, and increasing market share. Customers will be surveyed to determine the impact of ENERGY STAR labeling and promotion on their purchasing decisions. Evaluations will help determine program changes, if needed, over time to address market barriers.

5. Residential Building Practices and Demonstration Program – Gas Companies

The purpose of the Residential Building Practices and Demonstration Program is to explore and demonstrate new and/or underutilized energy efficiency practices and/or equipment that can enhance a home's overall energy saving potential. This unique program allows the Companies to support new and/or advanced energy saving technologies installed by residential customers.

The Companies plan to explore several ideas such as heating equipment programs, insulation and building envelope techniques, and new home construction practices. Ideas will be drawn from the Companies and other utilities' experiences, program vendors, and interested business partners. Eligible participants in this program will include home owners, landlords, and new home builders. Each participant may be asked to allow monitoring of the installation and publication of the results in case study format.

The Companies will consider the following:

- Early Retirement of Boilers Pilot - the Companies will investigate the viability of a boiler early retirement program. Although the usable life for a boiler is documented at 20 years, many of these boilers can last 40 years or more operating inefficiently. The concept of the pilot would be to have old inefficient operating equipment taken out of service and be replaced with high- efficient ENERGY STAR equipment. In contrast, the ENERGY STAR Appliance program provides incentives for failed equipment and new equipment (i.e., a new gas heat customer). The MA utilities will be concluding their pilot shortly on early retirement of gas boilers and the Companies will draw from this experience.
- WIFI Thermostats Pilot - The Companies will investigate a pilot program to evaluate the energy impact of programmable Wi-Fi thermostats installed in homes with existing programmable thermostats controlling their gas heating systems. The primary goal of the evaluation is to measure gas savings associated with these installations. We propose conducting a billing analysis for the 2013-2014 heating season to estimate the heating energy impacts attributable to the pilot program. In addition, we will conduct participant surveys to assess customer motivation, behavior, and satisfaction, and which will help inform potential ways to improve the program offering should it expand beyond the pilot phase. The pilot would be conducted in conjunction with the work of Liberty Utilities conducted in 2012.

The Companies will consider other ideas in addition to the list above.

B. Income Qualified Weatherization

1. Home Energy Assistance Program

Overview:

This program is designed to help income qualified customers manage their energy use and reduce their energy burden. Basic services include insulation, weatherization, cost effective appliance and lighting upgrades, and appropriate health and safety measures. Participating customers can receive up to \$5,000 in program services. Additional efficiency measures may be available to income eligible gas customers. Customers served by Community Action Agencies may be eligible for additional DOE Weatherization Assistance (Wxn) funding. The program will also have a strong educational component specifically tailored for income eligible customers and designed to help them better understand their home and the factors that affect energy use.

The program will be coordinated closely with the Electric Assistance Program (EAP) in order to identify eligible customers. While all income eligible customers may participate in this program, working with EAP participants to reduce their energy burden has the further benefit of increasing the EAP funds available to other customers.

The utilities are committed to working with the Community Action Agencies (CAAs), the Office of Energy and Planning, The Way Home (TWH), and other interested parties to improve and expand the collaboration initiated during the first phase of this program (see Attachment A). Specific goals for this collaboration include expanding the number of participants served by the CAAs and increasing the number of jobs jointly funded by the CORE and Wxn programs.

Delivery:

The Community Action Agencies (CAAs) and other independent contractors will deliver the program in a way that maximizes participation and energy saving goals. The NH CORE Utilities and contractors will cooperatively market the program, address customer intake, schedule work, conduct the initial home visit, install energy efficient measures, and perform quality assurance. The program will be open to all customers who meet the eligibility criteria for participation in the Fuel Assistance Program, the NH Electric Assistance Program, the DOE Weatherization Program and anyone living in subsidized housing or municipal and non-profit shelters serving those in need.

Qualified CAAs will be offered right of first refusal to deliver services under the Income Qualified Home Energy Assistance Program provided: (1) The CAAs agree to participate in a bidding process with other energy service providers to establish qualifications and pricing for program services. (2) The CAAs agree to provide services at established statewide rates. Where the same services are provided in the NH Home Performance with ENERGY STAR Program, pricing would be the same for both programs. (3) CAAs would meet established statewide standards for customer response time, work quality, and delivery of program

services. These statewide standards will apply to both the Home Energy Assistance as well as the Home Performance with ENERGY STAR Programs.

The NH CORE Utilities will strive to market the program in such a fashion as to promote a reasonably level flow of work. In cases where the CAAs cannot provide income qualified energy efficiency services in accordance with the approved CORE weatherization production schedule, or they choose not to deliver the services, the work will be assigned to other qualified vendors who will be held to the same standards for pricing, customer responsiveness and work quality. In such cases, the utility will provide notice to the CAA, and thereafter to the Weatherization Directors Association (WDA), that the work is being assigned to other qualified vendors. The utility will offer to discuss the matter with the CAA and WDA; however, the utility shall be permitted to assign work to other qualified vendors once notice has been provided to the CAA. If the matter cannot be resolved, the CAA reserves the right to file an appropriate motion with the Commission for resolution of the matter.

Marketing & Education:

The program will be promoted in a number of ways, including direct mail, call center and website promotion, and/or distribution of brochures at CAA or other social service agencies. Direct mailing of the program brochure will be used if CAA direct referrals are not adequate to meet program goals. Other marketing mediums will be investigated as needed. Utilities will work with the EAP program and CAAs to market the programs as efficiently as possible. The Energy Savers Booklet will also be given to program participants. Lastly, the CAP Energy Conference may include sponsorships by some of the utilities.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$3,769,904	818	11,698,444 kWhs
Gas	\$ 895,000	186	109,882 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$3,892,496	833	12,026,330 kWhs
Gas	\$ 957,500	199	117,824 MMBTUs

Measures of Success & Market Transition Strategy:

Success factors for this program include attaining the planned participation and energy savings goals, high customer satisfaction ratings, and successful delivery of all program services through the CAAs and independent contractors. No market transition strategy is recommended at this time based on the significant need for these services in the state, and the relatively small number who can be served in any given year due to budget constraints. This is consistent with the recommendation of the Energy Efficiency Working Group⁶.

⁶ See Final Report of the Energy Efficiency Working Group, July 6, 1999, Docket No. DR 96-150, page A34.

C. Commercial & Industrial Program Descriptions

The programs offered for Commercial and Industrial (C&I) customers by the CORE Utilities seek to address and overcome a number of market barriers. These barriers can include these three general categories:

1. barriers affecting uncertainty regarding realistic energy and cost savings estimates;
2. barriers associated with knowledgeable outside energy professionals and sufficient in-house staff to dedicate to energy matters; and
3. barriers affecting the cost and available funding for energy efficiency improvements.



Specifically, the major barriers on the demand side consist of uncertainty regarding energy and cost savings of energy efficiency measures, limited staff availability for implementation and management of new energy efficient equipment, high costs associated with efficiency measures, and limited staff knowledge regarding the identification and installation of energy efficient equipment.

To address and overcome these barriers, the CORE programs provide support to the commercial and industrial sector through a variety of different offerings. Lack of customer awareness of the program and uncertainty regarding energy and cost savings of efficiency measures will be addressed through outreach on the CORE Utilities' program websites, training seminars for large commercial and industrial customers and service providers, outreach to energy service companies and third party service providers, and program marketing to leads generated from referrals to customer service or energy service representatives. To address high costs associated with energy efficient equipment, financial incentives will be provided to promote program participation and overcome the first cost issue associated with more expensive equipment. Technical assistance, including but not limited to project evaluation, measure identification and energy audits, will be provided to increase customer knowledge regarding identification, installation, implementation and management of energy efficient measures.

Barriers that impact the supply infrastructure include business practices and policies that deter the development and delivery of energy efficient products and services. In particular, these barriers include: limited availability of trained energy efficiency professionals; lack of contractor availability and knowledge regarding energy audits; commercial energy building codes and other services; and lack of builder awareness and experience with efficiency technology.

The increasing demand for efficiency services from the customers and installers will address many of these barriers, ultimately causing builders and contractors to perceive energy efficiency services as profitable value added services, increasing availability and knowledge of contractors focused on building changes and expansions. Training will also be provided to supply contractors with code compliance assistance. Opportunities will be provided for customers to partner with third party service providers to help develop a competitive marketplace in the energy efficiency industry.

Barriers in the supply infrastructure include business practices and policies that deter the development and delivery of energy efficient products and services or indicate an insufficient availability or commitment to such energy efficient products or services. Perceptions of lack of demand for energy efficient projects and cost barriers to the development of innovative technology are among the larger barriers. To address these obstacles, incentives are available for energy efficient equipment not addressed by the prescriptive rebates. These steps in turn stimulate and facilitate development of innovative energy efficiency projects.

Efficiency Market	Market Barrier	Program Intervention	Program Objective
Customer Demand  	Uncertainty regarding the impacts of energy and cost savings of efficiency measures	Training Seminars Assistance from Energy Service Companies, Program Administrators, Engineers, third party service providers	Increased program participation Increased demand for energy efficient equipment and services
	High costs associated with premium efficiency equipment and/or incremental costs	Financial incentives	Reduced first cost for customers
	Limited customer capacity to identify, install, implement and manage energy efficiency measures	Technical Assistance, including project evaluation, measure identification and energy audits Customers utilize existing relationships with contractors Potential for customers to partner with third party service providers	Achieve energy efficiency goals Development of a competitive market place in the energy efficiency industry
	Lack of contractor availability and knowledge regarding energy audits, commercial energy building codes and other efficiency services	Contractors view energy services as profitable, due to increasing demand for efficiency measures Training activities	Increased supply of contractors capable of providing Technical Services Provide contractors with the expertise to provide code compliance assist.
	Perceived lack of demand for premium energy efficiency projects	Training to help Contractors view energy services as profitable, reach customers ready to adopt energy efficiency improvements	Development of a competitive market place in the energy efficiency industry
	Supply Infrastructure	Cost barriers to the development of innovative technology	Program focuses on projects not eligible for other programs

For 2013-14, the CORE utilities are proposing to restructure the C&I program offerings by incorporating new construction and retrofit services into two CORE C&I programs, which will be called Large Business Energy Solutions and Small Business Energy Solutions. Each program will have its own budget and savings goals. This consolidation will allow the utilities to more effectively respond to customer demand through a more seamless structure. It will also provide greater flexibility to facilitate rapid response to address shifts in market conditions. These two programs, along with the Education Programs, are described in this section.

1. Large Business Energy Solutions Program

Overview:

This program will target electric customers with a twelve-month average demand of 200 kW or more and natural gas customers with an average annual energy usage of 40,000 therms or more.

The largest energy users are concentrated in manufacturing, healthcare, schools, ski areas, large retail, and large commercially metered multi-family facilities. These accounts are generally served by the CORE utilities managed account staff who typically work with these customers on a one-on-one basis to explore efficiency opportunities and assist them through the participation process. This customer segment is generally well informed about the opportunities for energy efficiency improvements and is generally familiar with the CORE programs. They often have in-house staff that evaluate and propose energy efficiency improvements.

The program also targets customers with new construction, major renovation, failed equipment replacement and customers operating aging, inefficient equipment and systems. The Gas Utilities will further target customers that heat their businesses with natural gas or have food service operations.

For new construction projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 75% of incremental costs. For retrofit projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 35%⁷ of equipment and installation costs. Opportunities typically include lighting, motors, HVAC, air compressors, chillers, variable frequency drives as well as custom measures. For gas customers, additional opportunities include condensing boilers, high efficiency water heaters, high efficiency cooking equipment, and custom measures. The program also offers Technical Assistance including project evaluation, measure identification, equipment monitoring, compressed air leak detection, and energy audits. Technical Assistance services may require a customer co-payment.

Other initiatives will include: Energy Efficient Schools Initiative - offering rebates of up to 100% of incremental costs; Building Codes - training on the proper implementation of New Hampshire's commercial energy building code; and Compressed Air Services - assisting customers with comprehensive audits and training. NH Utilities will initially reserve five percent of the new equipment and construction sector budget for the Energy Efficient Schools Initiative; however, actual funding will be higher or lower depending on the number of new school building opportunities.

For new construction projects, incentives for customers installing high efficiency heating, cooling, hot water systems and controls will also be available. In the past, such incentives have only been available to gas customers. With the addition of funds from the Regional Greenhouse Gas Initiative auctions, incentives will now be offered on a fuel neutral basis,

⁷ Gas companies will pay up to 50% on Customer Retrofit Projects due to the current low price of natural gas.

with electric utilities providing incentives to get customers to purchase the more efficient equipment.

Delivery:

NH Electric and Gas Utility staff will be responsible for delivery of this program through multiple channels including: Account Executives and Energy Service Representatives working directly with customers; Economic Development staff working with new prospects as well as assisting customers who are relocating; and Energy Efficiency Program Administrators generating leads through the building development community, real estate professionals, and town permitting offices. The program will emphasize the benefits of selecting premium efficiency alternatives during the design stage of a project. Audits may be used to identify the opportunities for energy efficiency improvements. Customers wishing to take advantage of this program will sign a rebate offer that documents what will be done, the estimated completion date, and the anticipated incentive amount.

Marketing & Education:

The utilities will market the program through a number of strategies including one-on-one marketing by utility representatives, vendors, energy service providers, seminars and training sessions, and may use direct marketing in the case of specific market transformation initiatives Marketing materials developed may include case studies. The builders/developers and heating/plumbing contractors who plan/install these systems, as well as the manufacturers, distributors, and wholesalers who bring this equipment to market will also be targeted.

This program also includes an educational component that will offer training seminars of interest to commercial, municipal and industrial customers. Training seminars being considered include Commercial Energy Audit Training, Compressed Air Services, Certified Energy Manager Class, and seminars on new technologies. Program success will be based on attaining the planned participation and energy saving goals. Evaluations will help determine program changes, if needed, over time to address the following market barriers.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$6,689,778	446	275,058,218 kWhs
Gas	\$1,464,397	236	527,803 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$6,894,939	458	284,307,831 kWhs
Gas	\$1,524,457	256	551,328 MMBTUs

Measures of Success & Market Transition Strategy:

Program success will be based on attaining the planned participation and energy saving goals. Evaluations will help determine program changes, if needed, over time to address market barriers.

2. Small Business Energy Solutions Program

Overview:

The Small Business Energy Solutions Program will target electric customers with a twelve-month average demand of less than 200 kW and natural gas customers with an average annual energy usage of less than 40,000 therms.

Small-to-medium sized energy users include owners of office buildings, restaurants, small-to-medium retail, repair services, dry cleaners schools and small to medium commercially metered multifamily facilities, among many others. The main delivery channels for marketing to these customers include the utility websites, NHSaves.com, public speaking engagements, tradeshow and customer events. The utilities will continue to partner closely with the trade, contractor and builder community, as well as various energy efficiency equipment vendors, to promote the programs and ensure these key market allies are incorporating information about the incentive programs in their customer outreach and sales activities.

The program targets customers with new construction, major renovation, failed equipment replacement and customers operating aging, inefficient equipment and systems. For new construction projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 75% of incremental costs. With the addition of funds from the Regional Greenhouse Gas Initiative auctions, incentives will now be offered on a fuel blind basis, with electric utilities providing incentives on the electric, oil and liquid propane systems.

For retrofit projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 35%⁷ of equipment and installation costs up to the customer's incentive cap. Retrofit services also include a turnkey solution tailored to the unique needs of small businesses, a customer base which is very diverse in terms of technical capabilities and financial resources. As part of the turnkey services, the utilities offer lighting, refrigeration and commercial kitchen equipment upgrades delivered by vendors who perform initial assessments of existing, recommend energy efficient improvements, and then install appropriate measures. Program offerings include but are not limited to lighting, programmable thermostats, hot water measures, spray valves and refrigeration measures. The program pays up to 50% of the installed costs up to the customer's incentive cap. In addition, customers may elect to use their own contractors to complete energy projects.

Marketing & Education:

In addition to the marketing being done by the other C&I Programs, marketing for this program will focus on direct mail to customers/members, leads from trade organizations, and referrals from each utilities' customer service organization.

⁷ Gas companies will pay up to 50% on Customer Retrofit Projects due to the current low price of natural gas..

Delivery:

Utility personnel will administer the program and will contract for the delivery of program services. Leads will be generated from referrals from Customer Service or Energy Service Representatives, past audits, and other marketing efforts. Contractors will meet with the customer, perform a simple audit of the customer’s facility, and recommend cost effective energy saving measures for installation. Customers may elect to have measures installed by the utility’s contractor or a licensed electrician of their own choosing.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$4,924,644	1,945	149,653,145 kWhs
Gas	\$1,303,289	417	446,726 MMBTUs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$5,070,166	1,991	154,896,228 kWhs
Gas	\$1,358,729	451	475,775 MMBTUs

Measures of Success & Market Transition Strategy:

Program success will be based on attaining the planned participation and energy saving goals as well as customer satisfaction with the program. Evaluations will help determine program changes, if needed, over time to address market barriers.

3. Educational Programs

Overview:

The NH CORE Electric & Gas Utilities believe that educational programs play an important role in raising awareness about energy efficiency and complement the other programs. The Educational Programs planned for 2013-2014 are as follows:

1. Energy Code Training: Provide financial support for the Utility/State of NH/NHPUC statewide residential and C&I energy code trainings. Will include other initiatives identified in “The NH Energy Building Code Compliance Roadmap” completed April 20, 2012, such as Specialized Energy Code Training for Real Estate & Mortgage Professionals, On-site Builder and Code official training, and additional Home and Business Energy Code Compliance Field Guides.
2. Commercial Energy Auditing Class: Deliver training program to assist facility managers in learning tools of the trade, identifying energy efficiency opportunities, monitoring and tracking energy use, and developing an energy management plan. Based on customer demand, the utilities may opt to offer a Certified Energy Manager (CEM) or similar class in place of the auditing class.
3. C&I Customer Education: Develop and offer training seminars and workshops of interest to C&I customers and professionals (e.g., NH Energy in Schools Workshop, High Performance Lighting Systems, new Energy Efficient Equipment Opportunities, Operations and Maintenance Best Practices). These seminars and workshops will help building owners, facility personnel, architects, engineers, energy service companies and others better understand the opportunities for improving the energy performance of their buildings and equipment. Educational opportunities also include collaborating and partnering with trade allies to encourage and sponsor energy efficiency seminars and presentations for NH businesses.
4. Energy Education for Students: The NH Electric Utilities will support programs such as:
Grades K-2: Poss’s Energy Posse
Grades 3-4: “We understand it’s up to us to use energy....wisely!” (“Energy UUUU”)
Grades 3-4: Energy UUUU2, a 1-day program for students and their teachers
Grades 5-6: Watt Watchers, a 2-day program for students on lighting surveys
Grades 7-12: Savings Through Energy Management (STEM)
Grades 7-12: Bright Ideas, a 3-day program for students and their teachers
Grades K-12: Lights for Learning an outreach program presented in the classroom or assembly style with the goal being to educate children about energy efficiency, conservation and to understand the value of ENERGY STAR. Following the energy education phase, students may participate in a fund-raising component that promotes the sale and use of low-cost, energy efficient lighting technologies.

The purpose of these programs is to educate students in grades K-12 about energy efficiency. The NH CORE Utilities will conduct outreach to schools to promote these programs through such activities as school presentations, fundraisers and energy efficiency education displays in locations such as science centers or other educational venues.

In addition, the NH Electric & Gas Utilities have committed to numerous education initiatives as part of its CORE programs. The residential and low income education initiatives are integral to the delivery of the respective programs and are budgeted with the programs.

Delivery:

Varies by program; educational classes are presented by industry specialists.

Goals/Benefits:

Each educational effort is focused on meeting the needs of a particular customer or group of customers; however, the common theme of these efforts is to raise awareness and understanding of the benefits of energy efficiency, and encourage the implementation of energy efficiency improvements.

Measures of Success:

Success of these programs is based on customer satisfaction. This includes informal feedback from instructors and participants as well as customer satisfaction surveys used to evaluate a particular training session. These programs will be modified as needed to meet changing customer needs.

III. Utility Specific Program Descriptions

NEW HAMPSHIRE ELECTRIC COOPERATIVE, INC.

A. Smart Start Program

Overview:

The Smart Start Program provides members with an opportunity to install energy efficient measures with no up-front costs, and pay for them over time with the savings obtained from lower energy costs. Under the program, NHEC pays all of the costs associated with the purchase and installation of the approved measures. A Smart Start Delivery Charge, calculated to be less than the monthly savings, is added to the member's monthly electric bill until all costs are repaid. The program is designed to overcome many of the traditional barriers to energy efficiency projects including: high first cost; customer uncertainties related to achieving energy savings; customer reluctance to install measures if there is a possibility of moving from the premise before benefiting from the efficiency project; and the so-called "split incentive", where a landlord gets little return on an investment that reduces a tenant's energy costs and a tenant has no incentive to invest in their landlord's building.

Delivery:

NHEC plans to continue offering Smart Start to commercial members. NHEC staff will identify potential projects and make Smart Start offers where it applies. These offers may be combined with other energy efficiency programs for which the member is eligible.

Budget:	2013	2014
Program Implementation	\$12,473	\$13,318

Measures of Success & Market Transition Strategy:

Success factors for this program include Member acceptance of Smart Start offers, achieving high customer satisfaction ratings, and having a low default rate on Smart Start loans.

B. High Efficiency Heat Pump Program

Overview:

The objective of the High Efficiency Heat Pump Program is to assist residential members to reduce their energy costs by installing high efficiency heat pump technologies. These technologies include high efficiency air source heat pumps and geothermal heat pumps. The program has a number of goals, which include:

1. Increasing availability of energy efficient, zero onsite emission solutions to NHEC member’s heating and cooling needs;
2. Assessing the market potential and technical feasibility of various heat pump technologies;
3. Identifying barriers to increased penetration of energy efficient heat pumps and ways to overcome them; and
4. Determining the cost effectiveness of various heat pump technologies and applications.

NHEC will offer this program to residential members for new construction applications in conjunction with the ENERGY STAR Homes Program.

Delivery:

Delivery will be coordinated with the Core ENERGY STAR Homes Program. NHEC will work with its members and installation contractors to insure maximum performance from the building shell and heating/cooling equipment.

Budget:	2013	2014
Program Implementation	\$107,799	\$115,401

Measures of Success & Market Transition Strategy:

Success factors for this program include attainment of the planned participation and estimated savings, and high customer satisfaction ratings.

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

This section provides details on issues and programs specific to PSNH.

A. Budget Narrative

The following assumptions were used to develop PSNH's budget:

1. The budget is based on forecasted 2013 sales of 7,683,823 MWh and 2014 sales of 7,814,006 MWh and a System Benefits Charge (SBC) rate of 1.8 mills/kWh.
2. A carryover balance of \$18,386 was added to the 2013 budget.
3. Funds from the Regional Greenhouse Gas Initiative auctions (RGGI), estimated for both 2013 and 2014 to be \$6M statewide, were allocated to each utility based on kWh Sales. PSNH included \$4,382,093 in RGGI funds to both the 2013 and 2014 budgets (per HB 1490 and Commission Order No. 25,402)
4. Estimated ISO-NE Forward Capacity Payments for January – December 2013 were added to this budget (\$1,900,000) and \$2,090,000 for January – December 2014 . (In NHPUC Order No. 24,719 on December 22, 2007, the NHPUC stated “We also believe that it is appropriate, as a preliminary matter, to contribute any payments received by utilities for Core program peak load reduction back to the Core programs.”). These funds were split first 15% for Home Energy Assistance and then 70% of the remainder for C&I and 30% for Residential.
5. A set aside was reserved for a performance incentive. The actual incentive will be based on the methods approved by the New Hampshire Public Utilities Commission. Two separate calculations are required. The first applies to the Smart Start Program and is based on 6% of Smart Start loans repaid⁸. The second applies to all other programs⁹ and is based on the calculations recommended by the Energy Efficiency Working Group and approved by the Commission. The Performance Incentive section of this document covers this calculation in more detail. The set aside for the remaining programs was estimated at 8%¹⁰. The budget includes separate line items for the estimated commercial and residential incentives.
6. All customers fund the Home Energy Assistance Program (HEA) in proportion to their contributions to SBC revenues. Funding for this program comes “off the top” of the budget after the performance incentive calculation.
7. Marketing was estimated to be approximately 2% of the budget, with the majority of this being in the ENERGY STAR Lighting Program.
8. Monitoring and evaluation was estimated and budgeted at 5% of the overall budget.
9. The funds remaining after funding the HEA program are allocated between customer

⁸ Docket DE 01-080, Order No. 23,851, November 29, 2001, Section III, page 19.

⁹ Fuel-neutral savings and expenses associated with the NH Home Performance with ENERGY STAR program will be removed from the final performance incentive calculation.

¹⁰ More precisely, this calculation is based on 8% of the non-incentive portion of the budget in accordance with the Energy Efficiency Working Group Report which states on page 21, part 3f, “ For incentive calculation purposes only, ‘planned energy efficiency budget’ is defined as the total program budget minus performance incentives...”.

classes in proportion to contributions to SBC revenues (41.2% Residential, 58.8% Commercial & Industrial);

In addition there are several factors that could impact the budget during implementation of the CORE Programs including:

10. Any difference between the actual spending level achieved in the 2012 CORE Programs and the System Benefits Charge revenues collected will be allocated to future year program budgets.
11. PSNH plans to monitor spending in each of the programs and propose adjustments as necessary (e.g. in response to customer demand) in accordance with the guidelines proposed in the Introduction section of this filing.
12. PSNH will accrue interest¹¹ monthly at the prime rate¹² on the average net balance of the SBC revenues less funds expended for programs and services.
13. PSNH's budget and SBC revenues are based on sales projections. Actual sales may differ resulting in proportionately more or less SBC revenue available for energy efficiency programs. Budgets will be adjusted to reflect actual sales.

The budget is presented in Attachment H.

B. Availability of C&I Programs

PSNH proposes to offer the CORE and Utility specific programs to all of the Company's commercial and industrial customers except for those taking service under Backup Delivery Service Rate B. Rate B is designed for customers who require backup and maintenance delivery service, but who normally provide their own generation during which time they make no contribution to the System Benefits Charge.

C. Customer Installed Generation

PSNH's commercial and industrial customers who supply a portion of their energy needs through means which by-pass their meter and for which no System Benefits Charge revenues are collected will qualify for services and incentives offered as part of the state-wide energy efficiency programs with certain restrictions. The energy supply could be generation installed by the Customer or another party on the customer's side of the meter. However, the restrictions noted below apply regardless of the source of the energy (collectively referred to here as "customer generation").

- Customer generation which exceeds 50% of the customer's annual maximum kW demand ("Demand") will not qualify for services and incentives.
- A customer's maximum incentive will be based on the net of their demand less the name plate rating of the customer generation. For example, a Rate GV customer with a demand of 150 kW who installs 60 kW of generation will be capped at the incentive available to

¹¹ DE 96-150, Order 23,574, November 1, 2000, page 25.

¹² <http://www.moneycafe.com/library/primerate.htm>

Rate G customers. The table below depicts incentive levels for commercial and industrial customers. Incentives are limited to the customer’s end uses and may not be applied to the generation equipment.

- ❑ Customers who install generation within one year of the date they install measures for which they receive a monetary incentive must refund any difference between the incentive received and the incentive for which they would qualify after installing generation. Any such amount would be repaid within 60 days of PSNH’s request for payment.

This policy does not apply to customer generation used for emergency supply during service outages on PSNH’s transmission and distribution system. The customer may periodically test emergency generators without affecting program eligibility. In addition, customer generation which meets the requirements for net metering are not subject to the restrictions noted above.

D. Incentive Caps on C&I Programs

In order to manage the overall budget and to help achieve an equitable distribution of program funds, PSNH proposes the following annual caps on the level of incentives offered to any individual customer.

Customer Classification	Retrofit Annual Cap	New Construction Annual Cap
Rate G Customers (100 kW and below)	\$50,000	\$50,000
Rate GV Customers (101 kW to 1,000 kW)	\$50,000 plus \$5,000 for each GWH ¹³ above 1 GWH	\$100,000
Rate LG Customers (in excess of 1,000 kW)	\$100,000 plus \$1,000 for each GWH above 10 GWH	\$150,000

The retrofit caps apply to the total of all retrofit program incentives paid. Retrofit and New Equipment & Construction incentives are independent of one another. Customers selected to participate in the C&I RFP Program described in Section I may earn additional incentives and are not limited by the annual incentive caps shown above.

These customer caps are intended to allow PSNH to spread funds out to many different customers rather than on one or two large projects or customers. The caps will serve as guidelines to be used in dispersing rebates, and will not be absolute limits on the amount of incentive to be provided to any particular customer. PSNH reserves the right to provide incentive payments in excess of the caps on a case-by-case basis.

¹³ GWH – a gigawatt-hour (equal to 1,000,000 kilowatt-hours). The cap will be based on the customer’s GWHs for the preceding calendar year. For new or expanding facilities, the cap will be based on the estimated annual usage.

E. Smart Start Program

Overview:

The Smart Start Program provides customers with an opportunity to install energy saving measures with no up-front costs and to pay for them over time with the savings obtained from lower energy costs. Under the program, PSNH pays all of the costs associated with the purchase and installation of approved measures. A Smart Start Delivery Charge, calculated to be no more than the monthly savings, is added to the monthly electric bill until all costs are repaid. The program is designed to overcome many of the traditional barriers to energy efficiency projects including: high first cost, customer uncertainties related to achieving energy savings, customer reluctance to install measures if there is a possibility of moving from the premise before benefiting from the efficiency project, and the so-called “split incentive” where a landlord gets little return on an investment that reduces a tenant’s energy costs and a tenant has no incentive to invest in their landlord’s building.

Delivery:

PSNH plans to continue offering Smart Start to municipal customers. Company personnel will meet with municipal customers to inform them of the program, identify potential projects, and to make Smart Start offers. Smart Start offers may be combined with other energy efficiency programs for which the customer is eligible.

This program provides eligible customers with an opportunity to purchase energy efficient products and services with no up-front costs.

Budget:	2013	2014
Program Implementation	\$35,000	\$35,000

Measures of Success & Market Transition Strategy:

Success factors for this program include customer acceptance of Smart Start offers, achieving high customer satisfaction ratings, and having a low default rate on Smart Start loans.

F. ENERGY STAR Homes Program Enhancement: Geothermal and Air Source HP Option

Overview:

This enhancement will provide an incentive for customers to install geothermal and air source heat pumps as part of the ENERGY STAR Homes Program. New houses built in this program must still meet the minimum ENERGY STAR requirements in order to qualify for the geothermal rebate. The objective of this program is to assist residential customers in reducing their energy costs by installing high efficiency heat pump technologies. These technologies include high efficiency air source heat pumps and geothermal heat pumps. The program has a number of goals, which include:

1. Increasing availability of energy efficient, zero onsite emission solutions for home heating and cooling needs;
2. Assessing the market potential and technical feasibility of various heat pump technologies;
3. Identifying barriers to increased penetration of energy efficient heat pumps and ways to overcome them; and
4. Determining the cost effectiveness of various heat pump technologies and applications.

Delivery:

Delivery would be coordinated with the CORE ENERGY STAR Homes Program. Builders working with geothermal systems contractors and/or HVAC contractors would provide the services specific to these options.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$378,119	69	29,333,578 kWhs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$384,697	70	29,767,730 kWhs

According to the Environmental Protection Agency, geothermal systems are the most energy efficient, environmentally clean, and cost efficient space conditioning systems available¹⁴. PSNH has been a strong supporter of geothermal systems in New Hampshire since 1994. More than 400 New Hampshire builders, contractors, and vendors have participated in earlier programs. The heat pump industry is growing as evidenced by customer demand and attendance at manufacturers’ heat pump training sessions around the state. PSNH has also seen an interest by builders, HVAC contractors and customers to install Air Source Heat Pumps in New Hampshire. This enhancement to the ENERGY STAR Homes Program is important to the continued viability and growth of Geothermal and Air Source Heat Pump systems in New Hampshire.

¹⁴ <http://www.ghpc.org/home.htm>

Measures of Success & Market Transition Strategy:

Success factors for this program include attaining the planned participation and energy savings goals. The geothermal and air source heat pump options would be available for the duration of the ENERGY STAR Homes Program. Evaluations will help determine program changes, if needed, over time to address the residential market barriers.

G. Residential Customer Engagement Pilot Program

Background:

PSNH included in the 2012 CORE Energy Efficiency Program Update filing a proposal to implement a Residential Customer Engagement Program (CEP) in 2012. In Order No. 25,315, the Commission approved the Partial Settlement Agreement filed with the Commission on December 15, 2011, and directed the Staff or a party to submit a description of the final terms of the CEP by March 31, 2012. In addition, the Commission indicated there would be no need for further Commission approval of the CEP if an agreement is reached and the CEP would be authorized by the Commission to proceed in 2012. On March 28, 2012, PSNH submitted a description of the final terms of the CEP agreed upon by the parties. On May 4, 2012, PSNH issued a Request for Proposal for Professional Services (RFP) to hire a vendor to assist with the implementation of the CEP. Responses to the RFP were received on June 1, 2012. As of the time of this filing, PSNH is reviewing the responses received from the RFP. Based on an estimate of 12-16 weeks for program deployment as indicated by the vendors, the earliest date for program launch is during the month of January 2013.

Overview:

PSNH's Residential Customer Engagement Pilot Program will be utilized as a tool to evaluate the effectiveness of using a behavioral-based energy efficiency program in New Hampshire before expanding the program to a larger audience of residential customers. The pilot program participants will receive personalized energy savings reports that will include information about the electric usage in their home and tailored tips and recommendations for energy savings. In addition, a program website containing energy savings tips will be available and the program participants will have the option of setting individual goals and tracking their progress.

Primary Objectives:

The primary objectives of the pilot program are summarized below.

- To measure the program effectiveness on: electric energy savings, enrollment in other energy-efficiency programs and customer satisfaction with the program.
- To test the effect of messaging on electric energy savings by utilizing two separate engagement methods: 1) Normative – customers are compared to and ranked against similar customers to stimulate electric energy savings; and 2) Rewards – customers receive reward points for saving electric energy that can be redeemed at local merchants.
- To design the pilot program so that electric energy savings and costs from the pilot will be scalable to the residential customer population.
- To implement a cost-effective pilot program (benefit/cost ratio ≥ 1).

Program Design:

The pilot program will include the following design features in order to meet the primary objectives of the pilot program.

- A randomly selected group of 25,000 residential customers will be selected as participants in the pilot program. Utilizing a randomly selected group will help to ensure the resulting electric energy savings and costs will be scalable to the residential customer population. In addition, 25,000 participants is the estimated minimum number of participants required to ensure the total kilowatt-hour savings achieved over the duration of the pilot program will result in a cost-effective pilot program.
- An opt-out enrollment approach will be utilized (i.e. the program participants are automatically enrolled in the program and must contact PSNH to be removed from the program). The other enrollment option is an opt-in approach, whereby any customer can enroll in the program by contacting PSNH. An opt-in approach would not likely result in a group of participants that are representative of the residential customer population; therefore, the electric energy savings results of the pilot program would not be scalable to the residential customer population. Utilizing an opt-out enrollment approach in the pilot program will help to ensure the resulting electric energy savings and costs will be scalable to the residential population.
- In order to test the effect messaging has on electric energy savings, enrollment in other energy efficiency programs and customer satisfaction with the pilot program, the 25,000 participants will be randomly separated into two groups of 12,500 participants. One of the two groups will receive printed reports utilizing normative messaging (“normative group”); while the other group will receive printed reports utilizing rewards messaging (“rewards group”).
- All program participants will have access to a program website. The normative group will be directed to a site that primarily utilizes normative messaging and no rewards messaging and the rewards group will be directed to a site that primarily utilizes rewards messaging.
- The duration of the pilot program is 12 months.

Building Awareness of the Pilot Program:

PSNH plans to build awareness in the pilot program by utilizing bill inserts, press releases, social media and by placing articles on NHSAVES and PSNH’s web-sites. In addition, an outreach effort to environmental, energy-efficiency and trade ally groups will be implemented.

Evaluation:

An independent third party will perform the evaluation of the pilot program. An evaluation company will be hired during the program start-up phase to ensure the pilot program objectives and the evaluation methodology are understood and agreed upon before the pilot program is launched and to ensure the necessary information will be tracked and available to the third party program evaluator.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$252,079	25,000	2,700,000 kWhs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$282,753	25,000	4,000,000 kWhs

The vendor cost for the pilot program was budgeted at \$250,000 in 2012. Of this amount, \$66,000 is anticipated to be spent in 2012 to cover start-up and ongoing costs for project development for a January 2013 program launch. The remaining vendor cost of \$184,000 is included in the budget amount for 2013, and it is anticipated this amount will be spent in 2013. The remaining \$68,000 in the 2013 program budget will cover ongoing costs for the program implementation and possible costs associated with the evaluation of the program. In the event, a decision is made to continue the pilot program beyond the original 12 month term, PSNH has included funds to continue the pilot program in 2014. PSNH will work with interested Parties and the Commission's Staff in making a determination on whether the pilot program should continue beyond the original 12 month term.

Measures of Success & Market Transition Strategy:

Measures of Success

Success factors for this pilot program include: 1) implementing a cost effective pilot program and achieving the stated kilowatt-hour savings goals; 2) measuring the effectiveness of normative and rewards-based messaging on electric kilowatt-hour savings, enrollment in other energy-efficiency programs and customer satisfaction with the pilot program; 3) attaining results for both the normative and rewards-based messaging groups that are scalable to the residential customer population; 4) ensuring a third party evaluation of the pilot program results is completed and 5) utilizing the results of the pilot program and the third party evaluation to determine whether to expand the program and to aid in the development of the most effective future program design.

Market Transition Strategy

Customer behavioral-based energy-efficiency programs are premised on providing customer-specific energy usage information and personalized energy savings tips and recommendations to motivate customers to change their behavior and take action to save energy. Utilizing behavioral science-based marketing, rewards mechanisms and data presentment beyond what is typically displayed on customer bills has resulted in measurable energy savings in programs conducted by other utilities. PSNH's customer engagement program platform can also be utilized to educate and increase awareness and participation in other CORE energy efficiency programs. The results of PSNH's pilot program will help to determine how effective a behavioral-based energy efficiency program is in New Hampshire in educating residential customers on energy efficiency and transforming residential customers' energy efficiency behaviors.

H. Education Enhancement - C&I Customer Partnerships

Overview:

Partner with up to five customer groups to provide focused education to members on energy efficiency technologies and opportunities available in NH.

Delivery:

There is no set format envisioned for this proposal; it is intentionally left open to accommodate a wide range of opportunities. However, an example may serve to illustrate the type of partnerships undertaken so far.

- ✓ The NH Lodging & Restaurant Association in the development and implementation of a training program for their members interested in the sustainable lodging and restaurant program. In an effort to address member issues associated with travel and schedules, this organization is developing three trial webinars focused on energy issues. Each webinar would be approximately 60 to 90 minutes in length and offered during non-peak operational hours for the hospitality industry.

Goals/Benefits:

In its order¹⁵ approving the CORE Programs, the Commission expressed interest in finding innovative approaches for market transformation. PSNH believes this proposal provides an opportunity to work with customers and other parties to develop alternatives to traditional approaches.

Budget:

	2013	2014
Program Implementation	\$32,751	\$33,485

Measures of Success & Market Transition Strategy:

Specific success factors will vary depending on the partnership; however, in general, the goal will be to advance the partnership to a point where it can become self-sustaining.

¹⁵ Order No. 23,850, November 29, 2001, page 18

I. C&I RFP Program for Competitive and Economic Development

Objective:

To promote competitive market development in the energy efficiency industry by encouraging third parties to bid for energy efficiency projects on a competitive basis. The RFP Program is aimed at energy efficiency potential from large C&I projects that are not participating through other existing energy efficiency programs.

Target Market:

The minimum customer size is 350 kW of demand, the minimum project energy saving is 100,000 kWh per year (can be aggregated sites), and the minimum total project cost is \$150,000. C&I customers of PSNH, energy service companies¹⁶ and other third party service providers representing C&I customers are eligible to participate in this program.

RFP participants can be any PSNH customer¹⁷, energy service company, or third party service provider representing a PSNH customer who contracts with PSNH to provide energy savings from an approved energy efficiency project. It is expected that bidders typically will be of two types:

1. customers with significant in-house technical capability, or
2. customers allied with firms that specialize in implementing energy efficiency projects and have a staff of professionals trained to identify energy efficiency opportunities, calculate potential savings, design system modifications, manage construction and installation of energy efficiency measures, and measure energy savings.

Incentives:

The program offers incentives for measurable energy savings achieved by the installation of energy efficiency measures as specified in a project agreement. Eligible improvements include energy-efficient equipment, products, and measures that are cost-effective according to the criteria established by the NH Energy Efficiency Working Group and approved by the NHPUC. The estimated savings are verified using approved protocols. The estimated savings are measured based on the difference between the energy use of the new versus the existing customer equipment.

Eligible measures include replacing standard fluorescent lighting with high efficiency fluorescent lighting, installing variable speed drives on motors, installing lighting controls to reduce lighting operating hours, and replacing low efficiency air conditioning equipment with high efficiency equipment.

Measures that are not eligible include new construction projects, any power-producing project such as cogeneration, switching from electric energy to another fuel (fuel switching), or any repair or maintenance project.

¹⁶ Contractors involved in the implementation of PSNH's C&I energy efficiency programs are ineligible to participate in the RFP Program.

¹⁷ Except for Rate B customers (see Availability under C&I Program Descriptions).

One of the program’s goals is to assess the degree to which projects require incentives. As such this program will not have published incentives. Each proposal will need to identify the required incentive amount. All bids are evaluated based upon a comparison of energy savings and other price and non-price variables. Non-price variables include such factors as whether the project includes measures other than lighting (e.g., HVAC and process measures) and whether the environmental impacts reduce on-site emissions or waste stream impacts. All projects will be evaluated on the basis of established cost-effectiveness criteria.

Incentive Strategy:

Incentives are intended to be market driven in that bidders (or potential participants) request the incentive level that is needed to implement a retrofit or replacement energy efficient project. If their incentive request is too high or their project savings are too low, a competing project will be awarded the limited RFP Program funds.

Delivery:

Potential bidders are invited to an annual bidders conferences” to learn how to participate in the program. PSNH will provide information on this program at this session as well as on the PSNH website to PSNH customers greater than 200 kW peak demand who might qualify either individually or on an aggregated demand basis. Potential energy service companies and third party service providers will also be notified. Collateral materials will be made available to educate these groups on the RFP Program.

Budgets, Goals, Benefits:

2013 Plan	Budget	Participation	Lifetime Savings
Electric	\$561,432	12	34,723,249 kWhs

2014 Plan	Budget	Participation	Lifetime Savings
Electric	\$574,023	13	35,518,375 kWhs

This program is designed to foster competition and to stimulate the development of innovative energy efficiency projects. It will also provide an opportunity to provide incentives for larger projects that might not be pursued because of funding “caps” in other programs. And finally, it will provide the data needed to assess whether or not the incentive levels in the other C&I programs are set appropriately. For example, if bidders in the RFP program consistently seek incentives lower or higher than those offered in the CORE C&I energy efficiency programs, it may lead to review and possible revision of the CORE incentive levels.

Measures of Success & Market Transition Strategy:

Success factors for this program include: attaining the planned customer participation and energy savings goals as well as and generating a high level of interest among customers, energy service companies and third party service providers that results in a competitive bidding process. PSNH staff will review the success of this program annually.

UNITIL ENERGY SYSTEMS, INC.

A. Combined Heat and Power (CHP) C&I Pilot Measure

Overview:

With the addition of RGGI funds allowing more C&I measures to be installed, the Company seeks to add a measure to its C&I offerings. The objective of the Combined Heat and Power (CHP) Pilot Measure is to give C&I customers an opportunity to take advantage of this highly efficient technology and to assist in the upfront installation costs. CHP systems reduce electricity (kWh and kW) requirements while providing waste heat to reduce heating and/or hot water (thermal Btus) requirements. Typically, CHP systems emit less greenhouse gases than grid power. Systems can be fueled by natural gas, diesel fuel, wood pellets, etc. The pilot measure has a number of goals:

1. Market the technology and educate customers - especially those with heat and/or hot water needs for at least 6,000 hours per year.
2. Screen projects to determine if they pass the TRC with the new avoided costs.
3. Monitor one (possibly two) projects for performance and compare this to proposed energy savings and fuel usage.
4. Assist in the upfront cost of installation via rebates capping the total for rebates at \$100,000 for all projects for 2013-2014.
5. Advise customers to participate in ISO-NE programs using the equipment as a critical peak asset.

Implementation / Delivery:

The CHP Pilot Measure will be added to other measures in the C&I Programs (both Large and Small). Unitil will work with its customers to assure maximum performance from the equipment. For fossil fuel systems above 20kW, the systems must be in compliance with CARB 2007 standards. This is the standard adopted by NH as referenced in RSA 374-G (Distributed Energy Resources). The Company will seek to have a unit(s) installed in the summer of 2013 so that monitoring can take place during the 2013-2014 heating season with an evaluation report completed by the summer of 2014. This will allow time to determine if this technology should be included in future filings.

Measures of Success:

Success factors for this pilot measure include attainment of the participation, estimated savings, high customer satisfaction ratings, and acceptable M&E results, comparing results with the recent evaluation conducted by the MA utilities.

IV. Monitoring & Evaluation

A. MONITORING AND EVALUATION PLAN

A settlement agreement in 2006 approved by the New Hampshire Public Utilities Commission on March 17, 2006 (Order No. 24,599 in DE 05-157) transferred responsibility for monitoring and evaluation efforts from the Utilities to Commission Staff. Under that agreement, the Commission receives input and advice from the utilities on monitoring and evaluation activities and to also coordinate efforts with the Utilities' Core programs¹⁸ implementation efforts. In addition, there was also agreement:

(1) to provide utilities with the opportunity to comment on preliminary study findings and results prior to publication, (2) to invite interested parties to attend and provide input at evaluation presentations, (3) to permit utilities, on a case-by-case basis considered in light of study design, costs, schedule and similar issues, to participate in regional monitoring and evaluation studies as well as studies conducted by multi-jurisdictional utilities, and (4) that the Commission would aggressively pursue all available means to protect customer confidential information as permitted by the Right-to-Know Law, RSA 91-A, given that monitoring and evaluation studies frequently require access to such information. (Order No. 24,599, Page 5)

For 2013 and 2014, Measurement and Verification (M&V) efforts are funded at approximately five percent of the annual program budgets. These funds are utilized to support the following activities:

1. Evaluation Planning
2. Measurement and Verification of New Hampshire CORE Energy Efficiency Programs
3. Regional Measurement and Verification Projects
4. Regional Avoided Energy Supply Cost Studies
5. Miscellaneous Research
6. CORE EE Program Tracking and Reporting

During 2013-2014, the Utilities have identified a number of evaluation activities planned for or needed in New Hampshire.

1. Evaluation Planning – A multi-year evaluation plan will be developed to describe the measurement and verification projects and activities that will be required to demonstrate the effectiveness and quantify the savings achieved by energy efficiency programs that are funded by New Hampshire customers via the System Benefits Charge. The evaluation plan will also address the requirements that have been established by ISO New England to measure and verify the demand reduction value of qualified demand resources offered into the ISO-NE Forward Capacity Market.

¹⁸ NH gas evaluation activities are also coordinated with electric evaluations.

2. NH CORE EE M&V Projects – Several projects will be initiated in 2012 to demonstrate the effectiveness and quantify the savings achieved by the New Hampshire CORE Energy Efficiency programs and to comply with the requirements that have been established by ISO New England to measure and verify the demand reduction value of qualified demand resources offered into the ISO-NE Forward Capacity Market.

- Home Performance with ENERGY STAR Program: In response to the Order relating to the Home Performance with ENERGY STAR program, a study should be undertaken to identify the “drivers of the increasing air conditioning load in both residential and C&I customer classes.” Areas for study may include a market assessment of air conditioning equipment that would focus on opportunities for program interventions to reduce the rate of increase of air conditioning energy and peak demand in New Hampshire.

- Home Performance with ENERGY STAR Program: The staff and parties were further directed to "develop peak demand as a factor when calculating cost/benefit tests" of proposed non-electric energy efficiency measures. Therefore, it is recommended that a load shape study be conducted in 2013 to meter central and room air conditioning units, mini split systems, and air source heat pumps, during the cooling season.

- Impact evaluations are planned to be conducted for the following programs:

- a. ENERGY STAR Appliance Program: Impact evaluation in late 2013 to review electric and fuel neutral measures, prescriptive energy savings, and 2013 results.
- b. Home Energy Assistance Program: Impact evaluation to be initiated in later 2013 for the 2013 program period, reviewing one full year of results using the updated version of the home modeling software.
- c. ENERGY STAR Homes Program: Impact evaluation to review 2013 savings results with the new ENERGY STAR version 3.0.
- d. Large Business Energy Solutions Program (with PSNH’s RFP Program): Impact Evaluation for 2012 (and/or 2013) program results.
- e. PSNH Customer Engagement Pilot: Impact evaluation on first year results.

3. Regional Measurement and Verification Projects - The New Hampshire utilities are members of the Regional Evaluation, Measurement and Verification Forum (EM&V Forum). The EM&V Forum measurement and verification projects are focused on the development of data that can be utilized by the members in a variety of applications, including compliance with ISO-NE M&V standards established for participants in the Forward Capacity Market. By pooling the resources of the members in New England, New York and the Mid-Atlantic states, primary data development can be accomplished more cost-effectively than independent contracting by each member. These jointly-funded projects also seek to share and leverage existing data in order to reduce the cost of primary data collection. Activities being considered include:

- Development of common definitions for Net Savings and Gross Savings, and cataloguing and reviewing role of net and gross savings in various state, regional and national energy policies.
 - EM&V Methods for Emerging Technologies, including savings algorithms and assumptions to estimate savings for emerging technologies and programs in the region.
 - Continued implementation and refinement of the Regional Energy Efficiency Database (REED) to support common reporting of program impacts.
 - Loadshape research (Phase III) on VFDs for HVAC, including on-site metering of VFD installations throughout the region to develop 8760 loadshapes and associated coincidence factors.
 - Incremental Cost Study (Phase II) to develop cost curves for additional priority residential and commercial / industrial electric and gas efficiency measures not included in Phase I of the study.
 - Development of common approaches for evaluating savings associated with improved energy codes, and for estimating savings from utilities' efforts to advance code compliance.
4. Regional Avoided Energy Supply Cost Studies – The New England Avoided Energy Supply Component (AESCC) Study Group conducts biennial studies to update the avoided energy and capacity costs utilized by member utilities in their energy efficiency program benefit-cost analyses. The next study is scheduled to be initiated in 2013.
 5. Miscellaneous Research – In addition to program M&V studies, special studies are conducted to inform CORE EE Program planning and policy efforts. For example, a study was completed in 2009 to evaluate the potential for cost-effective energy efficiency investments in the residential, small commercial, large commercial and industrial classes in New Hampshire. Another study was completed in 2011 with the EESE Board that evaluated energy efficiency and sustainable energy policies and programs in New Hampshire and made a series of recommendations for improvements.
 6. CORE EE Program Tracking and Reporting – M&V activities are supported by program tracking and reporting systems that maintain detailed energy efficiency project and measure data that are used to report energy and peak demand savings achieved by the programs.

B. REPORTING

Beginning in 2002, the NH Electric Utilities have worked with Parties and Staff to refine the NH CORE Energy Efficiency Quarterly Reports that are used to help gauge the progress of both the CORE Programs and the Utility Specific Programs. These reports provide information on the progress towards goals of each program by utility and in aggregate. These quarterly reports are defined as follows:

1. **“CORE NH Program Highlights”** compares program goals to actual accomplishments and includes data about progress toward achieving program goals, including actual expenditures, participation, and lifetime kWh savings.
2. **“Budget Details Report”** provides a series of pie charts illustrating program and sector (e.g. residential and commercial/industrial) expenditures by the program tracking activities defined on the next page.
3. **“Home Energy Assistance Program Report”**:
 - states the number of single family homes and the number of multi-family units that received energy efficiency measures and services for that quarter.
 - identifies the county where energy efficiency services were provided and includes the number of units in the county where such services were provided or measures installed.
 - identifies for each Electric Utility and for the state in total, the number of projects completed, the number of jobs funded by both CORE and DOE, the cumulative collaborative DOE expenditures, the cumulative collaborative CORE expenditures, and the cumulative non collaborative CORE expenditures.
 - provides a breakdown of the types of measures installed and services provided sorted by county, utility, and dwelling type (e.g. single or multi-family).
 - provides a breakdown of completed jobs by county and contractor type (e.g. Local CAA, Outside CAA, Private Contractor).
 - includes an action plan for any utility that is below its quarterly production goals by more than 20%. The action plan shall include revised production goals. The subsequent quarterly report shall report on the status of the revised production goals.
4. **“Forward Capacity Market Report”** documents the payments received from ISO-NE and the associated expenses with this effort.

These reports will be submitted to the Commission with copies to the Parties and Staff in advance of quarterly meetings of the CORE Management Team with Parties and Staff.

Program Tracking Activities	
Tracking Activity	Description
ADMINISTRATION – INTERNAL	Used to track all internal utility costs associated with program design, development, regulatory support, and quality assurance. Costs captured in this activity include: employee labor, benefits, expenses, materials, and supplies
ADMINISTRATION – EXTERNAL	Used to track the total cost of contractors and consultants used in support of program design, development, regulatory support, and quality assurance. Captures all of the utility’s external costs associated with program administration.
CUSTOMER REBATES & SERVICES	All rebate dollars paid directly to customers as well as “indirect” payments to customers such as discounted prices. Also includes all costs directly attributable to providing energy efficiency services to customers (e.g. technical audits, employee and contract labor for installing efficiency measures, expenses, materials, and supplies).
INTERNAL IMPLEMENTATION SERVICES	Used to track the utility’s internal costs associated with delivering program services to customers. Costs captured in this activity include: employee labor, benefits, expenses, materials, and supplies.
MARKETING	Used to track all costs associated with marketing, advertising, trade shows, toll free numbers, and WEB site. Costs captured in this activity include: labor, benefits, expenses, consultants, contractors, materials, and supplies.
EVALUATION	Used to track all costs associated with monitoring and evaluation. Costs captured in this activity include: labor, benefits, expenses, consultants, contractors, tracking systems, materials, and supplies.

V. Performance Incentive Methodology

Basic Calculation

The NH Electric and Gas Utilities are allowed to earn a portion of their energy efficiency budget as an incentive “to motivate companies to achieve and exceed program goals.” NHPUC Order No. 24,203, at 13 (September 5, 2003). The formula used to calculate this incentive was initially proposed by the Energy Efficiency Working Group in its final report and the Commission adopted the formula in its order regarding Electric Utility Restructuring – Energy Efficiency Programs, 85 NHPUC 684, 694 (2000) and approved the formula in Order No. 23,982 (May 31, 2002) regarding the CORE Energy Efficiency Programs. The Commission found that “the present incentive mechanism provides a just and reasonable balance between the interest of performances and the interest of customers.” Order No. 24,203, at 13 (September 5, 2003). In NHPUC Order No. 25,189, at 22 (December 30, 2010), the Commission found it reasonable for the NH Electric and Gas Utilities to base the performance incentive calculation on actual spending rather than budget spending to avoid potential double counting of budgets in the calculation of the performance incentive.

Three factors influence the incentive: (1) the actual dollars spent, (2) the ratio of the actual Benefit-to-Cost Ratio achieved to the predicted Benefit-to-Cost Ratio, and (3) the ratio of the kWh savings achieved to the predicted kWh savings. The basic formula is:

$$\text{INCENTIVE} = [4\% \times \text{ACTUAL}] \times [(\text{BC}_{\text{ACT}}/\text{BC}_{\text{PRE}}) + (\text{kWh}_{\text{ACT}}/\text{kWh}_{\text{PRE}})]$$

Where:

- INCENTIVE - Performance incentive in dollars
- ACTUAL – Total dollars spent less the performance incentive
- BC_{ACT} - Actual Benefit-to-Cost ratio achieved
- BC_{PRE} - Predicted Benefit-to-Cost ratio
- kWh_{ACT} - Actual Lifetime Kilowatt-hour savings achieved
- kWh_{PRE} - Predicted Lifetime Kilowatt-hour savings

Residential and Commercial/Industrial Incentive Components

The performance incentive is made up of a residential component and a commercial/industrial component. The residential component is determined by summing the actual dollars spent and kWh savings and calculating a combined program benefit-to-cost ratio for residential programs. These values are then used in the formula above to determine an overall residential incentive. Programs included in the residential calculation are as follows: NH Home Performance with ENERGY STAR, Home Energy Assistance, ENERGY STAR Homes, ENERGY STAR Lighting, ENERGY STAR Appliances and any utility specific programs. The non-electric energy savings associated with the Home Performance with ENERGY STAR Fuel Neutral program will not be included in the final incentive calculation. The commercial/industrial component is determined in an analogous manner. Programs included in the commercial/industrial calculation are as follows: Large Business Energy Solutions, Small Business Energy Solutions, Education, and any utility specific programs.

Avoided Costs

The NH Electric Utilities requested and the NHPUC approved¹⁹ the use of a single avoided cost methodology for Generation, Transmission, and Distribution. In determining the Benefit-to-Cost ratio, the NH Electric Utilities used the avoided generation costs from the *2011 Avoided-Energy-Supply Costs in New England*²⁰.

For the avoided Transmission and Distribution costs, we used the weighted average of all the NH Electric Utilities costs. Refer to Attachments B and C for additional information on avoided costs.

Other assumptions used in determining the future and present values of benefits include inflation at 0.50%²¹ per annum and a nominal discount rate of 3.25%²².

Threshold Conditions

There are three threshold conditions that apply to the performance incentive calculation. Specifically,

1. The combined benefit-to-cost ratio for residential programs must be 1.0 or greater. If not, there is no incentive associated with program cost effectiveness. The commercial/industrial component is calculated similarly.
2. The actual lifetime kWh savings for the residential programs must be 65% or greater than the predicted lifetime kWh savings; otherwise, there will be no incentive associated with kWh savings. Kilowatt-hour savings for the commercial/industrial component are treated similarly.
3. The Residential and Commercial/Industrial components are calculated separately and are independent of one another. The residential incentive component is capped at 12% of the combined budget for residential programs. The commercial/industrial component is calculated similarly.

¹⁹ DE 01-057, Order No. 23,850, November 29, 2001, page 19.

²⁰ *Avoided Energy Supply Costs in New England*, August 2011.

²¹ Used the Gross Domestic Product: Implicit Price Deflator and calculated the difference between the January 1, 2009 and January 1, 2010 rates. See <http://research.stlouisfed.org/fred2/data/GDPDEF.txt>

²² Prime rate as of June 1, 2012, in accordance with Energy Efficiency Working Group Report, Section 7, page 17. Prime rate data taken from <http://www.moneycafe.com/library/primerate.htm>.

Potential Earnings: Performance Incentive Set Aside

The NH CORE Utilities have set aside a portion of their budget for the performance incentive. The Energy Efficiency Working Group Report states, “For incentive calculation purposes only, ‘planned energy efficiency budget’ is defined as the total program budget minus performance incentives²³...” To comply with this, the NH CORE Utilities budgeted for an 8% performance incentive as follows:

$$\text{INCENTIVE} = 8\% \times [\text{BUDGET}_{\text{TOT}} - \text{INCENTIVE}]$$

Where:

INCENTIVE - Performance incentive in dollars

BUDGET_{TOT} – Total dollars budgeted

Solving this equation for the performance incentive:

$$\text{INCENTIVE} = 0.074074 \times \text{BUDGET}_{\text{TOT}}$$

Smart Start Performance Incentive

A different methodology has been adopted by the Commission for determining the Smart Start performance incentive. It is calculated as 6% of loans repaid.

Performance Incentive Calculations

Attachments D, DG, E, F, G and GG present each utility’s calculations for cost effectiveness, performance incentive, planned benefit-to-cost ratios, and planned energy savings for each program.

²³ DR 96-150, Energy Efficiency Working Group Report, July 6, 1999, page 21, part 3f.

VI. Attachments

ATTACHMENT A: CORE/WXN COLLABORATION IMPLEMENTATION PLAN

Project Timeline

While each customer situation may be different, the CAAs will make every effort to contact a customer within two weeks of the time the customer is assigned and to work with the customer to conduct all necessary audits within four weeks, and to complete the installation of all approved measures within eight weeks. The following illustrates the typical project timeline.

Task	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Schedule Audit								
Conduct Audit								
Transmit Data To OEP/Utility								
Provide Services								

Implementation Targets:

Initial Contact Customer: 2 weeks
 Lead Assignment to Invoice Submittal: 8 weeks (on average)
 Up to 10 weeks (with exceptional conditions)
 Over 10 weeks – CAAs must submit customer specific documentation explaining the reason(s) for the extended timeline. No case should exceed 12 weeks.

Program Outline

1. Customer Intake

This step produces a prioritized list of eligible customers from the combined intake efforts of the Wxn and CORE programs. Eligibility for CORE includes customers who meet the eligibility criteria for participation in the Electric Assistance Program, the Fuel Assistance Program, the DOE Weatherization Program or anyone living in subsidized housing. Customers who are eligible for DOE Weatherization and who authorize any required data sharing between their Utility and CAA, will be eligible for funding from both programs. See the Customer Intake Process diagram below for additional detail.

- a) CORE Customers (Utility Marketing)
 - i. Marketing priority is based on (first priority) electric heat and (second priority) high usage, and then to all EAP participants
 - ii. Utilities send marketing package with Customer Reply Card
 - iii. Interested customers request services by returning Customer Reply Card
- b) Direct inquiries to Utilities from customers not participating in the EAP
 - i. Customers accepted based on (first priority) electric heat and (second priority) high usage
 - ii. Customer's eligibility is verified by CAA.
 - iii. Customer is notified of eligibility outcome.
- c) Weatherization Program Customers (CAA Marketing)

- i. Customers are prioritized in accordance with DOE Wxn Program rules (e.g. elderly, young children, persons with disabilities, households with high energy burden), and as needed, to meet CORE prioritization requirements described in Section (a)(i) above.
- ii. Customers will be given an opportunity to request services from both Wxn and the CORE energy efficiency program and authorize required data sharing.

2. Work Scheduling

In this step eligible customers are assigned to a CAA, and an audit is scheduled. Every effort will be made to contact the customer within a two week period to schedule the audit at a mutually agreeable time.

- a) Utility assigns jobs to CAA. Alternatively, Utility may request CAAs to develop leads from the Wxn waiting list.
- b) CAA prescreens customer (e.g. electric heat? high use? still at this address?, previously served? any remaining opportunities? Etc.)
- c) Utility assigns all customers who will receive CORE program services and who pass the prescreen regardless of how they were brought into the program (EAP list, direct inquiry, and Wxn customers). [*Note: Based on field experience, this step may be moved to a point after the audit if it can simplify overall implementation of the program.*]
- d) CAA schedules audit within two weeks of job assignment.
- e) CAA notifies Utility of audit schedule date.
- f) If audit is not scheduled within two weeks, Utility may elect to reassign job to another CAA or a non-CAA contractor, approved by the Utility and trained in low income program delivery.

3. Conduct Audit

In this step the CAA will conduct all necessary home audits as detailed below, the initial blower door and combustion air zone testing as appropriate, and provide the customer and the Utility with their report. The home visit is typically completed within four weeks of assigning the job; report distribution may take longer as noted below.

- a) The audit software creates a list of cost effective measures to install. The Utility also provides a list of predetermined cost effective measures to install which will identify measures such as refrigerator replacements, CFLs, etc.
- b) Auditors will also identify any health and safety items and/or customer education that need to be addressed.
- c) The auditor will review the preliminary audit results with the customer and/or landlord, and if appropriate, seek written customer approval to provide weatherization services.
- d) Audit data is sent electronically to Utility within six weeks of the time the job is assigned.
- e) During the home visit, the CAA auditor identifies energy saving actions the customer can take and provides appropriate educational materials.
- f) A report is provided to customer/landlord within two weeks of the home visit and details the list of proposed services to be provided.

4. Provide Services

This step includes the installation of measures, continuing customer education, the inspection of all completed work, customer signoff, and invoicing.

- a) All services, final inspections, and invoicing will typically be completed within eight weeks of authorization to provide services.
- b) CAA conducts final inspection on all jobs. Final inspection includes:
 - i. Post-completion blower door and combustion air zone test
 - ii. Review of all work completed by subcontractors to ensure compliance with program specifications
- c) CAA delivers education component of program including:
 - i. Energy efficiency materials (as appropriate, may be covered in step 3.f above)
 - ii. Review the “as installed” measures and audit report with the customer/landlord
- d) Obtain customer/landlord acknowledgement and approval of the services provided.
- e) When job (including Final Inspection) is complete, CAA electronically sends job completion report and invoice to Office of Energy & Planning (OEP) and Utility as appropriate.
- f) A customer satisfaction survey is mailed to the customer; survey results are shared by the Utility and OEP as appropriate.

5. Quality Assurance

This step provides overall assurance that services are delivered in compliance with all program requirements.

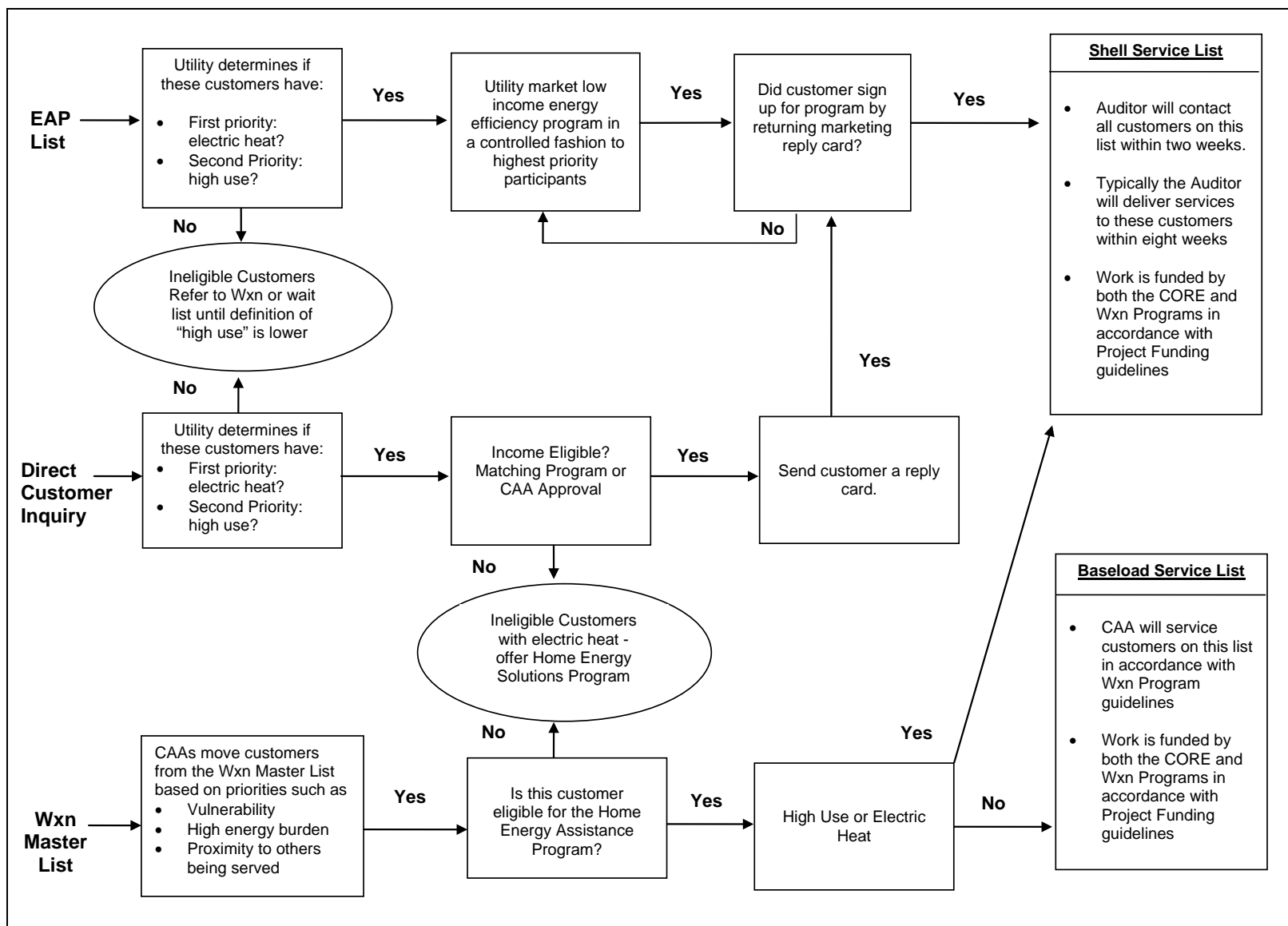
- a) To ensure compliance with federal auditing requirements, OEP personnel will inspect a sampling of all jobs receiving Wxn funding. The Utilities will coordinate their QA activity with OEP when possible to avoid duplicate inspections of the same premise.
- b) QA will typically be conducted on a minimum of 10% of all jobs – more as deemed necessary.

6. Job Closeout

This step includes follow-up on any customer concerns and invoice payment.

- a) Follow-up on any call back or QA concerns before processing invoices for payment.
- b) Review and pay CAA invoices. Check for errors such as “double billing.”
- c) Process Customer Satisfaction Surveys.

Customer Intake Process



Project Funding

Measures will be funded based on the table below. The current program “cap” is \$5,000 for the CORE low income Home Energy Assistance Program.

Measure Description	Funding Source	
	Shell	Baseload
Health & Safety	CORE/DOE ²⁴	DOE
Repair/Replace Non-electric Heating System ²⁵	DOE	DOE
Refrigerator	CORE	CORE
Lighting	CORE	CORE
Weatherization Services	CORE	DOE
Repair/Replace Electric Heating System ²⁶ & Controls	CORE	CORE
<i>Additional Measures As They Are Defined</i>	<i>To Be Determined</i>	<i>To Be Determined</i>

CORE Program Auditor Training

All program auditors will be trained in the following areas. Training will be coordinated with utilities, OEP, and software vendor(s) to insure continuity, efficiency and consistency:

- a) Sensitivity to low income customer’s needs and guidelines for safe professional behavior in the low income community
- b) Health and safety protocols related to Wxn will be reviewed and emphasized
- c) Health and safety elements relating to appliances will be covered in depth
- d) In-depth appliance diagnostics training
- e) Training on customer education including how adults learn and how best to motivate customers to conserve.
- f) Elements (b) through (e) must be coordinated with appliance software training and must thoroughly address the elements in the Customer Education Specifics Chart.
- g) Auditing software and the process for communicating data to the Utilities.

The training will be offered as needed to accommodate new staff and changing program requirements. Costs for training may be shared between OEP and the Utilities.

²⁴ In the event the work is assigned to a non-CAA contractor or DOE funds are not available, CORE funds may be used for Health & Safety measures.

²⁵ Applies to qualifying systems fired by oil, propane, and solid fuels.

²⁶ Applies to electric heating systems only (for National Grid, does not apply to thermal storage or heat pump systems).

Training For Customer Service Representatives

Utility Customer Service Representatives will be trained to handle customer inquiries regarding the CORE/Wxn program as well as other related programs designed to assist low income customers such as the Electric Assistance Program, the Fuel Assistance Program, and winter protections.

Low Income Customer Education and Training

Customer education will include a review of the customer's energy usage, and ways to reduce the energy usage. The auditor will discuss advantages of efficient lighting and appliances as well as life style changes that could reduce energy usage. The auditor will also discuss the weatherization opportunities in the customer's home. The *Energy Savers Booklet, Tips on Saving Energy & Money at Home* , will be provided to all program participants.

Capacity Planning

The tables on the next page depict (1) the Quarterly Production Schedule for each Utility and (2) the year end Job Distribution By County and By Utility.

The Utilities are committed to working with OEP and the CAAs to ensure there are sufficient qualified CAA personnel to meet program goals. If problems develop, the Utilities will address them with the CAAs and OEP before reassigning work to non-CAA contractors. It is understood that OEP cannot reimburse non-DOE approved subgrantees, and this must be taken into account in any work reassignment plan. For example, this would create significant problems in reassigning work that is already in progress. As such, to the extent non-CAA contractors were required to meet program goals, they would likely be given work that had not yet been assigned.

Maximizing Potential Benefits To Income Eligible Customers

The fundamental principle underlying the collaboration with the Community Action Agencies (CAAs) is that by working together, it will be possible to bring more services to more low income customers. As detailed in the Project Funding Table above, both Shell and Baseload jobs will be jointly funded by CORE and DOE dollars for all jobs implemented by the CAAs. The following table details the quarterly production schedule as well as the annual distribution of jobs by county and utility.

Low Income CORE & Wxn Participants by County

2013 HEA Quarterly Production Schedule					
Utility	Total Jobs	1st. Qtr.	2nd. Qtr.	3rd. Qtr.	4th. Qtr.
		13%	36%	33%	18%
LU-Electric	55	12	18	17	8
NHEC	57	7	16	20	14
PSNH	657	83	249	211	114
Unitil	49	8	15	17	9
LU-Gas	156	18	53	56	29
Northern Utilities	30	5	9	11	5
TOTAL Electric	818	110	298	265	145
TOTAL Gas	186	23	62	67	34
Cumulative TOTAL		133	493	825	1,004

2013 HEA Job Distribution By County and By Utility							
BY COUNTY	LU-Electric	NHEC	PSNH	Unitil	LU-Gas	Northern Utilities	Grand Total
Belknap		8	80		20		108
Carroll		8	47				55
Cheshire	11		16				27
Coos		3	47		0		50
Grafton	17	21	29				67
Hillsborough	9		263		125		397
Merrimack		6	67	31	10		114
Rockingham	9	4	66	18	1	20	118
Strafford		0	28			10	38
Sullivan	9	7	14				30
Program Totals	55	57	657	49	156	30	1,004

Note: Quarterly numbers are benchmarks and are not meant to be used to evaluate production on a monthly basis.

Low Income CORE & Wxn Participants by County

2014 HEA Quarterly Production Schedule						
Utility	Total Jobs	1st. Qtr.	2nd. Qtr.	3rd. Qtr.	4th. Qtr.	
		13%	34%	35%	18%	
LU-Electric	58	12	18	21	7	
NHEC	57	7	16	20	14	
PSNH	657	81	242	222	112	
Unitil	61	7	19	22	13	
LU-Gas	164	17	48	64	35	
Northern Utilities	35	5	9	12	9	
TOTAL Electric	833	107	295	285	146	
TOTAL Gas	199	22	57	76	44	
Cumulative TOTAL		129	481	842	1,032	

2014 HEA Job Distribution By County and By Utility							
BY COUNTY	LU-Electric	NHEC	PSNH	Unitil	LU-Gas	Northern Utilities	Grand Total
Belknap		8	78		20		106
Carroll		8	45				53
Cheshire	11		17				28
Coos		3	48		0		51
Grafton	18	21	30				69
Hillsborough	10		265		130		405
Merrimack		6	65	36	13		120
Rockingham	10	4	65	25	1	23	128
Strafford		0	29			12	41
Sullivan	9	7	15				31
Program Totals	58	57	657	61	164	35	1,032

Note: Quarterly numbers are benchmarks and are not meant to be used to evaluate production on a monthly basis.

ATTACHMENT B: COMPLETED MONITORING & EVALUATION STUDIES

Evaluation Studies Completed since 2000

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2. RER, 1999 Energy Initiative Lighting Program Impact Evaluation, June 20, 2000.
3. RLW Analytics, Inc., Energy Initiative and Small C&I Programs Indoor Prescriptive Lighting Impact Study, June 19, 2000.
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7. SBW Consulting, Inc., Impact Evaluation Study of 1999 Custom Industrial Process Installations, June 1, 2000.
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9. Michael Ketcham, David Wortman, PE, Wortman Engineering, Impact Evaluation Study of 1999 Custom O&M Installations, June 7, 2000.
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26. Regional Economic Research, Inc. (RER), Impact Evaluation of the 2001 Multifamily Energy Wise Program, June 21, 2002.
27. Ebu Alpay, Scott Dimetrosky, Ken Seiden, Ph.D., Quantec, LLC, Impact Evaluation of the 2001 Appliance Management Program, July 1, 2002.
28. Bruce Harley, Conservation Service Croup, Inc., Energy Consumption Analysis of the ENERGY STAR Homes Program, June 15, 2002.
29. Select Energy Services, Inc., Evaluation of 2000 Custom Process Installations – Part I, June 26, 2002.
30. DMI, Final Report for National Grid USA Service Company Evaluation of 2000 Custom Process Installations-Part II, June 26, 2002.
31. SBW Consulting Inc., Impact Evaluation of 2000 Custom Comprehensive Installation FINAL REPORT, June 27, 2002.
32. RLW Analytics, Impact Evaluation Analysis of the 2001 Custom Program, June 26, 2002.
33. PA Government Services, Inc., National Grid 2002 Commercial and Industrial Free-ridership and Spillover Study, May 30, 2003.
34. RLW Analytics, Design 2000plus Lighting Hours of Use and Load Shape Measurement Executive Summary, May 30, 2003.
35. RLW Analytics, Sample Design for the 2002 Custom Evaluation Studies, July 2, 2003.
36. SBW Consulting, Inc., Evaluation of 2001 Custom Process Installations – Part I FINAL REPORT, June 23, 2003.
37. DMI, Evaluation of 2001 Custom Process Installations – Part II, June 27, 2003.
38. Select Energy Services, Inc., Evaluation of 2001 Custom Process Installations – Part III Compressed Air, June 30, 2003.
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141. DNV Kema, New Hampshire CORE Residential ENERGY STAR Lighting Program, Impact and Process Evaluation Report, June 22, 2012.
142. DNV Kema, New Hampshire Small Business Energy Solutions Program, Impact and Process Evaluation, June 27, 2012.
143. ERS, New Hampshire Commercial & Industrial New Equipment & Construction Program, Baseline Evaluation, September, 2012.

ATTACHMENT C: AVOIDED COSTS

Summary of Avoided Electric Costs

In accordance with Commission Order No. 23,850, in DE 01-057, dated November 29, 2001, the NH Electric Utilities have based their avoided costs on the 2011 *Avoided-Energy-Supply Costs in New England: 2011 Final Report* (“2011 AESC”). Use of common avoided costs by the utilities ensures that all New Hampshire customers will have access to the same programs and services.

The present value of avoided costs over the life of program measures was calculated using a discount rate of 3.25% and a general inflation rate of 2.00%. The use of the 15% adder to represent non-quantified benefits – including environmental and other benefits as recommended by the Energy Efficiency Working Group, originally authorized by the NHPUC in DR 96-150, Order No. 23,574, dated November 1, 2000, has been discontinued because the 2011 AESC avoided costs include market-based price proxies for power plant emissions of NO_x, SO₂, Mercury and CO₂.

The 2011 AESC avoided costs also include a 9% generic retail adder to account for the expected differential between retail and wholesale market prices. In recognition of diversity among states and utilities in energy service procurement and retail pricing policies, the contractor provided the sponsors the option to remove the adder from the avoided cost data. PSNH and NHEC have concluded that the 2011 AESC forecasted wholesale prices of energy and capacity represent a better approximation to the cost of energy service avoided by their retail customers than the prices which include a 9% increase to the wholesale prices.

Avoided Transmission and Distribution Costs

In accordance with Commission Order No. 23,850, in DE 01-057, dated November 29, 2001, the NH Electric Utilities have based their avoided transmission and distribution costs on the weighted average of NH utility costs and have escalated them for inflation and put them in 2011 dollars. Use of common avoided costs by the utilities ensures that all New Hampshire customers will have access to the same programs and services.

The following table also includes an adjustment to reduce the energy and capacity line loss multipliers by the estimated losses that are accounted for in the 2011 forecast of energy prices.

Marginal T&D Costs and Line Loss Factors (\$2011)								
				Line Loss Multipliers				
	<u>MDC (\$/kW-yr)</u>		<u>MTC</u>	<u>Transmission</u>	<u>Summer</u>	<u>Winter</u>	<u>On-Peak</u>	<u>Off-Peak</u>
	<u>Res.(1)</u>	<u>C&I(2)</u>	<u>(\$/kW-yr)</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Energy</u>	<u>Energy</u>
GSE	\$118.71	\$86.39	\$49.63	1.1220	1.1500	1.1350	1.0630	1.0890
NHEC	\$163.05	\$163.05	\$103.02	1.0207	1.0818	1.0818	1.0818	1.0818
PSNH	\$31.61	\$31.61	\$1.77	1.0000	1.0820	1.0820	1.0820	1.0840
Unitil	\$73.03	\$73.03	\$29.26	1.0000	1.1217	1.1217	1.1217	1.0152
MWh Sales to Ultimate Customers in 2011								
GSE	911,923	8.52%						
NHEC	744,000	6.95%						
PSNH	7,815,462	73.03%						
Unitil	<u>1,229,614</u>	<u>11.49%</u>						
Total	10,700,999	100.00%						
Weighted Average Marginal T&D Costs and Line Loss Factors								
(Energy Line Loss Multipliers have been reduced by estimated transmission losses.)								
				Line Loss Multipliers				
	<u>MDC (\$/kW-yr)</u>		<u>MTC</u>	<u>Transmission</u>	<u>Summer</u>	<u>Winter</u>	<u>On-Peak</u>	<u>Off-Peak</u>
	<u>Res.(1)</u>	<u>C&I(2)</u>	<u>(\$/kW-yr)</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Energy</u>	<u>Energy</u>
2011\$	\$52.93	\$50.18	\$16.05	1.012	1.072	1.071	1.018	1.010

Program Cost-Effectiveness - 2013 PLAN

	Total Resource Benefit/Cost Ratio	Present Value				Shareholder Incentive (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)							
Residential Programs											
ENERGY STAR Homes	4.88	\$ 411.2	\$ 68.6	\$ 15.7		27	510	9	6	41	
Home Performance with ENERGY STAR	1.89	\$ 460.2	\$ 165.7	\$ 77.3		17	183	6	1	108	
ENERGY STAR Lighting	1.32	\$ 184.4	\$ 102.0	\$ 37.8		444	2,670	174	46	7,241	
ENERGY STAR Appliances	1.66	\$ 846.8	\$ 234.3	\$ 275.9		114	1,227	8	17	759	
Home Energy Assistance	1.21	\$ 375.0	\$ 310.9	\$ -		52	753	6	6	55	
	1.77										
Subtotal Residential	1.68	\$ 2,277.6	\$ 881.6	\$ 406.8	\$ 70.5	654	5,343	203	76	8,203	
Commercial/Industrial Programs											
Large Business Energy Solutions	1.84	\$ 2,264.9	\$ 665.2	\$ 567.2		1,819	23,689	238	326	40	
Small Business Energy Solutions	1.67	\$ 1,395.1	\$ 507.9	\$ 325.3		1,013	13,947	165	163	183	
C&I Education	0.00	\$ -	\$ 18.3	\$ -		-	-	-	-	-	
	1.76										
Subtotal C&I	1.68	\$ 3,659.9	\$ 1,191.4	\$ 892.5	\$ 95.3	2,833	37,636	403	488	223	
ISO-NE FCM		0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	-	
Total	1.68	\$ 5,937.49	\$ 2,098.00	\$ 1,299.21	\$ 165.84	3,487	42,979	606	564	8,426	

Present Value Benefits - 2013 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$411	\$11	\$0	\$2	\$6	\$10	\$12	\$5	\$6	\$359
Home Performance w/Energy Star	\$460	\$0	\$0	\$0	\$0	\$4	\$7	\$0	\$1	\$449
ENERGY STAR Lighting	\$184	\$12	\$0	\$4	\$14	\$45	\$58	\$23	\$28	\$0
ENERGY STAR Appliances	\$847	\$9	\$0	\$3	\$9	\$20	\$25	\$13	\$15	\$752
Home Energy Assistance	\$375	\$5	\$0	\$1	\$4	\$14	\$18	\$6	\$8	\$319
Subtotal Residential	\$2,278	\$37	\$0	\$11	\$34	\$92	\$120	\$48	\$57	\$1,879
Commercial/Industrial Programs										
Large Business	\$2,265	\$251	\$0	\$67	\$213	\$368	\$388	\$396	\$317	\$264
Small Business	\$1,395	\$141	\$0	\$35	\$113	\$281	\$255	\$183	\$150	\$238
C&I Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$3,660	\$392	\$0	\$102	\$326	\$649	\$643	\$579	\$467	\$502
Total	\$5,937	\$429	\$0	\$113	\$360	\$741	\$764	\$627	\$525	\$2,380

Shareholder Incentive Calculation 2013

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.76	
2. Threshold Benefit / Cost Ratio 1	1.00	
3. Lifetime kWh Savings	37,636,115	
4. Threshold Lifetime kWh Savings (65%) 2	24,463,475	
5. Budget	\$1,191,407	
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$95,313	
9. Cap (12%)	\$142,969	
Residential Incentive		
10. Benefit / Cost Ratio	1.77	
11. Threshold Benefit / Cost Ratio 1	1.00	
12. Lifetime kWh Savings	5,342,671	
13. Threshold Lifetime kWh Savings (65%) 2	3,472,736	
14. Budget	\$881,589	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$70,527	
18. Cap (12%)	\$105,791	
19. TOTAL INCENTIVE EARNED	\$ 165,840	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. HPwES Fuel Neutral portion of the actual expenses will be reduced on final year-end incentive calculation per NHPUC Order Nos. 24,974 and 25,402.

2013 TRC BENEFIT COST TEST
Planned Versus Actual Benefit / Cost Ratio by Sector
 2013

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 3,660	
2. Implementation Expenses	\$ 1,191	
3. Customer Contribution	<u>\$ 892</u>	
4. Total Costs Excluding Shareholder Incentive	\$ 2,084	
5. Benefit/Cost Ratio - C&I Sector	1.76	
6. Benefit/Cost Ratio - C&I Sector including SI	1.68	
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 2,278	
7. Implementation Expenses	\$ 882	
8. Customer Contribution	<u>\$ 407</u>	
9. Total Costs Excluding Shareholder Incentive	\$ 1,288	
10. Benefit/Cost Ratio - Residential Sector	1.77	
11. Benefit/Cost Ratio - Residential Sector including SI	1.68	

Actual Lifetime Energy Savings by Sector and Program 2013

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business	23,689,232	
Small Business	13,946,883	
C&I Education	0	
Total Commercial & Industrial Included for Incentive Calculation	37,636,115	
Residential:		
ENERGY STAR Homes	510,094	
Home Performance with ENERGY STAR	182,554	
ENERGY STAR Lighting	2,669,519	
ENERGY STAR Appliances	1,227,443	
Home Energy Assistance	753,061	
Total Residential Included for Incentive Calculation	5,342,671	
Total	42,978,786	

Program Cost-Effectiveness - 2014 PLAN

	Total Resource Benefit/Cost Ratio	Present Value					Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Shareholder Incentive (\$000)						
Residential Programs											
ENERGY STAR Homes	4.95	\$ 442.2	\$ 72.7	\$ 16.6			28	541	9	7	43
NH Home Performance with ENERGY STAR	1.94	\$ 500.2	\$ 175.6	\$ 82.0			19	193	6	1	114
ENERGY STAR Lighting	1.39	\$ 206.3	\$ 108.1	\$ 40.1			470	2,829	184	49	7,675
ENERGY STAR Appliances	1.71	\$ 905.6	\$ 248.3	\$ 281.1			130	1,397	10	19	841
Home Energy Assistance	1.24	\$ 408.8	\$ 329.5	\$ -			55	798	6	6	58
	1.82										
Subtotal Residential	1.69	\$ 2,463.2	\$ 934.3	\$ 419.8	\$ 101.0	\$ -	702	5,759	216	81	8,731
Commercial/Industrial Programs											
Large Business	1.93	\$ 2,523.8	\$ 706.5	\$ 604.5		0.00	1,940	25,254	254	347	42
Small Business	1.75	\$ 1,539.6	\$ 537.5	\$ 343.5			1,079	14,842	176	173	192
C&I Education	0.00	\$ -	\$ 18.3	\$ -			-	-	-	-	-
	1.84										
Subtotal C&I	1.78	\$ 4,063.4	\$ 1,262.3	\$ 947.9	\$ 74.7	\$ -	\$ 3,018	\$ 40,096	\$ 430	\$ 520	\$ 234
ISO NE FCM		-	25.0	-	-		-	-	-	-	-
Total	1.73	\$ 6,526.64	\$ 2,221.62	\$ 1,367.69	\$ 175.73		3,720	45,855	646	601	8,965

Present Value Benefits - 2014 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$442	\$12	\$0	\$2	\$7	\$11	\$14	\$5	\$7	\$384
Home Performance w/Energy Star	\$500	\$0	\$0	\$0	\$0	\$4	\$7	\$0	\$1	\$487
ENERGY STAR Lighting	\$206	\$13	\$0	\$5	\$15	\$50	\$65	\$26	\$32	\$0
ENERGY STAR Appliances	\$906	\$11	\$0	\$3	\$10	\$25	\$31	\$15	\$17	\$793
Home Energy Assistance	\$409	\$6	\$0	\$1	\$4	\$15	\$20	\$7	\$9	\$346
Subtotal Residential	\$2,463	\$42	\$0	\$12	\$37	\$105	\$137	\$55	\$65	\$2,010
Commercial/Industrial Programs										
Large Business	\$2,524	\$300	\$0	\$73	\$233	\$0	\$413	\$435	\$443	\$356
Small Business	\$1,540	\$166	\$0	\$38	\$123	\$0	\$315	\$285	\$204	\$168
C&I Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$4,063	\$466	\$0	\$111	\$356	\$0	\$728	\$721	\$647	\$524
Total	\$6,527	\$508	\$0	\$123	\$393	\$105	\$865	\$775	\$712	\$2,534

Shareholder Incentive Calculation 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.75	
2. Threshold Benefit / Cost Ratio 1	1.00	
3. Lifetime kWh Savings	40,095,966	
4. Threshold Lifetime kWh Savings (65%) 2	26,062,378	
5. Budget	\$934,298	
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$74,744	
9. Cap (12%)	\$112,116	
Residential Incentive		
10. Benefit / Cost Ratio	1.78	
11. Threshold Benefit / Cost Ratio 1	1.00	
12. Lifetime kWh Savings	5,758,753	
13. Threshold Lifetime kWh Savings (65%) 2	3,743,189	
14. Budget	\$1,262,320	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$100,986	
18. Cap (12%)	\$151,478	
19. TOTAL INCENTIVE EARNED	\$ 175,729	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

2014 TRC BENEFIT COST TEST

Planned Versus Actual Benefit / Cost Ratio by Sector
 2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 4,063	
2. Implementation Expenses	\$ 1,262	
3. Customer Contribution	\$ 948	
4. Total Costs Excluding Shareholder Incentive	\$ 2,210	
5. Benefit/Cost Ratio - C&I Sector	1.84	
6. Benefit/Cost Ratio - C&I Sector including SI	1.78	
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 2,463	
7. Implementation Expenses	\$ 934	
8. Customer Contribution	\$ 420	
9. Total Costs Excluding Shareholder Incentive	\$ 1,354	
10. Benefit/Cost Ratio - Residential Sector	1.82	
11. Benefit/Cost Ratio - Residential Sector including SI	1.69	

Actual Lifetime Energy Savings by Sector and Program 2014

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business	25,254,135	
Small Business	14,841,832	
C&I Education	0	
Total Commercial & Industrial Included for Incentive Calculation	40,095,966	
Residential:		
ENERGY STAR Homes	540,635	
NH Home Performance with ENERGY STAR	193,485	
ENERGY STAR Lighting	2,829,349	
ENERGY STAR Appliances	1,397,315	
Home Energy Assistance	797,969	
Total Residential Included for Incentive Calculation	5,758,753	
Total	45,854,719	

Attachment D-G: Total Resource Benefit Cost Analysis

January 1, 2013 - December 31, 2013 TRC BENEFIT COST TEST

Liberty Utilities Gas Energy Efficiency

New Hampshire Program Year ONE

Summary of Benefit, Costs Program Year 2013 (January 1, 2013 - December 31, 2013)

Total Resource Cost Test

BCR Activity		TRC Benefit/Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	PA Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant Goal
Residential	Low Income	1.04	\$29	\$779	\$750	\$750	\$0	4,459	89,172	156
	HPwES	2.71	\$2,064	\$3,268	\$1,205	\$730	\$475	18,708	374,164	569
	Residential Appliances	1.11	\$162	\$1,688	\$1,526	\$730	\$796	12,407	207,559	2,578
	Energy Star Homes	2.01	\$110	\$218	\$108	\$90	\$18	995	24,863	37
	Res Building Practices and Demo	NA	(\$70)	\$0	\$70	\$70	\$0	-	-	-
	Shareholder Incentive					\$190				
Subtotal: Residential		1.55	\$2,294	\$5,953	\$3,849	\$2,560	\$1,289	36,568	695,757	3,340
Commercial & Industrial										
	Large Business	1.36	\$648	\$2,441	\$1,793	\$1,184	\$609	19,125	295,915	178
	Small Business	1.71	\$1,248	\$3,015	\$1,767	\$1,093	\$673	22,711	365,747	313
	C&I Education	NA	(\$32)	\$0	\$32	\$32	\$0	-	-	-
	Shareholder Incentive					\$185				
Subtotal: Commercial & Industrial		1.44	\$1,863	\$5,455	\$3,777	\$2,495	\$1,282	41,836	661,662	491
Grand Total		1.50	\$4,157	\$11,409	\$7,626	\$5,054	\$2,571	78,404	1,357,419	3,831

January 1, 2014 - December 31, 2014 TRC BENEFIT COST TEST

Liberty Utilities Gas Energy Efficiency

New Hampshire Program Year TWO

Summary of Benefit, Costs Program Year 2014 (January 1, 2014 - December 31, 2014)

Total Resource Cost Test

BCR Activity		TRC Benefit/Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	PA Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant Goal
Residential	Low Income	1.07	\$59	\$846	\$788	\$788	\$0	4,677	93,543	164
	HPwES	2.80	\$2,280	\$3,545	\$1,265	\$767	\$498	19,591	391,817	595
	Residential Appliances	1.24	\$388	\$1,980	\$1,592	\$767	\$825	13,937	236,334	2,697
	Energy Star Homes	2.08	\$123	\$237	\$114	\$95	\$19	1,044	26,106	38
	Res Building Practices and Demo	NA	(\$74)	\$0	\$74	\$74	\$0	-	-	-
	Shareholder Incentive					\$199				
Subtotal: Residential		1.64	\$2,777	\$6,608	\$4,030	\$2,688	\$1,343	39,249	747,799	3,495
Commercial & Industrial										
	Large Business	1.45	\$851	\$2,738	\$1,887	\$1,244	\$643	20,466	319,440	198
	Small Business	1.80	\$1,500	\$3,373	\$1,874	\$1,149	\$725	24,870	394,862	347
	C&I Education	NA	(\$32)	\$0	\$32	\$32	\$0	-	-	-
	Shareholder Incentive					\$194				
Subtotal: Commercial & Industrial		1.53	\$2,318	\$6,111	\$3,987	\$2,620	\$1,367	45,336	714,302	545
Grand Total		1.59	\$5,095	\$12,719	\$8,017	\$5,307	\$2,710	84,585	1,462,101	4,040

Attachment DG: Shareholder Incentive Page 1 of 4

Liberty Utilities Gas Energy Efficiency

Target Shareholder Incentive Year ONE- January 1, 2013 - December 31, 2013

Commercial/Industrial Incentive

1. Target Benefit/Cost Ratio	1.44
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	661,662
4. Threshold MMBTU	430,080
5. Budget	\$2,310,000
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%
8. Target C/I Incentive	\$184,800
9. Cap	\$277,200

Residential Incentive

10. Target Benefit/Cost Ratio	1.55
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	695,757
13. Threshold MMBTU	452,242
14. Budget	\$2,370,000
15. CE Percentage	4.00%
16. Lifetime MMBTU Percentage	4.00%
17. Target Residential Incentive	\$189,600
18. Cap	\$284,400
19. TOTAL TARGET INCENTIVE	\$374,400

Line No. Notes:

- 1, 3, 5, 10, 12, and 14. See Exhibit B
- 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
4. 65% of line 3.
8. 8% of line 5.
9. 12% of line 5.
13. 65% of line 12.
17. 8% of line 14.
18. 12% of line 14.
19. Line 8 plus line 17.

Attachment DG: Shareholder Incentive Page 2 of 4
Liberty Utilities Gas Energy Efficiency
Target Benefit-Cost Ratio by Sector
Year ONE- January 1, 2013 - December 31, 2013

Commercial & Industrial:	<u>Planned</u>
1. Benefits (Value) From Eligible Programs	\$5,455,428
2. Implementation Expenses	\$2,277,686
3. Customer Contribution	\$1,282,033
4. Shareholder Incentive	\$184,800
5. Total Costs Including Shareholder Incentive	\$3,744,519
6. Benefit/Cost Ratio - C&I Sector	1.46

Residential:	
7. Benefits (Value) From Eligible Programs	\$5,953,227
8. Implementation Expenses	\$2,370,000
9. Customer Contribution	\$1,289,227
10. Shareholder Incentive	\$189,600
11. Total Costs Including Shareholder Incentive	\$3,848,827
12. Benefit/Cost Ratio - Residential Sector	1.55

Line No. Notes:

1 - 4 and 7-11. See Exhibit B.

5. Sum of lines 2-4.

6. Line 1 divided by line 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.

11. Sum of lines 7 - 10.

12. Line 7 divided by line 11. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio. However, the shareholder incentive is supposed to be included as an EE cost in determining the benefit/cost ratio. For the purpose of calculating the shareholder incentive, the Company has calculated the planned benefit/cost ratio including the shareholder incentive for one iteration and will compare the actual benefit/cost ratio including the shareholder incentive to the planned benefit/cost ratio including shareholder incentives when determining the earned shareholder incentive.

Attachment DG: Shareholder Incentive Page 3 of 4

Liberty Utilities Gas Energy Efficiency

Target Shareholder Incentive Year TWO- January 1, 2014 - December 31, 2014

Commercial/Industrial Incentive

1. Target Benefit/Cost Ratio	1.53
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	714,302
4. Threshold MMBTU	464,296
5. Budget	\$2,425,500
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%
8. Target C/I Incentive	\$194,040
9. Cap	\$291,060

Residential Incentive

10. Target Benefit/Cost Ratio	1.64
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	747,799
13. Threshold MMBTU	486,070
\$5.49/therm based on 50% of project cost	\$2,488,500
\$3.08/therm based on 50% of project cost.	4.00%
16. Lifetime MMBTU Percentage	4.00%
17. Target Residential Incentive	\$199,080
18. Cap	\$298,620
19. TOTAL TARGET INCENTIVE	\$393,120

Line No. Notes:

- 1, 3, 5, 10, 12, and 14. See Exhibit B
- 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
- 4. 65% of line 3.
- 8. 8% of line 5.
- 9. 12% of line 5.
- 13. 65% of line 12.
- 17. 8% of line 14.
- 18. 12% of line 14.
- 19. Line 8 plus line 17.

Attachment DG: Shareholder Incentive Page 4 of 4
Liberty Utilities Gas Energy Efficiency
Target Benefit-Cost Ratio by Sector
Year TWO- January 1, 2014 - December 31, 2014

Commercial & Industrial:	<u>Planned</u>
1. Benefits (Value) From Eligible Programs	\$6,110,950
2. Implementation Expenses	\$2,393,186
3. Customer Contribution	\$1,367,387
4. Shareholder Incentive	\$194,040
5. Total Costs Including Shareholder Incentive	\$3,954,613
6. Benefit/Cost Ratio - C&I Sector	1.55
Residential:	
7. Benefits (Value) From Eligible Programs	\$6,608,295
8. Implementation Expenses	\$2,488,500
9. Customer Contribution	\$1,342,688
10. Shareholder Incentive	\$199,080
11. Total Costs Including Shareholder Incentive	\$4,030,268
12. Benefit/Cost Ratio - Residential Sector	1.64

Line No. Notes:

1 - 4 and 7-11. See Exhibit B.

5. Sum of lines 2-4.

6. Line 1 divided by line 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.

11. Sum of lines 7 - 10.

12. Line 7 divided by line 11. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio. However, the shareholder incentive is supposed to be included as an EE cost in determining the benefit/cost ratio. For the purpose of calculating the shareholder incentive, the Company has calculated the planned benefit/cost ratio including the shareholder incentive for one iteration and will compare the actual benefit/cost ratio including the shareholder incentive to the planned benefit/cost ratio including shareholder incentives when determining the earned shareholder incentive.

Program Cost-Effectiveness - 2013 PLAN

	Total Resource Benefit/Cost Ratio	Present Value			Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Members Served
		Benefit (\$000)	Utility Costs (\$000)	Member Costs (\$000)					
Residential Programs									
ENERGY STAR Homes	7.0	\$ 1,616.0	\$ 161.7	\$ 70.1	40.2	796.6	11.4	9.9	43
Home Performance w/Energy Star	2.5	\$ 879.2	\$ 224.6	\$ 132.3	44.9	470.1	16.4	1.5	88
ENERGY STAR Lighting *1	1.3	\$ 266.3	\$ 125.8	\$ 85.2	473.0	3,699.1	185.3	49.2	28,405
ENERGY STAR Appliances	2.4	\$ 1,691.3	\$ 278.5	\$ 437.9	501.8	4,926.7	52.4	61.9	2,181
Home Energy Assistance	1.3	\$ 376.5	\$ 286.2	\$ -	88.6	956.0	9.1	10.1	57
High Efficiency Heat Pump	3.7	\$ 801.7	\$ 107.8	\$ 106.7	488.3	12,207.5	132.8	2.6	14
Subtotal Residential	2.8	\$ 5,631.0	\$ 1,184.6	\$ 832.2	1,636.7	23,055.9	407.4	135.2	30,788
Commercial/Industrial Programs									
New Construction / Major Renovation	0.0								-
Large C&I Retrofit	2.3	\$ 699.1	\$ 155.9	\$ 154.2	730.0	9,489.9	132.8	75.2	11
Small C&I Retrofit	2.3	\$ 1,520.1	\$ 421.0	\$ 253.4	1,236.1	17,090.9	152.7	257.5	79
Other (Education)	0.0	\$ -	\$ 34.3	\$ -	-	-	-	-	-
Smart Start	0.0	\$ -	\$ 12.5	\$ -	-	-	-	-	-
Subtotal C&I	2.2	2,219.2	623.6	407.6	1,966.1	26,580.8	285.6	332.8	90
Total		\$ 7,850.2	\$ 1,808.2	\$ 1,239.8	3,602.8	49,636.7	692.9	468.0	30,878

Note 1: Plan included 7,101 members purchasing a total of 28,405 lighting products (4 per member)

Present Value Benefits - 2013 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$1,616,019	\$16,855	\$0	\$3,223	\$10,298	\$14,976	\$19,166	\$7,862	\$9,578	\$1,534,059
Home Performance w/Energy Star	\$879,181	\$127	\$0	\$52	\$165	\$8,860	\$17,642	\$421	\$511	\$851,404
ENERGY STAR Lighting *1	\$266,325	\$20,438	\$0	\$6,066	\$19,382	\$64,053	\$82,789	\$33,082	\$40,513	\$0
ENERGY STAR Appliances	\$1,691,258	\$28,322	\$0	\$9,723	\$31,066	\$83,051	\$106,595	\$47,157	\$55,195	\$1,330,149
Home Energy Assistance	\$376,539	\$5,244	\$0	\$1,728	\$5,521	\$16,408	\$21,459	\$8,596	\$10,437	\$307,145
High Efficiency Heat Pump	\$801,709	\$5,137	\$0	\$935	\$2,988	\$261,813	\$517,626	\$6,554	\$6,656	\$0
Subtotal Residential	\$5,631,031	\$76,124	\$0	\$21,728	\$69,420	\$449,161	\$765,277	\$103,673	\$122,891	\$4,022,758
Commercial/Industrial Programs										
New Construction / Major Renovation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Large C&I Retrofit	\$699,097	\$56,547	\$0	\$15,282	\$48,825	\$198,401	\$273,174	\$61,051	\$45,818	\$0
Small C&I Retrofit	\$1,520,056	\$216,772	\$0	\$55,357	\$176,866	\$384,409	\$297,772	\$227,201	\$161,679	\$0
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Start	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$2,219,153	\$273,319	\$0	\$70,638	\$225,691	\$582,810	\$570,946	\$288,252	\$207,497	\$0
Total	\$7,850,184	\$349,443	\$0	\$92,366	\$295,111	\$1,031,971	\$1,336,223	\$391,925	\$330,388	\$4,022,758

**Shareholder Incentive Calculation
 2013**

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	2.05	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	26,580,844	0
4. Threshold Lifetime kWh Savings (65%) ²	17,277,548	
5. Budget	\$623,632	\$0
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Member Incentive	\$49,891	<input type="text"/>
9. Cap (12%)	\$74,836	
Residential Incentive		
10. Benefit / Cost Ratio	2.43	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	23,055,887	0
13. Threshold Lifetime kWh Savings (65%) ²	14,986,327	
14. Budget	\$1,184,556	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$94,765	<input type="text"/>
18. Cap (12%)	\$142,147	
19. TOTAL INCENTIVE EARNED	\$144,655	<input type="text"/>

Notes

- Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
- Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
- HPwES Fuel Neutral portion of the actual expenses will be reduced on final year-end incentive calculation per NHPUC Order Nos. 24,974 and 25,402.

Planned Versus Actual Benefit / Cost Ratio by Sector
2013

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 2,219,153	\$ -
2. Implementation Expenses	\$ 623,632	\$ -
3. Customer Contribution	\$ 457,476	\$ -
4. Estimated Member Incentive	\$ 49,891	\$ -
5. Total Costs Including Member Incentive	\$ 1,081,108	\$ -
5. Benefit/Cost Ratio - C&I Sector	2.05	0.00
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 5,631,031	\$ -
7. Implementation Expenses	\$ 1,184,556	\$ -
8. Customer Contribution	\$ 926,986	\$ -
4. Estimated Member Incentive	\$ 94,765	\$ -
5. Total Costs Including Member Incentive	\$ 2,111,543	\$ -
10. Benefit/Cost Ratio - Residential Sector	2.67	0.00

**Actual Lifetime Energy Savings by Sector and Program
 2013**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
New Equipment & Construction	0	0
Large C&I Retrofit	9,489,929	0
Small Business Energy Solutions	17,090,915	0
Education	0	0
Other	<u>0</u>	<u>0</u>
Total Commercial & Industrial Included for Incentive Calculation	26,580,844	0
Residential:		
Home Energy Assistance Program	956,047	0
Home Energy Solutions Program	470,060	0
ENERGY STAR Homes Program	796,573	0
ENERGY STAR Appliance Program	4,926,680	0
ENERGY STAR Lighting Program	3,699,053	0
High Efficiency Heat Pump Program	<u>12,207,474</u>	<u>0</u>
Total Residential Included for Incentive Calculation	23,055,887	0

Program Cost-Effectiveness - 2014 PLAN

	Total Resource Benefit/Cost Ratio	Present Value			Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Members Served
		Benefit (\$000)	Utility Costs (\$000)	Member Costs (\$000)					
Residential Programs									
ENERGY STAR Homes	7.6	\$ 1,963.3	\$ 173.1	\$ 84.8	48.6	963.4	13.8	12.0	52
Home Performance w/Energy Star	2.5	\$ 592.5	\$ 240.4	\$ 143.5	48.7	510.2	17.8	1.6	173
ENERGY STAR Lighting *1	1.3	\$ 307.6	\$ 134.6	\$ 93.5	518.9	4,058.0	203.3	54.0	15,581
ENERGY STAR Appliances	2.5	\$ 1,897.2	\$ 298.1	\$ 455.8	589.4	5,786.9	63.4	71.8	4,864
Home Energy Assistance	1.4	\$ 388.1	\$ 287.2	\$ -	88.6	956.0	9.1	10.1	23
High Efficiency Heat Pump	4.0	\$ 920.1	\$ 115.4	\$ 116.8	534.4	13,359.1	145.3	2.8	15
Subtotal Residential	2.8	\$ 6,068.9	\$ 1,248.9	\$ 894.4	1,828.6	25,633.6	452.7	152.4	20,707
Commercial/Industrial Programs									
New Construction / Major Renovation	0.0								-
Large C&I Retrofit	2.4	\$ 798.7	\$ 166.5	\$ 167.1	791.4	10,288.1	144.0	81.5	22
Small C&I Retrofit	2.4	\$ 1,727.8	\$ 449.5	\$ 273.2	1,332.5	18,424.3	164.6	277.6	85
Other (Education)	0.0	\$ -	\$ 36.6	\$ -	-	-	-	-	-
Smart Start	0.0	\$ -	\$ 13.3	\$ -	-	-	-	-	-
Subtotal C&I	2.3	2,526.5	665.9	440.3	2,123.9	28,712.4	308.6	359.2	107
Total		\$ 8,595.4	\$ 1,914.8	\$ 1,334.7	3,952.5	54,346.0	761.3	511.6	20,815

Note 1: Plan included 7,101 members purchasing a total of 28,405 lighting products (4 per member)

Present Value Benefits - 2014 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$1,963,305	\$21,721	\$0	\$3,976	\$12,704	\$19,054	\$24,319	\$9,951	\$12,176	\$1,859,404
Home Performance w/Energy Star	\$976,440	\$146	\$0	\$57	\$182	\$10,162	\$20,232	\$481	\$584	\$944,596
ENERGY STAR Lighting *1	\$307,641	\$23,377	\$0	\$6,788	\$21,688	\$74,314	\$96,177	\$38,289	\$47,007	\$0
ENERGY STAR Appliances	\$1,897,215	\$36,756		\$11,494	\$36,722	\$103,043	\$132,654	\$58,000	\$68,117	\$1,450,429
Home Energy Assistance	\$388,064	\$6,030	\$0	\$1,763	\$5,632	\$17,347	\$22,679	\$9,072	\$11,031	\$314,511
High Efficiency Heat Pump	\$920,143	\$5,957	\$0	\$1,044	\$3,335	\$301,171	\$593,494	\$7,494	\$7,649	\$0
Subtotal Residential	\$6,452,809	\$93,987	\$0	\$25,121	\$80,263	\$525,090	\$889,555	\$123,287	\$146,563	\$4,568,940
Commercial/Industrial Programs										
New Construction / Major Renovation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Large C&I Retrofit	\$798,707	\$68,726	\$0	\$16,898	\$53,990	\$226,254	\$311,217	\$69,398	\$52,224	\$0
Small C&I Retrofit	\$1,727,842	\$259,657	\$0	\$60,869	\$194,478	\$435,824	\$337,160	\$256,666	\$183,188	\$0
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smart Start	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$2,526,550	\$328,383	\$0	\$77,767	\$248,468	\$662,078	\$648,377	\$326,064	\$235,412	\$0
Total	\$8,979,358	\$422,371	\$0	\$102,889	\$328,731	\$1,187,168	\$1,537,933	\$449,351	\$361,678	\$4,568,940

Shareholder Incentive Calculation
 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	2.18	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	28,712,381	0
4. Threshold Lifetime kWh Savings (65%) ²	18,663,048	
5. Budget	\$665,944	\$0
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Member Incentive	\$53,275	<input type="text"/>
9. Cap (12%)	\$79,913	
Residential Incentive		
10. Benefit / Cost Ratio	2.63	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	25,633,589	0
13. Threshold Lifetime kWh Savings (65%) ²	16,661,833	
14. Budget	\$1,248,904	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$99,912	<input type="text"/>
18. Cap (12%)	\$149,869	
19. TOTAL INCENTIVE EARNED	\$153,188	<input type="text"/>

Notes

- Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
- Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
- HPwES Fuel Neutral portion of the actual expenses will be reduced on final year-end incentive calculation per NHPUC Order Nos. 24,974 and 25,402.

Planned Versus Actual Benefit / Cost Ratio by Sector
 2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 2,526,550	\$ -
2. Implementation Expenses	\$ 665,944	\$ -
3. Customer Contribution	\$ 493,598	\$ -
4. Estimated Member Incentive	\$ 53,275	\$ -
5. Total Costs Including Member Incentive	\$ 1,159,542	\$ -
5. Benefit/Cost Ratio - C&I Sector	2.18	0.00
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 6,068,852	\$ -
7. Implementation Expenses	\$ 1,248,904	\$ -
8. Customer Contribution	\$ 994,332	\$ -
4. Estimated Member Incentive	\$ 99,912	\$ -
5. Total Costs Including Member Incentive	\$ 2,243,236	\$ -
10. Benefit/Cost Ratio - Residential Sector	2.71	0.00

Actual Lifetime Energy Savings by Sector and Program
 2014

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
New Equipment & Construction	0	0
Large C&I Retrofit	10,288,116	0
Small Business Energy Solutions	18,424,265	0
Education	0	0
Other	<u>0</u>	<u>0</u>
Total Commercial & Industrial Included for Incentive Calculation	28,712,381	0
Residential:		
Home Energy Assistance Program	956,047	0
Home Energy Solutions Program	510,156	0
ENERGY STAR Homes Program	963,376	0
ENERGY STAR Appliance Program	5,786,914	0
ENERGY STAR Lighting Program	4,057,994	0
High Efficiency Heat Pump Program	<u>13,359,103</u>	<u>0</u>
Total Residential Included for Incentive Calculation	25,633,589	0

Program Cost-Effectiveness - 2013 PLAN

	Total Resource Benefit/Cost Ratio	Present Value				Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)						
Residential Programs										
ENERGY STAR Homes	6.59	\$7,058.43	\$892.28	\$178.05	497.4	10,586.6	162.3	139.6	312	
ENERGY STAR Lighting	1.26	\$1,502.63	\$882.28	\$308.43	3,616.7	21,754.6	1,416.9	376.5	59,009	
ENERGY STAR Appliances	2.40	\$14,509.26	\$1,997.73	\$4,050.39	2,821.4	30,263.4	287.4	373.2	16,741	
Home Performance w/ENERGY STAR	2.20	\$6,567.29	\$1,899.50	\$1,082.74	443.7	4,576.8	84.1	14.8	1,050	
Home Energy Assistance	1.63	\$4,500.15	\$2,763.38	\$0.00	619.5	9,036.0	72.3	67.1	657	
EnergyStar Homes (Geothermal)	2.87	\$1,942.95	\$378.12	\$298.34	1,173.3	29,333.6	311.8	10.3	69	
Customer Engagement Program	0.70	\$177.43	\$252.08	\$0.00	2,700.0	2,700.0	283.6	308.2	25,000	
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-	
Subtotal Residential	2.42	\$36,258.14	\$9,065.357	\$5,917.96	11,872.0	108,251.0	2,618.5	1,289.7	102,838	
Commercial/Industrial Programs										
Large Business Energy Solutions	2.26	\$21,208.09	\$5,052.89	\$4,316.13	15,447.8	205,517.8	2,047.4	2,794.7	349	
Small Business Energy Solutions	1.86	\$12,227.37	\$3,518.50	\$3,054.66	7,900.4	107,385.3	1,304.5	1,243.9	1,610	
Other (Education)	0.00	\$0.00	\$191.63	\$0.00	0.0	-	-	-	4	
C&I RFP Energy Rewards Program	2.83	\$2,955.59	\$561.43	\$482.54	2,979.2	34,723.2	405.1	611.7	12	
CI Partnerships		\$0.00	\$32.75	\$0.00	0.0	-	-	-	6	
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-	
Subtotal C&I	2.11	\$36,391.05	\$9,357.199	\$7,853.33	26,327.3	347,626.3	3,757.1	4,650.3	1,982	
Smart Start		\$0.00	\$35.00	\$0.00	0.0	-	-	0	-	
ISO-NE Forward Capacity Market		\$0.00	\$200.00	\$0.00	0.0	-	-	0	-	
		\$0.00	\$235.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-	
Total	2.24	\$72,649.19	\$18,657.556	\$13,771.29	38,199.3	455,877.4	6,375.6	5,940.1	104,820	

Note 1: Plan includes 59,009 customers purchasing a total of 236,036 lighting products.

Present Value Benefits - 2013 PLAN

	Total Benefits	CAPACITY				DRIPE	ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution		Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs											
ENERGY STAR Homes	\$7,058,433	\$260,568	\$0	\$47,691	\$153,177	\$0	\$203,423	\$259,321	\$102,141	\$128,597	\$5,903,515
ENERGY STAR Lighting	\$1,502,629	\$97,720	\$0	\$36,133	\$116,052	\$0	\$363,629	\$470,624	\$188,852	\$229,620	
ENERGY STAR Appliances	\$14,509,257	\$194,438	\$0	\$62,613	\$201,101	\$0	\$508,578	\$646,689	\$305,474	\$347,615	\$12,242,749
Home Performance w/ENERGY STAR	\$6,567,294	\$4,506	\$0	\$1,884	\$6,051	\$0	\$83,262	\$136,215	\$23,918	\$29,000	\$6,282,457
Home Energy Assistance	\$4,500,149	\$59,993	\$0	\$14,746	\$47,363	\$0	\$162,357	\$220,871	\$77,767	\$95,084	\$3,821,967
EnergyStar Homes (Geothermal)	\$1,942,953	\$20,563	\$0	\$3,708	\$11,910	\$0	\$623,220	\$1,222,286	\$33,109	\$28,156	\$0
Customer Engagement Program	\$177,429	\$13,706	\$0	\$5,129	\$16,472	\$0	\$41,080	\$53,238	\$21,615	\$26,190	\$0
Other	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Subtotal Residential	\$36,258,144	\$651,493	\$0	\$171,904	\$552,127		\$1,985,549	\$3,009,245	\$752,877	\$884,261	\$28,250,688
Commercial/Industrial Programs											
Large Business Energy Solutions	\$21,208,090	\$2,246,343	\$0	\$581,009	\$1,866,098	\$0	\$3,052,116	\$3,342,198	\$3,514,421	\$2,861,436	\$3,744,469
Small Business Energy Solutions	\$12,227,370	\$1,050,381	\$0	\$264,943	\$850,950	\$0	\$2,331,989	\$1,985,923	\$1,312,708	\$1,058,623	\$3,371,853
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C&I RFP Energy Rewards Program	\$2,955,591	\$362,763	\$0	\$109,724	\$352,414	\$0	\$412,245	\$480,882	\$685,603	\$551,959	\$0
CI Partnerships	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>		<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Subtotal C&I	\$36,391,051	\$3,659,487	\$0	\$955,676	\$3,069,462		\$5,796,350	\$5,809,003	\$5,512,733	\$4,472,018	\$7,116,323
Smart Start	\$0	\$0	\$0	\$0	\$0		\$0	\$0	\$0	\$0	\$0
Total	\$72,649,195	\$4,310,979	\$0	\$1,127,580	\$3,621,589	\$0	\$7,781,899	\$8,818,248	\$6,265,609	\$5,356,279	\$35,367,011

Shareholder Incentive Calculation 2013

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	2.03	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	347,626,342	0
4. Threshold Lifetime kWh Savings (65%) ²	225,957,122	
5. Budget ³	\$9,357,199	\$0
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$748,576	
9. Cap (12%)	\$1,122,864	
Residential Incentive		
10. Benefit / Cost Ratio	2.31	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	108,251,027	0
13. Threshold Lifetime kWh Savings (65%) ²	70,363,167	
14. Budget ³	\$9,065,357	\$0
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$725,229	
18. Cap (12%)	\$1,087,843	
19. TOTAL INCENTIVE EARNED	\$1,473,804	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. HPwES Fuel Neutral portion of the actual expenses will be reduced on final year-end incentive calculation per NHPUC Order Nos. 24,974 and 25,402.

Planned Versus Actual Benefit / Cost Ratio by Sector
2013

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 36,391,051	\$ -
2. Implementation Expenses	\$ 9,357,199	\$ -
3. Customer Contribution	\$ 7,853,327	\$ -
4. Estimated Shareholder Incentive	<u>\$ 748,576</u>	<u>\$ -</u>
5. Total Costs (including shareholder incentive)	\$ 17,959,102	\$ -
6. Benefit/Cost Ratio - C&I Sector	2.03	0.00
Residential:		
7. Benefits (Value) From Eligible Programs	\$ 36,258,144	\$ -
8. Implementation Expenses	\$ 9,065,357	\$ -
9. Customer Contribution	\$ 5,917,961	\$ -
10. Estimated Shareholder Incentive	<u>\$ 725,229</u>	<u>\$ -</u>
11. Total Costs (including shareholder incentive)	\$ 15,708,546	\$ -
12. Benefit/Cost Ratio - Residential Sector	2.31	0.00

**Actual Lifetime Energy Savings by Sector and Program
2013**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business Energy Solutions	205,517,772	0
Small Business Energy Solutions	107,385,321	0
Other (Education)	0	0
C&I RFP Energy Rewards Program	34,723,249	0
CI Partnerships	0	0
Other	<u>0</u>	<u>0</u>
Total Commercial & Industrial Included for Incentive Calculation	347,626,342	0
Residential:		
ENERGY STAR Homes	10,586,608	0
ENERGY STAR Lighting	21,754,639	0
ENERGY STAR Appliances	30,263,409	0
Home Performance w/ENERGY STAR	4,576,774	0
Home Energy Assistance	9,036,019	0
EnergyStar Homes (Geothermal)	29,333,578	0
Customer Engagement Program	2,700,000	0
Other	<u>0</u>	<u>0</u>
Total Residential Included for Incentive Calculation	108,251,027	0

Program Cost-Effectiveness - 2014 PLAN

	Present Value								
	Total Resource	Benefit	Utility Costs	Customer	Annual MWh	Lifetime	Winter kW	Summer	Number of
	Benefit/Cost Ratio	(\$000)	(\$000)	Costs (\$000)	Savings	MWh Savings	Savings	kW Savings	Customers Served
Residential Programs									
ENERGY STAR Homes	6.67	\$7,256.84	\$907.80	\$180.80	505.1	10,749.9	164.8	141.8	317
ENERGY STAR Lighting	1.34	\$1,632.86	\$897.63	\$317.44	3,722.3	22,389.8	1,458.3	387.5	60,732
ENERGY STAR Appliances	2.49	\$15,259.32	\$2,032.48	\$4,102.68	2,982.1	31,982.4	309.5	391.9	17,574
Home Performance w/ENERGY ST/	2.25	\$6,727.90	\$1,906.26	\$1,081.07	443.0	4,569.5	84.0	14.8	1,048
Home Energy Assistance	1.67	\$4,721.60	\$2,819.76	\$0.00	631.8	9,215.7	73.8	68.4	657
EnergyStar Homes (Geothermal)	3.01	\$2,067.85	\$384.70	\$302.76	1,190.7	29,767.7	316.4	10.4	70
Customer Engagement Program	0.97	\$275.03	\$282.75	\$0.00	4,000.0	4,000.0	420.1	456.6	25,000
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-
Subtotal Residential	2.49	\$37,941.40	\$9,231.388	\$5,984.75	13,474.9	112,674.9	2,826.8	1,471.5	105,398
Commercial/Industrial Programs									
Large Business Energy Solutions	2.37	\$22,750.21	\$5,166.20	\$4,419.66	15,830.7	210,634.6	2,098.3	2,864.1	357
Small Business Energy Solutions	1.94	\$12,993.27	\$3,597.40	\$3,115.86	8,098.5	110,068.7	1,337.8	1,274.0	1,641
Other (Education)	0.00	\$0.00	\$195.93	\$0.00	0.0	-	-	-	4
C&I RFP Energy Rewards Program	3.00	\$3,204.08	\$574.02	\$493.59	3,047.4	35,518.4	414.4	625.7	13
CI Partnerships		\$0.00	\$33.48	\$0.00	0.0	-	-	-	6
Other		\$0.00	\$0.00	\$0.00	0.0	-	-	-	-
Subtotal C&I	2.21	\$38,947.56	\$9,567.042	\$8,029.11	26,976.6	356,221.7	3,850.5	4,763.8	2,020
Smart Start		\$0.00	\$35.00	\$0.00	0.0	-	-	0	-
ISO-NE Forward Capacity Market		\$0.00	\$200.00	\$0.00	0.0	-	-	0	-
		\$0.00	\$235.00	\$0.00	0.0	-	-	0	-
Total	2.33	\$76,888.97	\$19,033.43	\$14,013.85	40,451.5	468,896.6	6,677.3	6,235.3	107,418

Present Value Benefits - 2014 PLAN

	Total Benefits	CAPACITY				DRIPE	ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution		Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs											
ENERGY STAR Homes	\$7,256,838	\$280,553	\$0	\$49,862	\$159,308	\$0	\$217,232	\$276,120	\$108,458	\$137,201	\$6,028,104
ENERGY STAR Lighting	\$1,632,863	\$102,174	\$0	\$38,289	\$122,335	\$0	\$397,201	\$515,830	\$206,054	\$250,979	\$0
ENERGY STAR Appliances	\$15,259,321	\$231,927	\$0	\$67,656	\$216,163	\$0	\$568,077	\$723,214	\$339,163	\$387,079	\$12,726,041
Home Performance w/ENERGY STAR	\$6,727,903	\$4,825	\$0	\$1,937	\$6,188	\$0	\$87,447	\$142,965	\$25,147	\$30,482	\$6,428,912
Home Energy Assistance	\$4,721,600	\$67,697	\$0	\$15,485	\$49,475	\$0	\$174,117	\$236,491	\$83,091	\$101,909	\$3,993,333
EnergyStar Homes (Geothermal)	\$2,067,854	\$22,112	\$0	\$3,875	\$12,379	\$0	\$664,802	\$1,299,578	\$35,104	\$30,003	\$0
Customer Engagement Program	\$275,026	\$21,072	\$0	\$7,823	\$24,994	\$0	\$63,991	\$83,272	\$33,388	\$40,486	\$0
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Residential	\$37,941,404	\$730,361	\$0	\$184,927	\$590,843		\$2,172,867	\$3,277,471	\$830,406	\$978,139	\$29,176,390
Commercial/Industrial Programs											
Large Business Energy Solutions	\$22,750,213	\$2,566,076	\$0	\$613,131	\$1,958,964	\$0	\$3,290,933	\$3,601,076	\$3,779,307	\$3,086,377	\$3,854,350
Small Business Energy Solutions	\$12,993,265	\$1,194,068	\$0	\$279,390	\$892,657	\$0	\$2,514,272	\$2,140,535	\$1,409,487	\$1,140,205	\$3,422,652
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
C&I RFP Energy Rewards Program	\$3,204,083	\$422,065	\$0	\$115,561	\$369,220	\$0	\$444,142	\$518,227	\$738,782	\$596,085	\$0
CI Partnerships	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$38,947,561	\$4,182,208	\$0	\$1,008,083	\$3,220,841		\$6,249,347	\$6,259,837	\$5,927,576	\$4,822,666	\$7,277,002
Smart Start	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$0	\$200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		\$0	\$200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$76,888,965	\$4,912,569	\$0	\$1,193,010	\$3,811,684	\$0	\$8,422,215	\$9,537,309	\$6,757,982	\$5,800,804	\$36,453,392

Shareholder Incentive Calculation
 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	2.12	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	356,221,683	0
4. Threshold Lifetime kWh Savings (65%) ²	231,544,094	
5. Budget ³	\$9,567,042	\$0
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$765,363	
9. Cap (12%)	\$1,148,045	
Residential Incentive		
10. Benefit / Cost Ratio	2.43	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	112,674,940	0
13. Threshold Lifetime kWh Savings (65%) ²	73,238,711	
14. Budget ³	\$9,231,388	\$0
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$738,511	
18. Cap (12%)	\$1,107,767	
19. TOTAL INCENTIVE EARNED	\$1,503,874	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. HPwES Fuel Neutral portion of the actual expenses will be reduced on final year-end incentive calculation per NHPUC Order Nos. 24,974 and 25,402.

Planned Versus Actual Benefit / Cost Ratio by Sector
2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 38,947,561	\$ -
2. Implementation Expenses	\$ 9,567,042	\$ -
3. Customer Contribution	\$ 8,029,106	\$ -
4. Estimated Shareholder Incentive	<u>\$ 765,363</u>	<u>\$ -</u>
5. Total Costs (including shareholder incentive)	\$ 18,361,511	\$ -
6. Benefit/Cost Ratio - C&I Sector	2.12	0.00
Residential:		
7. Benefits (Value) From Eligible Programs	\$ 37,941,404	\$ -
8. Implementation Expenses	\$ 9,231,388	\$ -
9. Customer Contribution	\$ 5,984,745	\$ -
10. Estimated Shareholder Incentive	<u>\$ 738,511</u>	<u>\$ -</u>
11. Total Costs (including shareholder incentive)	\$ 15,954,644	\$ -
12. Benefit/Cost Ratio - Residential Sector	2.38	0.00

Actual Lifetime Energy Savings by Sector and Program
2014

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business Energy Solutions	210,634,613	0
Small Business Energy Solutions	110,068,695	0
Other (Education)	0	0
C&I RFP Energy Rewards Program	35,518,375	0
CI Partnerships	0	0
Other	<u>0</u>	<u>0</u>
Total Commercial & Industrial Included for Incentive Calculation	356,221,683	0
Residential:		
ENERGY STAR Homes	10,749,877	0
ENERGY STAR Lighting	22,389,770	0
ENERGY STAR Appliances	31,982,415	0
Home Performance w/ENERGY STAR	4,569,456	0
Home Energy Assistance	9,215,691	0
EnergyStar Homes (Geothermal)	29,767,730	0
Customer Engagement Program	4,000,000	0
Other	<u>0</u>	<u>0</u>
Total Residential Included for Incentive Calculation	112,674,940	0

Program Cost-Effectiveness - 2013 PLAN

	Total Resource Benefit/Cost Ratio	Present Value Benefit (\$000)	Present Value Utility Costs (\$000)	Present Value Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served
Residential Programs									
ENERGY STAR Homes	9.1	\$ 2,449	\$ 190.0	\$ 78.9	441.1	10,639.5	306.1	19.2	47
Home Performance with Energy Star	2.8	\$ 834	\$ 211.0	\$ 90.5	25.0	480.6	7.8	0.6	47
ENERGY STAR Lighting	1.0	\$ 222	\$ 170.0	\$ 49.8	610.1	3,375.7	239.0	63.5	29,200
ENERGY STAR Appliances	2.2	\$ 1,449	\$ 280.0	\$ 375.8	340.1	3,704.0	47.7	47.6	2,118
Home Energy Assistance	1.6	\$ 664	\$ 409.3	\$ -	74.3	953.3	13.0	8.2	49
Res Education and Outreach	0.0	\$ -	\$ 25.0	\$ -	0.0	0.0	0.0	0.0	0
Res Energy Code Training	0.0	\$ -	\$ 3.5	\$ -	0.0	0.0	0.0	0.0	0
ISO-Related Expenses Res/LI	<u>0.0</u>	<u>\$ -</u>	<u>\$ 5.0</u>	<u>\$ -</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0</u>
Subtotal Residential	3.0	\$ 5,617	\$ 1,293.9	\$ 595.0	1,490.4	19,153.0	613.6	139.1	31,461
Commercial/Industrial Programs									
New Construction / Major Renovation	1.6	\$ 2,004.6	\$ 285.0	\$ 1,006.1	815.8	12,236.9	146.7	225.6	26
Large C&I Retrofit	1.1	\$ 2,309.2	\$ 530.8	\$ 1,504.5	1,855.7	24,124.4	331.7	453.6	20
Small New Construction/Major Renovation	2.9	\$ 424.5	\$ 105.0	\$ 42.3	62.8	816.8	5.8	11.4	32
Small C&I Retrofit	1.9	\$ 1,061.6	\$ 372.3	\$ 181.0	801.0	10,413.3	128.0	222.1	41
C&I Education	0.0	\$ -	\$ 18.6	\$ -	0.0	0.0	0.0	0.0	0
ISO-Related Expenses C&I	<u>0.0</u>	<u>\$ -</u>	<u>\$ 5.0</u>	<u>\$ -</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0</u>
Subtotal C&I	1.4	5,799.9	1,321.7	2,733.9	3,535.3	47,591.3	612.1	912.8	119
Total	1.9	\$ 11,417.3	\$ 2,615.5	\$ 3,328.9	5,025.8	66,744.4	1,225.7	1,051.9	31,580
On Bill Financing Residential			\$ 65.0						
On Bill Financing C&I			\$ 50.0						
Total			\$ 115.0						

Present Value Benefits - 2013 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$2,449,034	\$36,829	\$0	\$7,065	\$22,574	\$334,133	\$196,670	\$153,112	\$98,549	\$1,600,102
Home Performance w/ Energy Star	\$834,150	\$162	\$0	\$6	\$19	\$14,223	\$17,922	\$400	\$436	\$800,982
ENERGY STAR Lighting	\$221,786	\$14,833	\$0	\$489	\$1,564	\$62,969	\$73,392	\$32,769	\$35,770	\$0
ENERGY STAR Appliances	\$1,448,905	\$27,184	\$0	\$8,045	\$25,705	\$104,553	\$62,506	\$52,587	\$27,494	\$1,140,830
Home Energy Assistance	<u>\$663,513</u>	<u>\$5,233</u>	<u>\$0</u>	<u>\$1,594</u>	<u>\$5,092</u>	<u>\$25,475</u>	<u>\$22,518</u>	<u>\$8,865</u>	<u>\$6,492</u>	<u>\$588,245</u>
Subtotal Residential	\$5,617,389	\$84,241	\$0	\$17,199	\$54,953	\$541,353	\$373,010	\$247,733	\$168,741	\$4,130,159
Commercial/Industrial Programs										
Large New Construction / Major Renovation	\$2,004,611	\$233,082	\$0	\$56,450	\$166,232	\$224,855	\$196,759	\$227,416	\$178,540	\$721,276
Large C&I Retrofit	\$2,309,158	\$363,411	\$0	\$93,027	\$236,276	\$598,632	\$457,569	\$331,785	\$228,457	\$0
Small C&I New Construction/Major Renovation	\$424,523	\$9,222	\$0	\$2,072	\$6,619	\$22,155	\$13,769	\$12,487	\$7,063	\$351,138
Small C&I Retrofit	\$1,061,610	\$177,946	\$0	\$42,059	\$134,380	\$283,776	\$176,357	\$158,073	\$89,019	\$0
Subtotal C&I	\$5,799,901	\$783,661	\$0	\$193,608	\$543,506	\$1,129,418	\$844,454	\$729,761	\$503,079	\$1,072,414
Total	\$11,417,290	\$867,902	\$0	\$210,808	\$598,459	\$1,670,771	\$1,217,463	\$977,494	\$671,820	\$5,202,573

**Shareholder Incentive Calculation
 2013**

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.4	
2. Threshold Benefit / Cost Ratio ¹	1.0	
3. Lifetime kWh Savings	47,591,310	
4. Threshold Lifetime kWh Savings (65%) ²	30,934,351	
5. Budget ³	\$1,321,664	
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$119,230	<input type="text"/>
9. Cap (12%)	\$158,600	
Residential Incentive		
10. Benefit / Cost Ratio	2.8	
11. Threshold Benefit / Cost Ratio ¹	1.0	
12. Lifetime kWh Savings	19,153,042	
13. Threshold Lifetime kWh Savings (65%) ²	12,449,477	
14. Budget ³	\$1,293,855	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$118,116	<input type="text"/>
18. Cap (12%)	\$155,263	
19. TOTAL PLANNED / EARNED INCENTIVE	\$237,346	<input type="text"/>

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. HPwES fuel neutral portion of the actual expenses will be reduced on final year-end incentive calculation. per NHPUC Order Nos. 24,974 and 25,402.

**Planned Versus Actual Benefit / Cost Ratio by Sector
 2013**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 5,799,902	\$ -
2. Implementation Expenses	\$ 1,321,664	\$ -
3. Customer Contribution	\$ 2,733,912	\$ -
4. Shareholder Incentive	\$ 119,230	\$ -
5. Total Costs	\$ 4,174,806	\$ -
6. Benefit/Cost Ratio - C&I Sector	1.4	0.0
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 5,617,389	\$ -
7. Implementation Expenses	\$ 1,293,855	\$ -
8. Customer Contribution	\$ 594,991	\$ -
9. Shareholder Incentive	\$ 118,116	\$ -
10. Total Costs	\$ 2,006,962	\$ -
11. Benefit/Cost Ratio - Residential Sector	2.8	0.0

**Actual Lifetime Energy Savings by Sector and Program
2013**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large New Construction / Major Renovation	12,236,888	0
Large C&I Retrofit	24,124,397	0
Small C&I New Construction/Major Renovation	816,763	
Small C&I Retrofit	10,413,261	0
Total Commercial & Industrial	47,591,310	0
Residential:		
ENERGY STAR Homes	10,639,499	0
Home Performance with Energy Star	480,570	0
ENERGY STAR Lighting	3,375,679	0
ENERGY STAR Appliances	3,703,976	0
Home Energy Assistance	953,318	0
Total Residential	19,153,042	0

Program Cost-Effectiveness - 2014 PLAN

	Total Resource Benefit/Cost Ratio	Present Value Benefit (\$000)	Present Value Utility Costs (\$000)	Present Value Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served
Residential Programs									
ENERGY STAR Homes	9.3	\$ 2,497.1	\$ 190.0	\$ 78.9	441.1	10,639.5	306.4	19.5	47
Home Performance with Energy Star	2.9	\$ 887.9	\$ 216.7	\$ 94.6	26.1	502.4	8.2	0.6	49
ENERGY STAR Lighting	1.2	\$ 275.5	\$ 176.2	\$ 52.8	646.5	3,571.2	253.3	67.3	31,512
ENERGY STAR Appliances	2.3	\$ 1,507.9	\$ 282.5	\$ 382.3	347.3	3,782.1	48.7	48.5	2,162
Home Energy Assistance	1.7	\$ 754.5	\$ 456.0	\$ -	82.3	1,056.6	14.4	9.0	61
Res Education and Outreach	0.0	\$ -	\$ 25.0	\$ -	0.0	0.0	0.0	0.0	0
Res Energy Code Training	0.0	\$ -	\$ 3.5	\$ -	0.0	0.0	0.0	0.0	0
ISO-Related Expenses Res/LI	<u>0.0</u>	<u>\$ -</u>	<u>\$ 6.9</u>	<u>\$ -</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0</u>
Subtotal Residential	3.0	\$ 5,923.0	\$ 1,356.8	\$ 608.6	1,543.3	19,551.8	631.0	145.1	33,831
Commercial/Industrial Programs									
New Construction / Major Renovation	1.6	\$ 2,119.0	\$ 285.0	\$ 1,006.1	815.8	12,236.9	146.7	225.6	26
Large C&I Retrofit	1.2	\$ 2,693.5	\$ 570.7	\$ 1,614.9	1,991.9	25,894.1	354.8	485.7	22
Small New Construction/Major Renovation	3.0	\$ 462.6	\$ 110.8	\$ 43.2	72.7	1,091.0	181.4	12.7	32
Small C&I Retrofit	2.1	\$ 1,167.5	\$ 375.0	\$ 182.0	805.4	10,470.5	2,751.0	223.6	42
C&I Education	0.0	\$ -	\$ 18.6	\$ -	0.0	0.0	0.0	0.0	0
ISO-Related Expenses C&I	<u>0.0</u>	<u>\$ -</u>	<u>\$ 6.9</u>	<u>\$ -</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0</u>
Subtotal C&I	1.5	\$ 6,442.6	\$ 1,371.3	\$ 2,846.2	3,685.8	49,692.4	3,433.9	947.7	122
Total	2.0	\$ 12,365.6	\$ 2,728.0	\$ 3,454.8	5,229.1	69,244.2	4,064.9	1,092.7	33,953
On Bill Financing Residential			\$ 65.0						
On Bill Financing C&I			\$ 50.0						
Total			\$ 115.0						

Present Value Benefits - 2014 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$2,449,034	\$36,829	\$0	\$7,065	\$22,574	\$334,133	\$196,670	\$153,112	\$98,549	\$1,600,102
Home Performance w/Energy Star	\$834,150	\$162	\$0	\$6	\$19	\$14,223	\$17,922	\$400	\$436	\$800,982
ENERGY STAR Lighting	\$221,786	\$14,833	\$0	\$489	\$1,564	\$62,969	\$73,392	\$32,769	\$35,770	\$0
ENERGY STAR Appliances	\$1,507,924	\$31,654	\$0	\$9,611	\$30,706	\$112,810	\$67,371	\$56,611	\$29,651	\$1,169,509
Home Energy Assistance	\$754,532	\$6,563	\$0	\$1,880	\$6,007	\$29,746	\$26,247	\$10,341	\$7,594	\$666,153
Subtotal Residential	\$5,767,427	\$90,040	\$0	\$19,051	\$60,869	\$553,881	\$381,603	\$253,233	\$172,001	\$4,236,747
Commercial/Industrial Programs										
Large New Construction / Major Renovation	\$2,118,954	\$256,435	\$0	\$60,181	\$192,280	\$236,417	\$206,535	\$238,159	\$187,590	\$741,357
Large C&I Retrofit	\$2,693,478	\$436,213	\$0	\$113,614	\$362,998	\$479,133	\$595,473	\$373,839	\$332,208	\$0
Small C&I New Construction/Major Renovation	\$462,617	\$14,397	\$0	\$3,387	\$10,820	\$31,641	\$19,574	\$17,613	\$10,028	\$355,158
Small C&I Retrofit	\$1,167,509	\$200,826	\$0	\$52,306	\$167,119	\$300,148	\$186,347	\$166,655	\$94,108	\$0
Subtotal C&I	\$6,442,558	\$907,870	\$0	\$229,488	\$733,217	\$1,047,339	\$1,007,929	\$796,266	\$623,933	\$1,096,515
Total	\$12,209,984	\$997,911	\$0	\$248,539	\$794,086	\$1,601,221	\$1,389,532	\$1,049,500	\$795,935	\$5,333,261

**Shareholder Incentive Calculation
 2014**

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.5	
2. Threshold Benefit / Cost Ratio ¹	1.0	
3. Lifetime kWh Savings	49,692,403	
4. Threshold Lifetime kWh Savings (65%) ²	32,300,062	
5. Budget ³	\$1,371,256	
6. Benefit / Cost Percentage of Budget	4.00%	
7. Lifetime kWh Percentage of Budget	4.00%	
8. C/I Shareholder Incentive	\$123,507	
9. Cap (12%)	\$164,551	
Residential Incentive		
10. Benefit / Cost Ratio	2.8	
11. Threshold Benefit / Cost Ratio ¹	1.0	
12. Lifetime kWh Savings	19,551,802	
13. Threshold Lifetime kWh Savings (65%) ²	12,708,671	
14. Budget ³	\$1,356,790	
15. Benefit / Cost Percentage of Budget	4.00%	
16. Lifetime kWh Percentage of Budget	4.00%	
17. Residential Incentive	\$123,554	
18. Cap (12%)	\$162,815	
19. TOTAL PLANNED / EARNED INCENTIVE	\$247,061	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. HPwES fuel neutral portion of actual expenses will be reduced on final year-end incentive calculation. per NHPUC Order Nos. 24,974 and 25,402.

**Planned Versus Actual Benefit / Cost Ratio by Sector
2014**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 6,442,558	\$ -
2. Implementation Expenses	\$ 1,371,256	\$ -
3. Customer Contribution	\$ 2,846,183	\$ -
4. Shareholder Incentive	\$ 123,507	\$ -
5. Total Costs	\$ 4,340,946	\$ -
6. Benefit/Cost Ratio - C&I Sector	1.5	0.0
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 5,923,046	\$ -
7. Implementation Expenses	\$ 1,356,790	\$ -
8. Customer Contribution	\$ 608,615	\$ -
9. Shareholder Incentive	\$ 123,554	\$ -
10. Total Costs	\$ 2,088,959	\$ -
11. Benefit/Cost Ratio - Residential Sector	2.8	0.0

**Actual Lifetime Energy Savings by Sector and Program
2014**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large New Construction / Major Renovation	12,236,915	0
Large C&I Retrofit	25,894,052	0
Small C&I New Construction/Major Renovation	1,090,955	
Small C&I Retrofit	10,470,480	0
Total Commercial & Industrial	49,692,403	0
Residential:		
ENERGY STAR Homes	10,639,513	0
Home Performance with Energy Star	502,368	0
ENERGY STAR Lighting	3,571,156	0
ENERGY STAR Appliances	3,782,143	0
Home Energy Assistance	1,056,622	0
Total Residential	19,551,802	0

Attachment GG: Total Resource Benefit Cost Analysis

January 1, 2013 - December 31, 2013 TRC BENEFIT COST TEST

Unitil Gas Energy Efficiency

New Hampshire Program Year ONE Summary of Benefit, Costs Program Year 2013 (January 1, 2013 - December 31, 2013)

Total Resource Cost Test									
BCR Activity	TRC Benefit/Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	PA Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant
Residential									
Home Energy Assistance	1.94	\$148	\$306	\$158	\$158	\$0	1,056	20,710	30
Home Performance w/Energy Star	2.20	\$242	\$444	\$202	\$147	\$55	1,323	29,913	24
Energy Star Appliances	1.08	\$45	\$640	\$595	\$300	\$295	2,402	46,298	288
Energy Star Homes	1.59	\$89	\$240	\$150	\$87	\$63	592	14,202	16
Res Building Practices and Demo	NA	(\$18)	\$0	\$18	\$18	\$0	-	-	-
Res Energy Code Training & Education	NA	(\$7)	\$0	\$7	\$7	\$0	-	-	-
Subtotal: Residential	1.44	\$500	\$1,629	\$1,130	\$717	\$413	5,373	111,123	358
Commercial & Industrial									
Large Business Energy Solutions	4.72	\$2,326	\$2,952	\$626	\$305	\$321	12,178	231,888	58
Small Business Energy Solutions	2.06	\$546	\$1,062	\$517	\$228	\$288	3,965	80,979	104
C&I Codes, Energy Audits & Education	NA	(\$6)	\$0	\$6	\$6	\$0	-	-	-
Subtotal: Commercial & Industrial	3.50	\$2,866	\$4,014	\$1,148	\$539	\$609	16,143	312,867	163
Grand Total	2.48	\$3,366	\$5,644	\$2,277	\$1,256	\$1,022	21,516	423,990	520

January 1, 2014 - December 31, 2014 TRC BENEFIT COST TEST

Unitil Gas Energy Efficiency

New Hampshire Program Year TWO Summary of Benefit, Costs Program Year 2014 (January 1, 2014 - December 31, 2014)

Total Resource Cost Test									
BCR Activity	TRC Benefit/Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	PA Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant
Residential									
Home Energy Assistance	1.96	\$177	\$362	\$185	\$185	\$0	1,238	24,281	35
Home Performance w/Energy Star	2.34	\$306	\$535	\$229	\$163	\$65	1,579	35,713	29
Energy Star Appliances	1.09	\$56	\$704	\$648	\$326	\$322	2,621	50,507	314
Energy Star Homes	1.15	\$28	\$216	\$188	\$109	\$79	496	12,027	20
Res Building Practices and Demo	NA	\$0	\$0	\$0	\$0	\$0	-	-	-
Res Energy Code Training & Education	NA	(\$7)	\$0	\$7	\$7	\$0	-	-	-
Subtotal: Residential	1.45	\$567	\$1,816	\$1,256	\$790	\$466	5,935	122,528	398
Commercial & Industrial									
Large Business Energy Solutions	4.76	\$2,355	\$2,980	\$626	\$305	\$321	12,178	231,888	58
Small Business Energy Solutions	2.07	\$555	\$1,072	\$517	\$228	\$288	3,960	80,913	104
C&I Codes, Energy Audits & Education	NA	(\$6)	\$0	\$6	\$6	\$0	-	-	-
Subtotal: Commercial & Industrial	3.53	\$2,904	\$4,052	\$1,148	\$539	\$609	16,138	312,801	163
Grand Total	2.44	\$3,471	\$5,868	\$2,404	\$1,329	\$1,075	22,073	435,329	560

Attachment GG: Shareholder Incentive Page 1 of 4

Unitil Gas Energy Efficiency

Target Shareholder Incentive Year ONE- January 1, 2013 - December 31, 2013

Commercial/Industrial Incentive

1. Target Benefit/Cost Ratio	3.50
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	312,867
4. Threshold MMBTU	203,363
5. Budget	\$538,709
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%

8. Target C/I Incentive **\$43,071**

9. Cap **\$64,645**

Residential Incentive

10. Target Benefit/Cost Ratio	1.44
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	111,123
13. Threshold MMBTU	72,230
14. Budget	\$716,862
15. CE Percentage	4.00%
16. Lifetime MMBTU Percentage	4.00%

17. Target Residential Incentive **\$57,315**

18. Cap **\$86,023**

19. TOTAL TARGET INCENTIVE **\$100,386**

Line No. Notes:

- 1, 3, 5, 10, 12, and 14. See Exhibit B
- 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
4. 65% of line 3.
8. 8% of line 5.
9. 12% of line 5.
13. 65% of line 12.
17. 8% of line 14.
18. 12% of line 14.
19. Line 8 plus line 17.

Attachment GG: Shareholder Incentive Page 2 of 4
Unitil Gas Energy Efficiency
Target Benefit-Cost Ratio by Sector
Year ONE- January 1, 2013 - December 31, 2013

	<u>Planned</u>
Commercial & Industrial:	
1. Benefits (Value) From Eligible Programs	\$4,014,228
2. Implementation Expenses	\$495,639
3. Customer Contribution	\$609,074
4. Shareholder Incentive	\$43,071
5. Total Costs Including Shareholder Incentive	\$1,147,784
6. Benefit/Cost Ratio - C&I Sector	3.50
Residential:	
7. Benefits (Value) From Eligible Programs	\$1,629,425
8. Implementation Expenses	\$659,548
9. Customer Contribution	\$412,708
10. Shareholder Incentive	\$57,315
11. Total Costs Including Shareholder Incentive	\$1,129,570
12. Benefit/Cost Ratio - Residential Sector	1.44

Line No. Notes:

1 - 4 and 7-11. See Exhibit B.

5. Sum of lines 2-4.

6. Line 1 divided by line 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.

11. Sum of lines 7 - 10.

12. Line 7 divided by line 11. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio. However, the shareholder incentive is supposed to be included as an EE cost in determining the benefit/cost ratio. For the purpose of calculating the shareholder incentive, the Company has calculated the planned benefit/cost ratio including the shareholder incentive for one iteration and will compare the actual benefit/cost ratio including the shareholder incentive to the planned benefit/cost ratio including shareholder incentives when determining the earned shareholder incentive.

Attachment GG: Shareholder Incentive Page 3 of 4

Unitil Gas Energy Efficiency

Target Shareholder Incentive Year TWO- January 1, 2014 - December 31, 2014

Commercial/Industrial Incentive

1. Target Benefit/Cost Ratio	3.53
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	312,801
4. Threshold MMBTU	203,321
5. Budget	\$538,709
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%

8. Target C/I Incentive **\$43,071**

9. Cap **\$64,645**

Residential Incentive

10. Target Benefit/Cost Ratio	1.45
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	122,528
13. Threshold MMBTU	79,643
\$5.49/therm based on 50% of project cost	\$790,228
\$3.08/therm based on 50% of project cost.	4.00%
16. Lifetime MMBTU Percentage	4.00%

17. Target Residential Incentive **\$63,180**

18. Cap **\$94,827**

19. TOTAL TARGET INCENTIVE **\$106,251**

Line No. Notes:

- 1, 3, 5, 10, 12, and 14. See Exhibit B
- 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
- 4. 65% of line 3.
- 8. 8% of line 5.
- 9. 12% of line 5.
- 13. 65% of line 12.
- 17. 8% of line 14.
- 18. 12% of line 14.
- 19. Line 8 plus line 17.

Attachment GG: Shareholder Incentive Page 4 of 4
Unitil Gas Energy Efficiency
Target Benefit-Cost Ratio by Sector
Year TWO- January 1, 2014 - December 31, 2014

Commercial & Industrial:

	<u>Planned</u>
1. Benefits (Value) From Eligible Programs	\$4,051,800
2. Implementation Expenses	\$495,639
3. Customer Contribution	\$609,057
4. Shareholder Incentive	\$43,071
5. Total Costs Including Shareholder Incentive	\$1,147,767
6. Benefit/Cost Ratio - C&I Sector	3.53

Residential:

7. Benefits (Value) From Eligible Programs	\$1,816,198
8. Implementation Expenses	\$727,048
9. Customer Contribution	\$465,900
10. Shareholder Incentive	\$63,180
11. Total Costs Including Shareholder Incentive	\$1,256,127
12. Benefit/Cost Ratio - Residential Sector	1.45

Line No. Notes:

1 - 4 and 7-11. See Exhibit B.

5. Sum of lines 2-4.

6. Line 1 divided by line 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.

11. Sum of lines 7 - 10.

12. Line 7 divided by line 11. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio. However, the shareholder incentive is supposed to be included as an EE cost in determining the benefit/cost ratio. For the purpose of calculating the shareholder incentive, the Company has calculated the planned benefit/cost ratio including the shareholder incentive for one iteration and will compare the actual benefit/cost ratio including the shareholder incentive to the planned benefit/cost ratio including shareholder incentives when determining the earned shareholder incentive.

NH CORE Energy Efficiency Program - 2013 Budget Details

						(see Note 1)	
RESIDENTIAL PROGRAMS	Internal Adm	External Adm	Cust Rebts/Services	Internal Impl.	Marketing	Evaluation	Total
LU-Electric	\$5,487	\$6,859	\$44,584	\$6,173	\$2,058	\$3,430	\$68,591
NHEC	\$14,858	\$5,366	\$88,272	\$43,968	\$1,150	\$8,085	\$161,699
PSNH	\$19,373	\$0	\$734,006	\$80,000	\$14,284	\$44,614	\$892,277
Unitil	\$14,926	\$285	\$116,940	\$41,599	\$2,000	\$14,250	\$190,000
ENERGY STAR Homes	\$54,645	\$12,510	\$983,802	\$171,740	\$19,492	\$70,379	\$1,312,567
LU-Electric	\$8,163	\$10,204	\$66,326	\$9,184	\$3,061	\$5,102	\$102,039
NHEC	\$11,557	\$4,173	\$68,732	\$25,016	\$10,000	\$6,288	\$125,766
PSNH	\$19,156	\$0	\$540,506	\$95,000	\$183,500	\$44,114	\$882,276
Unitil	\$10,880	\$1,700	\$73,760	\$45,390	\$24,500	\$13,770	\$170,000
ENERGY STAR Lighting	\$49,756	\$16,077	\$749,324	\$174,590	\$221,061	\$69,274	\$1,280,081
LU-Electric	\$18,743	\$23,429	\$152,290	\$21,086	\$7,029	\$11,715	\$234,292
NHEC	\$11,557	\$4,173	\$221,448	\$25,016	\$10,000	\$6,288	\$278,482
PSNH	\$43,376	\$0	\$1,743,464	\$55,000	\$56,000	\$99,886	\$1,997,726
Unitil	\$17,235	\$4,840	\$135,520	\$93,035	\$13,500	\$15,870	\$280,000
ENERGY STAR Appliances	\$90,912	\$32,442	\$2,252,722	\$194,137	\$86,529	\$133,759	\$2,790,500
LU-Electric	\$13,257	\$16,572	\$107,717	\$14,915	\$4,972	\$8,286	\$165,718
NHEC	\$20,637	\$7,452	\$139,873	\$44,242	\$1,150	\$11,229	\$224,583
PSNH	\$41,243	\$0	\$1,508,279	\$240,000	\$15,000	\$94,975	\$1,899,497
Unitil	\$16,172	\$2,513	\$100,518	\$65,107	\$9,608	\$17,092	\$211,011
NH Home Performance w/ENERGY St:	\$91,309	\$26,537	\$1,856,387	\$364,264	\$30,730	\$131,582	\$2,500,808
LU-Electric	\$24,876	\$31,095	\$202,117	\$27,985	\$9,328	\$15,547	\$310,949
NHEC	\$26,301	\$9,498	\$205,623	\$29,494	\$1,000	\$14,311	\$286,227
PSNH	\$60,000	\$0	\$2,425,214	\$135,000	\$5,000	\$138,169	\$2,763,383
Unitil	\$28,204	\$5,460	\$205,794	\$129,219	\$3,250	\$37,417	\$409,344
Home Energy Assistance	\$139,381	\$46,053	\$3,038,748	\$321,699	\$18,578	\$205,444	\$3,769,904
LU-Electric	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NHEC	\$9,906	\$3,577	\$153,959	\$33,968	\$1,000	\$5,390	\$207,800
PSNH	\$13,683	\$0	\$487,505	\$95,000	\$2,500	\$31,510	\$630,198
Unitil (Res. Website, ISO Expenses)	\$520	\$10,900	\$65,000	\$22,080	\$0	\$0	\$98,500
Other Residential Programs	\$24,109	\$14,477	\$706,464	\$151,048	\$3,500	\$36,900	\$936,498
Total Residential Programs	\$450,111	\$148,096	\$9,587,447	\$1,377,477	\$379,890	\$647,337	\$12,590,358
COMMERCIAL, INDUSTRIAL AND MUNICIPAL PROGRAMS							
LU-Electric	\$53,217	\$66,521	\$432,387	\$59,869	\$19,956	\$33,261	\$665,211
NHEC	\$14,326	\$5,173	\$89,334	\$37,778	\$1,500	\$7,795	\$155,906
PSNH	\$109,711	\$0	\$3,850,531	\$815,000	\$25,000	\$252,645	\$5,052,887
Unitil	\$58,639	\$1,810	\$514,164	\$177,761	\$5,000	\$58,400	\$815,774
Large Business Energy Solutions	\$235,893	\$73,504	\$4,886,417	\$1,090,408	\$51,456	\$352,101	\$6,689,778
LU-Electric	\$40,630	\$50,787	\$330,118	\$45,709	\$15,236	\$25,394	\$507,874
NHEC	\$38,681	\$13,968	\$289,087	\$56,668	\$1,500	\$21,048	\$420,952
PSNH	\$76,395	\$0	\$2,846,175	\$400,000	\$20,000	\$175,925	\$3,518,495
Unitil	\$36,230	\$5,521	\$237,299	\$145,666	\$8,876	\$43,732	\$477,323
Small Business Energy Solutions	\$191,936	\$70,276	\$3,702,679	\$648,042	\$45,612	\$266,099	\$4,924,644
LU-Electric	\$1,466	\$1,832	\$11,909	\$1,649	\$550	\$916	\$18,322
NHEC	\$4,298	\$1,552	\$24,162	\$12,422	\$2,000	\$2,339	\$46,773
PSNH (Education, RFP, Smart Start)	\$17,062	\$0	\$681,463	\$73,250	\$8,000	\$41,042	\$820,817
Unitil (Education, C&I Web, ISO Expenses)	\$1,646	\$1,828	\$50,000	\$25,092	\$0	\$0	\$78,566
Other C&I Programs	\$24,471	\$5,212	\$767,534	\$112,413	\$10,550	\$44,297	\$964,478
Total Non-Residential Programs	\$452,300	\$148,992	\$9,356,630	\$1,850,863	\$107,618	\$662,497	\$12,578,900
TOTAL (Both Sectors)	\$902,411	\$297,089	\$18,944,077	\$3,228,340	\$487,508	\$1,309,834	\$25,169,259

Note 1: Evaluation amounts are based on 5% of total budgets. Actual program expenses will vary from numbers shown.

New Hampshire CORE Energy Efficiency Goals - 2013

PROGRAMS	LU Electric		NHEC		PSNH		UNITIL		TOTALS	
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	41	510,094	43	796,573	312	10,586,608	47	10,639,499	443	22,532,774
B/C Ratio / Planned Budget	4.88	\$68,591	6.97	\$161,699	6.59	\$892,277	9.11	\$190,000		\$1,312,567
ENERGY STAR Lighting										
Number of Units / Lifetime kWh Savings	7,241	2,669,519	28,405	3,699,053	236,036	21,754,639	29,200	3,375,679	300,882	31,498,890
B/C Ratio / Planned Budget	1.32	\$102,039	1.26	\$125,766	1.26	\$882,276	1.01	\$170,000		\$1,280,081
ENERGY STAR Appliances										
Number of Rebates / Lifetime kWh Savings	759	1,227,443	2,181	4,926,681	16,741	30,263,409	2,117	3,703,976	21,797	40,121,509
B/C Ratio / Planned Budget	1.66	\$234,292	2.36	\$278,482	2.40	\$1,997,726	2.21	\$280,000		\$2,790,500
Home Performance w/ENERGY STAR										
Number of Rebates / Lifetime kWh Savings	108	182,554	88	470,060	1,050	4,576,774	47	480,570	1,292	5,709,958
B/C Ratio / Planned Budget	1.89	\$165,718	1.07	\$224,583	2.20	\$1,899,497	2.77	\$211,011		\$2,500,808
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	55	753,061	57	956,047	657	9,036,019	49	953,318	818	11,698,444
B/C Ratio / Planned Budget	1.21	\$310,949	1.32	\$286,227	1.63	\$2,763,383	1.62	\$409,344		\$3,769,904
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	40	23,689,232	11	9,489,929	349	205,517,772	46	36,361,285	446	275,058,218
B/C Ratio / Planned Budget	1.84	\$665,211	2.25	\$155,906	2.26	\$5,052,887	1.30	\$815,774		\$6,689,778
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	183	13,946,883	79	17,090,915	1,610	107,385,322	73	11,230,025	1,945	149,653,145
B/C Ratio / Planned Budget	1.67	\$507,874	2.25	\$420,952	1.86	\$3,518,495	2.12	\$477,323		\$4,924,644
Educational Programs										
B/C Ratio / Planned Budget		\$18,322		\$34,300		\$191,634		\$23,566	0	267,822 \$0
Company Specific Programs / ISO-NE FCM Work										
Number of Participants / Lifetime kWh Savings			14	12,207,474	25,081	66,756,827			25,095	78,964,301
B/C Ratio / Planned Budget		\$25,000		\$107,800		\$1,424,381		\$38,500		\$1,595,681
Smart Start (NHEC/PSNH), RGGI RLF (NHEC/UES)										
Number of Participants / Planned Budget				\$112,473		\$35,000		\$115,000	0	\$262,473 \$0
Utility Performance Incentive										
B/C Ratio / Planned Budget		\$165,840		\$144,655		\$1,473,804		\$237,346		\$2,021,644
TOTAL PLANNED BUDGET		\$2,263,836		\$2,052,843		\$20,131,360		\$2,967,864		\$27,415,903

NOTES:
 Smart Start / RGGI RLF: Includes \$100,000 for NHEC's residential revolving loan fund; Also includes \$65,000 for Unitil's residential and \$50,000 for their C&I revolving loan fund. **\$327,624** **\$536,272,938**

NH CORE Energy Efficiency Program - 2014 Budget Details

						(see Note 1)	
RESIDENTIAL PROGRAMS	Internal Adm	External Adm	Cust Rebts/Services	Internal Impl.	Marketing	Evaluation	Total
LU-Electric	\$5,816	\$7,270	\$47,253	\$6,543	\$2,181	\$3,635	\$72,698
NHEC	\$15,601	\$5,366	\$106,757	\$35,666	\$1,150	\$8,562	\$173,102
PSNH	\$19,964	\$0	\$745,326	\$82,680	\$14,443	\$45,390	\$907,803
Unitil	\$14,926	\$285	\$116,940	\$41,599	\$2,000	\$14,250	\$190,000
ENERGY STAR Homes	\$56,307	\$12,920	\$1,016,276	\$166,487	\$19,774	\$71,837	\$1,343,602
LU-Electric	\$8,652	\$10,815	\$70,297	\$9,733	\$3,244	\$5,407	\$108,149
NHEC	\$12,134	\$4,173	\$75,401	\$26,267	\$10,000	\$6,659	\$134,634
PSNH	\$19,740	\$0	\$551,323	\$98,183	\$183,500	\$44,881	\$897,627
Unitil	\$11,277	\$1,762	\$77,345	\$47,046	\$24,500	\$14,272	\$176,203
ENERGY STAR Lighting	\$51,803	\$16,750	\$774,366	\$181,229	\$221,244	\$71,220	\$1,316,613
LU-Electric	\$19,865	\$24,832	\$161,407	\$22,349	\$7,450	\$12,416	\$248,319
NHEC	\$26,869	\$9,241	\$210,998	\$26,267	\$10,000	\$14,745	\$298,120
PSNH	\$44,697	\$0	\$1,773,321	\$56,843	\$56,000	\$101,624	\$2,032,484
Unitil	\$17,413	\$4,885	\$62,468	\$127,930	\$52,500	\$17,305	\$282,500
ENERGY STAR Appliances	\$108,844	\$38,958	\$2,208,194	\$233,388	\$125,950	\$146,090	\$2,861,423
LU-Electric	\$14,051	\$17,564	\$114,166	\$15,808	\$5,269	\$8,782	\$175,640
NHEC	\$21,669	\$7,452	\$151,804	\$46,454	\$1,150	\$11,891	\$240,420
PSNH	\$41,921	\$0	\$1,505,985	\$248,040	\$15,000	\$95,313	\$1,906,259
Unitil	\$16,605	\$2,581	\$105,078	\$66,852	\$8,000	\$17,550	\$216,667
NH Home Performance w/ENERGY St:	\$94,247	\$27,597	\$1,877,034	\$377,154	\$29,419	\$133,536	\$2,538,986
LU-Electric	\$26,359	\$32,949	\$214,170	\$29,654	\$9,885	\$16,475	\$329,493
NHEC	\$26,616	\$9,498	\$205,623	\$29,335	\$1,000	\$15,156	\$287,228
PSNH	\$62,010	\$0	\$2,472,244	\$139,523	\$5,000	\$140,988	\$2,819,765
Unitil	\$31,668	\$6,019	\$228,095	\$143,895	\$2,750	\$43,583	\$456,011
Home Energy Assistance	\$146,654	\$48,466	\$3,120,133	\$342,407	\$18,635	\$216,202	\$3,892,496
LU-Electric	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NHEC	\$10,401	\$3,577	\$59,049	\$35,666	\$1,000	\$5,708	\$115,401
PSNH	\$14,678	\$0	\$528,717	\$88,183	\$2,500	\$33,373	\$667,450
Unitil (Res. Website, ISO Expenses)	\$749	\$10,948	\$65,000	\$9,088	\$14,625	\$0	\$100,409
Other Residential Programs	\$25,828	\$14,525	\$652,766	\$132,936	\$18,125	\$39,081	\$883,261
Total Residential Programs	\$483,682	\$159,215	\$9,648,768	\$1,433,602	\$433,147	\$677,966	\$12,836,381
COMMERCIAL, INDUSTRIAL AND MUNICIPAL PROGRAMS							
LU-Electric	\$56,522	\$70,653	\$459,242	\$63,587	\$21,196	\$35,326	\$706,526
NHEC	\$15,043	\$5,173	\$96,848	\$39,667	\$1,500	\$8,255	\$166,486
PSNH	\$113,611	\$0	\$3,925,864	\$843,417	\$25,000	\$258,310	\$5,166,202
Unitil	\$61,749	\$1,690	\$538,654	\$185,036	\$3,000	\$65,596	\$855,725
Large Business Energy Solutions	\$246,925	\$77,516	\$5,020,608	\$1,131,707	\$50,696	\$367,487	\$6,894,939
LU-Electric	\$42,998	\$53,747	\$349,357	\$48,372	\$16,124	\$26,874	\$537,472
NHEC	\$40,615	\$13,968	\$311,640	\$59,501	\$1,500	\$22,289	\$449,513
PSNH	\$79,111	\$0	\$2,905,020	\$413,400	\$20,000	\$179,870	\$3,597,401
Unitil	\$36,919	\$5,264	\$241,111	\$145,158	\$6,250	\$51,078	\$485,780
Small Business Energy Solutions	\$199,643	\$72,979	\$3,807,128	\$666,431	\$43,874	\$280,111	\$5,070,166
LU-Electric	\$1,466	\$1,832	\$11,909	\$1,649	\$550	\$916	\$18,322
NHEC	\$4,512	\$1,552	\$26,098	\$13,306	\$2,000	\$2,476	\$49,944
PSNH (Education, RFP, Smart Start)	\$17,669	\$0	\$696,258	\$74,590	\$8,000	\$41,922	\$838,438
(Education, ISO Expenses, RGGI RLF)	\$1,769	\$1,870	\$50,000	\$26,113	\$0	\$0	\$79,751
Other C&I Programs	\$25,415	\$5,254	\$784,265	\$115,658	\$10,550	\$45,314	\$986,456
Total Non-Residential Programs	\$471,983	\$155,749	\$9,612,001	\$1,913,796	\$105,120	\$692,912	\$12,951,561
TOTAL (Both Sectors)	\$955,665	\$314,964	\$19,260,769	\$3,347,398	\$538,267	\$1,370,879	\$25,787,942

Note 1: Evaluation amounts are based on 5% of total budgets. Actual program expenses will vary from numbers shown.

New Hampshire CORE Energy Efficiency Goals - 2014

PROGRAMS	LU Electric		NHEC		PSNH		UNITIL		TOTALS	
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	43	540,635	52	963,376	317	10,749,877	47	10,639,513	459	22,893,400
B/C Ratio / Planned Budget	4.88	\$72,698	7.61	\$173,102	6.67	\$907,803	9.29	\$190,000		\$1,343,602
ENERGY STAR Lighting										
Number of Units / Lifetime kWh Savings	7,675	2,829,349	31,161	4,057,994	242,927	22,389,770	31,512	3,571,156	313,275	32,848,269
B/C Ratio / Planned Budget	1.32	\$108,149	1.35	\$134,634	1.34	\$897,627	1.20	\$176,203		\$1,316,613
ENERGY STAR Appliances										
Number of Rebates / Lifetime kWh Savings	841	1,397,315	2,524	5,786,914	17,574	31,982,415	2,162	3,782,143	23,101	42,948,787
B/C Ratio / Planned Budget	1.68	\$248,319	2.52	\$298,120	2.49	\$2,032,484	2.27	\$282,500		\$2,861,423
Home Performance w/ENERGY STAR										
Number of Rebates / Lifetime kWh Savings	114	193,485	96	510,156	1,048	4,569,456	49	502,368	1,307	5,775,464
B/C Ratio / Planned Budget	1.89	\$175,640	1.10	\$240,420	2.25	\$1,906,259	2.85	\$216,667		\$2,538,986
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	58	797,969	57	956,047	657	9,215,691	61	1,056,622	833	12,026,330
B/C Ratio / Planned Budget	1.21	\$329,493	1.35	\$287,228	1.67	\$2,819,765	1.65	\$456,011		\$3,892,496
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	42	25,254,135	11	10,288,116	357	210,634,613	48	38,130,967	458	284,307,831
B/C Ratio / Planned Budget	1.83	\$706,526	2.39	\$166,486	2.37	\$5,166,202	1.38	\$855,725		\$6,894,939
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	192	14,841,832	85	18,424,265	1,641	110,068,696	74	11,561,436	1,991	154,896,228
B/C Ratio / Planned Budget	1.67	\$537,472	2.39	\$449,513	1.94	\$3,597,401	2.29	\$485,780		\$5,070,166
Educational Programs										
B/C Ratio / Planned Budget		\$18,322		\$36,626		\$195,931		\$47,066	0	\$297,945
Company Specific Programs / ISO-NE FCM Work										
Number of Participants / Lifetime kWh Savings	0	0	15	13,359,103	25,082	69,286,105			25,097	82,645,208
B/C Ratio / Planned Budget		\$25,000		\$115,401		\$1,474,957		\$18,095		\$1,633,454
Smart Start (NHEC/PSNH), RGGI RLF (UES)										
Number of Participants / Planned Budget		\$0		\$13,318		\$35,000		\$115,000	0	\$163,318
										\$0
Utility Performance Incentive										
B/C Ratio / Planned Budget		\$175,729		\$153,188		\$1,503,874		\$247,061		\$2,079,852
TOTAL PLANNED BUDGET		\$2,397,347		\$2,068,036		\$20,537,304		\$3,090,107		\$28,092,794

NOTES:

SmartStart, RGGI Revolving Loan Funding: Unitil allocated \$65,000 to their Residential and \$50,000 to their C&I revolving loan fund.

NH CORE Energy Efficiency Program - 2013 Budget Details

Liberty Utilities - Gas

RESIDENTIAL	Internal Adm	External Adm	Cust Rebts/Services	Internal Impl.	Marketing	Evaluation	Total
ENERGY STAR Homes	\$7,200	\$9,000	\$58,500	\$8,100	\$2,700	\$4,500	\$90,000
ENERGY STAR Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ENERGY STAR Appliances	\$58,400	\$73,000	\$474,500	\$65,700	\$21,900	\$36,500	\$730,000
Home Performance w/ENERGY STAR	\$58,400	\$73,000	\$474,500	\$65,700	\$21,900	\$36,500	\$730,000
Home Energy Assistance	\$60,000	\$75,000	\$510,000	\$67,500	\$0	\$37,500	\$750,000
Education							
Energy Code Training							
Building Practices & Demo	\$5,600	\$7,000	\$45,500	\$6,300	\$2,100	\$3,500	\$70,000
							\$2,370,000
COMMERCIAL & INDUSTRIAL							
Large Business Energy Solutions	\$96,096	\$120,120	\$780,780	\$91,305	\$36,036	\$60,060	\$1,184,397
Small Business: New	\$88,704	\$110,880	\$720,720	\$84,281	\$33,264	\$55,440	\$1,093,289
Codes, Audit Training & Education	\$0	\$0	\$0	\$32,314	\$0	\$0	\$32,314
							\$2,310,000
							\$4,680,000

Northern Utilities

RESIDENTIAL	Internal Adm	External Adm	Cust Rebts/Services	Internal Impl.	Marketing	Evaluation	Total
ENERGY STAR Homes	\$5,901	\$1,504	\$36,000	\$30,115	\$0	\$6,480	\$80,000
ENERGY STAR Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ENERGY STAR Appliances	\$21,692	\$1,925	\$156,725	\$74,283	\$2,500	\$17,875	\$275,000
Home Performance w/ENERGY STAR	\$10,098	\$1,261	\$64,416	\$39,050	\$9,240	\$10,935	\$135,000
Home Energy Assistance	\$11,264	\$1,736	\$74,195	\$44,956	\$1,250	\$11,600	\$145,000
Education							\$0
Energy Code Training	\$180	\$592	\$0	\$6,275	\$0	\$0	\$7,048
Building Practices & Demo	\$1,120	\$1,050	\$0	\$15,330	\$0	\$0	\$17,500
							\$659,548
COMMERCIAL & INDUSTRIAL							
Large Business Energy Solutions	\$21,078	\$640	\$169,800	\$63,082	\$3,000	\$22,400	\$280,000
Small Business: New	\$16,397	\$1,270	\$116,000	\$54,043	\$5,490	\$16,800	\$210,000
Codes, Audit Training & Education	\$180	\$451	\$0	\$5,007	\$0	\$0	\$5,639
							\$495,639
							\$1,155,186

New Hampshire CORE Energy Efficiency Goals - 2013

PROGRAMS	Liberty Utilities - Gas		Northern Utilities		TOTALS	
ENERGY STAR Homes						
Number of Homes / Lifetime MMBTU Savings	37	24,863	16	14,202	53	39,065
B/C Ratio / Planned Budget	2.01	\$90,000	1.59	\$80,000		\$170,000
ENERGY STAR Lighting						
Number of Units / Lifetime MMBTU Savings	0	0			0	0
B/C Ratio / Planned Budget	0.00	\$0				\$0
ENERGY STAR Appliances						
Number of Rebates / Lifetime MMBTU Savings	2,578	207,559	288	46,298	2,866	253,857
B/C Ratio / Planned Budget	1.11	\$730,000	1.08	\$275,000		\$1,005,000
Home Performance w/ENERGY STAR						
Number of Rebates / Lifetime MMBTU Savings	569	374,164	24	29,913	593	404,077
B/C Ratio / Planned Budget	2.71	\$730,000	2.20	\$135,000		\$865,000
Home Energy Assistance						
Number of Units / Lifetime MMBTU Savings	156	89,172	30	20,710	186	109,882
B/C Ratio / Planned Budget	1.04	\$750,000	1.94	\$145,000		\$895,000
Large Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	178	295,915	58	231,888	236	527,803
B/C Ratio / Planned Budget	1.36	\$1,184,397	4.72	\$280,000		\$1,464,397
Small Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	313	365,747	104	80,979	417	446,726
B/C Ratio / Planned Budget	1.71	\$1,093,289	2.06	\$210,000		\$1,303,289
Educational Programs						
B/C Ratio / Planned Budget		\$32,314		\$12,686	0	\$45,000
Company Specific Programs						
Number of Participants / Lifetime MMBTU Savings	0	0			0	0
B/C Ratio / Planned Budget		\$70,000		\$17,500		\$87,500
Smart Start Program						
Number of Participants / Planned Budget		\$0			0	\$0
Utility Performance Incentive						
B/C Ratio / Planned Budget		<u>\$374,400</u>		<u>\$100,386</u>		<u>\$474,786</u>
TOTAL PLANNED BUDGET		\$5,054,400		\$1,255,572		\$6,309,972

NH CORE Energy Efficiency Program - 2014 Budget Details

Liberty Utilities - Gas

RESIDENTIAL	Internal Adm	External Adm	ust Rebts/Service	Internal Impl.	Marketing	Evaluation	Total
ENERGY STAR Homes	\$7,560	\$9,450	\$61,425	\$8,505	\$2,835	\$4,725	\$94,500
ENERGY STAR Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ENERGY STAR Appliances	\$61,320	\$76,650	\$498,225	\$68,985	\$22,995	\$38,325	\$766,500
Home Performance w/ENERGY STAR	\$61,320	\$76,650	\$498,225	\$68,985	\$22,995	\$38,325	\$766,500
Home Energy Assistance	\$63,000	\$78,750	\$535,500	\$70,875	\$0	\$39,375	\$787,500
Education							
Energy Code Training							
Building Practices & Demo	\$5,880	\$7,350	\$47,775	\$6,615	\$2,205	\$3,675	\$73,500
							\$2,488,500
COMMERCIAL & INDUSTRIAL							
Large Business Energy Solutions	\$100,901	\$126,126	\$819,819	\$96,710	\$37,838	\$63,063	\$1,244,457
Small Business: New	\$93,139	\$116,424	\$756,756	\$89,271	\$34,927	\$58,212	\$1,148,729
Codes, Audit Training & Education	\$0	\$0	\$0	\$32,314	\$0	\$0	\$32,314
							\$2,425,500
							\$4,914,000

Northern Utilities

RESIDENTIAL	Internal Adm	External Adm	ust Rebts/Service	Internal Impl.	Marketing	Evaluation	Total
ENERGY STAR Homes	\$7,376	\$1,880	\$45,000	\$37,644	\$0	\$8,100	\$100,000
ENERGY STAR Lighting							\$0
ENERGY STAR Appliances	\$23,664	\$2,100	\$170,973	\$81,036	\$2,727	\$19,500	\$300,000
Home Performance w/ENERGY STAR	\$11,220	\$1,401	\$71,573	\$43,389	\$10,267	\$12,150	\$150,000
Home Energy Assistance	\$13,206	\$2,035	\$86,987	\$52,707	\$1,466	\$13,600	\$170,000
Education							\$0
Energy Code Training	\$180	\$591	\$6,275	\$0	\$0	\$0	\$7,048
Building Practices & Demo	\$0	\$0	\$0	\$0	\$0	\$0	\$0
							\$727,048
COMMERCIAL & INDUSTRIAL							
Large Business Energy Solutions	\$21,078	\$640	\$169,800	\$63,082	\$3,000	\$22,400	\$280,000
Small Business: New	\$16,397	\$1,270	\$116,000	\$54,043	\$5,490	\$16,800	\$210,000
Codes, Audit Training & Education	\$180	\$451	\$0	\$5,007	\$0	\$0	\$5,639
							\$495,639
							\$1,222,687

New Hampshire CORE Energy Efficiency Goals - 2014

PROGRAMS	Liberty Utilities - Gas		Northern Utilities		TOTALS	
ENERGY STAR Homes						
Number of Homes / Lifetime MMBTU Savings	37	24,863	20	12,027	57	36,890
B/C Ratio / Planned Budget	2.01	\$94,500	1.15	\$100,000		\$194,500
ENERGY STAR Lighting						
Number of Units / Lifetime MMBTU Savings	0	0			0	0
B/C Ratio / Planned Budget	0.00	\$0				\$0
ENERGY STAR Appliances						
Number of Rebates / Lifetime MMBTU Savings	2,578	207,559	314	50,507	2,892	258,066
B/C Ratio / Planned Budget	1.11	\$766,500	1.09	\$300,000		\$1,066,500
Home Performance w/ENERGY STAR						
Number of Rebates / Lifetime MMBTU Savings	569	374,164	29	35,713	598	409,877
B/C Ratio / Planned Budget	2.71	\$766,500	2.34	\$150,000		\$916,500
Home Energy Assistance						
Number of Units / Lifetime MMBTU Savings	164	89,172	35	24,281	199	113,453
B/C Ratio / Planned Budget	1.04	\$787,500	1.96	\$170,000		\$957,500
Large Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	178	295,915	58	231,888	236	527,803
B/C Ratio / Planned Budget	1.36	\$1,244,457	4.76	\$280,000		\$1,524,457
Small Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	313	365,747	104	80,913	417	446,660
B/C Ratio / Planned Budget	1.71	\$1,148,729	2.07	\$210,000		\$1,358,729
Educational Programs						
B/C Ratio / Planned Budget		\$32,314		\$12,687	0	\$45,001
Company Specific Programs						
Number of Participants / Lifetime MMBTU Savings	0	0			0	0
B/C Ratio / Planned Budget		\$73,500		\$0		\$73,500
Smart Start Program						
Number of Participants / Planned Budget		\$0			0	\$0
Utility Performance Incentive						
B/C Ratio / Planned Budget		<u>\$393,120</u>		<u>\$106,251</u>		<u>\$499,371</u>
TOTAL PLANNED BUDGET		\$5,307,120		\$1,328,938		\$6,636,058

Liberty Utilities Electric Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings								
	2011		2013		2011		2013		2011		2013		2011		2011		2011		2011		2011		2011		2011		2011				
	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2013	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	
AMP Baseload	50.0	52.0			206.0	206.0			13.0	13.0			100%		133,900.0	139,256.0			0.0	0.0			0.0	0.0			0.0	0.0			
Electric Weatherization	2.0	1.0			541.0	595.0			20.0	20.0			100%		21,640.0	11,900.0			0.0	0.0			0.0	0.0			0.0	0.0			
CFLs	289.0	237.0			63.0	63.0			8.0	8.0			100%		145,704.0	119,448.0			0.0	0.0			0.0	0.0			0.0	0.0			
Fixtures	45.0	14.0			127.3	126.0			20.0	20.0			100%		114,540.0	35,280.0			0.0	0.0			0.0	0.0			0.0	0.0			
Replacement Refrigerator	31.0	26.0			1013.0	1016.0			19.0	19.0			100%		596,676.0	501,904.0			0.0	0.0			0.0	0.0			0.0	0.0			
DHWater Measure (elec)	23.0	23.0			414.0	419.0			15.0	15.0			100%		142,845.0	144,555.0			0.0	0.0			0.0	0.0			0.0	0.0			
DHWater Measure (OIL)	12.0	47.0			0.0	0.0			15.0	15.0			100%		0.0	0.0			6.2	0.0			1,124.3	0.0			0.0	0.0			
Tstats	7.0	14.0			299.3	288.0			10.0	10.0			100%		20950.0	40320.0			0.0	0.0			0.0	0.0			0.0	0.0			
AMP Oil Wx	25.0	47.0			145.6	143.0			15.0	20.0			100%		54600.0	134420.0			1.4	1645.0			525.0	1,546,300.0			0.0	0.0			
Refrigerator Removal	0.0	27.0			0.0	136.0			0.0	5.0			100%		0.0	18360.0			0.0	0.0			0.0	0.0			0.0	0.0			
Freezer Replacement	0.0	2.0			0.0	726.0			0.0	19.0			100%		0.0	27588.0			0.0	0.0			0.0	0.0			0.0	0.0			
Weatherization Package (Electric Heat)			1.1	1.2		2,412.6	2,412.7			19.8	19.8			86.2%			45,047.1	47,736.5			0.0	0.0	0	0			0	0			
Weatherization Package (Kerosene Heat)			16.1	17.1		0.0	0.0			20.6	20.6			86.2%			0.0	0.0			14.7	14.7	0	4,193			4,443				
Weatherization Package (Liquid Propane Heat)			4.8	5.1		0.0	0.0			21.4	21.4			86.2%			0.0	0.0			12.9	12.9	0	1,151			1,220				
Weatherization Package (Natural Gas Heat)			16.6	17.6		0.0	0.0			19.4	19.4			86.2%			0.0	0.0			6.9	6.9	0	1,921			2,036				
Weatherization Package (Wood Heat)			2.7	2.8		0.0	0.0			21.0	21.0			86.2%			0.0	0.0			21.5	21.6	0	1,044			1,106				
Weatherization Package (Oil Heat)			13.4	14.2		0.0	0.0			20.0	20.0			86.2%			0.0	0.0			19.8	19.8	0	4,583			4,856				
Weatherization Package (Other)			0.0	0.0		0.0	0.0			0.0	0.0			86.2%			0.0	0.0					0	0			0	0			
Electric Svgs on Fossil Heated Homes			53.7	56.9		931.5	912.9			14.3	14.3			86.2%			616,563.6	640,255.4			0.0	0.0	0	0			0	0			

Liberty Utilities Electric Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011		2013		2011		2013		2011		2013		2013		2011				2011		2013		2011		2013		2014	
	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan		
HES - ELECTRIC																												
EnergyWise SF Elec	10	5			915	1,398			12	9			100.00%	100.00%	109,824	62,910			0.0	0.0			0.0	0.0				
EnergyWise SF Non Elec	51	69			535	615			8	8			100.00%	100.00%	218,104	339,300			0.0	0.0			0.0	0.0				
EW Multi Electric CFL	520	1,320			67	67			5	5			100.00%	100.00%	173,056	439,326.0			0.0	0.0			0.0	0.0				
EW Multi Electric DHWS	29	0			83	0			15	15			100.00%	100.00%	36,300	0.0			0.0	0.0			0.0	0.0				
EW Multi Electric Heat Fixtures	291	112			347	347			20	20			100.00%	100.00%	2,021,635	778,086.0			0.0	0.0			0.0	0.0				
EW Multi Electric Heat REFRIG	22	0			329	0			13	13			100.00%	100.00%	94,042	0.0			0.0	0.0			0.0	0.0				
Lighting only projects (6 CFLs, possible ref. voucher)			0.0	0.00			0.0	0.0			7	7		100.00%			0.0	0.0			0	0.00			0	0	0	
Weatherization for > 30% Electric Heat (MultiFamily)			0.0	0.0			0.0	0.0			14	14		100.00%			0.0	0.0			0	0.00			0	0	0	
Baseload SF			4.6	4.9			138.0	138.0			5	5		100.00%			3,173.0	3362.9			0	0.00			0	0	0	
Baseload MF			36.1	38.3			138.0	138.0			5	5		100.00%			24,906.3	26397.6			0	0.00			0	0	0	
Other			0.0	0.0			0.0	0.0			8	8		100.00%			0.0	0.0			0	0.00			0	0	0	
Other			0.0	0.0			0.0	0.0			0	0		100.00%			0.0	0.0			0	0.00			0	0	0	
Other			0.0	0.0			0.0	0.0			14	14		100.00%			0.0	0.0			0	0.00			0	0	0	
Fuel Neutral, SF, Electric, CFLs			32.8	34.8			138.0	138.0			5	5		100.00%			22,647.0	24003.0			0	0.00			0	0	0	
Fuel Neutral Pilot (Oil)-SF- 52%			26.4	28.0			0.0	0.0			21	21		100.00%			0.0	0.0			28.6	28.6			15,815	16,763		
Fuel Neutral Pilot (LP) - SF - 20%			3.1	3.3			0.0	0.0			21	21		100.00%			0.0	0.0			22.5	22.6			1,451	1,546		
Fuel Neutral Pilot (Gas) - SF - 3%			0.1	0.1			0.0	0.0			19	19		100.00%			0.0	0.0			15.5	14.4			38	37		
Fuel Neutral Pilot (Wood) - SF - 18%			1.8	1.9			0.0	0.0			21	21		100.00%			0.0	0.0			19.0	18.8			724	759		
Fuel Neutral Pilot (Kerosene) - SF - 2%			0.3	0.3			0.0	0.0			22	22		100.00%			0.0	0.0			32.7	31.9			214	221		
Fuel Neutral Pilot (Electric) - SF - 5%			1.1	1.2			6,552.2	6,552.2			18	18		100.00%			131,827.7	139720.9			-	0.0			0	0		
Heating System Replacements (Oil Boilers?)			1.4	1.5			0.0	0.0			20	20		100.00%			0.0	0.0			11.4	11.2			325	340		

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
RNC ES Homes (Heating) All Fuel Types	50.0	13.0			286.0	2,863.0			25	25			100%		357,125.0	930,400.0			26.9	588.7			33,600.0	191,327.5		
RNC ES Homes (Cooling) All Units	50.0	13.0			20.0	-2.0			25	25			100%		25,100.0	-675.0			0.0	0.0			0.0	0.0		
RNC ES Homes (Water Heating) All Fuel Types	50.0	13.0			32.0	287.0			15	15			100%		24,060.0	55,878.0			4.3	50.8			3,225.0	9,906.0		
Indoor Fixture	1,000.0	14.0			105.9	111.0			8	8			100%		847,200.0	12,383.0			0.0	0.0			0.0	0.0		
Screw In Bulb	500.0	561.0	233.5	247.4	50.6	43.0	18.5	18.5	7	7	5	5	100%	100%	177,100.0	168,861.0	21554.5	22,845.0	0.0	0.0	0.0	0.0			0.0	0.0
Interior HW Fixtures			70.0	74.2			62.3	62.3			20	20	100%				87225.2	92,447.5	0.0	0.0	0.0	0.0			0.0	0.0
Exterior Fixtures			0.0	0.0			0.0	0.0			5	5	100%				0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Clothes Washer	34.0	4.0	3.5	3.7	15.0	46.0	260.7	260.7	11	11	11	11	100%	100%	5,610.0	2,024.0	10041.8	10,643.0	0.6	0.7	0.7	0.8	220.0	30.8	28.4	33.0
Dishwasher	3.0	11.0	14.0	14.8	33.3	39.0	33.0	33.0	10	10	10	10	100%	100%	1,000.0	4,290.0	4622.6	4,899.3	0.0	0.5	0.4	0.4	0.0	110.0	56.0	60.0
Refrigerator	50.0	13.0	18.7	19.8	144.7	107.0	106.0	106.0	12	12	12	12	100%	100%	64,200.0	16,692.0	23757.2	25,179.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Room AC			0.0	0.0			0.0	0.0			9	9	100%				0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Central AC			0.0	0.0			0.0	0.0			14	14	100%				0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Thermostat			17.5	18.6			0.0	0.0			12	12	100%				0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Oil Heated Home (5%)			1.2	1.2			519.8	519.8			25	25	100%				15169.8	16,078.1	29.0	29.1	29.0	29.1			846.1	900.0
Gas Heated Home (55%)			12.8	13.6			481.5	481.5			25	25	100%				154561.4	163,815.3	23.7	23.7	23.7	23.7			7609.7	8075.0
LP Heated Home (35%)			8.2	8.7			506.0	506.0			25	25	100%				103365.9	109,554.6	40.6	40.5	40.6	40.5			8284.3	8775.0
Elec Baseboard Heated Home (5%)			1.2	1.2			3,077.0	3,077.0			25	25	100%				89795.8	95,172.1	0.0	0.0	0.0	0.0			0.0	0.0
ASHP Heated Home			0	0			0	0.00			25	25	100%				0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0

Liberty Utilities Electric ENERGY STAR® Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Catalog CFLs	46	79	350.8	371.8	51.0	51.0	14.3	14.3	5	5	5	5	84.0%	62.3%	9,828.0	16,888.0	15,654.5	16,591.8
Catalog Interior Fixtures (Lamps and HW Fixture)	26	16	46.2	48.9	107.0	107.0	60.0	60.0	8	8	8	8	104.0%	96.4%	23,499.0	14,312.0	21,367.9	22,647.2
Catalog Exterior Fixtures	26	0	23.1	24.5	107.0	107.0	62.3	62.3	5	5	5	5	109.0%	100.0%	15,277.0	0.0	7,185.5	7,615.7
Catalog Torchieres	13	0	13.8	14.7	120.0	120.0	64.8	64.8	8	8	8	8	108.0%	93.5%	13,641.0	0.0	6,716.3	7,118.4
Catalog LED Fixtures	0	0	4.6	4.9	0.0	0.0	26.3	26.3	20	20	20	20	95.0%	95.0%	0.0	0.0	2,305.1	2,443.1
Catalog LED Bulbs	0	0	23.1	24.5	0.0	0.0	26.3	26.3	20	20	20	20	95.0%	95.0%	0.0	0.0	11,525.4	12,215.4
Retail LED Bulbs	0	0	0.0	0.0	0.0	43.0	0.0	0.0	5	5	20	20	80.3%	50.0%	0.0	0.0	0.0	0.0
Retail CFLs	12,872	17,987	942.8	999.2	51.0	51.0	14.3	14.3	5	5	5	5	84.0%	62.3%	2,730,189.0	3,845,165.0	42,071.5	44,590.4
Retail CFL Multi-packs	0	0	26,310.0	27,885.2	0.0	111.0	14.3	14.3	8	8	8	8	96.4%	62.3%	0.0	0.0	1,878,539.5	1,991,011.8
Retail Interior Fixtures (Lamps and HW Fixtures)	67	98	263.1	278.9	106.0	106.0	60.0	60.0	5	5	5	5	104.0%	96.4%	58,973.0	86,680.0	76,123.2	80,680.8
Retail Exterior Fixtures	66	8	17.5	18.6	106.0	106.0	62.3	62.3	5	5	5	5	109.0%	100.0%	37,766.0	4,600.0	5,461.0	5,788.0
Retail Torchieres	13	0	4.4	4.6	104.0	47.0	64.8	64.8	8	8	8	20	108.0%	93.5%	11,868.0	0.0	2,126.8	5,635.4
Retail LED Fixtures	0	144	87.7	93.0	0.0	47.0	26.3	26.3	8	8	20	20	100.0%	95.0%	0.0	54,374.0	43,796.4	46,418.6
Retail LED Bulbs	13	0	877.0	929.5	47.0	0.0	26.3	26.3	8	8	20	20	100.0%	95.0%	4,960.0	0.0	437,964.5	464,186.4

Liberty Utilities Electric ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011		2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
					Actual	Plan																					Actual
Clothes Washer Tier 1 Electric DHW	19.0	9.0			104.0	104.0			11	11			100.0%	100.0%	21,736.0	10,296.0			0	0			0.0	0.0			
Clothes Washer Tier 1 Gas DHW	7.0	2.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.3	0.3			22.0	5.5			
Clothes Washer Tier 1 Oil DHW	24.0	18.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.0	0.2			0.0	39.6			
Clothes Washer Tier 1 Electric Dryer	49.0	25.0			57.0	57.0			11	11			100.0%	100.0%	30,723.0	15,675.0			0.0	0			0.0	0.0			
Clothes Washer Tier 1 Other Dryer	2.0	5.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.0	0.1			0.0	7.2			
Clothes Washer Tier 2 Electric DHW	12.0	21.0			137.0	137.0			11	11			100.0%	100.0%	18,084.0	31,647.0			0.0	0.0			0.0	0.0			
Clothes Washer Tier 2 Gas DHW	4.0	9.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.3	0.3			11.0	31.7			
Clothes Washer Tier 2 Oil DHW	15.0	42.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.0	0.3			0.0	129.4			
Clothes Washer Tier 2 Electric Dryer	31.0	66.0			103.0	103.0			11	11			100.0%	100.0%	35,123.0	74,778.0			0.0	0.0			0.0	0.0			
Clothes Washer Tier 2 Other Dryer	1.0	7.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.0	0.2			0.0	18.5			
Clothes Washer Tier 3 Electric DHW	84.0	74.0	323.1	365.9	172.0	172.0	260.7	260.7	11	11	11	11	100.0%	100.0%	158,928.0	140,008.0	926,431.0	1,049,246.0	0.0	0.0	0.7	1.0	0.0	0.0	2,618.0	4,169.0	
Clothes Washer Tier 3 Gas DHW	30.0	37.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.4	0.4			132.0	166.9			
Clothes Washer Tier 3 Oil DHW	105.0	272.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.0	0.4			0.0	1,077.1			
Clothes Washer Tier 3 Electric Dryer	210.0	333.0			104.0	104.0			11	11			100.0%	100.0%	240,240.0	380,952.0			0.0	0.0			0.0	0.0			
Clothes Washer Tier 3 Other Dryer	7.0	54.0			0.0	0.0			11	11			100.0%	100.0%	0.0	0.0			0.3	0.2			22.0	143.0			
Energy Star Room A/C	85.0	189.0	105.6	119.6	20.0	20.0	16.2	16.2	9	9	9	9	100.0%	100.0%	15,003.0	34,020.0	15,354.0	17,397.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
Energy Star Refrigerator	300.0	249.0	161.5	183.0	107.0	107.0	107.0	107.0	12	12	12	12	100.0%	100.0%	385,200.0	319,716.0	207,420.0	234,912.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
Energy Star Room Air Purifiers	25.0	1.0	3.7	4.2	58.0	58.0	390.6	390.6	9	9	9	9	100.0%	100.0%	13,050.0	522.0	13,104.0	14,841.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
Energy Star Dehumidifiers	0.0	0.0			0.0	213.0			12	12			100.0%	100.0%	0.0	0.0			0.0	0.0			0.0	0.0			
Energy Star Water Coolers	0.0	0.0			0.0	361.0			10	10			100.0%	100.0%	0.0	0.0			0.0	0.0			0.0	0.0			
Smartstrip Power Strip	85.0	16.0	8.1	9.1	57.0	57.0	75.0	75.0	5	5	5	5	100.0%	100.0%	24,225.0	4,560.0	3,030.0	3,430.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
2nd Refrigerator Pickup/Turnin	80.0	56.0	12.4	14.1	413.0	413.0	835.0	834.9	8	8	8	8	100.0%	100.0%	264,320.0	185,024.0	83,008.0	94,008.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
2nd Freezer Pickup/Turnin	0.0	0.0	6.2	7.0	0.0	0.0	234.3	662.9	8	8	8	8	100.0%	100.0%	0.0	0.0	11,648.0	37,320.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
Room AC Pickup/Turnin	0.0	0.0	0.6	0.7	0.0	0.0	17.7	18.5	5	5	5	5	100.0%	100.0%	0.0	0.0	55.0	65.0	0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Central AC (385 Hours ON in NH)			3.3	3.3			110.2	110.2			14	14			100.0%		5,068.0	5,068.0			0.0	0.0			-	-	
Energy Star Mini Split Heat Pump			5.9	5.9			122.8	122.8			12	12			100.0%		8,712.0	8,712.0			0.0	0.0			-	-	
Energy Star Mini Split Heat Pump (+ Gas)											12	12			100.0%		0.0	0.0			0.0	0.0			-	-	
Energy Star Mini Split Heat Pump (+ Oil)			4.3	4.3			(2,158.1)	(2,158.1)			12	12			100.0%		-110,460.0	-110,460.0			73.0	73.0			3,736.4	3,736.4	
Energy Star Mini Split Heat Pump (+ LP)			1.6	1.6			(2,158.4)	(2,158.4)			12	12			100.0%		-42,648.0	-42,648.0			25.0	25.0			494.0	494.0	
ES Furnace w/ECM (LP), AFUE >=95%			7.9	7.9			168.0	168.0			18	18			100.0%		23,832.0	23,832.0			35.0	35.0			4,966.0	4,966.0	
ES Furnace w/ECM (LP), AFUE >=96%			3.9	3.9			168.0	168.0			18	18			100.0%		11,916.0	11,916.0			22.0	22.0			1,560.7	1,560.7	
ES Furnace w/ECM (LP), AFUE >=97%			1.3	1.3			168.2	168.2			18	18			100.0%		3,978.0	3,978.0			8.0	8.0			189.2	189.2	
ES Furnace w/ECM (Oil), AFUE >=85%			3.9	3.9			168.0	168.0			18	18			100.0%		11,916.0	11,916.0			71.0	71.0			5,036.9	5,036.9	
ES Furnace w/ECM (Oil), AFUE >=90%			1.3	1.3			168.8	168.2			18	18			100.0%		3,992.4	3,978.0			27.0	27.0			638.5	638.5	
ES Boiler (LP), AFUE>=90%			7.9	7.9			-	-			20	20			100.0%		0.0	0.0			82.0	82.0			12,927.3	12,927.3	
ES Boiler (LP), AFUE>=96%			2.6	2.6			-	-			20	20			100.0%		0.0	0.0			34.0	34.0			1,786.7	1,786.7	
ES Boiler (Oil), AFUE>=85%			49.9	49.9			-	-			20	20			100.0%		0.0	0.0			268.0	268.0			267,584.7	267,584.3	
ES Boiler (Oil), AFUE>=90%			6.6	6.6			-	-			20	20			100.0%		0.0	0.0			71.0	71.0			9,327.6	9,327.6	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			0.7	0.7			-	-			20	20			100.0%		0.0	0.0			12.0	12.0			157.7	157.6	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			0.7	0.7			-	-			20	20			100.0%		0.0	0.0			12.0	12.0			157.7	157.6	
Water Heater: LP Tankless, EF>=0.82 (1/1/09 Criteria)			15.8	15.8			-	-			20	20			100.0%		0.0	0.0			153.0	153.0			48,240.9	48,240.8	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			0.7	0.7			-	-			20	20			100.0%		0.0	0.0			5.0	5.0			65.7	65.7	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			0.7	0.7			-	-			20	20			100.0%		0.0	0.0			5.0	5.0			65.7	65.7	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			0.7	0.7			-	-			13	13			100.0%		0.0	0.0			2.0	2.0			17.1	17.1	
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES=EF>=2.0)			0.7	0.7			1,775.1	1,775.1			10	10			100.0%		11,660.0	11,660.0			0.0	0.0			-	-	
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES=EF>=2.0)			0.7	0.7			2,671.7	2,671.8			10	10			100.0%		17,550.0	17,550.0			0.0	0.0			-	-	
BRC: Gas, Boiler Reset Controls			0.0	0.0			-	-			15	15			100.0%		0.0	0.0			0.0	0.0			-	-	
BRC: LP, Boiler Reset Controls			5.9	5.9			-	-			15	15			100.0%		0.0	0.0			57.0	57.0			5,054.7	5,054.6	
BRC: Oil, Boiler Reset Controls			7.9	7.9			-	-			15	15			100.0%		0.0	0.0			76.0	76.0			8,986.1	8,986.0	
TSTAT: LP, 7-Day Programmable Thermostats			0.7	0.7			13.7	13.7			15	15			100.0%		135.0	135.0			5.0	5.0			49.3	49.3	
TSTAT: Oil, 7-Day Programmable Thermostats			0.7	0.7			13.7	13.7			15	15			100.0%		135.0	135.0			5.0	5.0			49.3	49.3	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			0.7	0.7			13.7	13.7			15	15			100.0%		135.0	135.0			4.0	4.0			39.4	39.4	
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			0.7	0.7			13.7	13.7			15	15			100.0%		135.0	135.0			4.0	4.0			39.4	39.4	

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011		2013		2011		2013		2011		2013		2011	2013	2011		2013		2011		2013		2011		2013			
	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011	2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan		
Large New Equipment and Construction 2011*																												
D2 CAIR	86,319	3			86,319				15	15			103%		1,334,000.0	180,139				0.0	0.0			0.0	0.0			
D2 Cool Choice	32,641	4			32,641				13	15			106%		0.4370	1,438,670				0.0	0.0			0.0	0.0			
D2 Custom	238,114	5			238,114				16	15			92%		4.0380	6,853,897				0.0	0.0			0.0	0.0			
D2 Lights	87,400	11			87,400				15	15			104%		1.4030	6,090,590				0.0	0.0			0.0	0.0			
D2 VSD	32,124	1			32,124				15	15			102%		0.4910	238,411				0.0	0.0			0.0	0.0			
D2 MotorUp	0	1							15	15			62%			163,017				0.0	0.0			0.0	0.0			
NEW EQUIPMENT TRACK																												
Cooling			3.4	3.6			32,180.77	32,209.72		15	15	15	92.5%	94.0%			1,533,671.1	1,634,965.5			0.0	0.0			0.0	0.0		
Heating			0.3	0.4			49,654.55	49,908.57		15	15	15	92.5%	94.0%			231,042.6	246,298.8			0.0	0.0			0.0	0.0		
Lighting			1.0	1.1			61,522.00	61,902.83		15	15	15	92.5%	94.0%			867,460.2	925,199.7			0.0	0.0			0.0	0.0		
Lighting LED			0.0				0.00			15	15	15	92.5%	94.0%			0.0	0.0			0.0	0.0			0.0	0.0		
Lighting - (Occ Sensors Only)			0.3	0.3			22,762.07	22,700.00		10	10	10	92.5%	94.0%			62,049.4	66,147.8			0.0	0.0			0.0	0.0		
Other			0.7	0.3			121,041.5	270,554.8		15	15	15	92.5%	94.0%			1,109,345.7	1,182,595.2			0.0	0.0			0.0	0.0		
Process			2.4	2.6			50,779.5	50,606.9		15	15	15	92.5%	94.0%			1,747,018.2	1,862,384.4			0.0	0.0			0.0	0.0		
Lighting - Parking Lot Lights			0.0	0.0			0.00	0.00									0.0	0.0			0.0	0.0			0.0	0.0		
RETROFIT TRACK																												
EI HVAC	39,148.0	3.0			0.0	52,119.1			13.0	13.0			102.0%			2,032,644.0				0.0	0.0			0.0	0.0			
EI CAIR	460,771.0	6.0			0.0	49,902.6			13.0	13.0			109.2%			3,831,163.0				0.0	0.0			0.0	0.0			
EI Custom	2,248,275.0	14.0			0.0	117,446.5			13.0	13.0			111.7%			21,104,034.0				0.0	0.0			0.0	0.0			
EI Light	59,856.0	2.0			0.0	215,127.8			13.0	13.0			103.0%			5,593,322.0				0.0	0.0			0.0	0.0			
EI VSD	0.0	0.0			0.0	0.0			0.0	0.0			0.0%			0.0				0.0	0.0			0.0	0.0			
Cooling			2.6	2.7				61,197.7		12.4	12.6	12.6	94.0%	94.0%			0	1,983,343			0.0	0.0			0.0	0.0	0.0	0.0
Heating			1.3	1.4				16,326.4		13.1	20.1	20.1	94.0%	94.0%			0	426,259			0.0	0.0			0.0	0.0	0.0	0.0
Lighting			11.6	12.3				49,079.6		12.9	13.0	13.0	94.0%	94.0%			0	7,376,925			0.0	0.0			0.0	0.0	0.0	0.0
Lighting - LED			1.2	1.3				83,041.1		13.0	13.0	13.0	94.0%	94.0%			0	1,337,141			0.0	0.0			0.0	0.0	0.0	0.0
Lighting - Occ Sensors only			2.3	2.5				28,437.8		9.1	9.4	9.4	94.0%	94.0%			0	626,106			0.0	0.0			0.0	0.0	0.0	0.0
Other			0.8	0.9				26,121.0		13.0	13.6	13.6	94.0%	94.0%			0	301,286			0.0	0.0			0.0	0.0	0.0	0.0
Lighting - Parking Lot Lights			1.2	1.2				48,062.0		13.0	13.0	13.0	94.0%	94.0%			0	732,726			0.0	0.0			0.0	0.0	0.0	0.0
Process			7.0	7.5				61,457.0		11.8	11.7	11.7	94.0%	94.0%			0	5,044,159			0.0	0.0			0.0	0.0	0.0	0.0
Fuel Neutral Heating, Hot Water and Controls																												
1 Energy Star Central Air Conditioner			0.0	0.0			0.0	0.0					100%				0.0	0.0			0.00	0.00			0.0	0.0		
2 Energy Star Mini Split Heat Pump			0.6	0.6			0.1	0.1					100%				0.4	0.0			0.00	0.00			0.0	0.0		
3 Energy Star Mini Split Heat Pump (for homes w/Gas heat)			0.0	0.0			0.0	0.0					100%				0.0	0.0			0.00	0.00			0.0	0.0		
4 Energy Star Mini Split Heat Pump (for homes w/LP heat)			0.1	0.1			0.0	0.0					100%				16.16	17.26			0.00	0.00			11	12		
5 Energy Star Mini Split Heat Pump (for homes w/Oil heat)			0.2	0.2			0.0	0.0					100%				0.0	0.0			17.19	17.30			48	48		
40 Boilers, LP ≥ 90% thermal efficiency (500 to 999 MBH), Condensing			0.0	0.1			0.0	0.0					100.0%				0.0	0.0			68.78	6.90			25	25		
41 Boilers, Oil ≥ 85% thermal efficiency (500 to 999 MBH), Condensing			0.0	0.0			0.0	0.0					100.0%				0.0	0.0			0.00	0.00			0	0		
42 Boilers, Gas ≥ 90% thermal efficiency (1000 to 1700 MBH), Condensing			0.0	0.0			0.0	0.0					100.0%				0.0	0.0			0.00	0.00			0	0		
43 Boilers, LP ≥ 90% thermal efficiency (1000 to 1700 MBH), Condensing			0.9	0.9			0.0	0.0					100.0%				0.0	0.0			2.29	2.30			50	50		
44 Boilers, Oil ≥ 85% thermal efficiency (1000 to 1700 MBH)			0.0	0.0			0.0	0.0					100.0%				0.0	0.0			0.00	0.00			0	0		
45 Boilers, Gas ≥ 90% thermal efficiency (1701 to 2000 MBH), Condensing			0.0	0.0			0.0	0.0					100.0%				0.0	0.0			0.00	0.00			0	0		
46 Boilers, LP ≥ 90% thermal efficiency (1701 to 2000 MBH), Condensing			1.4	1.4			0.0	0.0					100.0%				0.0	0.0			248.41	249.32			8,850	8,850		
47 Boilers, Oil ≥ 85% thermal efficiency (1701 to 2000 MBH)			0.0	0.0			0.0	0.0					100.0%				0.0	0.0			0.00	0.00			0	0		

Notes:
 1. 2011 Large Business Actual Participant Data unavailable

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate				Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
	Small Business Energy Solutions (2011 NG)	536,796.0				536,796.0	0.0			11.0	0.0			0.0%		6,082,000.0	0.0							0.0	0.0			0.0
D2 CAIR	0.0	0.0			0.0	0.0			0.0	0.0			0.0%		0.0	0.0							0.0	0.0			0.0	0.0
D2 Cool Choice	0.0	4.0			0.0	46,104.4			0.0	10.7			104.0%		0.0	495,030.7							0.0	0.0			0.0	0.0
D2 Custom	0.0	3.0			0.0	68,792.5			0.0	13.0			105.7%		0.0	894,302.1							0.0	0.0			0.0	0.0
D2 Lights	0.0	86.0			0.0	602,380.6			0.0	11.1			97.5%		0.0	6,670,138.8							0.0	0.0			0.0	0.0
D2 VSD	0.0	0.0			0.0	0.0			0.0	0.0			0.0%		0.0	0.0							0.0	0.0			0.0	0.0
Vendor Miser	0.0	1.0			0.0	356.7			0.0	5.0			104.0%		0.0	1,783.6							0.0	0.0			0.0	0.0
NEW EQUIPMENT TRACK																												
Cooling			1.0	1.3		38,769.7	32,167.9				15.0	15.0		92.5%		537,929.2	537,929.2	571,927.5				0.0	0.0			0.0	0.0	
Heating			0.1	0.1		49,291.1	49,285.7				15.0	15.0		92.5%		81,043.9	81,043.9	86,163.8				0.0	0.0			0.0	0.0	
Lighting			0.4	0.4		61,782.6	61,774.4				15.0	15.0		92.5%		304,403.6	304,403.6	323,648.3				0.0	0.0			0.0	0.0	
Lighting LED			0.0	0.0		0.0	0.0				15.0	15.0		92.5%		0.0	0.0	0.0				0.0	0.0			0.0	0.0	
Lighting (Occ Sensors Only)			0.1	0.1		22,778.3	22,777.8				10.0	10.0		92.5%		21,765.3	21,765.3	23,134.3				0.0	0.0			0.0	0.0	
Other			0.2	0.2		121,503.5	121,495.5				15.0	15.0		92.5%		389,096.6	389,096.6	413,683.1				0.0	0.0			0.0	0.0	
Process			0.9	0.9		50,703.8	50,700.8				15.0	15.0		92.5%		612,761.6	612,761.6	651,486.8				0.0	0.0			0.0	0.0	
RETROFIT TRACK																												
Lighting - New Construction			15.7	16.7		13,787.6	13,787.6				15.9	15.9		100.0%				3,432,068.4	3,648,984.8				0.0	0.0			0.0	0.0
Lighting - Retrofit			18.3	19.5		19,981.5	19,981.5				12.8	12.8		100.0%				4,692,832.2	4,989,446.0				0.0	0.0			0.0	0.0
Lighting - Direct Install			21.0	22.3		14,488.6	14,488.5				12.9	12.9		100.0%				3,906,001.7	4,152,875.9				0.0	0.0			0.0	0.0
Cooling			0.0	0.0		0.0	0.0				12.9	13.0		100.0%				0.0	0.0				0.0	0.0			0.0	0.0
Lighting - Catalog Sales			72.9	77.5		46.3	46.3				6.0	6.0		100.0%				20,256.0	21,534.0				0.0	0.0			0.0	0.0
Smart Strips			8.8	9.4		75.0	75.0				5.0	5.0		100.0%				3,305.0	3,515.0				0.0	0.0			0.0	0.0
Fuel Neutral Heating, Hot Water and Controls																												
Energy Star Central Air Conditioner			2.3	2.3		110.4	110.4				14.0	14.0	1.0	100.0%				3,514.0	3,514.0				0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump			17.7	17.7		61.4	61.4				12.0	12.0	1.0	100.0%				13,032.0	13,032.0				0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump (for homes w/Gas heat)			0.0	0.0		0.0	0.0				12.0	12.0	1.0	100.0%				0.0	0.0				0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump (for homes w/LP heat)			2.5	2.5		0.0	0.0				12.0	12.0	1.0	100.0%				0.0	0.0				15.4	15.4			468.0	468.0
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			6.3	6.3		0.0	0.0				12.0	12.0	1.0	100.0%				0.0	0.0				17.1	17.1			1,296.0	1,296.0
11 On Demand Tankless Water Heater, LP, >= .82 EF w/Electronic Ignition			2.5	2.5		0.0	0.0				20.0	20.0	1.0	100%				0.0	0.0				7.1	7.1			0.0	0.0
12 On Demand Tankless Water Heater, Oil, >= .82 EF w/Electronic Ignition			0.0	0.0		0.0	0.0				20.0	20.0	1.0	100%				0.0	0.0				0.0	0.0			360.0	360.0
13 On Demand Tankless Water Heater, Gas, >= .95 EF w/Electronic Ignition			0.0	0.0		0.0	0.0				20.0	20.0	1.0	100%				0.0	0.0				0.0	0.0			0.0	0.0
14 On Demand Tankless Water Heater, LP, >= .95 EF w/Electronic Ignition			1.5	1.5		0.0	0.0				20.0	20.0	1.0	100%				0.0	0.0				9.9	9.9			300.0	300.0
26 Boilers, LP >= 90% AFUE (up to 300 MBH), Condensing			1.3	1.3		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				23.0	23.0			725.0	725.0
27 Boilers, Oil >= 85% AFUE (up to 300 MBH)			2.5	2.5		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				23.0	23.0			1,450.0	1,450.0
28 Boilers, Gas >= 96% AFUE (up to 300 MBH), Condensing			0.0	0.0		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				0.0	0.0			0.0	0.0
29 Boilers, LP >= 96% AFUE (up to 300 MBH), Condensing			0.0	0.0		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				0.0	0.0			0.0	0.0
30 Boilers, Oil >= 87% AFUE (up to 300 MBH)			0.0	0.0		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				0.0	0.0			0.0	0.0
31 Boilers, Gas >= 90% thermal efficiency (301 to 499 MBH), Condensing			0.0	0.0		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				0.0	0.0			0.0	0.0
32 Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			1.3	1.3		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				42.0	42.0			1,325.0	1,325.0
33 Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			2.5	2.5		0.0	0.0				25.0	25.0	1.0	100%				0.0	0.0				42.4	42.4			2,675.0	2,675.0
48 Boiler Reset Controls, Oil, After Market, 1 shift operation			1.3	1.3		0.0	0.0				15.0	15.0	1.0	100%				0.0	0.0				19.0	19.0			360.0	360.0
49 Boiler Reset Controls, Gas, After Market, >1 shift operation			1.3	1.3		0.0	0.0				15.0	15.0	1.0	100%				0.0	0.0				19.0	19.0			360.0	360.0

Notes:

Liberty Utilities Gas Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate			Total Lifetime Savings (mmbtu)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013 Plan	2014 Plan	2011			
																	2011 Plan	Actual	2013 Plan
Low Income	260.0	271.0	156.0	164.1	31.8	11.7	17.2	28.5	20.0	20.0	20.0	20.0	1.0	1.0	1.0	165,360.0	63,648.0	89,172.0	93,540.0

Liberty Utilities Gas Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (mmbtu)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013&2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Single Family (1-4 Units)	733	203	24	27	19	19	34	37	20	20	20	20	100%	100%	280,218	77,546	16,120	20,228
Multi-Family (5+ Units)	367	545	544	568	19	19	33	33	20	20	20	20	100%	100%	140,109	208,190	358,060	373,840

Liberty Utilities Gas ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (mmbtu)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013 & 2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Energy Star Homes	30	33	37	38	27	27	27	27	25	25	25	25	100%	100.00%	20,400	22,440	24,875	26,100

Liberty Utilities Gas ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				In-Service / Realization Rate			Total Lifetime Savings (mmbtu)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
High Efficiency Gas Steam Boiler	0.0	21.0			0.0	12.9			0.0	25.0			100%			0.0	6,772.5		
Tankless Water Heaters (EF 0.82)	232.0	2.0	90.0	94.0	8.0	1.9	8.0	9.7	20.0	13.0	20.0	20.0	100%	100%	100%	37,120.0	49.4	14,400.0	18,240.0
Indirect Water Heater (attached to gas Energy Star FHW boiler)	27.0	53.0	175.0	180.0	3.7	8.0	3.7	8.0	20.0	20.0	20.0	20.0	100%	100%	100%	2,000.0	8,480.0	12,960.0	28,800.0
Stand Alone Storage Water Heater (EF 0.67)	162.0	6.0	62.0	65.0	3.7	3.7	3.7	3.7	13.0	13.0	13.0	13.0	100%	100%	100%	7,787.0	286.0	2,982.2	3,133.0
Combo condensing boiler w/ On-Demand DWH 90%	104.0	45.0	40.0	45.0	21.1	21.1	17.8	17.8	20.0	20.0	20.0	20.0	100%	100%	100%	43,880.0	18,990.0	14,240.0	16,020.0
Furnace (forced hot air) 92% AFUE	0.0	19.0			0.0	21.1			0.0	18.0			100%			0.0	7,216.2		
Furnace (forced hot air) 92% AFUE w/ECM	0.0	23.0			0.0	11.8			0.0	18.0			100%			0.0	4,885.2		
Furnace (forced hot air) 94% AFUE w/ECM	25.0	168.0			18.0	14.2			18.0	18.0			100%			8,100.0	42,940.8		
Furnace (forced hot air) 95% AFUE w/ECM			192.0	208.0			4.5	4.5	18.0	18.0	18.0	18.0	100%	100%	100%			15,552.0	16,848.0
Furnace (forced hot air) 96% AFUE w/ECM	76.0	1.0	30.0	32.0	20.7	20.7	5.9	5.9	18.0	18.0	18.0	18.0	100%	100%	100%	28,314.0	373.1	3,186.0	3,402.0
Furnace 97+AFUE (<150) w/ECM Motor			17.0	17.0			18.5	18.5			18.0	18.0	100%	100%	100%			5,670.0	5,670.0
Boiler (forced hot water) 85% AFUE	0.0	56.0			0.0	7.2			0.0	20.0			100%			0.0	8,064.0		
Boiler (forced hot water) 96% AFUE	200.0	0.0	12.0	12.0	21.3	0.0	13.1	13.1	20.0	20.0	20.0	20.0	100%	100%	100%	85,200.0	0.0	3,144.0	3,140.0
Boiler (forced hot water) 90% AFUE	7.0	146.0	99.0	102.0	13.7	14.2	10.4	10.4	20.0	20.0	20.0	20.0	100%	100%	100%	1,920.0	41,464.0	20,600.0	21,220.0
Early Retirement Steam Boiler (Retire)			0.0	0.0			0.0	0.0			10.0	10.0		100%	100%			0.0	0.0
Boiler Reset Controls	20.0	2.0	18.0	19.0	7.9	7.9	4.5	4.5	15.0	15.0	15.0	15.0	100%	100%	100%	2,370.0	237.0	1,215.0	1,290.0
Tankless Water Heater (EF 0.95)	15.0	93.0			10.3	7.8	0.0	0.0	20.0	20.0			100%	100%	100%	3,100.0	14,508.0		
Condensing Gas Water Heater (EF 0.94)	15.0	0.0			25.0	0.0			15.0	15.0			100%			5,625.0	10,881.0		
Tankless Water Heater (EF 0.94)			30.0	32.0			10.1	9.9			20.0	20.0		100%	100%			6,060.0	6,360.0
7-Day Programmable Thermostats	1,130.0	393.0	1,410.0	1,470.0	7.7	8.0	3.2	3.2	15.0	15.0	15.0	15.0	100%	100%	100%	130,515.0	29,475.0	67,680.0	70,560.0
WiFiThermostats (controls gas heat only)			81.0	84.0			6.6	6.6			15.0	15.0		100%	100%			8,025.0	8,310.0
WiFiThermostats (controls elec cooling & gas heat only)			322.0	337.0			6.6	6.6			15.0	15.0		100%	100%			31,875.0	33,360.0

Liberty Utilities Gas Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (mmbtu)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013 & 2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
CEEP	0.0	5.0			0.0	351.0			15.0	21.0			100%		-	36,121.0		
Large Business Retrofit	174.0	113.0	25.0	26.0	266.2	286.0	414.4	414.4	15.0	12.0	15.0	15.0	100%	100%	694,665.0	384,727.0	155,400.0	161,610.0
Large Business New Equipment	8.0	1.0	4.0	4.0	634.1	2375.2	634.3	634.3	18.0	20.0	18.0	18.0	100%	100%	91,314.0	44,469.0	45,666.0	45,666.0
Furnace (forced hot air) 92% AFUE	0.0	2.0			0.0	21.1			18.0	18.0			100%		-	759.6		
Furnace 92+ AFUE (<150) w/ECM Motor	0.0	1.0			0.0	19.6			18.0	18.0			100%	100%	-	352.8		
Furnace 94+ AFUE (<150) w/ECM Motor	0.0	2.0			0.0	23.6			18.0	18.0			100%	100%	-	849.6		
Furnace 95+ AFUE (<150) w/ECM Motor			9.0	11.0			16.1	16.1					100%				2,610.0	3,186.0
Furnace 96+ AFUE (<150) w/ECM Motor			1.0	3.0			21.0	20.7					100%	100%			378.0	1,116.0
Infrared	10.0	20.0	12.0	13.0	223.2	74.4	48.3	48.3	17.0	17.0	17.0	17.0	100%	100%	37,944.0	25,296.0	9,860.0	10,676.0
On demand, Tankless Water Heater >=.82,	60.0	4.0	0.0	0.0	17.8	30.4	0.0	0.0	20.0	20.0	0.0	0.0	100%	100%	21,300.0	2,432.0	-	-
Indirect Water Heaters (Combined appliance efficiency rating >=.85% (EF=.82)	37.0	15.0	12.0	13.0	75.0	30.4	20.7	20.7	15.0	15.0	15.0	15.0	100%	100%	41,625.0	6,840.0	3,720.0	4,035.0
Condensing Stand Alone >95% TE, >75000 btu	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0	100%	100%	-	-	-	-
Integrated water heater/condensing boiler (0.9 EF, 0.9 AFUE)	2.0	45.0	0.0	0.0	1.1	21.1	0.0	0.0	20.0	20.0	25.0	25.0	100%	100%	43.6	18,990.0	-	-
Boiler >=96% AFUE, <= 300 mbh	5.0	3.0	0.0	0.0	37.0	16.8	0.0	0.0	25.0	25.0	25.0	25.0	100%	100%	4,625.0	1,260.0	-	-
Condensing boiler <= 300 mbh	45.0	21.0	0.0	0.0	47.4	32.3	0.0	0.0	25.0	25.0	25.0	25.0	100%	100%	53,303.6	16,957.5	-	-
Condensing boiler 301-499 mbh	42.0	8.0	7.0	10.0	222.1	78.3	56.1	56.1	25.0	25.0	25.0	25.0	100%	100%	233,231.3	15,660.0	9,825.0	14,025.0
Condensing boiler 500-999 mbh	15.0	13.0	2.0	2.0	89.0	146.7	103.0	103.0	25.0	25.0	25.0	25.0	100%	100%	33,375.0	47,677.5	5,150.0	5,150.0
Condensing boiler 1000-1700 mbh	7.0	12.0	2.9	3.0	83.2	264.1	189.3	189.3	25.0	25.0	25.0	25.0	100%	100%	14,554.2	79,230.0	13,525.0	14,200.0
Condensing boiler 1701+ mbh	4.0	4.0	3.0	4.0	249.0	332.6	331.3	331.3	25.0	25.0	25.0	25.0	100%	100%	24,900.0	33,260.0	24,850.0	33,125.0
Condensing Unit Heaters	0.0	0.0	6.0	7.0	0.0	0.0	41.0	40.9	18.0	18.0	18.0	18.0	100%	100%	-	-	4,428.0	5,148.0
Hydronic boiler <= 300mbh	10.0	1.0			16.8	16.8			25.0	25.0			100%		4,200.0	420.0		
Hydronic boiler 301-499 mbh	2.0	0.0			0.0	3.5			25.0	25.0			100%	100%				
Hydronic boiler 500-999 mbh	2.0	0.0			0.0	6.5			25.0	25.0			100%	100%				
Hydronic boiler 1000-1700 mbh	1.0	0.0			0.0	12.0			25.0	25.0			100%	100%				
Hydronic boiler 1701+ mbh	1.0	0.0			0.0	15.0			25.0	25.0			100%	100%				
Fryers	2.0	0.0	2.0	2.0	293.0	0.0	58.5	58.5	12.0	12.0	12.0	12.0	100%	100%	7,032.0	-	1,404.0	1,404.0
High Efficiency Gas Steamer (Energy Star >=38% efficiency)	2.0	0.0	1.0	1.0	153.5	0.0	107.0	107.0	10.0	10.0	12.0	12.0	100%	100%	3,070.0	-	1,284.0	1,284.0
High Efficiency Gas Convection Oven (>=40% efficiency)	3.0	4.0	1.0	1.0	16.7	24.8	31.0	31.0	12.0	12.0	12.0	12.0	100%	100%	600.0	1,190.4	372.0	372.0
High Efficiency Gas Combination Oven (>=40% efficiency)	2.0	0.0	1.0	1.0	60.5	0.0	110.0	110.0	12.0	12.0	12.0	12.0	100%	100%	1,452.0	-	1,320.0	1,320.0
High Efficiency Gas Conveyer Oven (>=40% efficiency)	1.0	0.0	1.0	1.0	169.0	0.0	85.0	85.0	12.0	12.0	12.0	12.0	100%	100%	2,028.0	-	1,020.0	1,020.0
High Efficiency Gas Rack Oven (>=50% efficiency)	1.0	11.0	1.0	1.0	211.0	0.0	211.0	211.0	12.0	12.0	12.0	12.0	100%	100%	2,532.0	-	2,532.0	2,532.0
High Efficiency Gas Griddle	1.0	0.0	1.0	1.0	19.0	0.0	19.0	19.0	12.0	12.0	12.0	12.0	100%	100%	228.0	-	228.0	228.0
Pre Rinse Spray Valve	10.0	125.0	30.0	34.0	33.6	33.6	32.6	33.7	5.0	5.0	5.0	5.0	100%	100%	1,680.0	21,000.0	4,888.2	5,725.0
Boiler Reset Controls (retrofit only)	2.0	9.0	8.0	8.0	35.5	1.0	35.5	35.5	20.0	20.0	15.0	15.0	100%	100%	1,420.0	180.0	4,260.0	4,260.0
Steam Traps	20.0	17.0	33.0	36.0	25.3	25.3	23.6	25.7	1.0	1.0	3.0	3.0	100%	100%	506.0	430.1	2,332.0	2,775.0
Thermostat	20.0	64.0	15.0	16.0	2.5	9.7	2.4	2.5	15.0	15.0	15.0	15.0	100%	100%	750.0	9,276.0	534.4	600.0

Liberty Utilities Gas Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (mmbtu)			
	2011 Plan	Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	Actual	2013 Plan	2014 Plan	2011	2013 & 2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Small Business Custom	23	0			324	0			15	0			100%		111,885	0		
Small Business Retrofit Custom			25	26			324	324			15	15	100%				121,620	126,465
Small New Equipment Custom			7	7			634	634			18	18	100%				79,902	79,902
Pre Rinse Spray Valve			52	54			34	34			5	5	100%				8,736	1,814
Boiler Reset Controls (retrofit only)			3	5			36	36			15	15	100%				1,598	178
Steam Traps			8	9			26	26			3	3	100%				617	231
Thermostat			9	10			3	3			15	15	100%				338	25
Condensing boiler <= 300 mbh			55	49			22	22			25	25	100%				30,388	1,083
Hydronic boiler <= 300 mbh			0	0			-	-			25	25	100%				0	0
Infrared			22	23			74	74			17	17	100%				27,826	1,711
On demand, Tankless Water Heater >=.82,			12	15			7	7			20	20	100%				1,704	107
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.82)			45	46			30	30			15	15	100%				20,520	1,398
Condensing Stand Alone >95% TE, >75000 btu			5	10			25	25			15	15	100%				1,875	250
Integrated water heater/condensing boiler (0.9 EF, 0.9 AFUE)			8	9			25	25			20	20	100%				3,930	221
Boiler >=96% AFUE, <= 300 mbh			5	10			22	22			25	25	100%				2,763	221
Condensing boiler 301-499 mbh			21	22			42	42			25	25	100%				22,208	931
Condensing boiler 500-999 mbh			11	12			77	77			25	25	100%				21,203	925
Condensing boiler 1000-1700 mbh			0	0			-	-			25	25	100%				0	0
Condensing boiler 1701+ mbh			0	0			-	-			25	25	100%				0	0
Hydronic boiler 301-499 mbh			0	0			-	-			25	25	100%				0	0
Hydronic boiler 500-999 mbh			0	0			-	-			25	25	100%				0	0
Hydronic boiler 1000-1700 mbh			0	0			-	-			25	25	100%				0	0
Hydronic boiler 1701+ mbh			0	0			-	-			25	25	100%				0	0
Condensing Unit Heaters			5	6			41	41			18	18	100%				3,683	246
Fryers			9	12			59	59			12	12	100%				6,329	703
High Efficiency Gas Steamer (Energy Star >=38% efficiency)			2	5			154	154			12	12	100%				3,686	768
High Efficiency Gas Convection Oven (>=40% efficiency)			2	5			25	25			12	12	100%				595	124
High Efficiency Gas Combination Oven (>=40% efficiency)			3	3			40	40			12	12	100%				1,451	121
High Efficiency Gas Conveyer Oven (>=40% efficiency)			2	3			85	85			12	12	100%				2,028	254
High Efficiency Gas Rack Oven (>=50% efficiency)			1	3			211	211			12	12	100%				2,536	634
High Efficiency Gas Griddle			1	3			19	19			12	12	100%				222	56

NHEC Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011		2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan				
	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2013	2011 Plan	Actual	2013 Plan	2014 Plan	Plan	Actual	Plan	Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan		
Electric Savings for Fossil Heated Homes	85	85	57	57	1,360	1,246	1,747	1,747	11.0	10.69	10.79	10.79	86.20%	88.80%	1,095,797	975,831	956,047	956,047										
Weatherization - Electric Heat		0																										
Weatherization - Kerosene Heated	85	6	23	23					11.0	15.68	13.85	13.85	86.20%	88.80%							5.3	10.4	24.6	24.6	4,288	839	6,912	6,912
Weatherization - LP Heated	85	5							11.0	15.55			86.20%	88.80%							4.1	4.9			3,272	328		
Weatherization - NG Heated																												
Weatherization - Wood Heated	85	3							11.0	12.61			86.20%	88.80%							3.1	22.9			2,507	748		
Weatherization - Oil Heated	85	15	34	34					11.0	10.98	10.99	10.99	86.20%	88.80%							10.4	19.4	17.3	17.3	8,366	2,749	5,799	5,799
Weatherization - Other																												
Weatherization - Baseload																												
Heating System Replacements											20.00	20.00	100.00%	100.00%														

Planning Assumptions

1. MMBTU savings for 2013 only include savings resulting from SBC funded weatherization, projected to be 15-17 MMBTUs per home (WAP collaboration funding is expected to pay for other additional MMBTU Savings). For gas heated homes, it is expected that the gas companies will pay for most of the weatherization project and will claim associated MMBTU savings.

NHEC Home Performance with Energy Star Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011		2013		2011		2013		2011		2013		2013		2011		2011		2013		2011		2013		2011		2013	
	2011 Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2014	2011 Plan	Actual	2013 Plan	2014 Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Actual	Plan
Weatherization: Electric Heat	39	15	9	10	5,787	5,238	4,388	4,388	10.9	16.34	10.9	10.9	100.00%	100.00%	2,480,854	1,283,858	421,887	457,874	6	12	23	23	2,705	2,929		5,360	5,818	
Weatherization: LP Heat			11	11							22.3	22.3	100.00%	100.00%												26,582	28,850	
Weatherization: Oil Heat			45	49							20.6	20.6	100.00%	100.00%												1,082	1,175	
Weatherization: Kerosene			3	3							19.6	19.6	100.00%	100.00%												1,200	1,303	
Weatherization: Wood Heat			4	5							18.9	18.9	100.00%	100.00%														
Electric Baseload: Single Family			17	18			369	369			7.8	7.8	100.00%	100.00%			48,173	52,282										

Planning Assumptions

1. For CFL savings, we assumed EISA was fully in place for 2012 and our contractors installed 6 CFLs per home audited/weatherized (2.7 hrs/day x 365 days/year x (49.9-18.4)/1,000) x 6 = 186.3 kWh/year.

2. Plan to audit and install electric measures (Light Fixtures, CFLs, and Refrigerator Replacement) at 17 SF homes in 2013, and provide weatherization & electric measures at 63 fuel neutral homes and 9 electrically heated homes. Used average energy savings from the 2011 Cadmus Impact Evaluation, Table 16, page 30, adjusted based on actual 2012 results through Aug 6, 2012.

NHEC Energy Star Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	ES CFL Lights	223	47	38	46	51	51	23	23	7.00	7.00	5.00	5.00	0.80	0.80	63,388	13,377	3,524	4,261							
ES Light Fixture (Interior)	37	112	90	109	106	106	62	62	20.00	20.00	20.00	20.00	1.00	1.00	78,589	237,120	112,683	136,279								
ES Clothes Washer	26	25	26	31	223	223	261	261	11.00	11.00	11.00	11.00	1.00	1.00	63,740	61,328	73,778	89,227								
ES Dishwasher	37	44	36	43	33	33	33	33	10.00	10.00	10.00	10.00	1.00	1.00	12,250	14,520	11,745	14,205								
ES Refrigerator	32	44	36	43	107	107	106	106	12.00	12.00	12.00	12.00	1.00	1.00	40,513	56,496	45,273	54,753								
ES Central AC	22	5	2	3	113	263	198	198	14.00	14.00	14.00	14.00	1.00	1.00	35,235	18,426	5,930	7,172								
Oil Heated Homes		3				80			25.00	25.00	25.00	25.00	1.00	1.00		6,000										
Liquid Propane Heated Homes	22	31	29	35	909	781	757	757	25.00	25.00	25.00	25.00	1.00	1.00	506,135	605,275	543,640	657,478	43	59	66	66	23,872	4,424	47,242	57,134
ASHP Heated Home		3				4,945			25.00	25.00	25.00	25.00	1.00	1.00		370,875										
GSHP Heated Homes	15	12	14	17					25.00	25.00	25.00	25.00	1.00	1.00												

Planning Assumptions

- Appliance Measure Life Changes
 - ES Room AC reduced from 12 to 8 years.
 - Dishwasher reduced from 12 to 10 years.
 - Clothes Washer reduced from 14 to 11 years.
 - Refrigerator reduced from 13 to 12 years.
- Lighting Changes: Measure life was reduced.
 - CFL reduced from 8 to 5 years (Eg. 6500 hour bulb / 3.44 hours/day = 5.18 years)
 - Annual kWh Savings reduced due to the new standards from the Energy Independence & Securities Act that reduces base bulb wattage between 2012-2014.
- ENERGY STAR CFL Lights incentives capped at 12 per home for 2012.

NHEC Energy Star Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Catalog Sales: CFLs	717	273	1,676	1,839	52	52	23	23	5.00	5.00	5.00	5.00	0.80	0.62	148,602	56,564	120,043	131,692
Retail Sales: CFLs	3,586	1,736	1,676	1,839	51	51	23	23	5.00	5.00	5.00	5.00	0.80	0.62	729,082	352,913	120,043	131,692
Retail Sales: Multipacks	30,126	30,231	21,304	23,371	51	51	23	23	5.00	5.00	5.00	5.00	0.80	0.62	6,120,319	6,145,681	1,525,975	1,674,050
Retail Sales: Interior Fixture	1,076	299	568	623	106	106	62	62	8.00	8.00	8.00	8.00	0.96	0.96	878,350	244,095	272,812	299,285
Retail Sales: Exterior Fixture	359	49	57	62	106	106	62	62	5.00	5.00	5.00	5.00	1.00	1.00	189,823	25,935	17,688	19,404
Retail Sales: Torchieres		7	36	37	104	104	69	69	8.00	8.00	8.00	8.00	0.94	0.94	0	5,465	18,537	19,078
Retail Sales: LED Fixtures		119	284	312	47	47	28	28	20.00	20.00	20.00	20.00	0.95	0.95	0		149,317	163,807
Retail Sales: # LEDs (102 packs)			2,841	3,116	47	47	28	28	20.00	20.00	20.00	20.00	0.95	0.95	0	0	1,493,174	1,638,065

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

NHEC Energy Star Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan		
Energy Star Clothes Washer	746	1,026	858	1,006	223	223	261	261	11.00	11.00	11.00	11.00	1.00	1.00	1,829,838	2,516,834	2,461,138	2,884,346		0.14	0.74	0.74			1,624	6,964	8,161	
Energy Star Room A/C	173	294	200	234	16	16	16	16	9.00	9.00	9.00	9.00	1.00	1.00	25,225	42,750	29,024	34,015										
Smartstrip Power Strip	52	25	60	70	75	75	75	75	5.00	5.00	5.00	5.00	1.00	1.00	19,527	9,381	22,469	26,332										
Energy Star Refrigerator	520	649	599	702	107	107	107	107	12.00	12.00	12.00	12.00	1.00	1.00	668,226	833,316	768,871	901,083										
2nd Refrigerator Pickup	226	194	200	234	413	413	835	835	8.00	8.00	8.00	8.00	1.00	1.00	745,110	640,976	1,333,348	1,562,626										
2nd Freezer Pickup			60	70	413	413	663	663	8.00	8.00	8.00	8.00	1.00	1.00			317,608	372,223										
Energy Star Room Air Purifiers	17	11	20	23	268	268	391	391	9.00	9.00	9.00	9.00	1.00	1.00	41,842	26,532	70,173	82,240										
Energy Star Central Air Conditioner			5	5	263	263	110	110	14.00	14.00	14.00	14.00	1.00	1.00			7,144	7,144										
Energy Star Mini Split Heat Pump			8	8			123	123									12,279	12,279										
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158	-2,158												15.43		15.43						
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			4	4			-2,158	-2,158												17.14		17.14				890	890	
Energy Star Mini Split Heat Pump (for homes w/LP heat)			4	4			-2,158	-2,158												15.43		15.43				741	741	
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM			11	11			168	168			18.00	18.00	1.00	1.00			33,579	33,579			4.50		4.50			899	899	
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM			6	6			168	168			18.00	18.00	1.00	1.00			16,789	16,789			5.55		5.55			555	555	
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM			2	2			168	168			18.00	18.00	1.00	1.00			5,596	5,596			5.90		5.90			197	197	
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM			6	6			168	168			18.00	18.00	1.00	1.00			16,789	16,789			18.00		18.00			1,799	1,799	
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM			2	2			168	168			18.00	18.00	1.00	1.00			5,596	5,596			20.70		20.70			690	690	
Boil: LP Boiler, FHW, AFUE >= 90%			11	11							20.00	20.00	1.00	1.00							10.40		10.40			2,310	2,310	
Boil: LP Boiler, FHW, AFUE >=96%			4	4							20.00	20.00	1.00	1.00							13.10		13.10			970	970	
Boil: Oil Boiler, FHW, AFUE >=85%			70	70							20.00	20.00	1.00	1.00							5.38		5.38			7,567	7,567	
Boil: Oil Boiler, FHW, AFUE >=90%			9	9							20.00	20.00	1.00	1.00							10.75		10.75			1,989	1,989	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			1	1							20.00	20.00	1.00	1.00							17.80		17.80			329	329	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			1	1							20.00	20.00	1.00	1.00							17.80		17.80			329	329	
DHW: LP, Tankless Water Heaters (EF>= 0.82)			22	22							20.00	20.00	1.00	1.00							9.70		9.70			4,308	4,308	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			1	1							20.00	20.00	1.00	1.00							8.00		8.00			148	148	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			1	1							20.00	20.00	1.00	1.00							8.00		8.00			148	148	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			1	1							13.00	13.00	1.00	1.00							3.70		3.70			45	45	
DHW: Energy Star Heat Pump 50 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			1	1			1,775	1,775			10.00	10.00	1.00	1.00			16,425	16,425			0.00		0.00			0	0	
DHW: Energy Star Heat Pump 80 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			1	1			2,672	2,672			10.00	10.00	1.00	1.00			24,725	24,725			0.00		0.00			0	0	
BRC: Gas, Boiler Reset Controls			0	0							15.00	15.00	1.00	1.00							9.60		9.60			0	0	
BRC: LP, Boiler Reset Controls			8	8							15.00	15.00	1.00	1.00							9.60		9.60			1,199	1,199	
BRC: Oil, Boiler Reset Controls			11	11							15.00	15.00	1.00	1.00							9.60		9.60			1,599	1,599	
TSTAT: LP, 7-Day Programmable Thermostats			1	1			14	14			15.00	15.00	1.00	1.00			200	200			7.70		7.70			107	107	
TSTAT: Oil, 7-Day Programmable Thermostats			1	1			14	14			15.00	15.00	1.00	1.00			200	200			7.70		7.70			107	107	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			1	1			14	14			15.00	15.00	1.00	1.00			200	200			6.60		6.60			92	92	
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			1	1			14	14			15.00	15.00	1.00	1.00			200	200			6.60		6.60			92	92	

Planning Assumptions

1. Clothes Washer Annual kWh Savings updated based on mix of Electric Water Heating customer and per EnergyStar.gov Savings Calculator.
2. Room Air Purifier Annual kWh Savings updated per EnergyStar.gov Savings Calculator.
3. Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
4. All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

NHEC Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	Snowmaking-Retrofit	1	3	1	1	321,194	333,129	333,129	333,129	13.0	13.0	13.0	13.0	94.0%	98.7%	3,924,991	12,212,509	4,519,386	4,899,506							
Lighting-Retrofit	21	11	6	7	20,818	36,984	44,921	44,921	13.0	13.0	13.0	13.0	94.0%	98.7%	5,242,846	4,971,389	3,656,535	3,964,082								
VFD-Retrofit		2	2	2		38,743	38,743	38,743	13.0	13.0	13.0	13.0	94.0%	98.7%		946,879	1,051,212	1,139,628								
Refrigeration-Retrofit		1	1	1		19,371	19,371	19,371	13.0	13.0	13.0	13.0	94.0%	98.7%		236,714	262,796	284,900								
Motors-Retrofit		1				16,688			13.0	13.0	13.0	13.0	94.0%	98.7%		203,927										
HVAC-Retrofit		1				29,870			13.0	13.0	13.0	13.0	94.0%	98.7%		365,011										

NHEC Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Lighting-Retrofit	29	40	58	62	7,026	14,922	12,623	12,623	13.0	13.0	15.9	15.9	92.90%	93%	2,431,013	7,208,554	10,780,416	11,621,452								
Refrigeration-Retrofit	3	4	6	7	22,555	12,396	13,242	13,242	13.0	13.0	12.9	12.9	92.90%	93%	867,136	598,833	1,002,768	1,080,999								
VFD-Retrofit		1				8,969			13.0	13.0			92.90%	93%		108,314										
Average New Construction Project	5				32,605				15.0	15.0	15.0	15.0	92.5%	100.0%	2,248,898											
Lighting-New Construction		7	9	9		91,447	42,705	42,705	15.0	15.0	15.0	15.0	92.5%	100.0%		8,881,790	5,587,285	6,023,177								
HVAC-New Construction		4	4	4		13,326	6,925	6,925	15.0	15.0	15.0	15.0	92.5%	100.0%		739,593	411,843	443,973								
VFD-New Construction		1				20,197			15.0	15.0	15.0	15.0	92.5%	100.0%		280,233										
Refrigeration-New Construction		1	2	3		21,156	46,695	46,695	15.0	15.0	15.0	15.0	92.5%	100.0%		293,540	1,666,177	1,796,164								
Lighting Catalog		2				745				5.0			92.90%	93%		6,921										
Weatherization		1				23,782				18.0			92.90%	93%		397,683										

NHEC Company Specific Programs
 A. High Efficiency Heat Pump Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate			Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
A. GSHP (Heating)	12	12	14	15	18,232	42,073	33,057	33,057	25	25	25	25	100.00%	100.00%	5,696,795	12,621,975	11,682,515	12,784,621	
A. GSHP (Cooling)	12	12	14	15	286	76	96	96	25	25	25	25	100.00%	100.00%	89,303	22,776	34,024	37,233	
A. GSHP (Hot Water)	12	12	14	15	1,811	1,613	1,389	1,389	25	25	25	25	100.00%	100.00%	565,856	483,849	490,935	537,248	
A. ASHP (Heating)		2			9,671	-2,661			25	25	25	25	100.00%	100.00%		-133,025			
A. ASHP (Cooling)		2			71.19	101.50			25	25	25	25	100.00%	100.00%		5,075			
A. ASHP (Hot Water)		2			519.55	725.77			25	25	25	25	100.00%	100.00%		36,289			

Planning Assumptions

A. Energy Star Homes - Geothermal & Air Source Heat Pump

- GSHP = Ground Source (Geothermal) Heat Pump; ASHP = Air Source Heat Pump; Split System Heat Pump (ex. Mitsubishi "Mr. Slim")
- Home Energy Raters incorporating a new Heat Pump COP calculation for the rated home to more accurately account for pumping power requirements. This reduced savings by 8% from 2011.
- The User Defined Reference Home for New Hampshire continues to be updated to reflect code changes. Revisions will include a change to the efficiency of the reference heating system efficiency, resulting in a 5% reduction in savings.
- Planning for additional homes to have Air Source Heat Pumps installed in 2012 due to their cold climate heating improvements. (Some may choose to go through the ENERGY STAR Homes program.)

PSNH Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
	Electric Savings for Fossil Heated Homes	740.0	287	643.9	656.7	1,117.0	1,262.6	1,059.0	1,059.0	13.4	11.96	14.31	14.31	86.20%	86.20%	9,511,864	3,735,874	8,408,970	8,576,174								
Weatherization - Electric Heat	20.0	230	13.1	13.4	3,187.0	1,710.5	2,799.0	2,799.0	17.4	13.56	19.78	19.78	86.20%	86.20%	957,672	4,599,760	627,049	639,517					0	0	0	0	
Weatherization - Kerosene Heated	111.0	62	193.2	197.0					20.9	14.64	20.62	20.62	86.20%	86.20%	0	0	0	0	15.00	16.12	17.00	17.00	29,967	12,924	58,362	59,523	
Weatherization - LP Heated	59.2	36	57.9	59.1					19.3	11.86	21.39	21.39	86.20%	86.20%	0	0	0	0	15.00	18.80	15.00	15.00	14,796	6,999	16,024	16,343	
Weatherization - NG Heated	229.4	36	199.6	203.6					17.2	6.54	19.43	19.43	86.20%	86.20%	0	0	0	0	15.00	17.32	8.00	8.00	51,017	3,761	26,744	27,275	
Weatherization - Wood Heated	14.8	5	32.2	32.8					20.3	13.38	20.95	20.95	86.20%	86.20%	0	0	0	0	15.00	113.31	25.00	25.00	3,885	6,349	14,534	14,823	
Weatherization - Oil Heated	325.6	148	161.0	164.2					18.9	11.73	19.99	19.99	86.20%	86.20%	0	0	0	0	15.00	21.71	23.00	23.00	79,610	33,240	63,810	65,079	
Weatherization - Other													86.20%	86.20%	0	0	0	0					0	0	0	0	
Weatherization - Baseload		269				640.5			13.0	12.71			86.20%	86.20%	0	1,887,795	0	0					0	0	0	0	
Heating System Replacements											20.00	20.00	100.00%	100.00%	0	0	0	0					0	0	0	0	

Planning Assumptions

1. MMBTU savings for 2013 only include savings resulting from SBC funded weatherization, projected to be 15-25 MMBTUs per home (WAP collaboration funding is expected to pay for other additional MMBTU Savings). For gas heated homes, it is expected that the gas companies will pay for most of the weatherization project and will claim associated MMBTU savings.

PSNH Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings						
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011		2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
																2011 Plan	Actual	2013 Plan	2014 Plan										
HES - ELECTRIC																													
Weatherization-Baseload: Electric Heat/Lighting		14				11,395.7				11.0			100.00%	100.00%	0	1,750,156	0	0					0	0	0	0			
Weatherization-Baseload: LP Heat/Lighting													100.00%	100.00%	0	0	0	0					0	0	0	0			
Weatherization-Baseload: Oil Heat/Lighting													100.00%	100.00%	0	0	0	0					0	0	0	0			
Weatherization-Baseload: Electric Savings													100.00%	100.00%	0	0	0	0					0	0	0	0			
Weatherization-HVAC: Electric/Wood Heat		7				8,617.6				22.1			100.00%	100.00%	0	1,335,557	0	0					0	0	0	0			
Weatherization-HVAC: LP Heat													100.00%	100.00%	0	0	0	0					0	0	0	0			
Weatherization-HVAC: Oil Heat													100.00%	100.00%	0	0	0	0					0	0	0	0			
Weatherization-HVAC: Elec w/LP Backup													100.00%	100.00%	0	0	0	0					0	0	0	0			
Electric Baseload: Single Family	51.3	112	64.4	64.3	186.3	331.2	294.0	294.0	5.0	7.6	7.9	7.9	100.00%	100.00%	47,774	280,153	149,169	148,932					0	0	0	0			
Electric Baseload: Multi-Family	402.7	366	505.5	504.7	186.3	888.1	294.0	294.0	5.0	16.4	7.9	7.9	100.00%	100.00%	375,001	5,331,344	1,170,908	1,169,053					0	0	0	0			
FUEL-NEUTRAL PILOT ELECTRIC SAVINGS																													
Pilot Wxn - Electric Heat Savings	562.2				186.3	9,638.0			5.0	14.6			100.00%	100.00%	523,563	0	0	0					0	0	0	0			
Fuel Neutral Pilot (Kerosene)						315.5				8.0			100.00%	100.00%	0	0	0	0					0	0	0	0			
Fuel Neutral Pilot (LP)						578.9				11.6			100.00%	100.00%	0	0	0	0					0	0	0	0			
Fuel Neutral Pilot (Gas)						177.3				9.8			100.00%	100.00%	0	0	0	0					0	0	0	0			
Fuel Neutral Pilot (Oil)						443.0				8.9			100.00%	100.00%	0	0	0	0					0	0	0	0			
Fuel Neutral Pilot (Wood)						5,216.3				16.3			100.00%	100.00%	0	0	0	0					0	0	0	0			
Fuel Neutral Pilot (ElecBaseload)	5.62185				6,533.8	946.0			14.6	12.6			100.00%	100.00%	536,291	0	0	0					0	0	0	0			
FUEL NEUTRAL HPwES																													
SF, Electric, CFLs			459.7	458.9			378.0	378.0			8.1	8.1	100.00%	100.00%	0	0	1,410,809	1,408,545					0	0	0	0			
Wxn Oil Heated Homes	314.8235	314	369.6	369.0	0.0				20.2	19.38	21.0	21.0	100.00%	100.00%	0	0	0	0	22.30	38.40	28.56	28.56	141,535	229,079	221,439	221,084			
Wxn LP Heated Homes	112.437	54	43.2	43.1	0.0				20.4	20.48	20.9	20.9	100.00%	100.00%	0	0	0	0	22.30	33.79	22.52	22.52	51,150	36,490	20,324	20,291			
Wxn Gas Heated Homes	16.86554	2	1.8	1.8	0.0				16.9	21.11	18.6	18.6	100.00%	100.00%	0	0	0	0	22.30	64.41	15.51	15.51	6,343	2,705	532	531			
Wxn Wood Heated Homes	101.1933	24	25.3	25.2	0.0				20.6	21.57	21.1	21.1	100.00%	100.00%	0	0	0	0	22.30	98.38	19.02	19.02	46,576	51,943	10,133	10,116			
Wxn Kerosene Heated Homes	11.2437	1	4.1	4.1	0.0				16.9	21.26	22.1	22.1	100.00%	100.00%	0	0	0	0	22.30	46.88	32.70	32.70	4,240	984	2,991	2,986			
Wxn Electrically Heated Homes			15.6	15.6			6,552.2	6,552.2			18.0	18.0	100.00%	100.00%	0	0	1,845,888	1,842,926					0	0	0	0			
Pilot - Fossil - Audits & CFLs				0									100.00%	100.00%	0	0	0	0					0	0	0	0			
Pilot - Heating System Replacements	20.0	34	20	20	0	0.0			20.0	21.7	20.0	20.0	100.00%	100.00%	0	0	0	0	11.36	6.60	11.36	11.36	4,544	4,937	4,544	4,544			

Planning Assumptions

1. For CFL savings, we assumed EISA was fully in place for 2012 and our contractors installed 6 CFLs per home audited/weatherized (2.7 hrs/day x 365 days/year x (49.9-18.4)/1,000) x 6 = 186.3 kWhs/year.

2. Plan to audit and install electric measures (Light Fixtures, CFLs, and Refrigerator Replacement) at 64 SF and 506 MF homes, and provide weatherization & electric measures at 460 fuel neutral homes. Used average energy savings from the 2011 Cadmus Impact Evaluation, Table 16, page 30, adjusted based on actual 2012 results through Aug 6, 2012.

PSNH ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	ES CFL Lights	3,844	4,566	3,121	3,169	39.1	50.6	23.0	23.0	5	5	5	5	80.30%	80.30%	603,270	928,225	288,178	292,623					0	0	0
ES Light Fixture (Interior)	1,153	4,270	312	317	105.9	105.9	62.3	62.3	20	20	20	20	100.00%	100.00%	2,441,232	9,040,213	388,727	394,722					0	0	0	0
ES Light Fixture (Exterior)		0	0	0	105.9	105.9	62.3	62.3	5	5	5	5	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Clothes Washer	57.7	270.0	46.8	48	223.0	223.0	223.0	223.0	11	11	11	11	100.00%	100.00%	141,416	662,340	114,851	116,622	0.14	0.95	0.7376	0.7376	91	2,809	380	386
ES Dishwasher	230.6	438.0	218.5	222	33.0	33.0	33.0	33.0	10	10	10	10	100.00%	100.00%	76,105	144,540	72,103	73,215	0.40	0.40	0.1888	0.18880	922	1,752	413	419
ES Refrigerator	307.5	589.0	249.7	254	106.0	107.0	106.0	106.0	12	12	12	12	100.00%	100.00%	391,127	756,276	317,629	322,527					0	0	0	0
ES Room AC		0.0	0.0	0	16.2	36.4	16.2	16.2	9	9	9	9	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Central AC			0.0	0	263.0	263.2	263.0	263.0	14	14	14	14	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Thermostats	288.3	381.0	234.1	238	0.0	0.0	0.0	0.0	12	12	12	12	100.00%	100.00%	0	0	0	0					0	0	0	0
Oil Heated Homes	19.2	9.0	15.6	16	519.8	597.8	519.8	519.8	25	25	25	25	100.00%	100.00%	249,747	134,500	202,817	205,945	28.99	37.69	46.00	46.00	13,928	8,481	17,948	18,225
Natural Gas Heated Homes	211.4	183.0	46.8	48	481.5	23.8	481.5	481.5	25	25	25	25	100.00%	100.00%	2,544,603	109,025	563,577	572,269	23.71	22.93	25.80	25.80	125,306	104,900	30,199	30,665
Liquid Propane Heated Homes	134.5	302.0	171.7	174	506.0	544.2	506.0	506.0	25	25	25	25	100.00%	100.00%	1,701,754	4,109,075	2,171,679	2,205,171	40.55	36.77	37.20	37.20	136,376	277,650	159,657	162,119
Electric Baseboard Heated Home	19.2	3.0	15.6	16	3,077.0	7,081.7	7,323.0	7,323.0	25	25	25	25	100.00%	100.00%	1,478,345	531,125	2,857,206	2,901,270					0	0	0	0
ASHP Heated Home		151.0	62.4	63	1,600.0	5,871.6	2,313.0	2,313.0	25	25	25	25	100.00%	100.00%	0	22,165,125	3,609,841	3,665,513					0	0	0	0
Wood Heated Homes		2.0				239.5			25	25	25	25	100.00%	100.00%	0	11,975	0	0		26.50			0	1,325	0	0
GSHP Heated Homes		2.0				20,058.5			25	25	25	25	100.00%	100.00%	0	1,002,925	0	0					0	0	0	0
GSHP/NG Heated Homes		0.0				0.0			25	25	25	25	100.00%	100.00%	0	0	0	0					0	0	0	0

Planning Assumptions

802.924 1066.15

- Planned participation - 384 homes. Expect a fewer number of electric heated homes (multi-family) than in 2010
 (The 2010 Air Source Heat Pumps were the result of a large development that will have been completed in 2011.)
- Appliance Measure Life Changes
 - > ES Room AC reduced from 12 to 8 years.
 - > Dishwasher reduced from 12 to 10 years.
 - > Clothes Washer reduced from 14 to 11 years.
 - > Refrigerator reduced from 13 to 12 years.
- Lighting Changes: Measure life was reduced.
 - > CFL reduced from 8 to 5 years (Eg. 6500 hour bulb / 3.44 hours/day = 5.18 years)
 - > Annual kWh Savings reduced due to the new standards from the Energy Independence & Securities Act that reduces base bulb wattage between 2012-2014.
- ENERGY STAR CFL Lights incentives capped at 12 per home for 2012.

PSNH ENERGY STAR® Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Catalog Sales: CFLs	3,851	3,532	2,859	2,942	39.6	51.61	23.00	23.00	5	5	5	5	80.30%	62.30%	611,473	731,812	204,772	210,750
Catalog Sales: Interior Fixtures	1,685	366	376	387	107.1	107.10	62.27	62.27	8	8	8	8	96.40%	96.40%	1,392,163	302,307	180,636	185,909
Catalog Sales: Exterior Fixtures	194	113	188	194	107.1	107.10	62.27	62.27	5	5	5	5	100.00%	100.00%	104,145	60,513	58,557	60,266
Catalog Sales: Torchieres	39	21	113	116	120.0	119.98	69.35	69.35	8	8	8	8	93.50%	93.50%	34,906	18,846	58,538	60,247
Catalog Sales: LED Fixtures	65	0	38	39	47.0	47.16	27.67	27.67	20	20	20	20	95.00%	95.00%	57,931		19,773	20,351
Catalog Sales: LEDs	648	0	188	194	47.0	47.16	27.67	27.67	20	20	20	20	95.00%	95.00%	579,313	0	98,867	101,753
Retail Sales: # CFLs (1-2 packs)	3,355	13,512	7,683	7,907	39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	526,541	2,746,864	550,324	566,391
Retail Sales: # CFLs (3-6 packs)	210,036	222,592	214,407	220,667	39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	32,966,010	45,250,882	15,357,877	15,806,253
Retail Sales: # CFL (> 6 packs)	0	0		0	39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	0	0	0	0
Retail Sales: Interior Fixture	583	3,120	2,144	2,207	105.9	105.86	62.27	62.27	8	8	8	8	96.40%	96.40%	476,296	2,547,079	1,029,624	1,059,684
Retail Sales: Exterior Fixture	117	186	143	147	105.9	105.86	62.27	62.27	5	5	5	5	100.00%	100.00%	61,761	98,447	44,503	45,802
Retail Sales: Torchieres	29	0	36	37	104.4	104.37	69.35	69.35	8	8	8	8	93.50%	93.50%	22,775	0	18,537	19,078
Retail Sales: LED Fixtures	583		715	736	47.0	47.16	27.67	27.67	20	20	20	20	95.00%	95.00%	521,382		375,694	386,662
Retail Sales: # LEDs (102 packs)	1,167	1,092	7,147	7,356	47.0	47.16	27.67	27.67	20	20	20	20	95.00%	95.00%	1,042,885	978,434	3,756,939	3,866,623

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

PSNH ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan		
Energy Star Clothes Washer	4,824.2	8,098.0	7,809.0	8,242.4	223.01	223.01	260.68	260.68	11	11	11	11	100.00%	100.00%	11,834,033	19,864,839	22,392,048	23,634,903		0.14	0.74	0.74			12,814	63,359	66,875	
Energy Star Room A/C	3,308.0	2,537.0	2,552.9	2,694.6	16.16	16.16	16.16	16.16	9	9	9	9	100.00%	100.00%	481,014	368,901	371,217	391,821										
Smartstrip Power Strip	1,102.7	200.0	195.2	206.1	75.04	75.04	75.04	75.04	5	5	5	5	100.00%	100.00%	413,746	75,044	73,252	77,318										
Energy Star Refrigerator	3,445.9	4,736.0	3,904.5	4,121.2	106.00	107.00	107.00	107.00	12	12	12	12	100.00%	100.00%	4,383,133	6,081,024	5,013,355	5,291,618										
2nd Refrigerator Pickup	964.8	50.0	300.3	317.0	413.00	413.00	835.00	835.00	8	8	8	8	100.00%	100.00%	3,187,831	165,200	2,006,303	2,117,662										
2nd Freezer Pickup		0.0	150.2	158.5	413.00	450.00	663.00	663.00	8	8	8	8	100.00%	100.00%		0	796,514	840,724										
Energy Star Freezers					67.00	67.00	114.00	114.00	11	11	12	12	100.00%	100.00%														
Energy Star Dishwasher (CEE Tier 2)					60.00	60.00	60.00	60.00	10	10	10	10	100.00%	100.00%									0	0				0
Energy Star Dishwasher (w/Oil DHW)					33.00	33.00	33.00	33.00	10	10	10	10	100.00%	100.00%									0	0				0
Energy Star Dehumidifiers					213.00	213.00	213.00	213.00	12	12	12	12	100.00%	100.00%														
Energy Star Room Air Purifiers	137.8	67.0	90.1	95.1	268.00	268.00	390.63	390.63	9	9	9	9	100.00%	100.00%	332,456	161,604	316,772	334,355										
Room AC Pickup/Turn-in		3.0	15.0	15.9	18.00	18.00	16.16	16.16	5	5	5	5	100.00%	100.00%		270	1,213	1,280										
Energy Star Set-top Boxes & Cable Boxes							100.00	100.00					100.00%	100.00%														
Energy Star Water Coolers					361.00	361.00	361.00	361.00			10	10	100.00%	100.00%														
Energy Star Central Air Conditioner			43.1	43.1	263.23	263.23	110.29	110.29	14	14	14	14	100.00%	100.00%			66,525	66,525										
Energy Star Mini Split Heat Pump			77.6	77.6			122.87	122.87			12	12	100.00%	100.00%			114,347	114,347										
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12	-2,158.12			12	12	100.00%	100.00%							15.43	15.43						0
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			57.6	57.6			-2,158.12	-2,158.12			12	12	100.00%	100.00%			-1,490,416	-1,490,416			17.14	17.14				11,837	11,837	
Energy Star Mini Split Heat Pump (for homes w/LP heat)			20.0	20.0			-2,158.12	-2,158.12			12	12	100.00%	100.00%			-517,949	-517,949			15.43	15.43				3,703	3,703	
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM			103.4	103.4			168.00	168.00			18	18	100.00%	100.00%			312,684	312,684			4.50	4.50				8,375	8,375	
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM			51.7	51.7			168.00	168.00			18	18	100.00%	100.00%			156,342	156,342			5.55	5.55				5,165	5,165	
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM			17.2	17.2			168.00	168.00			18	18	100.00%	100.00%			52,114	52,114			5.90	5.90				1,830	1,830	
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM			51.7	51.7			168.00	168.00			18	18	100.00%	100.00%			156,342	156,342			18.00	18.00				16,751	16,751	
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM			17.2	17.2			168.00	168.00			18	18	100.00%	100.00%			52,114	52,114			20.70	20.70				6,421	6,421	
Boil: LP Boiler, FHW, AFUE >= 90%			103.4	103.4							20	20	100.00%	100.00%							10.40	10.40				21,507	21,507	
Boil: LP Boiler, FHW, AFUE >=96%			34.5	34.5							20	20	100.00%	100.00%							13.10	13.10				9,030	9,030	
Boil: Oil Boiler, FHW, AFUE >=85%			654.9	654.9							20	20	100.00%	100.00%							5.38	5.38				70,425	70,425	
Boil: Oil Boiler, FHW, AFUE >=90%			86.2	86.2							20	20	100.00%	100.00%							10.75	10.75				18,533	18,533	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			8.6	8.6							20	20	100.00%	100.00%							17.80	17.80				3,068	3,068	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			8.6	8.6							20	20	100.00%	100.00%							17.80	17.80				3,068	3,068	
DHW: LP, Tankless Water Heaters (EF>= 0.82)			206.8	206.8							20	20	100.00%	100.00%							9.70	9.70				40,120	40,120	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			8.6	8.6							20	20	100.00%	100.00%							8.00	8.00				1,379	1,379	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			8.6	8.6							20	20	100.00%	100.00%							8.00	8.00				1,379	1,379	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			8.6	8.6							13	13	100.00%	100.00%							3.70	3.70				414	414	
DHW: Energy Star Heat Pump 50 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			8.6	8.6			1,775.00	1,775.00			10	10	100.00%	100.00%			152,947	152,947								0		
DHW: Energy Star Heat Pump 80 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			8.6	8.6			2,672.00	2,672.00			10	10	100.00%	100.00%			230,239	230,239								0		
BRC: Gas, Boiler Reset Controls											15	15	100.00%	100.00%							9.60	9.60						0
BRC: LP, Boiler Reset Controls			77.6	77.6							15	15	100.00%	100.00%			0	0			9.60	9.60				11,167	11,167	
BRC: Oil, Boiler Reset Controls			103.4	103.4							15	15	100.00%	100.00%			0	0			9.60	9.60				14,890	14,890	
TSTAT: LP, 7-Day Programmable Thermostats			8.6	8.6			14.40	14.40			15	15	100.00%	100.00%			1,861	1,861			7.70	7.70				995	995	
TSTAT: Oil, 7-Day Programmable Thermostats			8.6	8.6			14.40	14.40			15	15	100.00%	100.00%			1,861	1,861			7.70	7.70				995	995	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			8.6	8.6			14.40	14.40			15	15	100.00%	100.00%			1,861	1,861			6.60	6.60				853	853	
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			8.6	8.6			14.40	14.40			15	15	100.00%	100.00%			1,861	1,861			6.60	6.60				853	853	

Planning Assumptions

1. Clothes Washer Annual kWh Savings updated based on mix of Electric Water Heating customer and per EnergyStar.gov Savings Calculator.
2. Room Air Purifier Annual kWh Savings updated per EnergyStar.gov Savings Calculator.
3. Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
4. All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

PSNH Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
	NEW EQUIPMENT TRACK																										
Cooling	43.6	55.0	44.2	45.3	53,315.0	34,776.7	34,776.7	34,777	15.8	14.0	15.0	15.0	92.5%	92.5%	34,000,960	24,784,371	21,310,899	21,877,583					0	0	0	0	
Heating	0.0	4.0	4.3	4.5	48,790.0	53,278.3	53,278.3	53,278	15.0	17.3	15.0	15.0	92.5%	92.5%	0	3,404,899	3,210,435	3,295,804					0	0	0	0	
Lighting	21.8	24.0	13.0	13.4	59,615.0	66,783.4	66,783.4	66,783	15.0	15.0	15.0	15.0	92.5%	92.5%	18,001,360	22,238,868	12,059,476	12,380,154					0	0	0	0	
Lighting (LED)	0.0	0.0	0.0	0.0			0.0	0	15.0	15.0	15.0	15.0	92.5%	92.5%	0	0	0	0					0	0	0	0	
Lighting (Occ Sensors Only)	0.0	2.0	3.8	3.9		24,628.0	24,628.0	24,628	15.0	10.0	10.0	10.0	92.5%	92.5%	0	455,618	862,163	885,089					0	0	0	0	
Other	0.0	2.0	8.5	8.7		131,370.3	131,370.3	131,370	15.0	15.0	15.0	15.0	92.5%	92.5%	0	3,645,527	15,414,643	15,824,539					0	0	0	0	
Process	29.0	39.0	31.9	32.8	78,123.0	54,812.6	54,812.6	54,813	15.9	13.9	15.0	15.0	92.5%	92.5%	33,346,145	27,574,157	24,275,347	24,920,860					0	0	0	0	
Lighting - Parking Lot Lights	-	6.0					0.0	0	15.0	13.0	15.0	15.0	92.5%	92.5%	0	0	0	0					0	0	0	0	
RETROFIT TRACK																											
Cooling	15.4	15.0	18.6	19.0	74,299	106,077.7	65,104	65,104	12.8	12.4	12.6	12.6	94.0%	94.0%	13,727,948	18,480,327	14,293,887	14,634,952					0	0	0	0	
Heating	-	10.0	9.4	9.6		19,891.0	17,369	17,369	13.0	13.1	20.1	20.1	94.0%	94.0%	0	2,444,215	3,072,035	3,145,336					0	0	0	0	
Lighting	46.5	81.0	83.6	85.6	91,962	63,383.8	52,212	52,212	12.7	12.9	13.0	13.0	94.0%	94.0%	51,032,269	62,434,514	53,165,257	54,433,827					0	0	0	0	
Lighting - LED	4.0	8.0	8.9	9.1	72,862	84,966.0	88,342	88,342	13.0	13.0	13.0	13.0	94.0%	94.0%	3,564,700	8,306,276	9,636,735	9,866,676					0	0	0	0	
Lighting - Occ Sensors only	5.9	14.0	16.9	17.3	28,951	35,414.2	30,253	30,253	9.0	9.1	9.4	9.4	94.0%	94.0%	1,435,386	4,247,879	4,512,326	4,619,994					0	0	0	0	
Other		1.0	6.1	6.3		10,500.0	27,788	27,788		13.0	13.6	13.6	94.0%	94.0%	0	128,310	2,171,361	2,223,172					0	0	0	0	
Lighting - Parking Lot Lights		6.0	8.5	8.7		47,270.3	51,130	51,130		13.0	13.0	13.0	94.0%	94.0%	0	3,465,861	5,280,733	5,406,736					0	0	0	0	
Process	29.5	48.0	50.5	51.7	85,195	92,159.5	65,380	65,380	13.4	11.8	11.7	11.7	94.0%	94.0%	31,725,299	48,860,675	36,353,093	37,220,510					0	0	0	0	
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Cental Air Conditioner			0.0	0.0			110.29	110.29			14.0	14.0	100.0%	100%				0	0								
Energy Star Mini Split Heat Pump			4.1	4.1			122.87	122.87			12.0	12.0	100.0%	100%			6,075	6,075									
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12	-2,158.12			12.0	12.0	100.0%	100%				0	0	15.43	15.43				0	0	
Energy Star Mini Split Heat Pump (for homes w/LP heat)			0.8	0.8			-2,158.12	-2,158.12			12.0	12.0	100.0%	100%				-21,339	-21,339	15.43	15.43				153	153	
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			3.3	3.3			-2,158.12	-2,158.12			12.0	12.0	100.0%	100%				-85,354	-85,354	17.14	17.14				678	678	
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			1.0	1.0							25	25		100.0%					42.30	42.30			0	0	1,089	1,089	
Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			0.0	0.0							25	25		100.0%					42.30	42.30			0	0	0	0	
Boilers, LP >= 90% thermal efficiency (500 to 999 MBH), Condensing			0.0	0.0							25	25		100.0%					77.10	77.10			0	0	0	0	
Boilers, Oil >= 85% thermal efficiency (500 to 999 MBH)			2.1	2.1							25	25		100.0%					77.10	77.10			0	0	3,970	3,970	
Boilers, LP >= 90% thermal efficiency (1000 to 1700 MBH), Condensing			0.2	0.2							25	25		100.0%					142.60	142.60			0	0	734	734	
Boilers, Oil >= 85% thermal efficiency (1000 to 1700 MBH)			12.4	12.4							25	25		100.0%					142.60	142.60			0	0	44,062	44,062	
Boilers, LP >= 90% thermal efficiency (1701 to 2000 MBH), Condensing			0.0	0.0							25	25		100.0%					249.00	249.00					0	0	
Boilers, Oil >= 85% thermal efficiency (1701 to 2000 MBH)			20.2	20.2							25	25		100.0%					249.00	249.00					125,665	125,665	
7-Day Programmable Thermostats (LP)			0.0	0.0							15	15		100.0%					7.70	7.70					0	0	
7-Day Programmable Thermostats (Oil)			0.0	0.0							15	15		100.0%					7.70	7.70					0	0	
Boiler Reset Controls, LP, After Market, 1 shift operation			0.0	0.0							15	15		100.0%					19.30	19.30					0	0	
Boiler Reset Controls, Oil, After Market, 1 shift operation			1.2	1.2							15	15		100.0%					19.30	19.30					358	358	
Boiler Reset Controls, LP, After Market, >1 shift operation			0.0	0.0							15	15		100.0%					35.50	35.50					0	0	
Boiler Reset Controls, Oil, After Market, >1 shift operation			0.0	0.0							15	15		100.0%					35.50	35.50					0	0	
Steam Traps, LP (greater than 10 steam traps requires pre-approval)			0.0	0.0							3	3		100.0%					25.70	25.70					0	0	
Steam Traps, Oil (greater than 10 steam traps requires pre-approval)			0.0	0.0							3	3		100.0%					25.70	25.70					0	0	

Planning Assumptions

PSNH Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
Lighting - New Equipment & Construction			143.5	147.0			13,788	13,788		12.8	15.9	15.9	92.90%	100%	0	0	31,432,153	32,196,145									
Lighting - Retrofit	448.0	530.0	167.8	171.8	17,000	18,408.9	19,982	19,982	13.1	13.1	12.8	12.8	92.90%	100%	92,827,671	119,082,650	42,978,806	44,023,451									
Lighting - Direct Install			192.1	196.8			14,489	14,489		12.8	12.9	12.9	92.90%	100%	0	0	35,772,621	36,642,113									
Lighting - Catalog Sales	534.0	170.0	667.7	683.9	440	80.9	46.31	46	5.4	6.0	6.0	6.0	92.90%	100%	1,178,700	71,110	185,501	190,010									
SmartStrips	65	1.0	80.7	82.7	113.00	75.0	75.0	75	5	5.0	5.0	5.0	92.90%	100%	34,118	349	30,280	31,016									
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Central Air Conditioner			32.3	32.3			110.29	110.29			14.0	14.0	100.0%	100%			49,810	49,810									
Energy Star Mini Split Heat Pump			125.4	125.4			122.87	122.87		12.0	12.0	12.0	100.0%	100%			184,973	184,973									
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12	-2,158.12		12.0	12.0	12.0	100.0%	100%			0	0	15.43	15.43			0	0			
Energy Star Mini Split Heat Pump (for homes w/LP heat)			35.8	35.8			-2,158.12	-2,158.12		12.0	12.0	12.0	100.0%	100%			-928,235	-928,235	15.43	15.43			6,637	6,637			
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			89.6	89.6			-2,158.12	-2,158.12		12.0	12.0	12.0	100.0%	100%			-2,320,588	-2,320,588	17.14	17.14			18,430	18,430			
On Demand Tankless Water Heater, LP, >=.82 EF w/Electronic Ignition			35.8	35.8							20	20	100.0%	100%					7.10	7.10	0	0	5,090	5,090			
On Demand Tankless Water Heater, Oil, >=.82 EF w/Electronic Ignition			0.0	0.0							20	20	100.0%	100%					7.10	7.10	0	0	0	0			
On Demand Tankless Water Heater, LP, >=.95 EF w/Electronic Ignition			21.5	21.5							20	20	100.0%	100%					9.59	9.59	0	0	4,125	4,125			
On Demand Tankless Water Heater, Oil, >=.95 EF w/Electronic Ignition			0.0	0.0							20	20	100.0%	100%					9.59	9.59	0	0	0	0			
Boilers, LP ≥ 90% AFUE (up to 300 MBH), Condensing			17.9	17.9							25	25	100.0%	100%					22.80	22.80	0	0	10,215	10,215			
Boilers, Oil ≥ 85% AFUE (up to 300 MBH)			35.8	35.8							25	25	100.0%	100%					22.80	22.80	0	0	20,430	20,430			
Boilers, LP ≥ 96% AFUE (up to 300 MBH), Condensing			0.0	0.0							25	25	100.0%	100%					25.20	25.20	0	0	0	0			
Boilers, Oil ≥ 87% AFUE (up to 300 MBH)			0.0	0.0							25	25	100.0%	100%					25.20	25.20	0	0	0	0			
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			17.9	17.9							25	25	100.0%	100%					42.30	42.30	0	0	18,952	18,952			
Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			35.8	35.8							25	25	100.0%	100%					42.30	42.30	0	0	37,904	37,904			
7-Day Programmable Thermostats (LP)			0.0	0.0							15	15	100.0%	100%					7.70	7.70	0	0	0	0			
7-Day Programmable Thermostats (Oil)			0.0	0.0							15	15	100.0%	100%					7.70	7.70	0	0	0	0			
Boiler Reset Controls, LP, After Market, 1 shift operation			17.9	17.9							15	15	100.0%	100%					19.30	19.30	0	0	5,188	5,188			
Boiler Reset Controls, Oil, After Market, 1 shift operation			17.9	17.9							15	15	100.0%	100%					19.30	19.30	0	0	5,188	5,188			
Boiler Reset Controls, LP, After Market, >1 shift operation			0.0	0.0							15	15	100.0%	100%					35.50	35.50	0	0	0	0			
Boiler Reset Controls, Oil, After Market, >1 shift operation			0.0	0.0							15	15	100.0%	100%					35.50	35.50	0	0	0	0			
Steam Traps, LP (greater than 10 steam traps requires pre-approval)			0.0	0.0							3	3	100.0%	100%					25.70	25.70	0	0	0	0			
Steam Traps, Oil (greater than 10 steam traps requires pre-approval)			0.0	0.0							3	3	100.0%	100%					25.70	25.70	0	0	0	0			

Planning Assumptions

1. We are updating the catalog with some lighting products, such as MR16 replacements, to assist customers like Inns, Restaurants, Barbershops/Salons, etc. to assist them with do-it-yourself retrofits. This is expected to result in more catalog sales.
2. Used average energy savings from the Gas Networks, and expanded for oil and LP.

ENERGY STAR® Homes - Heat Pump Program, C&I RFP Program, Customer Engagement Program

PSNH Company Specific Programs

- A. Energy Star Homes - Geothermal & Air Source Heat Pump Program
- B. C&I RFP Program
- C. Customer Engagement Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate			Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2014	2011 Plan	2011 Actual	2013 Plan	2014 Plan
A. GSHP (Heating)	51.7		54	55	21,499		15,303	15,303	25	25	25	25	100.00%	100.00%	27,772,064	0	20,642,251	20,947,767	
A. GSHP (Cooling)	51.7		54	55	158		81	81	25	25	25	25	100.00%	100.00%	204,351	0	108,924	110,536	
A. GSHP (Hot Water)	51.7		54	55	1,155		1,538	1,538	25	25	25	25	100.00%	100.00%	1,491,453	0	2,074,868	2,105,577	
A. GSHP (Lights & Appliances)	51.7		54	55	-177		-238	-238	25	25	25	25	100.00%	100.00%	-228,068	0	-321,282	-326,037	
A. GSHP (HVAC: All-in-1)		53				25,510			25	25	25	25	100.00%	100.00%	0	33,800,300	0	0	
A. ASHP (Heating)	14.5		15	15	9,671		17,244	17,244	25	25	25	25	100.00%	100.00%	3,513,613	0	6,542,007	6,638,832	
A. ASHP (Cooling)	14.5		15	15	71.19		468	468	25	25	25	25	100.00%	100.00%	25,865	0	177,549	180,177	
A. ASHP (Hot Water)	14.5		15	15	519.55		0	0	25	25	25	25	100.00%	100.00%	188,763	0	0	0	
A. ASHP (Lights & Appliances)	14.5		15	15	-79.45		288	288	25	25	25	25	100.00%	100.00%	-28,866	0	109,261	110,878	
A. ASHP (HVAC: All-in-1)		1				18,344			25	25	25	25	100.00%	100.00%	0	458,600	0	0	
A. Split Sys HP (Heating)			0	0			9,671	9,671	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Cooling)			0	0			71	71	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Hot Water)			0	0			520	520	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Lights & Appliances)			0	0			-79	-79	25	25	25	25	100.00%	100.00%	0	0	0	0	
B. C&I RFP: Lighting	2.5	1	2.2	2.2	392,000	769,917	392,000	392,000	13.0	13	13.0	13.0	100.00%	100.00%	12,623,686	10,008,921	11,152,478	11,407,859	
B. C&I RFP: Process	5.2	6	6.1	6.3	212,000	143,841	212,000	212,000	11.5	13	11.5	11.5	100.00%	100.00%	12,663,160	11,219,611	14,916,470	15,258,042	
B. C&I RFP: Cooling	2.4	1	4.2	4.3	197,000	224,527	197,000	197,000	10.5	10	10.5	10.5	100.00%	100.00%	4,897,976	2,245,270	8,654,300	8,852,474	
B. C&I RFP: Lighting (Occ Sensors Only)		1	0.0	0.0		107,001	30,767	30,767		10	10	10.0	100.00%	100.00%	0	1,070,010	0	0	
B. C&I RFP: Heating		3	0.0	0.0		74,513	0	0		10			100.00%	100.00%	0	2,232,407	0	0	
C. Customer Engagement			25,000	25,000			108	160			1.0	1.0		100.00%			2,700,000	4,000,000	

Planning Assumptions

A. Energy Star Homes - Geothermal & Air Source Heat Pump

1. GSHP = Ground Source (Geothermal) Heat Pump; ASHP = Air Source Heat Pump; Split System Heat Pump (ex. Mitsubishi "Mr. Slim")
2. Home Energy Raters incorporating a new Heat Pump COP calculation for the rated home to more accurately account for pumping power requirements. This reduced savings by 8% from 2011.
3. The User Defined Reference Home for New Hampshire continues to be updated to reflect code changes. Revisions will include a change to the efficiency of the reference heating system efficiency, resulting in a 5% reduction in savings.
4. Planning for additional homes to have Air Source Heat Pumps installed in 2013 due to their cold climate heating improvements. (Some may choose to go through the ENERGY STAR Homes program.)

B. C&I RFP Program

1. PSNH estimated smaller Lighting and Cooling projects and larger Process projects in 2012 than were done in 2010.

C. Customer Engagement Program: Energy savings were estimated by the contractor in their proposal.

Unitil ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	E-STAR Homes - CFLs	354	403	541	541	51	51	23	23	7	7	5	5	100%	100%	125,697	143,185	62,204	62,204	0.0	0.0	0.0	0.0	0	0	0
E-STAR Homes - Fixtures	0	264	38	38	106	106	62	62	20	20	20	20	100%	100%	0	558,927	46,871	46,871	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Dishwashers	39	59	47	47	107	107	33	33	10	10	11	11	100%	100%	41,730	63,130	17,077	17,077	1.9	1.9	0.0	0.0	741	1,121	0	0
E-STAR Homes - Refrigerators	20	56	35	35	107	107	107	107	12	12	12	12	100%	100%	25,236	71,904	45,304	45,304	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Clotheswashers	6	14	16	16	223	223	261	261	11	11	12	12	100%	100%	14,464	34,343	51,508	51,508	0.1	0.1	0.0	0.0	9	22	0	0
E-STAR Homes - Thermostats	39	0	16	16	0	0	0	0	10	10	15	15	100%	100%	0	0	0	0	7.5	0.0	6.4	6.4	2,948	0	1,581	1,581
E-STAR Homes - Heating (Elec)	0	0	3	3	0	0	1,925	1,925	25	25	25	25	100%	100%	0	0	158,483	158,483	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Heating (Oil)	39	0	0	0	1,200	0	0	0	25	25	25	25	100%	100%	1,179,261	0	0	0	36.0	0.0	0.0	0.0	35,378	0	0	0
E-STAR Homes - Heating (Nat Gas)	0	48	11	11	0	32	0	0	25	25	25	25	100%	100%	0	38,924	0	0	0.0	19.8	30.0	30.0	0	23,711	8,118	8,118
E-STAR Homes - Heating (Propane)	0	7	28	28	0	1,137	1,136	1,136	25	25	25	25	100%	100%	0	198,900	801,647	801,648	0.0	62.7	62.7	62.7	0	10,970	44,232	44,232
E-STAR Homes - Geothermal	0	3	5	5	0	79,058	79,041	79,041	25	25	25	25	100%	100%	0	5,929,350	9,296,216	9,296,229	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Cooling	10	8	28	28	131	228	227	227	25	25	25	25	100%	100%	32,184	45,525	160,188	160,189	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Water Heating (Elec)	0	0	3	3	0	0	3,012	3,012	15	15	15	15	100%	100%	0	0	148,785	148,785	0.0	0.0	0.0	0.0	0	0	0	0
E-STAR Homes - Water Heating (Oil)	39	0	0	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	2.0	0.0	0.0	0.0	1,179	0	0	0
E-STAR Homes - Water Heating (Nat Gas)	0	0	11	11	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0.0	0.0	4.0	4.0	0	0	649	649
E-STAR Homes - Water Heating (Propane)	0	59	28	28	0	204	0	0	15	15	15	15	100%	100%	0	180,735	0	0	0.0	1.2	4.1	4.1	0	1,052	1,715	1,715

Planning Assumptions

Unitil Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2013 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
CFLs	348.9	311	245	272	50.8	89.1	23.0	23.0	8	8	7	7	91.2%	91.2%	129,297	202,280	36,026	39,930	0.0	0.0	0.0	0.0	0	0	0	0
Refrigerator	46.5	28	74	82	781.0	950.1	820.5	820.5	19	19	12	12	91.2%	91.2%	629,473	460,994	661,092	732,730	0.0	0.0	0.0	0.0	0	0	0	0
Wx Electric, MF	0.0	0	7	8	0.0	0.0	1,473.7	1,473.7	20	20	20	20	91.2%	91.2%	0	0	197,895	219,339	0.0	0.0	0.0	0.0	0	0	0	0
Wx Oil, MF	0.0	0	6	7	0.0	0.0	0.0	0.0	20	20	20	20	91.2%	91.2%	0	0	0	0	0.0	0.0	28.7	28.7	0	0	3,381	3,747
Wx Propane, MF	0.0	0	1	2	0.0	0.0	0.0	0.0	20	20	20	20	91.2%	91.2%	0	0	0	0	0.0	0.0	43.6	43.6	0	0	1,283	1,422
DHW MF Elec	0.0	0	15	16	0.0	0.0	120.0	120.0	7	7	7	7	91.2%	91.2%	0	0	11,280	12,502	0.0	0.0	0.0	0.0	0	0	0	0
Wx Electric	5.8	16	7	8	2,354.5	1,532.9	44.7	44.7	20	20	20	20	91.2%	91.2%	249,696	447,353	5,600	6,207	0.0	0.0	0.0	0.0	0	0	0	0
Wx Gas	6.4	11	0	0	0.0	0.0	0.0	0.0	20	20	20	20	91.2%	91.2%	0	0	0	0	22.0	22.6	0.0	0.0	2,810	4,973	0	0
Wx Oil	25.6	24	21	23	0.0	0.0	66.1	66.1	20	20	20	20	91.2%	91.2%	0	0	24,852	27,545	28.6	38.4	38.2	38.2	14,633	18,412	15,741	17,447
Wx Propane	20.3	7	7	8	0.0	0.0	115.4	115.4	20	20	20	20	91.2%	91.2%	0	0	14,467	16,035	32.8	51.9	18.7	18.7	13,349	7,270	2,566	2,844
DHW Elec	0.0	31	3	4	0.0	365.0	96.0	96.0	7	7	7	7	91.2%	91.2%	0	72,235	2,106	2,334	0.0	0.0	0.0	0.0	0	0	0	0
DHW Non-Elec	0.0	23	5	6	0.0	0.0	0.0	0.0	7	7	7	7	91.2%	91.2%	0	0	0	0	0.0	5.3	0.7	0.7	0	858	25	28
DWH Gas	5.4	0	0.0	0.0	0.0	0.0	0.0	0.0	7	7	7	7	91.2%	91.2%	0	0	0	0	11.3	0.0	0.0	0.0	430	0	0	0
DHW Oil	21.0	0	0.0	0.0	0.0	0.0	0.0	0.0	7	7	7	7	91.2%	91.2%	0	0	0	0	2.3	0.0	0.0	0.0	338	0	0	0
Thermostats	0.0	414	0.0	0.0	0.0	234.6	0.0	0.0	10	10	10	10	91.2%	91.2%	0	885,661	0	0	0.0	0.3	0.0	0.0	0	1,225	0	0

Planning Assumptions

Unitil Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011		2013		2011		2013		2011		2013		2011		2013		2011		2013		2011		2013			
	2011 Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2013	2011 Plan	Actual	2013 Plan	2014 Plan	Plan	Actual	2013 Plan	2014 Plan	Plan	Actual	2013 Plan	2014 Plan
FUEL NEUTRAL HPwES																										
HES CFLs	301	230	225	235	51	56	23	23	7	7	7	7	100%	100%	107,208	90,542	36,200	37,842	0.00	0.00	0	0	0	0	0	0
HES Wx, Electric	10	0	0	0	1,904	0	0	0	20	20	20	20	100%	100%	382,685	0	0	0	0.00	0.00	0	0	0	0	0	0
HES Wx, Oil	40	0	0	0	0	0	0	0	20	20	20	20	100%	100%	0	0	0	0	30.00	0.00	0	0	24,119	0	0	0
HES Air Sealing, Electric	0	7	5	5	0	643	829	829	15	15	15	15	100%	100%	0	67,527	58,227	60,868	0.0	0.0	0.0	0.0	0	0	0	0
HES Insulation, Electric	0	16	9	10	0	1,052	1,629	1,629	25	25	25	25	100%	100%	0	420,711	381,618	398,928	0.0	0.0	0.0	0.0	0	0	0	0
HES Insulation, Gas	0	1	0	0	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0.0	19.1	0.0	0.0	0	477	0	0
HES Air Sealing, Gas	0	1	0	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0.0	15.5	0.0	0.0	0	232	0	0
HES Air Sealing, Oil	0	26	28	29	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0.0	12.1	5.2	5.2	0	4,709	2,176	2,275
HES Insulation, Oil	0	20	28	29	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0.0	53.2	23.5	23.5	0	26,607	16,516	17,265
HES Air Sealing, Propane	0	5	9	10	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0.0	7.9	12.5	12.5	0	592	1,756	1,835
HES Insulation, Propane	0	4	9	10	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0.0	38.7	38.5	38.5	0	3,869	9,010	9,419
HES Air Sealing, Wood	0	1	0	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0.0	15.2	0.0	0.0	0	228	0	0
HES Insulation, Wood	0	1	0	0	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0.0	49.8	0.0	0.0	0	1,245	0	0
Baseload (CFLs only)	15	0	5	5	51	0	138	138	7	7	7	7	100%	100%	5,212	0	4,525	4,730	0.0	0.0	0.0	0.0	0	0	0	0
Thermostats	0	34	0	0	0	133	0	0	10	10	10	10	100%	100%	0	45,170	0	0	0.0	3.0	0.0	0.0	0	1,031	0	0
DWH ISMs	0	10	0	0	0	164	0	0	7	7	7	7	100%	100%	0	11,459	0	0	0.0	4.2	0.0	0.0	0	296	0	0
High Efficiency Furnace	0	1	0	0	0	0	0	0	18	18	18	18	100%	100%	0	0	0	0	0.0	14.6	0.0	0.0	0	263	0	0

Planning Assumptions

Unitil ENERGY STAR® Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Retail Sales: # CFLs	417,879	34,735	19,564	21,114	51	51	23	23	5	5	5	5	80.3%	62.3%	85,159,124	7,078,609	1,401,358	1,512,356
Retail Sales: Interior Fixture	22	390	292	315	106	106	62	62	8	8	8	8	96.4%	96.4%	17,944	318,385	140,224	151,331
Retail Sales: Exterior Fixture	879	58	29	32	106	106	62	62	5	5	5	5	100.0%	100.0%	465,357	30,699	9,091	9,811
Retail Sales: Torchieres	0	8	0	0	104	104	69	69	8	8	8	8	93.5%	93.5%	0	6,246	0	0
Retail Sales: # LEDs	22	90	292	315	47	47	28	28	20	20	20	20	95.0%	95.0%	19,643	80,640	153,497	165,655
Retailer Promotion: CFLs	0	16,743	20,400	20,400	52	52	23	23	7	7	5	5	80.3%	62.3%	0	4,856,686	1,461,240	1,461,240
Retailer Promotion: LEDs	0	0	280	280	0	0	28	28	20	20	20	20	95.0%	95.0%	0	0	147,188	147,188
Retailer Promotion: LED fixtures	0	0	120	120	0	0	28	28	20	20	20	20	95.0%	95.0%	0	0	63,081	63,081

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
 This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

Unitil ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
Energy Star Clothes Washer	1,054	1,148	884	903	223	223	261	261	11	11	11	11	100.00%	100.00%	2,585,477	2,816,107	2,535,680	2,589,625	0.1	0.1	0.7	0.7	1,668	1,817	7,175	7,327
Energy Star Room A/C	162	410	393	401	31	31	16	16	9	9	9	9	100.00%	100.00%	44,827	113,342	57,148	58,364	0.0	0.0	0.0	0.0	0	0	0	0
2nd Refrigerator Pickup	162	8	20	20	413	413	835	835	8	8	8	8	100.00%	100.00%	535,759	26,432	131,268	134,060	0.0	0.0	0.0	0.0	0	0	0	0
Smartstrip Power Strip	65	120	98	100	75	75	79	79	5	5	5	5	100.00%	100.00%	24,323	45,000	38,810	39,636	0.0	0.0	0.0	0.0	0	0	0	0
Energy Star Refrigerator	162	687	590	602	107	107	107	107	12	12	12	12	100.00%	100.00%	208,207	882,108	756,951	773,055	0.0	0.0	0.0	0.0	0	0	0	0
Energy Star Room Air Purifiers	16	12	20	20	238	238	391	391	9	9	9	9	100.00%	100.00%	34,734	25,704	69,086	70,555	0.0	0.0	0.0	0.0	0	0	0	0
Energy Star Central AC (385 Hours ON in NH)	0	0.0	3.8	3.9	0	0	110	110	0	0	14	14	100.00%	100.00%	0	0	5,886	5,979	0.0	0.0	0.0	0.0	0	0	0	0
Energy Star Mini Split Heat Pump	0	0.0	6.9	7.0	0	0	123	123	0	0	12	12	100.00%	100.00%	0	0	10,118	10,277	0.0	0.0	0.0	0.0	0	0	0	0
DHW: LP, Tankless Water Heaters (EF>= 0.82)	0	0.0	18.3	18.6	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	9.7	9.7	0	0	3,550	3,606
DHW: LP, Indirect Water Heater (attached to LP Energy Star FH)	0	0.0	0.8	0.8	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	8.0	8.0	0	0	122	124
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FH)	0	0.0	0.8	0.8	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	8.0	8.0	0	0	122	124
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)	0	0.0	0.8	0.8	0	0	0	0	0	0	13	13	100.00%	100.00%	0	0	0	0	0.0	0.0	3.7	3.7	0	0	37	37
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES)	0	0.0	0.8	0.8	0	0	1,775	1,775	0	0	10	10	100.00%	100.00%	0	0	13,533	13,747	0.0	0.0	0.0	0.0	0	0	0	0
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES)	0	0.0	0.8	0.8	0	0	2,672	2,672	0	0	10	10	100.00%	100.00%	0	0	20,373	20,694	0.0	0.0	0.0	0.0	0	0	0	0
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%	0	0.0	0.8	0.8	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	17.8	17.8	0	0	271	276
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%	0	0.0	0.8	0.8	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	17.8	17.8	0	0	271	276
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM	0	0.0	9.1	9.3	0	0	168	168	0	0	18	18	100.00%	100.00%	0	0	27,668	28,104	0.0	0.0	4.5	4.5	0	0	741	753
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM	0	0.0	4.6	4.6	0	0	168	168	0	0	18	18	100.00%	100.00%	0	0	13,834	14,052	0.0	0.0	5.6	5.6	0	0	457	464
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM	0	0.0	1.5	1.5	0	0	168	168	0	0	18	18	100.00%	100.00%	0	0	4,611	4,684	0.0	0.0	5.9	5.9	0	0	162	164
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM	0	0.0	4.6	4.6	0	0	168	168	0	0	18	18	100.00%	100.00%	0	0	13,834	14,052	0.0	0.0	18.0	18.0	0	0	1,482	1,506
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM	0	0.0	1.5	1.5	0	0	168	168	0	0	18	18	100.00%	100.00%	0	0	4,611	4,684	0.0	0.0	20.7	20.7	0	0	568	577
Boiler, LP, FHW, AFUE >= 90%	0	0.0	9.1	9.3	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	10.4	10.4	0	0	1,903	1,933
Boiler, LP, FHW, AFUE >=96%	0	0.0	3.0	3.1	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	13.1	13.1	0	0	799	812
Boiler, Oil, FHW, AFUE >=85%	0	0.0	57.9	58.9	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	5.4	5.4	0	0	6,232	6,330
Boiler, Oil, FHW, AFUE >=90%	0	0.0	7.6	7.7	0	0	0	0	0	0	20	20	100.00%	100.00%	0	0	0	0	0.0	0.0	10.8	10.8	0	0	1,640	1,666
TSTAT: LP, 7-Day Programmable Thermostats	0	0.0	0.8	0.8	0	0	14	14	0	0	15	15	100.00%	100.00%	0	0	165	167	0.0	0.0	7.7	7.7	0	0	88	89
TSTAT: Oil, 7-Day Programmable Thermostats	0	0.0	0.8	0.8	0	0	14	14	0	0	15	15	100.00%	100.00%	0	0	165	167	0.0	0.0	7.7	7.7	0	0	88	89
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats	0	0.0	0.8	0.8	0	0	14	14	0	0	15	15	100.00%	100.00%	0	0	165	167	0.0	0.0	6.6	6.6	0	0	75	77
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats	0	0.0	0.8	0.8	0	0	14	0	0	0	15	15	100.00%	100.00%	0	0	165	0	0.0	0.0	6.6	6.6	0	0	75	77
BRC: LP, Boiler Reset Controls	0	0.0	6.9	7.0	0	0	0	0	0	0	15	15	100.00%	100.00%	0	0	0	0	0.0	0.0	4.5	4.5	0	0	463	470
BRC: Oil, Boiler Reset Controls	0	0.0	9.1	9.3	0	0	0	0	0	0	15	15	100.00%	100.00%	0	0	0	0	0.0	0.0	4.5	4.5	0	0	618	627

Planning Assumptions

1. Clothes Washer Annual kWh Savings updated based on mix of Electric Water Heating customer and per EnergyStar.gov Savings Calculator.
2. Room Air Purifier Annual kWh Savings updated per EnergyStar.gov Savings Calculator.
3. Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
4. All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

Unitil Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	NEW EQUIPMENT TRACK																							0	0	0
Large C&I (Rolled-Up average)	13	0	0	0	43,236	0	0	0	15	15	15	15	100%	100%	8,431,037	0	0	0	0	0	0	0	0	0	0	0
Lighting	0	1	6	6	0	105,175	58,349	58,349	15	15	15	15	100%	100%	0	1,577,625	4,846,325	4,846,335	0	0	0	0	0	0	0	0
HVAC	0	4	6	6	0	2,419	27,693	27,693	15	15	15	15	100%	100%	0	145,140	2,683,415	2,683,421	0	0	0	0	0	0	0	0
Non-Lighting (Rolled Up)	0	0	6	6	0	0	48,577	48,577	15	15	15	15	100%	100%	0	0	4,707,148	4,707,159	0	0	0	0	0	0	0	0
ComprAir	0	1	0	0	0	11,913	0	0	15	15	15	15	100%	100%	0	178,695	0	0	0	0	0	0	0	0	0	0
Motors	0	1	0	0	0	7,634	0	0	20	20	20	20	100%	100%	0	152,680	0	0	0	0	0	0	0	0	0	0
VFDs	0	1	0	0	0	67,102	0	0	15	15	15	15	100%	100%	0	1,006,530	0	0	0	0	0	0	0	0	0	0
RETROFIT TRACK																										
LCI Non Lighting (Rolled-Up average)	7	0	4	4	92,713	0	82,048	82,048	13	13	13	14	89%	89%	7,465,898	0	3,920,115	4,531,344	0	0	0	0	0	0	0	0
Lighting	22	15	10	11	92,713	144,094	117,843	117,843	13	13	13	13	89%	89%	23,599,102	25,007,433	13,794,384	14,806,276	0	0	0	0	0	0	0	0
Freezer/Cooler LEDs	0	2	1	1	0	103,481	83,273	83,273	13	13	13	13	89%	89%	0	2,394,561	994,662	1,067,626	0	0	0	0	0	0	0	0
LEDs	0	0	2	3	0	0	77,951	77,951	13	13	13	13	89%	89%	0	0	2,234,629	2,398,551	0	0	0	0	0	0	0	0
VFDs	0	3	3	3	0	53,949	95,100	95,100	13	13	13	13	89%	89%	0	1,872,570	3,180,608	3,413,922	0	0	0	0	0	0	0	0
CFL Bulbs	0	1	0	0	0	86,464	0	0	5	5	5	5	89%	89%	0	384,765	0	0	0	0	0	0	0	0	0	0
Motors	0	2	0	0	0	6,410	0	0	13	13	13	13	89%	89%	0	148,316	0	0	0	0	0	0	0	0	0	0
Occupancy Sensors	0	1	0	0	0	9,387	0	0	9	9	9	9	89%	89%	0	75,190	0	0	0	0	0	0	0	0	0	0
Fuel Neutral Heating, Hot Water and Controls																										
Oil: Air Source Heat Pump Split Systems (Energy Star >= 14.5 SEER)	0	0	0.8	1	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0.0	0.0	17.1	0.0	0	0	156	0
Boilers (301 to 499 MBH), Condensing	0	0	1.5	2	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0.0	0.0	42.3	42.3	0	0	1,600	1,600
Boilers (1000 to 1700 MBH)	0	0	2.3	2	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0.0	0.0	142.6	142.6	0	0	8,089	8,089
Boilers (1701 to 2000 MBH)	0	0	3.8	4	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0.0	0.0	249.0	249.0	0	0	23,541	23,541

Planning Assumptions

Unitil Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	
SBS NC - Lighting	0	0	5	5	0	0	13,788	13,788	13	13	13	13	93%	97%	0	0	812,990	913,016	0	0	0	0	0	0	0	0	
Lighting - Retrofit	46	41	33	34	19,372	19,508	20,343	20,343	13	13	13	13	93%	97%	10,855,741	9,659,281	8,581,033	8,605,986	0	0	0	0	0	0	0	0	
Refrigerator/Freezer LEDs	0	3	1	1	0	15,602	46,807	46,807	13	13	13	13	93%	97%	0	565,288	674,724	686,606	0	0	0	0	0	0	0	0	
SBS Retro Non-Lighting	12	0	6	7	19,372	0	11,433	11,433	13	13	13	13	93%	120%	2,713,935	0	1,157,504	1,177,888	0	0	0	0	0	0	0	0	
Air Compressors	0	1	0	0	0	9,484	0	0	13	13	13	13	93%	97%	0	0	0	0	0	0	0	0	0	0	0	0	
Occupancy Sensors	0	3	0	0	0	3,874	0	0	9	9	9	9	93%	97%	0	0	0	0	0	0	0	0	0	0	0	0	
Unitary AC	0	3	0	0	0	11,987	0	0	15	15	15	15	93%	97%	0	0	0	0	0	0	0	0	0	0	0	0	
Unitary HP	0	1	0	0	0	1,398	0	0	15	15	15	15	93%	97%	0	0	0	0	0	0	0	0	0	0	0	0	
Fuel Neutral Heating, Hot Water and Controls																											
Central Air Conditioner (Energy Star >= 14.5 SEER), 3 ton	0	0	2	2	0	0	110	110	0	0	14	14	100%	100%	0	0	3,773	3,773	0.0	0.0	0.0	0.0	0	0	0	0	
LP: Air Source Heat Pump Split Systems (Energy Star >= 14.5 SEER)	0	0	3	3	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0.0	0.0	15.4	15.4	0	0	503	503	
Oil: Air Source Heat Pump Split Systems (Energy Star >= 14.5 SEER)	0	0	7	7	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0.0	0.0	17.1	17.1	0	0	1,396	1,396	
On Demand Tankless Water Heater, EF >=0.82 EF w/Electronic Ignition	0	0	3	3	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0.0	0.0	7.1	7.1	0	0	386	386	
On Demand Tankless Water Heater >=.95 EF w/Electronic Ignition	0	0	16	16	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0.0	0.0	9.6	9.6	0	0	3,124	3,124	
Boilers (up to 300 MBH), Condensing	0	0	1	1	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0.0	0.0	22.8	22.8	0	0	774	774	

Planning Assumptions

Unitil Gas ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
RNC ES Homes (Heating)	0.0	0.0	15.6	19.5	0.0	0.0	34.4	34.4	0.0	0.0	25	25	100%	100%	0.0	0.0	535.9	669.9	0	0	13,398	16,747
RNC ES Homes (Water Heating)	0.0	0.0	15.6	19.5	0.0	0.0	3.1	3.1	0.0	0.0	15	15	100%	100%	0.0	0.0	48.8	61.0	0	0	732	916
RNC Dishwashers	0.0	0.0	15.6	19.5	0.0	0.0	0.4	0.4	0.0	0.0	10	10	100%	100%	0.0	0.0	6.2	7.8	0	0	62	78
RNC Clotheswashers	0.0	0.0	4.7	5.9	0.0	0.0	0.2	0.2	0.0	0.0	11	11	100%	100%	0.0	0.0	0.9	1.1	0	0	10	12

Unitil Gas Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011		2013		2011		2013		2011		2013		2013		2011		2013		2011		2013	
	2011 Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2014	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan
Weatherization (per home)	26	0	0	0	40.0	0.0	0.0	0.0	20	0	0	0	100%	100%	1,040.0	0.0	0.0	0.0	20,800	0	0	0
Air Sealing	0	19	24	29	0.0	10.9	9.0	9.0	15	15	15	15	100%	100%	0.0	206.7	217.7	259.9	0	3,101	3,265	3,898
Insulation	0	19	24	29	0.0	27.9	42.8	42.8	25	25	25	25	100%	100%	0.0	529.3	1,034.0	1,234.5	0	13,232	25,850	30,862
Thermostats	0	2	5	6	0.0	2.1	7.7	7.7	15	15	15	15	100%	100%	0.0	4.2	37.4	44.6	0	64	561	670
DWH ISMs	0	4	5	6	0.0	5.9	7.0	7.0	4	4	7	7	100%	100%	0.0	23.6	33.9	40.5	0	94	237	283

Unitil Gas ENERGY STAR Appliances

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	Boiler Reset Controls	13	1	0	0	7.9	7.9	4.5	4.5	15	15	15	15	100%	100%	102.7	7.9	0.0	0.0	1,541	119	0
Boiler (forced hot water) 85% AFUE	13	3	0	0	7.2	7.2	0.0	0.0	20	20	0	0	100%	100%	93.6	21.6	0.0	0.0	1,872	432	0	0
Boiler (forced hot water) 90% AFUE	87	37	46	50	14.2	14.2	10.4	10.4	20	20	20	20	100%	100%	1,235.4	525.4	479.4	523.0	24,708	10,508	9,588	10,460
Boiler (forced hot water) >= 96% AFUE	0	0	12	13	0.0	0.0	13.1	13.1	0	0	20	20	100%	100%	0.0	0.0	151.0	164.7	0	0	3,019	3,294
Furnace (forced hot air) 92% AFUE	0	13	0	0	21.1	21.1	0.0	0.0	18	18	0	0	100%	100%	0.0	274.3	0.0	0.0	0	4,937	0	0
Furnace (forced hot air) 92% AFUE w/ ECM	22	0	0	0	11.8	11.8	0.0	0.0	18	18	0	0	100%	100%	259.6	0.0	0.0	0.0	4,673	0	0	0
Furnace (forced hot air) 94% AFUE w/ ECM	65	42	0	0	14.2	14.2	0.0	0.0	18	18	0	0	100%	100%	920.4	594.7	0.0	0.0	16,567	10,705	0	0
Furnace (forced hot air) 95% AFUE w/ECM	0	0	17	19	0.0	0.0	4.5	4.5	0	0	18	18	100%	100%	0.0	0.0	77.8	84.9	0	0	1,400	1,527
Furnace (forced hot air) >= 97% AFUE	0	0	17	19	0.0	0.0	5.9	5.9	0	0	18	18	100%	100%	0.0	0.0	102.0	111.3	0	0	1,836	2,003
Integrated water heater/condensing boiler	13	13	29	31	21.0	21.0	17.8	17.8	20	20	20	20	100%	100%	273.0	273.0	512.8	559.4	5,460	5,460	10,256	11,189
High Efficiency Stand Alone Water Heater (0.62 EF)	4	1	0	0	1.9	1.9	0.0	0.0	13	13	0	0	100%	100%	7.6	1.9	0.0	0.0	99	25	0	0
Tankless Water Heaters (EF 0.82)	43	21	40	44	9.7	9.7	9.7	9.7	20	20	20	20	100%	100%	417.1	203.7	391.2	426.8	8,342	4,074	7,825	8,536
Tankless Water Heaters (EF 0.94)	0	0	9	9	0.0	0.0	10.1	10.1	0	0	20	20	100%	100%	0.0	0.0	87.3	95.2	0	0	1,746	1,905
Indirect Water Heater (attached to gas Energy Star FHW boiler)	43	18	40	44	8.0	8.0	8.0	8.0	20	20	20	20	100%	100%	344.0	144.0	322.7	352.0	6,880	2,880	6,453	7,040
Energy Star Programmable Thermostats	143	44	69	75	7.5	7.5	3.2	3.2	15	15	15	15	100%	100%	1,072.5	330.0	221.3	241.4	16,088	4,950	3,319	3,621
Wi-Fi Thermostats (controls gas heat only)	0	0	9	9	0.0	0.0	6.6	6.6	0	0	15	15	100%	100%	0.0	0.0	57.0	62.2	0	0	856	933

Unitil Gas Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	Weatherization (per home)	23	0	0	0	34.3	0.0	0.0	0.0	20	0	0	0	100%	100%	790.0	0.0	0.0	0.0	15,797	0	0
Air Sealing SF	0	2	9	11	0.0	45.9	23.2	23.2	15	15	15	15	100%	100%	0.0	91.8	209.4	245.5	0	1,377	3,141	3,682
Insulation SF	0	3	9	11	0.0	54.9	29.5	29.5	25	25	25	25	100%	100%	0.0	164.7	266.2	312.0	0	4,117	6,654	7,801
Air Sealing MF	0	86	21	25	0.0	2.3	6.2	6.2	15	15	15	15	100%	100%	0.0	198.6	129.5	151.9	0	2,979	1,943	2,278
Insulation MF	0	16	21	25	0.0	0.1	8.8	8.8	25	25	25	25	100%	100%	0.0	2.2	185.1	217.0	0	56	4,627	5,424
DHW ISMs (aerators & pipewrap) SF	0	2	9	11	0.0	1.9	3.0	3.0	4	4	4	4	100%	100%	0.0	3.8	26.6	31.2	0	15	106	125
DHW ISMs (aerators & pipewrap) MF	0	16	21	25	0.0	1.9	3.2	3.2	4	4	4	4	100%	100%	0.0	31.0	67.5	79.1	0	124	270	317
Heating System Replacement	0	6	1	2	0.0	36.8	10.4	10.4	0	18	20	20	100%	100%	0.0	220.8	14.1	16.5	0	4,037	281	330
Thermostats	0	92	21	25	0.0	7.8	7.5	7.5	0	15	15	15	100%	100%	0.0	719.3	157.7	184.9	0	10,790	2,366	2,774
Controls	0	1	0	0	0.0	13.4	0.0	0.0	0	15	0	0	100%	100%	0.0	13.4	0.0	0.0	0	200	0	0
Water Heater Stand Alone	0	1	0	0	0.0	12.5	0.0	0.0	0	13	0	0	100%	100%	0.0	12.5	0.0	0.0	0	163	0	0

Unitil Gas Large Business Energy Solutions

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
	2011 Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2011	2013	2011 Plan	Actual	Plan	Plan	2011 Plan	Actual	Plan	Plan
RETROFIT TRACK																						
C&I Retrofit Custom	5	2	2	2	679.4	3,060.0	4,469.8	4,469.8	18	20	18	18	100%	100%	3,397.1	6,120.0	8,981.0	8,981.1	61,149	122,400	161,659	161,659
Multi-Family Rolled Up	5	0	0	0	631.7	0.0	0.0	0.0	18	0	0	0	100%	100%	3,158.6	0.0	0.0	0.0	55,276	0	0	0
Multi-Family Windows	0	1	0	0	0.0	723.0	0.0	0.0	0	25	0	0	100%	100%	0.0	723.0	0.0	0.0	0	18,075	0	0
Multi-Family Condensing Boiler	0	44	0	0	0.0	32.3	0.0	0.0	0	25	0	0	100%	100%	0.0	1,421.2	0.0	0.0	0	35,530	0	0
Multi-Family Water Heater - Indirect	0	44	0	0	0.0	30.4	0.0	0.0	0	15	0	0	100%	100%	0.0	1,337.6	0.0	0.0	0	20,064	0	0
NEW EQUIPMENT TRACK																						
Furnace 94+ AFUE (<150) w/ECM Motor	5	0	0	0	23.6	23.6	0.0	0.0	18	18	0	0	100%	100%	118.0	0.0	0.0	0.0	2,124	0	0	0
Furnace 97+ AFUE (<150) w/ECM Motor	0	0	1	1	0.0	0.0	18.5	18.5	0	0	18	18	100%	100%	0.0	0.0	20.8	20.8	0	0	375	375
Condensing boiler <= 300 mbh	15	2	6	6	32.3	32.3	22.8	22.8	25	25	25	25	100%	100%	484.5	64.6	128.3	128.3	12,113	1,615	3,207	3,207
Condensing boiler 301-499 mbh	0	3	12	12	78.3	78.3	56.1	56.1	25	25	25	25	100%	100%	0.0	234.9	662.8	662.8	0	5,873	16,570	16,570
Condensing boiler 500-999 mbh	0	6	9	9	146.7	146.7	103.0	103.0	25	25	25	25	100%	100%	0.0	880.2	927.2	927.2	0	22,005	23,179	23,179
Condensing boiler 1000-1700 mbh	0	0	3	3	264.1	264.1	189.2	189.2	25	25	25	25	100%	100%	0.0	0.0	532.2	532.2	0	0	13,305	13,305
Boiler >=96% AFUE, <= 300 mbh	0	0	3	3	0.0	0.0	29.3	29.3	0	0	25	25	100%	100%	0.0	0.0	82.4	82.4	0	0	2,061	2,061
Infrared	2	0	0	0	74.4	74.4	48.3	48.3	17	17	17	17	100%	100%	148.8	0.0	0.0	0.0	2,530	0	0	0
On demand, Tankless Water Heater >=.82,	9	0	0	0	7.1	7.1	7.1	7.1	20	20	20	20	100%	100%	63.9	0.0	0.0	0.0	1,278	0	0	0
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.82)	12	5	8	8	30.4	30.4	20.7	20.7	15	15	15	15	100%	100%	364.8	152.0	174.7	174.7	5,472	2,280	2,620	2,620
Condensing Stand Alone >95% TE, >75000 btu	2	0	0	0	25.0	25.0	25.0	25.0	15	15	15	15	100%	100%	50.0	0.0	0.0	0.0	750	0	0	0
WATER HEATER TANK 0.67 EF	0	0	2	2	0.0	0.0	3.0	3.0	0	0	13	13	100%	100%	0.0	0.0	5.1	5.1	0	0	66	66
Integrated water heater/condensing boiler (0.9 EF, 0.9 AFUE)	6	0	5	5	24.6	24.6	24.6	24.6	20	20	20	20	100%	100%	147.6	0.0	110.7	110.7	2,952	0	2,214	2,214
Fryers	3	9	7	7	60.0	60.0	58.6	58.6	12	12	12	12	100%	100%	180.0	540.0	428.6	428.6	2,160	6,480	5,143	5,143
High Efficiency Gas Combination Oven (>=44% efficiency)	0	1	1	1	40.3	40.3	110.3	110.3	12	12	12	12	100%	100%	0.0	40.3	124.1	124.1	0	484	1,489	1,489
Thermostats	5	0	0	0	7.5	7.5	0.0	0.0	15	15	0	0	100%	100%	37.5	0.0	0.0	0.0	563	0	0	0
Hydronic Boiler (301-499 mbh)	1	0	0	0	35.3	35.3	0.0	0.0	1	1	0	0	100%	100%	35.3	0.0	0.0	0.0	35	0	0	0
Custom Projects	0	2	0	0	0.0	159.9	0.0	0.0	0	25	0	0	100%	100%	0.0	319.7	0.0	0.0	0	7,993	0	0

Unitil Gas Small Business Energy Solutions

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011	2013	2011 Plan	2011 Actual	2013 Plan	2014 Plan	2011 Plan	2011 Actual	2013 Plan	2014 Plan
RETROFIT TRACK																						
Furnace 95+ AFUE (<150) w/ECM Motor	0	0	3	3	0.0	0.0	16.1	16.1	0	0	18	18	100%	100%	0.0	0.0	48.1	48.1	0	0	865	866
Condensing boiler <= 300 mbh	0	0	9	9	0.0	0.0	22.8	22.8	0	0	25	25	100%	100%	0.0	0.0	204.2	204.4	0	0	5,105	5,109
Infrared	0	0	18	18	0.0	0.0	48.3	48.3	0	0	17	17	100%	100%	0.0	0.0	865.2	865.8	0	0	14,708	14,719
Fryers	0	0	6	6	0.0	0.0	58.6	58.6	0	0	12	12	100%	100%	0.0	0.0	349.9	350.1	0	0	4,199	4,202
Boiler >=96% AFUE, <= 300 mbh	0	0	3	3	0.0	0.0	29.3	29.3	0	0	25	25	100%	100%	0.0	0.0	87.5	87.5	0	0	2,187	2,188
On demand, Tankless Water Heater >=.82,	0	0	3	3	0.0	0.0	7.1	7.1	0	0	20	20	100%	100%	0.0	0.0	21.2	21.2	0	0	424	424
High Efficiency Gas Convection Oven (>=44% efficiency)	0	0	6	6	0.0	0.0	30.6	30.6	0	0	12	12	100%	100%	0.0	0.0	182.7	182.8	0	0	2,192	2,194
Boiler Reset Controls	0	0	1	1	0.0	0.0	35.5	35.5	0	0	15	15	100%	100%	0.0	0.0	38.2	31.8	0	0	572	477
Custom SCI Weatherization	0	0	3	3	0.0	0.0	141.1	141.1	0	0	25	25	100%	100%	0.0	0.0	421.2	421.5	0	0	10,530	10,537
NEW EQUIPMENT TRACK																						
Condensing boiler <= 300 mbh	0	0	22	22	0.0	0.0	22.8	22.8	0	0	25	25	100%	100%	0.0	0.0	507.8	507.8	0	0	12,695	12,695
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.8	0	0	9	9	0.0	30.4	20.7	20.7	0	0	15	15	100%	100%	0.0	0.0	184.4	184.4	0	0	2,766	2,766
Boiler >=96% AFUE, <= 300 mbh	0	0	13	13	0.0	0.0	29.3	29.3	0	0	25	25	100%	100%	0.0	0.0	391.5	391.5	0	0	9,789	9,789
Condensing boiler 301-499 mbh	0	0	9	9	0.0	78.3	56.1	56.1	0	0	25	25	100%	100%	0.0	0.0	499.8	499.8	0	0	12,495	12,495
Thermostats	0	0	9	9	0.0	0.0	7.7	7.7	0	0	15	15	100%	100%	0.0	0.0	68.6	68.6	0	0	1,029	1,029
Boiler Reset Controls	0	0	3	3	0.0	0.0	35.5	35.5	0	0	15	15	100%	100%	0.0	0.0	94.9	94.9	0	0	1,423	1,423
SMALL BUSINESS SERVICES (Retrofit & New Equipment)																						
Small C&I Custom (Rolled-up)	11	0	0	0	314.7	0.0	0.0	0.0	18	0	0	0	100%	100%	3461.2	0.0	0.0	0.0	62,302	0	0	0
DHW Custom (Hot Water Ozone)	0	1	0	0	0.0	306.9	0.0	0.0	0	15	0	0	100%	100%	0.0	306.9	0.0	0.0	0	4,604	0	0
Indirect Water Heaters	0	1	0	0	0.0	30.4	0.0	0.0	0	15	0	0	100%	100%	0.0	30.4	0.0	0.0	0	456	0	0
Condensing Stand Alone Water Heater >95% TE, >75000 btu	0	1	0	0	0.0	25.0	0.0	0.0	0	15	0	0	100%	100%	0.0	25.0	0.0	0.0	0	375	0	0
ECM Furnace	0	2	0	0	0.0	37.2	0.0	0.0	0	18	0	0	100%	100%	0.0	74.3	0.0	0.0	0	1,337	0	0
Infrared Heaters	0	6	0	0	0.0	74.4	0.0	0.0	0	17	0	0	100%	100%	0.0	446.4	0.0	0.0	0	7,589	0	0
Furnace 94+ AFUE (<150) w/ECM Motor	0	1	0	0	0.0	23.6	0.0	0.0	0	18	0	0	100%	100%	0.0	23.6	0.0	0.0	0	425	0	0
Condensing boiler 301-499 mbh	0	3	0	0	0.0	78.3	0.0	0.0	0	25	0	0	100%	100%	0.0	234.9	0.0	0.0	0	5,873	0	0
Boiler Reset control	0	1	0	0	0.0	35.5	0.0	0.0	0	20	0	0	100%	100%	0.0	35.5	0.0	0.0	0	710	0	0
Roof Insulation	0	1	0	0	0.0	261.2	0.0	0.0	0	25	0	0	100%	100%	0.0	261.2	0.0	0.0	0	6,530	0	0
Food Service High Efficiency Gas Convection Oven (>=40% efficiency)	0	2	0	0	0.0	24.8	0.0	0.0	0	12	0	0	100%	100%	0.0	49.6	0.0	0.0	0	595	0	0
Food Service Fryers	0	2	0	0	0.0	60.0	0.0	0.0	0	12	0	0	100%	100%	0.0	120.0	0.0	0.0	0	1,440	0	0

ATTACHMENT M: 2013 STATEWIDE BUDGET S AND GOALS (ELECTRIC AND GAS)

NH CORE Energy Efficiency Program Goals			
(January 1 - December 31, 2013)			
NH CORE ENERGY EFFICIENCY PROGRAMS	EXPENSES (\$)	SAVINGS (Lifetime kWh)	NUMBER OF CUSTOMERS
RESIDENTIAL (nhsaves@home)			
ENERGY STAR Homes	\$1,312,567	22,532,774	443
ENERGY STAR Lighting ¹	\$1,280,081	31,498,890	300,882
ENERGY STAR Appliances	\$2,790,500	40,121,509	21,797
NH Home Performance w/ENERGY STAR	\$2,500,808	5,709,958	1,292
Home Energy Assistance	\$3,769,904	11,698,444	818
TOTAL RESIDENTIAL	\$11,653,860	111,561,575	325,233
COMMERCIAL & INDUSTRIAL (nhsaves@work)			
Educational Programs	\$267,822		
Large Business Energy Solutions	\$6,689,778	275,058,218	446
Small Business Energy Solutions	\$4,924,644	149,653,145	1,945
TOTAL COMMERCIAL & INDUSTRIAL	\$11,882,244	424,711,363	2,391
TOTAL	\$23,536,105	536,272,938	327,624

NH CORE ENERGY EFFICIENCY PROGRAMS	EXPENSES (\$)	SAVINGS (Lifetime MMBTU)	NUMBER OF CUSTOMERS
RESIDENTIAL (nhsaves@home)			
ENERGY STAR Homes	\$170,000	39,065	53
ENERGY STAR Lighting	\$0	0	0
ENERGY STAR Appliances	\$1,005,000	253,857	2,866
NH Home Performance w/ENERGY STAR	\$865,000	404,077	593
Home Energy Assistance	\$895,000	109,882	186
TOTAL RESIDENTIAL	\$2,935,000	806,881	3,698
COMMERCIAL & INDUSTRIAL (nhsaves@work)			
Educational Programs	\$45,000		
Large Business Energy Solutions	\$1,464,397	527,803	236
Small Business Energy Solutions	\$1,303,289	446,726	417
TOTAL COMMERCIAL & INDUSTRIAL	\$2,812,686	974,529	654
TOTAL	\$5,747,686	1,781,410	4,352

The Power to make a difference.

365 days a year.

Since 2002 New Hampshire electric customers have been taking advantage of the CORE Energy Efficiency Programs. All energy improvements, from the very small to the very large, have combined to make a real difference -- saving energy, money, and protecting the environment.

Since the inception of the CORE Programs, New Hampshire electric customers have:



Saved enough 8.7 billion lifetime kWh – enough energy to power the city of Concord for 22 years!



Saving 8.7 billion kWhs is equivalent to saving \$1.2 billion at today's average costs of \$0.1317/kWh – benefiting both customers and the economy.



Reduced emissions by 4.9 million tons – the equivalent of taking more than 1 million cars off the road for a full year.

The New Hampshire gas customers have also:



Saved enough 5.7 million lifetime MMBTUs – enough energy to heat 3,850 homes for 20 years!



Saving 5.7 million lifetime MMBTTUs is equivalent to saving \$57.5 million at today's average costs of \$1.0556/therm – benefiting both customers and the economy.

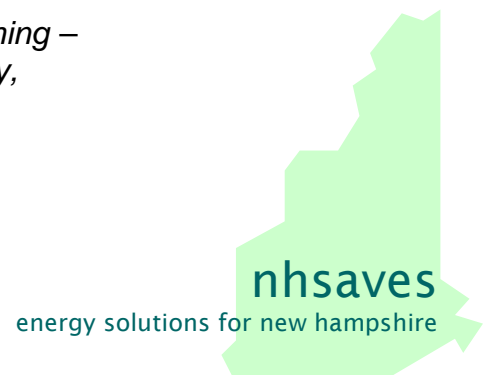


Reduced emissions by 337,000 tons – the equivalent of taking more than 58,500 cars off the road for a full year.

*NHSaves is about people in
New Hampshire doing the right thing –
working together to save energy,
reduce costs and
protect the environment.*

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1.866.266.2420





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A Northeast Utilities Company

Matthew J. Fossum
Counsel

September 13, 2013

Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-2429

RE: DE 12-262, 2013-2014 CORE Electric and Gas Energy Efficiency Programs
Program Year 2014 Update

Dear Director Howland:

In accordance with Article II, Section F.5. of the Settlement Agreement in Docket DE 12-262, approved by Order No. 25,462 (February 1, 2013), and as amended by secretarial letter dated September 3, 2013 granting an extension to file the 2014 CORE energy efficiency program updates no later than September 13, 2013, enclosed for filing is an original and six copies of the 2014 CORE New Hampshire Energy Efficiency Programs, which include updates for program year 2014. These updates are made jointly by Granite State Electric d/b/a Liberty Utilities; New Hampshire Electric Cooperative, Inc.; Public Service Company of New Hampshire; Unitil Energy Systems, Inc.; EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities and Northern Utilities, Inc. (collectively, the "NH CORE Utilities"). The NH CORE Utilities seek authority to implement the 2014 programs as proposed in this filing as of January 1, 2014.

Thank you for your assistance with this matter. Please do not hesitate to contact me should you have any questions regarding this filing.

Very truly yours,

Matthew J. Fossum
Counsel

Enclosures
CC: Service List (electronic only)

**NEW HAMPSHIRE ELECTRIC AND GAS UTILITIES
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**

**2014 CORE New Hampshire
Energy Efficiency Programs**

Granite State Electric Company d/b/a Liberty Utilities
New Hampshire Electric Cooperative, Inc.
Public Service Company of New Hampshire
Unitil Energy Systems, Inc.
EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities
Northern Utilities, Inc.

NHPUC Docket DE 12-262

SEPTEMBER 13, 2013

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I. INTRODUCTION

This filing is being made jointly by Granite State Electric Company d/b/a Liberty Utilities, New Hampshire Electric Cooperative, Inc., Public Service Company of New Hampshire and Unitil Energy Systems, Inc. (referred to throughout the remainder of this document as the “NH Electric Utilities”) and EnergyNorth Natural Gas, Inc. d/b/a Liberty Utilities and Northern Utilities, Inc. (referred to as the “NH Gas Utilities”) or collectively as the “NH CORE Utilities”.

A. Background

On September 17, 2012, in Docket DE 12-262, the NH CORE Utilities submitted a two-year plan entitled “2013-2014 CORE New Hampshire Energy Efficiency Programs” with the Commission for approval. On February 1, 2013, the Commission issued Order No. 25,462 approving the CORE Energy Efficiency Programs, as amended by the Settlement Agreement reached in the proceeding and as clarified within the Order with respect to the Home Performance with ENERGY STAR rebates for gas customers. In the Settlement Agreement the NH CORE Utilities agreed to provide an update for the 2014 program year on or by August 31, 2013. On August 30, 2013, the NH CORE Utilities requested that the Commission provide an extension to the August 31, 2013 filing deadline until September 13, 2013; and on September 3, 2013 the Commission approved the extension request. In accordance with the Settlement Agreement and as amended by the Commission’s September 3, 2013 secretarial letter, this filing includes the NH CORE Utilities proposed program changes for the program year 2014 and provides a brief update on several initiatives contained in the 2013-2014 CORE New Hampshire Energy Efficiency Programs filing. The sections contained in the original 2013-2014 CORE New Hampshire Energy Efficiency Programs plan that are not updated in this plan, remain in their original form as approved by the Commission.

This plan is separated into the following major categories and each category includes the proposed changes for 2014:

- Program Funding
- Program Budgets
- CORE Program Changes
- Utility-specific Program Changes
- Monitoring and Evaluation
- Performance Incentive
- Status of Initiatives Contained in the 2013-2014 CORE Programs Plan
- Attachments (All Attachments included in the 2013-2014 CORE Programs Plan updated for 2014, except Attachment B)

B. Program Funding

CORE Electric Energy Efficiency Program Funding

The CORE Electric Energy Efficiency Programs are funded through three main sources: 1) a portion of the System Benefits Charge which is applied to the electric bills of all customers receiving delivery service through one of the NH Electric Utilities; 2) a portion of the Regional Greenhouse Gas Initiative (RGGI) auction proceeds; and 3) proceeds obtained by the NH Electric Utilities from ISO-NE for participation in ISO-NE’s Forward Capacity Market. In addition, any unspent funds from prior program years are carried forward to future years, including interest at the prime rate.

Table I.1 below summarizes the original 2014 estimated program funding, the updated 2014 estimated program funding and the difference in program funding by source and utility for the CORE Electric Programs. The overall estimated level of funding for 2014 increased by \$145,000, which is primarily made up of a \$40,000 increase in System Benefits Charge funding due to a projected increase in kilowatt-hour sales from what was originally projected for 2014, a \$203,000 increase in Carryforward and Interest due to more recent information, a \$231,000 decrease in RGGI auction proceeds based on an up-to-date forecast of the 2014 RGGI funding as provided by the Commission's staff on July 31, 2013 and a \$134,000 increase in Forward Capacity Market proceeds due to the use of updated prices effective June 1, 2013 for multiple year commitments.

Table I.1 – CORE Electric Program Funding 2014

New Hampshire CORE Electric Energy Efficiency Programs					
Original 2014 Estimated Program Funding (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
System Benefits Charge (SBC)	1,746.0	1,358.3	14,065.2	2,227.5	19,397.0
Carryforward & Interest	-	232.6	-	(1.3)	231.3
RGGI	511.3	417.2	4,382.1	689.7	6,000.2
ISO-NE Forward Capacity Market (FCM)	140.0	60.0	2,090.0	174.2	2,464.2
Total Energy Efficiency Funding	2,397.3	2,068.0	20,537.3	3,090.1	28,092.8
Updated 2014 Estimated Program Funding (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
System Benefits Charge (SBC)	1,706.9	1,379.2	14,129.6	2,221.3	19,437.0
Carryforward & Interest (1)	27.6	249.2	1.7	155.9	434.4
RGGI	488.0	421.8	4,215.4	643.8	5,769.0
Estimated ISO-NE FCM Proceeds	128.6	60.0	2,235.0	174.2	2,597.8
Total Energy Efficiency Funding	2,351.0	2,110.2	20,581.7	3,195.2	28,238.2
2014 Estimated Program Funding Difference (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
System Benefits Charge (SBC)	(39.2)	20.9	64.4	(6.2)	40.0
Carryforward & Interest	27.6	16.7	1.7	157.2	203.1
RGGI	(23.3)	4.6	(166.7)	(45.9)	(231.2)
Estimated ISO-NE FCM Proceeds	(11.4)	-	145.0	-	133.6
Total Energy Efficiency Funding	(46.3)	42.2	44.4	105.1	145.4

(1) On August 26, 2013, PSNH submitted a request to the Commission for approval to transfer \$1.09 million in 2012 carryover funds to the Smart Start Revolving Loan Fund (\$900k) and to the Residential Energy Efficiency Revolving Loan Fund (\$190k) during the 2013 program year.

CORE Gas Energy Efficiency Program Funding

The CORE Gas Energy Efficiency Programs are funded by the Local Distribution Adjustment Charge which is applied to the gas bills of all customers receiving service through one of the NH Gas Utilities. Similar to the electric programs, any unspent funds from prior program years are carried forward to future years, including interest at the prime rate.

Table I.2 below summarizes the original 2014 estimated program funding, the updated 2014 estimated program funding and the difference in program funding by source and utility for the CORE Gas Programs. The overall estimated level of funding for 2014 increased by \$449,000.

Table I.2 – CORE Gas Program Funding 2014

New Hampshire CORE Gas Energy Efficiency Programs			
Original 2014 Estimated Program Funding (\$000's)			
	LU-Gas	Unitil-Gas	Total
Local Distribution Adjustment Charge (LDAC)	5,307.1	1,322.9	6,630.0
Carryforward & Interest	-	6.0	6.0
Total Energy Efficiency Funding	5,307.1	1,328.9	6,636.1
Updated 2014 Estimated Program Funding (\$000's)			
	LU-Gas	Unitil-Gas	Total
Local Distribution Adjustment Charge (LDAC)	5,583.3	1,501.6	7,084.9
Carryforward & Interest	-	-	-
Total Energy Efficiency Funding	5,583.3	1,501.6	7,084.9
2014 Estimated Program Funding Difference (\$000's)			
	LU-Gas	Unitil-Gas	Total
Local Distribution Adjustment Charge (LDAC)	276.2	190.3	454.9
Carryforward & Interest	-	(6.0)	(6.0)
Total Energy Efficiency Funding	276.2	184.3	448.8

C. Program Budgets

CORE Electric Energy Efficiency Program Budgets

Table I.3 below summarizes the original 2014 electric program budget, the updated 2014 electric program budget and the difference in electric program budget by sector and utility for the CORE Electric Programs. The overall 2014 electric program budget increased by approximately \$247,000 from the original 2014 budget projection.

Table I.3 – CORE Electric Program Budget 2014

New Hampshire CORE Electric Energy Efficiency Programs					
Original 2014 Program Budgets (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
Residential - Income Eligible (HEA Program)	\$329.5	\$287.2	\$2,819.8	\$456.0	\$3,892.5
Residential - Non Income Eligible	\$604.8	\$961.7	\$6,411.6	\$893.9	\$8,872.0
Commercial, Industrial & Municipal	\$1,262.3	\$665.9	\$9,567.0	\$1,364.4	\$12,859.6
Smart Start & FCM & Unitil Res Loan	\$25.0	\$0.0	\$235.0	\$128.8	\$388.8
Total Budget	\$2,221.6	\$1,914.8	\$19,033.4	\$2,843.1	\$26,012.9
Updated 2014 Program Budgets (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
Residential - Income Eligible (HEA Program)	\$325.8	\$294.6	\$2,835.6	\$482.8	\$3,938.7
Residential - Non Income Eligible	\$602.0	\$984.3	\$6,389.8	\$973.7	\$8,949.8
Commercial, Industrial & Municipal	\$1,244.2	\$674.6	\$9,678.5	\$1,420.9	\$13,018.2
Smart Start & FCM & Unitil Res Loan	\$15.0	\$10.3	\$245.0	\$83.1	\$353.4
Total Budget	\$2,187.0	\$1,963.7	\$19,148.9	\$2,960.5	\$26,260.1
2014 Program Budget Difference (\$000's)					
	LU-Electric	NHEC	PSNH	Unitil	Total
Residential - Income Eligible (HEA Program)	-\$3.7	\$7.4	\$15.8	\$26.8	\$46.3
Residential - Non Income Eligible	-\$2.8	\$22.6	-\$21.8	\$79.8	\$77.7
Commercial, Industrial & Municipal	-\$18.1	\$8.7	\$111.5	\$56.5	\$158.6
Smart Start & FCM & Unitil Res Loan	-\$10.0	\$10.3	\$10.0	-\$45.7	-\$35.4
Total Budget	-\$34.6	\$48.9	\$115.5	\$117.4	\$247.1

CORE Gas Energy Efficiency Program Budgets

Table I.4 below summarizes the original 2014 gas program budget, the updated 2014 gas program budget and the difference in gas program budget by sector and utility for the CORE Gas Programs. The overall 2014 gas program budget increased \$415,000 from the original 2014 budget estimate. The main reasons for each utility's budget change are as follows:

LU-Gas

- Increased the Home Energy Assistance program budget to create level funding between 2013 and 2014.
- Increased the Residential Building Practices and Demonstration Program budget in anticipation of performing a Home Energy Reports pilot initiative.

Unitil-Gas

- Increased the residential budget (including the income eligible sector) by 13% to ensure there are sufficient funds to meet the increased demand for rebates through the Energy Star Appliance program (also known as Gas Networks). In addition, the income eligible sector budget was increased to include a carryover of unspent funds from the prior year.
- Increased the 2014 C&I budget by 13% to meet the demand for custom projects in the large C&I program.

Table I.4 – CORE Gas Program Budget 2014

New Hampshire CORE Gas Energy Efficiency Programs			
Original 2014 Program Budgets (\$000's)			
	LU-Gas	Unitil -Gas	Total
Residential - Income Eligible (HEA Program)	\$787.5	\$170.0	\$957.5
Residential - Non Income Eligible	\$1,701.0	\$557.0	\$2,258.0
Commercial & Industrial	\$2,425.5	\$495.7	\$2,921.2
Total Budget	\$4,914.0	\$1,222.7	\$6,136.7
Updated 2014 Program Budgets (\$000's)			
	LU-Gas	Unitil -Gas	Total
Residential - Income Eligible (HEA Program)	\$923.3	\$232.1	\$1,155.3
Residential - Non Income Eligible	\$1,821.0	\$587.0	\$2,408.0
Commercial & Industrial	\$2,425.5	\$562.5	\$2,988.0
Total Budget	\$5,169.8	\$1,381.5	\$6,551.3
2014 Program Budget Difference (\$000's)			
	LU-Gas	Unitil -Gas	Total
Residential - Income Eligible (HEA Program)	\$135.8	\$62.1	\$197.8
Residential - Non Income Eligible	\$120.0	\$30.0	\$150.0
Commercial & Industrial	\$0.0	\$66.8	\$66.8
Total Budget	\$255.8	\$158.8	\$414.6

II. CORE PROGRAM CHANGES

A. Residential Programs

1. **ENERGY STAR Appliance Program**

The NH CORE Utilities plan to add a Wi-Fi thermostat and associated incentive to the list of ENERGY STAR Hot Water and Heating System measures.

An Early Boiler Replacement (EBR) incentive will be offered by Liberty Utilities-Gas after the completion of the Early Boiler Replacement Pilot Program which was approved by the Commission as part of the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan. The pilot program is being conducted in 2013 to develop the logistics related to the operation of the program in 2014. A similar program, currently in operation in Massachusetts, has been successful. The benefit and cost structure of the Massachusetts program has been incorporated into the New Hampshire program design. An explanation of the pilot program, formerly titled “Early Retirement of Boilers Pilot” can be found on page 32 of the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan.

<u>Measure</u>	<u>Incentive</u>
Wi-Fi Thermostat	\$100
Early Boiler Replacement	Up to \$3,000 (Liberty Utilities-Gas)

The NH Electric Utilities modified savings and incentives for the ductless mini-split heat pumps in 2014 to bring them in line with standard practice in other northeast states. Specifically, the base case assumption has changed from a fossil fuel appliance to a standard efficiency mini-split heat pump. By rebating the higher efficiency mini-split heat pump, the utilities are incenting customers to use less electricity than they would with a lower efficiency model. In addition, the amount of the rebate has been reduced from \$900 and \$450 (depending on the efficiency of the equipment) to \$500 and \$300 in order reflect the incremental cost the utilities are seeing in the field and to allow for a greater number of units to be incented through the program.

2. **Residential Building Practices and Demonstration Program – NH Gas Utilities**

As described in the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan, the purpose of the Residential Building Practices and Demonstration Program is to explore and demonstrate new and/or underutilized energy efficiency practices and/or equipment that can enhance a home’s overall energy savings potential. This unique program allows either of the NH Gas Utilities to support new and/or advanced energy savings technologies installed by residential customers. In addition to the Early Boiler Replacement Pilot and the Wi-Fi Thermostats Pilot introduced previously, the NH Gas Utilities will investigate a Third Party Financing Pilot and a Home Energy Reports Pilot in 2014 as described below.

Early Boiler Replacement Pilot (formerly known as the Early Retirement of Boilers Pilot)

It is anticipated the Early Boiler Replacement Pilot Program as described in the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan will conclude in 2013. As

described in the ENERGY STAR Appliance Program section above, Liberty Utilities-Gas plans to add an early boiler replacement incentive starting in 2014.

WiFi Thermostats Pilot

Liberty Utilities recently completed an evaluation study of the WiFi Thermostats Pilot Program as described in the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan. The evaluation study was provided to the Commission's staff on August 21, 2013 and the utilities plan to discuss the results at the CORE Quarterly Meeting scheduled in September 2013. The results of this study indicate that the average impact was a reduction of 69 therms, or 8%, of the participants' baseline natural gas consumption. As a result, the NH CORE Utilities have proposed to add Wi-Fi Thermostats to the ENERGY STAR Appliance Program beginning in 2014.

Third Party Financing Pilot

The NH Gas Utilities are in the process of assessing the potential of offering low interest third party financing to support residential customers' participation in the CORE Energy Efficiency Programs. The primary goal of this pilot is to determine if lenders are interested in offering unsecured energy efficiency loans to customers and providing the administrative infrastructure for such financing. At this time, the NH Gas Utilities plan to collaborate with banks, credit unions or other financing institutions to develop the Third Party Financing Pilot Program. To the extent possible, the NH Gas Utilities will draw on the experience obtained from financing programs offered in other states in order to minimize program costs. In addition, if determined as relevant, the NH Gas Utilities may conduct participant surveys to assess customer motivation, behavior and satisfaction, and will utilize the results to improve future program offerings.

Home Energy Reports (HER) Pilot

The NH Gas Utilities will investigate a behavioral pilot program for the 2014/2015 winter heating season that includes delivery of paper reports to a randomly selected group of residential gas customers. The HER pilot program would be designed to engage residential customers into a long term conversation about how they can save energy and money on their utility bills. Notably, the HER pilot program would be similar to PSNH's existing pilot program; however, the program would be tailored exclusively for gas customers with a focus on the heating season. It is anticipated that the residential gas customer participants will be drawn from Liberty Utilities' service area.

The purpose of the HER pilot program would be to provide customers with personalized information regarding their gas usage, comparative energy use information, tips to save energy, and opportunities to participate in other energy efficiency programs. This unique program could help customers:

- 1) visualize how their gas consumption compares to similarly sized and equipped homes in their area,
- 2) understand how their gas usage changes over time and across seasons, and
- 3) develop goals and strategies to reduce their gas use.

The NH Gas Utilities would also consider the following as part of the pilot:

- Home Energy Reports Web Portal – the web portal would be accessible to all HER recipients. The portal would complement the paper reports and provide an even more in-depth picture of customers' energy use, as well as, self-service tools that allow customers to manage their report experience.

- Home Energy Reports Emails – a randomly selected group of residential gas customers would also be sent monthly reports to their email mailbox. These digital communications complement the paper reports and have been shown to improve program impact in other gas behavior programs around the country.
- Customer Engagement Survey – a survey would be conducted with a randomly selected group of residential gas customers to better understand how the home energy reports are improving awareness and increasing participation in gas energy efficiency programs. It will also help inform potential ways to enhance the program offering should it expand beyond the pilot phase.

The NH Gas Utilities will continue to consider other ideas in addition to the list above.

B. Income Qualified Weatherization

1. Home Energy Assistance Program

Recommendation Regarding the Per-Customer Program Spending Cap

Background

On July 26, 2013, the Commission issued Order No. 25,554 in DE 12-262, which approved, on a temporary basis, the NH Electric Utilities' request to make the following changes to the Home Energy Assistance (HEA) Program:

1. Increase the 2013 and 2014 HEA Program per-customer spending cap from \$5,000 to \$8,000.
2. Allow for expenditures above the \$8,000 cap for the replacement of space heating equipment and combined space/water heating equipment. The equipment installed will be ENERGY STAR certified whenever possible. In cases where ENERGY STAR certified equipment is unavailable or a cost effective substitution is unavailable (as in the case of manufactured homes), the equipment must meet the ENERGY STAR annual fuel utilization efficiency (AFUE) minimum requirements. *See* March 21, 2013 Assented-to Request to Amend Electric Utilities' Home Energy Assistance Program in Docket No. DE 10-188. Space heating equipment replacements will only be allowed if a home has also been weatherized.
3. Strive to limit the amount of funds spent on space and combined space/water heating equipment to 25% of each NH Electric Utility's HEA Program annual budget to ensure that most of the funds are used for weatherization services.

The Commission directed the NH Electric Utilities to work with interested parties to develop a recommendation regarding the appropriate per household spending cap once federal funding levels are finalized and monies received and to include a recommendation to the Commission within the CORE Programs Quarterly Report following the NH Office of Energy and Planning's (OEP) receipt of federal Weatherization Assistance Program funds. The NH Electric Utilities did not have the necessary information available to include a recommendation in the last Quarterly Report filed with the Commission. As a result, a recommendation is included below.

Update Regarding Federal Funding

Federal funding for the Weatherization Assistance Program (WAP) is secured via a grant to the OEP, which distributes the funds among the Community Action Agencies. For the year ending

March 31, 2014, the WAP allocation is \$1,186,108. Given the timing of the release of funds by the federal Department of Energy, monies are expected to be available to the Community Action Agencies to spend between October 2013 and the end of March 2014. The level of funding for the following year (year ending March 31, 2015) has not yet been determined and is not expected to be received by the OEP until the fall of 2014.

Recommendation

Given that a) WAP funding through March 2014 will be limited compared to historic levels, b) there will likely be a six month or more gap between April and October 2014 when little to no federal WAP funding will be available, and c) funding levels for the 2014-15 program year are expected to be comparable to if not lower than those received in the 2013-14 program year the NH Electric Utilities propose to retain the changes to the HEA Program as temporarily approved in Order No. 25,554, through the Program Year 2014.

C. Commercial, Industrial & Municipal Programs

1. Municipal Program

Background

On July 24, 2013, Senate Bill 123 (SB 123) was signed into law. This bill amended RSA 125-O:23, II-III (Multiple Pollutant Reduction Program) effective January 1, 2014, and requires that certain proceeds from the Regional Greenhouse Gas Initiative (RGGI) Program be allocated to municipal and local government energy efficiency projects. Specifically, the law states in part:

“All remaining proceeds received by the state from the sale of allowances shall be allocated by the commission as an additional source of funding to electric distribution companies for core energy efficiency programs which are approved by the commission and funded by SBC funds. Beginning January 1, 2014, the core utilities shall dedicate up to \$2,000,000 of these remaining RGGI proceeds annually for municipal and local government energy efficiency projects, including projects by local governments that have their own municipal utilities. Funding elements shall include, but not be limited to, funding for direct technical and project management assistance to identify and encourage comprehensive projects and incentives structured to assist municipal and local governments funding energy efficiency projects.”

In order to meet the requirements of this new law, the NH Electric Utilities first reached out to and solicited feedback from several municipalities of differing sizes throughout New Hampshire, the NH Energy Efficiency and Sustainable Energy (EESE) Board and the NH Local Energy Working Group. In particular, the NH Electric Utilities sought to more fully understand the unique barriers faced by the municipalities which may prohibit or lessen investment in energy efficiency projects and to identify specific technical assistance needs that could be met through a new CORE energy efficiency program. Based on the valuable input and feedback received, the NH Electric Utilities are proposing a first year program that:

- leverages the NH Electric Utilities’ existing commercial and industrial programs;
- incorporates a fuel blind component; and
- encompasses a flexible approach for technical assistance.

The primary focus in the first year is to expand on the successes achieved through the foundation of the existing CORE commercial and industrial programs, and to gain insight and experience that can be utilized in the program design in 2014 and in subsequent years. The NH Electric Utilities believe it is important to continue the collaborative process with stakeholders in order to facilitate leveraging of multiple resources and funding, and to identify best practices that can be incorporated into the program design.

Program Overview

In accordance with RSA 123-O:23, the new Municipal and Local Government Program is available to all municipal and local government customers of the NH Electric Utilities and to the five communities in New Hampshire that have their own municipal utilities (collectively these customers and five communities are referred to through the remainder of this document as “municipal customers”).

Municipal customers face barriers similar to other commercial and industrial customers, but they also have unique challenges. More frequent leadership changes, budgeting processes that require city/town representative approval and/or voter approval, and the level of local energy efficiency knowledge and project management expertise are all factors that can impact the ability of a municipality to cost-effectively implement energy efficiency projects. In addition, the technical assistance needs may vary widely from one city/town to another.

The program targets municipal customers with new construction projects, major renovation projects, failed equipment that needs replacement and those operating aging, inefficient equipment and systems. For new construction projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 75% of the incremental cost (100% for schools) of higher efficiency products. Incentives are also available for electric, oil and liquid propane heating, cooling and hot water systems.

For retrofit projects, the program offers prescriptive and custom rebates designed to cover the lesser of a one year payback or up to 35% of the equipment and installation cost up to the customer’s incentive cap. Retrofit services also include a turnkey solution tailored to the unique needs of municipal customers. As part of the turnkey services, the NH Electric Utilities offer lighting and refrigeration equipment upgrades delivered by vendors who perform initial assessments of existing buildings, recommend energy efficient improvements, and install the appropriate energy efficiency measures. Turnkey services include incentives of up to 50% of the installed cost of the energy efficiency measures up to the customer’s incentive cap. In addition, municipal customers may elect to use their own contractors to complete the energy efficiency projects.

Marketing & Education

In addition to the marketing activities being performed for the other CORE Commercial and Industrial Programs, the marketing of this program will focus on direct outreach to municipal customers to inform them about the program and how to participate.

Delivery

The NH CORE Utilities are responsible for the delivery of this program. Municipal customers will be served by each of the utilities’ account representatives who will explore efficiency opportunities with municipal representatives and guide them through the participation process. Technical assistance will be tailored to the individual needs of the

participating municipality, and existing resources such as completed energy audits will be utilized as much as possible.

Measures of Success & Market Transition Strategy

The NH Electric Utilities will monitor the success of the program during the first year. In addition, the NH Electric Utilities will continue to collaborate with and seek feedback from program stakeholders. Based on the program's success and the feedback from program participants and stakeholders, the NH Electric Utilities may incorporate program modifications in 2014 and in subsequent years. Program success will be defined by attaining the planned participation and energy saving goals, as well as, customer satisfaction with the program. Program evaluations will help shape any program changes needed over time to address market barriers.

III. UTILITY SPECIFIC PROGRAM CHANGES

Unitil Energy Systems, Inc.

This section provides information on programs specific to UES.

A. Combined Heat and Power (CHP) C&I Pilot Measure

Unitil received Commission approval as described in Order No. 25,555 to implement the CHP C&I pilot measure. As of this filing, Unitil is finalizing a Request for Proposal (RFP) for the Company's commercial customers interested in installing a CHP system. A team will review the RFP responses and will choose the best project that meets the requirements of the pilot measure. Since CHP systems often have longer manufacturing lead times and the interconnection process is often lengthy due to technical requirements, the installation and operation of this pilot measure equipment could occur in the fourth quarter of the 2014 program year. The Company plans to conduct an evaluation that spans at least the larger part of a heating season; therefore, the evaluation may not be concluded until 2015.

B. On-Bill Financing C&I

Unitil estimates that there is a sufficient balance of funds in the revolving loan fund for its commercial and industrial electric customers to carry through 2014, therefore Unitil is proposing to move the planned appropriation of \$50,000 from the C&I revolving loan fund to other C&I programs.

Public Service Company of New Hampshire

This section provides information on matters and programs specific to PSNH.

A. 2014 Budget Narrative

The following process and assumptions were used to develop PSNH's 2014 budget.

1. 2014 Energy Efficiency Program Funding

The total 2014 funding available to PSNH's energy efficiency programs was estimated based on the following:

- a) PSNH's System Benefits Charge (SBC) energy efficiency revenue is based on a forecast of 2014 MWh sales and an SBC energy efficiency rate of 1.8 mills per kilowatt-hour.

2014 Forecasted MWh Sales	SBC Rate (mills/kWh)	Total SBC Revenue (\$000's)
7,849,792	1.8	\$14,129.63

- b) The estimated 2014 RGGI proceeds of \$5.769 million was provided to the NH Electric Utilities by the Commission's staff on July 31, 2013.

Of this amount, as required by Senate Bill 123, which amends RSA 125-O:23, II-III effective January 1, 2014, up to \$2 million of the RGGI proceeds must be dedicated annually by the NH Electric Utilities for municipal and local government energy efficiency projects, including projects by local governments that have their own municipal utilities. As shown in the following table, the \$2 million was allocated to each NH Electric Utility based on each utility's proportional share of the total 2012 kWh sales, including the 2012 kWh sales of the NH municipal electric utilities. The kWh sales of the municipal electric utilities were assigned to PSNH and the NHEC based on their geographic location.

Utility	2012 kWh Sales	Allocated to:	Total Allocated kWh Sales	% Allocation	Municipal Allocation (\$000's)
LU-Electric	910,773,000		910,773,000	8.37%	\$167.34
NHEC	750,839,000		856,727,325	7.87%	\$157.41
PSNH	7,841,312,000		7,916,503,660	72.73%	\$1,454.51
Unitil	1,201,472,000		1,201,472,000	11.04%	\$220.75
Ashland	18,038,293	NHEC			
Littleton	72,000,000	PSNH			
New Hampton	3,191,660	PSNH			
Wolfeboro	66,928,312	NHEC			
Woodsville	20,921,720	NHEC			
Total	10,885,475,985		10,885,475,985	100.00%	\$2,000.00

The remaining RGGI funds of \$3.769 million was allocated to each NH Electric Utility based on each utility's proportional share of the total 2012 kWh sales delivered by each utility. As shown in the following table, the final RGGI funds allocated to each NH Electric Utility is the summation of the municipal program funds and the remaining RGGI funds.

Utility	2012 mWh Sales	Percent Allocation	Municipal Program Allocation (\$000's)	Remaining RGGI Funds (\$000's)	Final RGGI Funds Allocation (\$000's)
LU-Electric	910,773	8.51%	\$ 167.34	\$ 320.68	\$ 488.02
NHEC	750,839	7.01%	\$ 157.41	\$ 264.37	\$ 421.78
PSNH	7,841,312	73.25%	\$ 1,454.51	\$ 2,760.91	\$ 4,215.42
Unitil	1,201,472	11.22%	\$ 220.75	\$ 423.04	\$ 643.78
Total	10,704,396	100.00%	\$ 2,000.00	\$ 3,769.00	\$ 5,769.00

- c) The ISO-NE Forward Capacity Market (FCM) proceeds for the period January through December 2014 are estimated to be \$2.235 million.
- d) The total carryover and interest balance from the 2012 program year is \$1,091,700. PSNH has included \$1,720 of this amount in the estimate of total 2014 funding. PSNH has requested the Commission's approval to immediately transfer \$900,000 to the Smart Start Revolving Loan Fund (Rate SSP) and \$190,000 to the Residential Energy Efficiency Revolving Loan Fund (Rate LP). For additional information, please refer to the request submitted to the Commission on August 26, 2013.
- e) The total 2014 funding of \$20.581 million is the summation of the SBC revenue, the 2012 carryforward and interest, and the RGGI and FCM proceeds.

Source	Amount (\$000's)
SBC Revenues	\$14,129.63
Carryforward and Interest	\$1.72
RGGI	\$ 4,215.42
FCM	\$2,235.00
Total	\$20,581.77

2. Performance Incentive Budget

A portion of the total 2014 funding is reserved for the performance incentive. The first portion relates to the performance incentive associated with PSNH's Smart Start Program and is calculated based on 6% of the loans repaid¹. The second portion relates to the performance incentive associated with all of PSNH's other energy efficiency programs and is calculated based on the method approved by the Commission in its Order No. 25,569 issued on September 6, 2013. The performance incentive section of this document (Section V) describes the calculation of the performance incentive in greater detail, including the calculation of the performance incentive budget. Reference Attachment F, page 3 for the

¹ Docket DE 01-080, Order No. 23,851, November 29, 2001, Section III, page 19.

total 2014 planned performance incentive budget and the commercial/industrial/municipal sector and residential sector performance incentive budgets.

3. Total Program Budget and Allocation to the Residential and Commercial/Industrial Sectors

- a) The total program budget is equal to the total 2014 program funding less the performance incentive budget and the Smart Start Program expenses.
- b) The Residential Home Energy Assistance (HEA) Program is first allocated 15% of the total program budget.²
- c) The remaining budget amount (total program budget as defined in (a) above less the HEA Program budget) is allocated to the residential sector and the commercial/industrial sector based on the funding source.
 - a. The SBC, RGGI and carryforward and interest funds are allocated based on each sector's proportional share of the forecasted 2014 total kWh sales (Residential – 40.43%; Commercial/Industrial – 59.57%). Of the C&I funds, \$1.45 million was allocated to the C&I municipal program.
 - b. Seventy percent (70%) of the FCM funds are allocated to the Commercial/Industrial sector and thirty percent (30%) are allocated to the Residential sector. (As stated in Order No. 24,719 dated December 22, 2006, the Commission stated “We also believe that it is appropriate, as a preliminary matter, to contribute any payments received by utilities for Core program peak load reduction back to the Core programs.”)
- d) Of the Residential and Commercial/Industrial sector budgets, approximately 2% is allocated to marketing activities and approximately 5% is allocated to monitoring and evaluation activities.

4. Factors Influencing Budget Level

There are several factors that may impact the budget level, including:

- a) Any difference between the actual spending level achieved in the 2014 program year and the total actual energy efficiency funding exclusive of the actual performance incentive earned in 2014 may be allocated to future year program budgets.
- b) PSNH plans to monitor spending in each of the programs and propose adjustments as necessary (e.g. in response to customer demand) in accordance with the guidelines contained in the Introduction section (Section K) of the 2013-2014 CORE New Hampshire Energy Efficiency Programs Plan.
- c) PSNH will accrue interest³ monthly at the prime rate⁴ on the average net balance of the total of the SBC revenue and RGGI and FCM proceeds received less funds expended for programs and services.
- d) PSNH's SBC revenue is based on sales projections. Actual sales may differ resulting in proportionately more or less SBC revenue available for energy efficiency programs. In addition, RGGI and FCM proceeds are estimated and are subject to change. The budget will be adjusted to reflect actual sales and actual RGGI and FCM proceeds.

The 2014 budget is presented in Attachment H.

² As required by Senate Bill 123, which amends RSA 125-O:23,III effective January 1, 2014, at least 15 percent of the RGGI proceeds must be allocated to the low-income core energy efficiency program.

³ DE 96-150, Order 23,574, November 1, 2000, page 25.

⁴ <http://www.moneycafe.com/library/primerate.htm>

B. Residential Customer Engagement Pilot Program

In late March 2013, PSNH contracted Opower to assist with the implementation of PSNH's Residential Customer Engagement Pilot Program. A project implementation kick-off meeting was held in April 2013 and based on the most current project schedule; the first Home Energy Reports will be mailed to 25,000 randomly-selected pilot participants in early October 2013.

In the 2013–2014 CORE NH Energy Efficiency Programs Plan dated September 17, 2012 and updated on December 14, 2012, the initial project implementation date was forecasted to be in January 2013. Due to more extensive reviews of the responses to the Request for Proposal for Professional Services and contract negotiations, a vendor was not selected until late March. As a result, the program launch is now scheduled to occur in October 2013.

A Request for Quotes for Professional Evaluation Services was issued in April 2013 to select an independent program evaluator to perform an evaluation requirements review soon after the program implementation kick-off to ensure the necessary data is collected and is readily available to the evaluation vendor upon the close of the pilot program and to verify that the samples chosen by the vendor are representative of PSNH's residential customer population. Upon the close of the pilot program, the evaluation vendor will verify the electric kilowatt-hour savings, the change in participation levels in PSNH's other energy efficiency programs and will evaluate the participants' overall satisfaction with the pilot program. PSNH awarded the evaluation contract to Navigant Consulting in May 2013.

The pilot program is anticipated to conclude in September 2014. Based on this date, the final evaluation report from Opower will be completed in October 2014 and Navigant Consulting's independent program evaluation will be completed in November 2014.

IV. MONITORING & EVALUATION

A settlement agreement approved by the Commission on March 17, 2006 (Order No. 24,599 in DE 05-157) transferred responsibility for monitoring and evaluation efforts from the NH CORE Utilities to the Commission's Staff. Under that agreement, the Commission receives input and advice from the NH CORE Utilities on monitoring and evaluation activities.

In 2014, no changes are anticipated regarding the responsibilities of the parties. Funding for Monitoring and Evaluation is proposed to remain at approximately five percent of the annual program budgets.

From January to August 2013, the following Monitoring and Evaluation studies were completed:

- The Avoided Energy Supply Costs in New England: 2013 Report, July 12, 2013. The updated avoided energy and capacity costs were utilized by the NH CORE Utilities in their energy efficiency program benefit-cost analyses.
- The New Hampshire HVAC Load and Savings Research, April 5, 2013. This study conducted research on electric cooling loads and cooling equipment, additional opportunities for energy efficiency and the comprehensive electric impacts of the Home Performance with ENERGY STAR Program.
- Wi-Fi Programmable Thermostat Pilot Program Evaluation, July 2013. This report presents the findings and recommendations of Liberty Utilities' Wi-Fi Thermostat Pilot Program.

The following evaluations included in the 2013-2014 Plan are still being considered, including: PSNH's Customer Engagement Pilot first year results impact evaluation, and the Large Business Energy Solutions Program Impact Evaluation, which has been expanded to include C&I New Equipment & Construction projects. Evaluations for the Energy Star Appliance Program and the Energy Star Homes Programs are also planned for 2014.

NH also participates in the Regional Evaluation, Measurement & Verification Forum (EM&V Forum) administered by NEEP. Projects completed recently include the Regional Energy Efficiency Database (REED), Emerging Technologies (recently reviewed advanced powers strips in commercial environments), Incremental Cost Studies (including residential combined heat and hot water systems; ventilation fans; residential cellulose attic insulation; economizers; ductless minisplit heat pumps; prescriptive chillers; and variable frequency drives as well as findings from an examination of non-energy features of residential air conditioners), and Load Shape Studies (Commercial Lighting and C&I Unitary HVAC).

Research & Evaluation projects underway in 2013 include Load Shape research (finishing up variable frequency drives on HVAC units and prioritizing measures/end uses for Phase 4), Incremental Cost Research (Phase 3) for priority measures, and Emerging Technologies. Protocol Development Projects include Cost-Effectiveness Testing Guidance and Research, and a Clothes Dryer baseline study.

Reports and project details are available at <http://neep.org/emv-forum/index>

V. PERFORMANCE INCENTIVE

Background

On December 12, 2012, in Docket No. DE 12-262, a settlement agreement relating to the CORE Programs was presented to the Commission. The settlement agreement stated, in relevant part, that the Settling Parties and the Commission's Staff agreed that the performance incentive working group would develop a performance incentive proposal to address non-electric savings and ensure the performance incentives are appropriately aligned with CORE program goals for the Commission's review by June 30, 2013. To the extent that members of the working group could not agree on a proposal, any individually developed proposal(s) for a performance incentive would be submitted for Commission review by June 30, 2013. Any proposals, whether joint or individual, were to include proposed terms relative to the effective date of any changes recommended. This settlement agreement was approved by the Commission on February 1, 2013 in Order No. 25,462.

As part of the performance incentive working group, representatives of the NH CORE Utilities, Staff, the Department of Environmental Services and the Office of Energy and Planning met subsequent to Order No. 25,462 and engaged in numerous discussions relating to the performance incentive formula. As a result of those discussions, the NH CORE Utilities and Staff reached a compromise on a proposal for a performance incentive effective as of the 2014 program year and filed the proposal with the Commission for approval on July 1, 2013. On June 28, 2013, the Office of Consumer Advocate (OCA) indicated in a letter to the performance incentive working group that it did not oppose the performance incentive settlement proposal being presented to the Commission regarding the CORE program performance incentive to be used beginning in 2014. On July 19, 2013, the Office of Energy and Planning (OEP) and the Department of Environmental Services (DES) filed joint comments with the Commission indicating that neither DES or OEP wished to impede the work of the utilities or the Commission to move toward a more effective performance incentive for the utilities and did not object to the temporary implementation of the July 1, 2013 proposal, but urged the Commission to open a new docket or other process in the near future so that the issues may be resolved prior to the filing of the 2015-2016 CORE programs plan.

On September 6, 2013, the Commission issued Order No. 25,569 approving the proposed performance incentive formula for effect beginning with the 2014 program year. The NH CORE Utilities have utilized the new performance incentive formula to prepare their 2014 CORE Program Plan, including program budgets and goals, and have included the performance incentive formula in the following section entitled "Performance Incentive Formula".

Treatment of the Forward Capacity Market Expenses in the Calculation of the Performance Incentive

On July 1, 2013, the Commission's audit staff filed its final audit reports for the 2011 CORE Electric and Gas Efficiency Programs with the Commission. In the Final Audit Report for Unitil Energy Services, Inc., the audit staff indicated the following as Repeat Audit Issue #1, "*As was identified in the prior year audit report, UES should not be including of the Forward Capacity Market expenses for purposes [of] calculating the shareholder incentive.*" In the Final Audit Reports for PSNH, NHEC and Liberty Utilities, the audit staff indicated that the Forward Capacity Market expenses were properly not included in the performance incentive calculation. In addition, in the Final Audit Report for Unitil, the audit staff recommended that the utilities and the staff at the Commission expressly determine what costs are authorized for inclusion in the

actual costs for the performance incentive, given that there is no consensus on the accurate method to use.

The proceeds received from ISO-NE for the NH Electric Utilities participation in the Forward Capacity Market are utilized as a source of funding for the CORE Programs. In 2014, the estimated annual proceeds total \$2.6 million, or approximately 9.2% of the total annual energy efficiency funding for the CORE Programs, while the estimated annual expenses total \$233,000. These expenses are related directly to the CORE Energy Efficiency Programs and the CORE Electric Utilities participation in the Forward Capacity Market, and are similar to other expenses incurred to administer the CORE Programs. All other program expenses are included in the calculation of the performance incentive. As a result, the NH Electric Utilities have included the energy-efficiency-related expenses resulting from their participation in the Forward Capacity Market in the calculation of the 2014 performance incentive for each utility.

Performance Incentive Formula

Four factors influence the performance incentive (PI) for the electric programs: (1) the actual dollars spent; (2) the ratio of the actual electric lifetime savings achieved to the total actual lifetime energy savings achieved (includes both electric and non-electric measures); (3) the ratio of the actual benefit-to-cost ratio achieved to the predicted benefit-to-cost ratio; and (4) the ratio of the actual lifetime kilowatt-hour savings achieved to the predicted lifetime kilowatt-hour savings achieved.

The formula is as follows:

A. For the CORE programs offered by the NH Electric Utilities:

- i. The percentage of electric lifetime savings to the total lifetime energy savings achieved by each electric utility is calculated using the following formula:

$$\text{Electric Lifetime Savings \%} = \frac{\text{Electric Lifetime Savings}}{\text{Total Lifetime Energy Savings}}$$

Where:

Total Lifetime Energy Savings = Electric Lifetime Savings (in kWh) + (Lifetime MMBtu Savings x 293)

Electric Lifetime Savings = Actual lifetime kilowatt-hour savings achieved by all CORE programs offered by each electric utility

Lifetime MMBtu Savings = Actual lifetime MMBtu savings achieved by all CORE programs offered by each electric utility

- ii. If the Electric Lifetime Savings % \geq 55%, then the PI formula for both electric and non-electric measures is:

$$PI = [3.75\% \times \text{ACTUAL}] \times [(BC_{\text{ACT}} / BC_{\text{PRE}}) + (kWh_{\text{ACT}} / kWh_{\text{PRE}})]$$

Where:

PI = Performance Incentive in dollars

ACTUAL = Total dollars spent less the performance incentive

BC_{ACT} = Actual Benefit-to-Cost ratio achieved

BC_{PRE} = Predicted Benefit-to-Cost ratio

kWh_{ACT} = Actual Lifetime Kilowatt-hour savings achieved

kWh_{PRE} = Predicted Lifetime Kilowatt-hour savings

This formula is used to calculate the PI for the residential and the commercial/industrial sectors separately; the overall PI is determined by adding the sector PIs.

The residential and commercial/industrial sector PIs are each capped at 10% of actual expenditures. In addition, the kWh savings ratio component and the B/C ratio component are each capped at 5% of actual expenditures.

- iii. If the Electric Lifetime Savings % < 55%, then the PI formula for both electric and non-electric measures is of the form shown in A.ii. above with the 3.75% multiplier replaced by 3.0%.

The formula is used to calculate the PI for the residential and the commercial/industrial sectors separately; the overall PI is determined by adding the sector PIs.

The residential and commercial/industrial sector PIs are each capped at 8% of actual expenditures. In addition, the kWh savings ratio component and the B/C ratio component are each capped at 4% of actual expenditures.

B. For the CORE programs offered by the NH Gas Utilities:

The formula is:

$$PI = [4\% \times ACTUAL] \times [(BC_{ACT}/BC_{PRE}) + (MMBTU_{ACT}/MMBTU_{PRE})]$$

Where:

PI = Performance Incentive in dollars

ACTUAL = Total dollars spent less the performance incentive

BC_{ACT} = Actual Benefit-to-Cost ratio achieved

BC_{PRE} = Predicted Benefit-to-Cost ratio

MMBTU_{ACT} = Actual Lifetime MMBTU savings achieved

MMBTU_{PRE} = Predicted Lifetime MMBTU savings

The residential and commercial/industrial sector PIs are calculated separately and are independent of one another. The residential PI is capped at 12% of the actual residential expenditures. In addition, the commercial/industrial PI is capped at 12% of the actual commercial/industrial expenditures. The overall PI is determined by adding the sector PIs.

C. The following threshold conditions are applicable:

- i. For the programs offered by the NH Electric Utilities and NH Gas Utilities, the combined benefit-to-cost ratio for residential sector programs must be 1.0 or greater. If not, there is no incentive associated with the program cost effectiveness performance metric. The commercial/industrial component is calculated similarly.
- ii. For the programs offered by the NH Electric Utilities, the actual lifetime kWh savings for the residential sector programs must be 65% or greater than the predicted lifetime kWh savings. If not, there is no incentive associated with the kWh savings performance metric. The commercial/industrial component is calculated similarly.

- iii. For the programs offered by the NH Gas Utilities, the actual lifetime MMBtu savings for the residential sector programs must be 65% or greater than the predicted lifetime MMBtu savings. If not, there is no incentive associated with the MMBtu savings performance metric. The commercial/industrial component is calculated similarly.

Performance Incentive Budget

A portion of each utility's budget is set aside for the PI, as defined in the Energy Efficiency Working Group Report dated July 6, 1999 in DR 96-150 (page 21, part 3f).⁵

Each NH Electric Utility budgets for a 7.5% PI as follows:

Electric Utility PI Budget

$$PI = 7.5\% \times [BUDGET_{TOT} - PI]$$

$$PI = 0.069767 \times BUDGET_{TOT}$$

Each NH Gas Utility budgets for an 8.0% PI as follows:

Gas Utility PI Budget

$$PI = 8.0\% \times [BUDGET_{TOT} - PI]$$

$$PI = 0.074074 \times BUDGET_{TOT}$$

Where:

PI = Performance incentive in dollars

BUDGET_{TOT} = Total budget in dollars, including the performance incentive

Smart Start Program Performance Incentive

PSNH's Smart Start Program performance incentive is 6% of the loans repaid.

Benefit-to-Cost Ratio Avoided Costs and Assumptions

Refer to Attachment C for information on avoided costs and assumptions used to calculate the benefit-to-cost ratios.

Performance Incentive Calculations

Attachments D, DG, E, F, G and GG present each utility's calculations for cost effectiveness, performance incentive, planned benefit-to-cost ratios and planned energy savings for each program.

⁵ "For incentive calculation purposes only, planned energy efficiency budget is defined as the total program budget minus performance incentives..."

VI. STATUS OF INITIATIVES CONTAINED IN THE 2013/2014 CORE FILING

A. BetterBuildings Program / Home Performance with ENERGY STAR Program Collaboration

During 2012, Public Service Company of New Hampshire, Unil Energy Systems, Inc. and the New Hampshire Electric Cooperative each entered into collaboration agreements with the New Hampshire Community Development Finance Authority (CDFA). CDFFA is responsible for operating the BetterBuildings Program. In that role, the CDFFA received an \$8.5 million grant, through the New Hampshire Office of Energy and Planning (OEP), from the Department of Energy. Through these collaborative efforts, the utilities made commitments to use their best efforts to deliver an additional \$1.8 million in program services to residential customers throughout each utility's service territory through April 30, 2013, which was the duration of the Department of Energy grant period. The utilities are pleased to report that all of the funds were expended on program services by the close of the grant program on April 30, 2013. Over 450 New Hampshire homes received program services under this collaboration, which included audit and weatherization services and/or the replacement of appliances and lights to more efficient models. In addition, approximately forty percent of the participating customers received on-bill financing services for their portion of the project costs. The utilities appreciated the opportunity to collaborate with CDFFA and provide weatherization services to an additional 450 customers.

B. Status of Independent Study of Energy Policy Issues Report Recommendations with Implementation Dates Scheduled in 2013

- *Develop Shared IT Resources and Common Reporting Standards for the Home Energy Assistance Program.*

Plan:

The OEP and the NH CORE Utilities are working together to implement a common weatherization projects database and shared software for assessing energy savings potential, program administration and reporting. The goal is for OEP, the Community Action Agencies (CAAs) and the utility program administrators to have secured access to the system with functionality to support their specific needs.

Status: OEP, the CAAs and the utilities currently utilize the same shared software for modeling energy savings potential. This group reviewed existing program administration and reporting requirements to determine what is needed in a tracking system. In 2014, the group will look at modifying existing software and researching other systems to identify the most appropriate path forward that will meet each organization's needs.

- *Increase Maximum Length of an Energy Performance Contract.*

Report Recommendation:

With the passage of Senate Bill 252 (2012 Session) which was signed into law on June 7, 2012, state agencies and municipalities can enter into an energy performance contract (EPC) with a term lasting up to 20 years. CORE program account executives should prepare to assist local governments in understanding and taking advantage of this legislative change to take on more and larger energy projects.

Status: The NH CORE Utilities will update their account executives on this legislation as part of the roll-out of the new municipal C&I program.

- *Better Align and Coordinate Programs*

Status: With the 2013-2014 CORE Programs filing, the NH CORE Utilities made significant progress towards better alignment of programs. Differences between the programs offered by the gas utilities were eliminated in 2013 and customers have received services and incentives seamlessly from both the gas and electric programs.

In April 2013, all of the utility Account Executives received training on the full suite of electric and gas programs. As a result, the electric companies' Account Executives are now familiar with the gas programs and the gas companies' Account Executives are familiar with the electric programs. Future training sessions will be conducted as needed to ensure familiarity with both the electric and gas programs. Each utility's Account Executives provide a range of services in addition to energy efficiency and are the single point of contact between the utility and the customer within that utility's franchise. Rather than assigning a single Account Executive to customers with facilities in multiple franchise areas, as was suggested in the VEIC report, the assigned Account Executives coordinate with each other when working with cross-franchise customers in order to serve their needs.

The NH CORE Utilities recently issued an RFP and selected a web designer to make improvements to the NHSaves.com website. These improvements include the following objectives: 1) To fully integrate, describe, and support both electric and gas efficiency program offerings; 2) To better integrate the catalog.nhsaves.com web site and NHSaves.com site; and 3) To update the navigation, look and feel of the web site. The changes that will be made to the website in 2013 and 2014 will facilitate the coordination of program offerings both among utilities and between the gas and electric programs, as well as provide a more seamless experience for our customers.

- *Include Consideration for Multi-family Dwellings and Fuel Neutral Products/Programs*

Status: The NH CORE Utilities included multi-family dwellings in both the Home Performance with ENERGY STAR (HPwES) and ENERGY STAR Homes Programs in the 2013-2014 CORE Programs filing. In addition, the NH CORE Utilities included fuel neutral high efficiency heating, cooling, hot water and control system measures to both residential and business customers in 2013 and have proposed to continue to offer these measures in 2014.

C. Status of the Directives Contained in the Commission’s Home Performance with ENERGY STAR Program Order No 25,402

On August 23, 2012, the Commission issued Order No. 25,402 (Order on Home Performance with ENERGY STAR Program (HPwES)). In its Order, the Commission provided conditional approval to continue the fuel neutral HPwES Program in 2012 and to include the program in the utilities’ 2013-2014 CORE program filing. The Commission’s conditional approval is subject to eight directives, which are summarized below along with an update on the status of the resolutions proposed for each directive.

- 1) Study the drivers of the increasing air conditioning load in both the residential and C&I customer classes and begin to develop cost-effective energy efficiency programs to reduce this load. Included in this analysis should be window unit air conditioners and their installation, as well as central air conditioning systems.

Resolution

Complete a market assessment study of air conditioning equipment in both the residential and C&I customers sectors that will focus on opportunities for program interventions to reduce the rate of increase of air conditioning energy and peak demand.

Status

The NH Electric Utilities, in conjunction with Commission Staff, contracted with The Cadmus Group to complete a market assessment study of air conditioning equipment in the residential and C&I sectors. On April 5, 2013, in compliance with the Commission’s directive, the NH Electric Utilities filed a final report entitled “New Hampshire HVAC Load and Savings Research” with the Commission. This research studied the drivers of the increasing air conditioning load in both the residential and C&I sectors; recommended additional measures to reduce air conditioning electric loads and provided estimates of the ancillary electricity savings associated with various non-electric measures utilized in the HPwES Program. These ancillary savings are included in the calculation of kWh savings and benefits in this filing.

- 2) Further develop peak demand as a factor when calculating cost/benefit tests of proposed energy efficiency measures.

Resolution

This directive was interpreted to mean that attention should be focused on accurate quantification of the benefit of summer peak demand savings in cost/benefit tests of air conditioning measures and was included as a requirement of the market assessment study noted in directive #1.

Status

The benefit/cost model does incorporate peak demand as a factor when calculating the benefit/cost of all energy efficiency measures. Savings associated with cooling measures mostly occur in the summer peak period for both energy and peak demand reductions.

With respect to air conditioning impact on the ISO-NE "On Peak Hours", the Cadmus NH HVAC Load and Savings Research did find that air conditioning loads do contribute to the demand for electricity during on peak hours in NH. As part of their review, Cadmus

recommended that the NH Electric Utilities consider including the following cooling measures to enhance energy and peak demand reductions:

Residential Sector

- Utilize ductless heat pump air conditioners (in place of central or window air conditioners);
- Encourage highest efficiency equipment for new construction and planned equipment replacement opportunities;
- Encourage early replacement of existing inefficient equipment;
- Encourage the installation of web-enabled programmable thermostats with central controls for demand response actions during summer peak periods for homes with central air and heat pump cooling systems.

Business Sector:

- Promote building retro-commissioning to assess and upgrade HVAC equipment and controls;
- Promote installation of variable speed drives for data center computer room air conditioners and computer room air handler fans;
- Consider utilizing a remote interval data analysis tool to identify customers with the highest cooling loads and assess energy efficiency opportunities.

- 3) Include additional measures or programs that target peak demand in the 2013-2014 CORE program filing.

Resolution

The 2013-2014 CORE Programs Plan included incentives for new high efficiency central air conditioning and air source heat pumps in both the residential and C&I customer sectors.

Status

The 2014 CORE Update Plan also includes incentives for high efficiency ENERGY STAR central air conditioning and air source heat pumps in the residential and C&I customer sectors.

- 4) Include ancillary electric savings data from non-electric energy efficiency measures, as well as a description of the reliability and accuracy of the data in the form of a report in the 2013-2014 CORE program filing.

Resolution

The quantification of ancillary electric savings data from non-electric energy efficiency measures was included as a requirement of the market assessment study noted in directive #1.

Status

The NH Electric Utilities have incorporated the recommendations and results of the Cadmus "New Hampshire HVAC Load and Savings Research" into the 2014 plan for weatherization programs (HEA and HPwES). Specifically, the utilities included the following energy savings values: Boiler Circulator Pump Savings (9 annual kWh), Furnace Fan Savings (86 annual kWh), Furnace w/new ECM Motor (733 annual kWh), Central AC Savings (77 annual kWh), and Room AC Savings (23 annual kWh).

Cadmus performed simulation modeling and engineering analysis to develop savings

estimates for these impacts, utilizing secondary data from previous impact evaluations conducted in New Hampshire and for other similar weather regions. All calculations in this study were adjusted to develop results appropriate for the New Hampshire weather regions and customer base. Cadmus confirmed that the estimated savings results were consistent with those measured through metering studies of similar measures.

- 5) Perform outreach to electric space heating customers and give such customers priority.

Resolution

The NH Electric Utilities will continue to perform outreach to customers/landlords that are likely to utilize electricity to heat their homes/multi-family buildings and will give priority to electric heat customers via the Home Heating Index screening tool by allowing them to qualify for the program at a lower BTU/Square Foot threshold. In addition, the NH Electric Utilities agreed to conduct a targeted marketing campaign during the time period October 2012 – December 2014.

Status

The NH Electric Utilities continue to give priority to electric heat customers via the Home Heating Index screening tool by allowing them to qualify for the program at a lower BTU/Square Foot threshold. A targeted marketing campaign will be conducted in 2014.

- 6) Develop cost/benefit tools to measure energy savings in multi-family buildings and give priority to multi-unit buildings which utilize electricity for space heating.

Resolution

The NH CORE Utilities plan to implement a common statewide energy modeling software program in 2013 for residential programs that will have the capability to more easily calculate energy savings in multi-family buildings.

Status

Recognizing that the Home Heating Index is not an appropriate tool to screen multi-family buildings, the utilities will perform an assessment of electric or gas heated multi-family units whose owners are interested in participating in the Home Performance with ENERGY STAR Program. The utilities can use their existing HEA modeling tool, TREAT, for modeling these multi-family units. As other tracking and reporting software tools are evaluated, the utilities will assess the ability for the tools to incorporate both multi-family and single family buildings.

- 7) Include an alternative cost benefit analysis approach for electrically heated multi-family projects in the 2013-2014 CORE program filing.

Resolution

The NH Electric Utilities plan to conduct audits of electrically heated multi-family projects to determine the cost-effectiveness of these projects.

Status

The NH Electric Utilities will continue to conduct audits of electrically heated multi-family projects to determine the cost-effectiveness of these projects. The Home Heating Index (HHI) tool is not utilized for multi-family cost benefit analyses as it was designed to be utilized for single family home cost benefit analyses.

- 8) Convene a working group immediately, for the purpose of developing a performance incentive proposal for non-electric savings.

Status

A Performance Incentive Working Group met on several occasions and engaged in numerous discussions relating to the performance incentive mechanism in light of the Commission's directive. On July 1, 2013, the CORE Utilities and the Commission's Staff reached a compromise on a performance incentive proposal and filed the proposal with the Commission for approval. On September 6, 2013, the Commission issued Order No. 25,569 approving the proposed performance incentive formula for effect beginning with the 2014 program year.

ATTACHMENT A: Income Qualified Weatherization – Home Energy Assistance Program Production Schedule

2014 HEA Quarterly Production Schedule

Utility	Total Jobs	1st. Qtr.	2nd. Qtr.	3rd. Qtr.	4th. Qtr.
		13%	37%	33%	17%
LU-Electric	40	6	10	17	7
NHEC	34	6	9	11	8
PSNH	343	42	122	120	59
Unitil	92	7	59	18	8
LU-Gas	182	26	57	64	35
Northern Utilities	43	7	12	14	10
TOTAL Electric	509	61	200	166	82
TOTAL Gas	225	33	69	78	45
Cumulative TOTAL		94	363	607	734

2014 HEA Job Distribution By County and By Utility

BY COUNTY	LU-Electric	NHEC	PSNH	Unitil	LU-Gas	Northern Utilities	Grand Total
Belknap		6	38		22		66
Carroll		4	20				24
Cheshire	8		11				19
Coos		2	21		0		23
Grafton	12	11	12				35
Hillsborough	6		132		138		276
Merrimack		4	29	45	19		97
Rockingham	7	3	34	47	3	28	122
Strafford		0	34			15	49
Sullivan	7	4	12				23
Program Totals	40	34	343	92	182	43	734

Note: Quarterly numbers are benchmarks and not meant to be used to evaluate production on a monthly basis.

ATTACHMENT C: AVOIDED COSTS

Summary of Avoided Electric Costs

In accordance with Commission Order No. 23,850, in DE 01-057, dated November 29, 2001, the NH Electric Utilities have based their avoided costs on the *Avoided-Energy-Supply Costs in New England: 2013 Final Report* (“2013 AESC”). Use of common avoided costs by the utilities ensures that all New Hampshire customers will have access to the same programs and services.

The present value of avoided costs over the life of program measures was calculated using a discount rate of 3.25%¹ and a general inflation rate of 2.00%². The use of the 15% adder to represent non-quantified benefits – including environmental and other benefits as recommended by the Energy Efficiency Working Group, originally authorized by the NHPUC in DR 96-150, Order No. 23,574, dated November 1, 2000, has been discontinued because the 2013 AESC avoided costs include market-based price proxies for power plant emissions of NO_x, SO₂, Mercury and CO₂.

The 2013 AESC avoided costs also include a 9% generic retail adder to account for the expected differential between retail and wholesale market prices. In recognition of diversity among states and utilities in energy service procurement and retail pricing policies, the contractor provided the sponsors the option to remove the adder from the avoided cost data. The NH Electric Utilities have concluded that the 2013 AESC forecasted wholesale prices of energy and capacity represent a better approximation to the cost of energy service avoided by their retail customers than the prices which include a 9% increase to the wholesale prices.

¹ Prime rate as of June 1, 2013, in accordance with Energy Efficiency Working Group Report, Section 7, page 17. Prime rate data taken from <http://www.moneycafe.com/library/primerate.htm>

² Used the Gross Domestic Product: Implicit Price Deflator and calculated the difference between the January 1, 2012 and January 1, 2013 rates. See <http://research.stlouisfed.org/fred2/data/GDPDEF.txt>

Avoided Transmission and Distribution Costs

In accordance with Commission Order No. 23,850, in DE 01-057, dated November 29, 2001, the NH Electric Utilities have based their avoided transmission and distribution costs on the weighted average of NH utility costs and have escalated them for inflation and put them in 2013 dollars. Use of common avoided costs by the utilities ensures that all New Hampshire customers will have access to the same programs and services.

The following table also includes an adjustment to reduce the energy and capacity line loss multipliers by the estimated losses that are accounted for in the 2013 forecast of energy prices.

Marginal T&D Costs and Line Loss Factors (\$2012)								
Line Loss Multipliers								
	<u>MDC (\$/kW-yr)</u>		<u>MTC</u>	<u>Transmission</u>	Summer	Winter	On-Peak	Off-Peak
	<u>Res.(1)</u>	<u>C&I(2)</u>	<u>(\$/kW-yr)</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Energy</u>	<u>Energy</u>
NHEC	\$163.05	\$163.05	\$109.43	1.0207	1.0818	1.0818	1.0818	1.0818
Liberty	\$118.71	\$86.39	\$49.63	1.1220	1.1500	1.1350	1.0630	1.0890
PSNH	\$38.11	\$38.11	\$2.30	1.0000	1.0820	1.0820	1.0820	1.0840
Unitil	\$76.47	\$76.47	\$30.37	1.0000	1.1217	1.1217	1.1217	1.0152
MWh Sales to Ultimate Customers in 2012								
NHEC	750,839	7.01%						
Liberty	910,773	8.51%						
PSNH	7,841,312	73.25%						
Unitil	<u>1,201,472</u>	<u>11.22%</u>						
Total	10,704,396	100.00%						
Weighted Average Marginal T&D Costs and Line Loss Factors (Energy Line Loss Multipliers have been reduced by estimated transmission losses.)								
Line Loss Multipliers								
	<u>MDC (\$/kW-yr)</u>		<u>MTC</u>	<u>Transmission</u>	Summer	Winter	On-Peak	Off-Peak
	<u>Res.(1)</u>	<u>C&I(2)</u>	<u>(\$/kW-yr)</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Capacity</u>	<u>Energy</u>	<u>Energy</u>
2013\$	\$59.20	\$56.39	\$17.33	1.012	1.076	1.075	1.061	1.053

Program Cost-Effectiveness - 2014 PLAN

Present Value												
	Total Resource Benefit/Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Shareholder Incentive (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs												
ENERGY STAR Homes	6.10	\$ 680.3	\$ 96.3	\$ 15.2		49	1,038	15	14	27	854	21,268
NH Home Performance with ENERGY STAR	2.56	\$ 710.9	\$ 174.6	\$ 102.7		19	232	538	180	74	983	20,571
ENERGY STAR Lighting	1.26	\$ 175.5	\$ 108.4	\$ 31.1		419	2,615	130	44	6,793	-	-
ENERGY STAR Appliances	2.27	\$ 1,004.8	\$ 222.7	\$ 220.0		267	2,833	40	33	1,656	1,491	24,691
Home Energy Assistance	1.64	\$ 533.0	\$ 325.8	\$ -		46	719	7	5	40	899	18,391
ISO NE FCM - Residential	0.00	\$ -	\$ 4.5	\$ -		-	-	-	-	-	-	-
Subtotal Residential	2.26	\$ 3,104.5	\$ 932.3	\$ 369.0	\$ 69.9	800	7,437	730	275	8,590	4,227	84,920
Commercial/Industrial Programs												
Large Business	1.41	\$ 1,973.9	\$ 693.6	\$ 703.0		1,607	21,519	206	297	85	675	9,349
Small Business	1.23	\$ 950.7	\$ 367.0	\$ 403.7		869	11,462	256	100	166	585	7,869
C&I Education	0.00	\$ -	\$ 16.3	\$ -		-	-	-	-	1	-	-
Municipal	2.09	\$ 594.5	\$ 167.3	\$ 117.7		357	4,826	92	48	24	444	9,640
ISO NE FCM - C&I	0.00	\$ -	\$ 10.5	\$ -		-	-	-	-	-	-	-
Subtotal C&I	1.37	\$ 3,519.1	\$ 1,254.7	\$ 1,224.4	\$ 94.1	2,834	37,807	554	445	275	1,704	26,859
Total	1.68	\$ 6,623.60	\$ 2,186.98	\$ 1,593.43	\$ 164.02	3,634	45,244	1,284	720	8,866	5,931	111,779

Annual kWh Savings	3,634,436	68%	kWh > 55%
Annual MMBTU Savings (in kWh)	1,738,214	32%	
Total Annual Energy Savings	5,372,650	100%	

Lifetime kWh Savings	45,244,204	58%	kWh > 55%
Lifetime MMBTU Savings (in kWh)	32,760,473	42%	
Total Lifetime Energy Savings	78,004,677	100%	

Present Value Benefits - 2014 PLAN

	CAPACITY					ENERGY				Non Electric Resource
	Total Benefits (\$000)	Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$680	\$33	\$0	\$5	\$17	\$19	\$26	\$9	\$12	\$559
Home Performance w/Energy Star	\$711	\$76	\$0	\$22	\$72	\$4	\$8	\$1	\$1	\$528
ENERGY STAR Lighting	\$176	\$17	\$0	\$5	\$15	\$41	\$55	\$18	\$24	\$0
ENERGY STAR Appliances	\$1,005	\$28	\$0	\$6	\$19	\$45	\$64	\$21	\$25	\$796
Home Energy Assistance	\$533	\$8	\$0	\$1	\$4	\$12	\$19	\$5	\$6	\$477
Subtotal Residential	\$3,105	\$162	\$0	\$38	\$128	\$122	\$172	\$55	\$68	\$2,360
Commercial/Industrial Programs										
Large Business	\$1,974	\$366	\$0	\$66	\$218	\$0	\$417	\$407	\$216	\$196
Small Business	\$924	\$123	\$0	\$22	\$73	\$0	\$195	\$248	\$95	\$114
C&I Education	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Municipal	\$595	\$61	\$0	\$11	\$36	\$0	\$84	\$101	\$43	\$48
Subtotal C&I	\$3,492	\$550	\$0	\$99	\$327	\$0	\$696	\$756	\$355	\$358
Total	\$6,597	\$713	\$0	\$137	\$455	\$122	\$868	\$810	\$423	\$2,718

Shareholder Incentive Calculation 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.43	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	37,807,486	
4. Threshold Lifetime kWh Savings (65%) ²	24,574,866	
5. Budget	\$1,254,687	
6. Benefit / Cost Percentage of Budget	3.75%	
7. Lifetime kWh Percentage of Budget	3.75%	
8. C/I Shareholder Incentive	\$94,102	
9. Cap (10%)	\$125,469	
Residential Incentive		
10. Benefit / Cost Ratio	2.39	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	7,436,718	
13. Threshold Lifetime kWh Savings (65%) ²	4,833,867	
14. Budget	\$932,295	
15. Benefit / Cost Percentage of Budget	3.75%	
16. Lifetime kWh Percentage of Budget	3.75%	
17. Residential Incentive	\$69,922	
18. Cap (10%)	\$93,229	
19. TOTAL INCENTIVE EARNED	\$ 164,024	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

2014 TRC BENEFIT COST TEST

Planned Versus Actual Benefit / Cost Ratio by Sector
 2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 3,519	
2. Implementation Expenses	\$ 1,255	
3. Customer Contribution	\$ 1,224	
4. Total Costs Excluding Shareholder Incentive	\$ 2,479	
5. Benefit/Cost Ratio - C&I Sector	1.42	
6. Benefit/Cost Ratio - C&I Sector including SI	1.37	
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 3,105	
7. Implementation Expenses	\$ 932	
8. Customer Contribution	\$ 369	
9. Total Costs Excluding Shareholder Incentive	\$ 1,301	
10. Benefit/Cost Ratio - Residential Sector	2.39	
11. Benefit/Cost Ratio - Residential Sector including SI	2.26	

Actual Lifetime Energy Savings by Sector and Program
 2014

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business	21,519,008	
Small Business	11,462,209	
C&I Education	0	
Municipal	4,826,269	
Total Commercial & Industrial Included for Incentive Calculation	37,807,486	
Residential:		
ENERGY STAR Homes	1,038,066	
NH Home Performance with ENERGY STAR	231,888	
ENERGY STAR Lighting	2,615,391	
ENERGY STAR Appliances	2,832,541	
Home Energy Assistance	718,833	
Total Residential Included for Incentive Calculation	7,436,718	
Total	45,244,204	

Attachment DG: Total Resource Benefit Cost Analysis

January 1, 2014 - December 31, 2014 TRC BENEFIT COST TEST

Liberty Utilities Gas Energy Efficiency

New Hampshire Program Year Two

Summary of Benefit, Costs Program Year 2014 (January 1, 2014 - December 31, 2014)

Total Resource Cost Test

BCR Activity	TRC Benefit/ Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	PA Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant Goal
Residential									
Home Energy Assistance	1.13	\$116	\$1,039	\$923	\$923	\$0	5,812	116,239	182
Home Performance with ENERGY STAR	2.43	\$1,803	\$3,068	\$1,265	\$767	\$498	17,160	343,209	522
ENERGY STAR Appliances	1.34	\$372	\$1,478	\$1,106	\$767	\$340	10,140	173,723	1,781
ENERGY STAR Homes	1.82	\$104	\$230	\$126	\$95	\$32	1,013	25,315	37
Building Practices and Demo	NA	(\$194)	\$0	\$194	\$194	\$1	-	-	-
Shareholder Incentive					\$220				
Subtotal: Residential	1.52	\$2,201	\$5,816	\$3,834	\$2,964	\$870	34,125	658,486	2,522
Commercial & Industrial									
Large Business	1.40	\$1,190	\$4,158	\$2,968	\$1,394	\$1,574	39,920	607,669	188
Small Business	1.18	\$411	\$2,686	\$2,275	\$999	\$1,276	19,897	355,930.9	549
Codes, Audit Training & Education	NA	(\$32)	\$0	\$32	\$32	\$0	-	-	-
Shareholder Incentive					\$194				
Subtotal: Commercial & Industrial	1.25	\$1,568	\$6,844	\$5,470	\$2,620	\$2,850	59,817	963,600	737
Grand Total	1.36	\$3,769	\$12,660	\$9,304	\$5,583	\$3,720	93,942	1,622,085	3,259

Attachment DG: Shareholder Incentive
Liberty Utilities Gas Energy Efficiency
Target Shareholder Incentive
Year Two- January 1, 2014 - December 31, 2014

Commercial & Industrial:

1. Target Benefit/Cost Ratio	1.25
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	963,600
4. Threshold MMBTU	626,340
5. Budget	\$2,425,501
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%
8. Target C/I Incentive	\$194,040
9. Cap	\$291,060

Residential:

10. Target Benefit/Cost Ratio	1.52
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	658,486
13. Threshold MMBTU	428,016
14. Budget	\$2,744,250
15. CE Percentage	4.00%
16. Lifetime MMBTU Percentage	4.00%
17. Target Residential Incentive	\$219,540
18. Cap	\$329,310
19. TOTAL TARGET INCENTIVE	\$413,580

Line No. Notes:

- 1, 3, 5, 10, 12, and 14. See Attachment DG, page 1.
- 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
- 4. 65% of line 3.
- 8. 8% of line 5.
- 9. 12% of line 5.
- 13. 65% of line 12.
- 17. 8% of line 14.
- 18. 12% of line 14.
- 19. Line 8 plus line 17.

**Attachment DG: Shareholder Incentive
Liberty Utilities Gas Energy Efficiency
Target Benefit-Cost Ratio by Sector
Year Two- January 1, 2014 - December 31, 2014**

Commercial & Industrial:	<u>Planned</u>
1. Benefits (Value) From Eligible Programs	\$6,843,931
2. Implementation Expenses	\$2,393,187
3. Customer Contribution	\$2,850,048
4. Shareholder Incentive	\$194,040
5. Total Costs Including Shareholder Incentive	\$5,437,275
6. Benefit/Cost Ratio - C&I Sector	1.26
Residential:	
7. Benefits (Value) From Eligible Programs	\$5,815,570
8. Implementation Expenses	\$2,744,250
9. Customer Contribution	\$870,234
10. Shareholder Incentive	\$219,540
11. Total Costs Including Shareholder Incentive	\$3,834,024
12. Benefit/Cost Ratio - Residential Sector	1.52

Line No. Notes:

1 - 4 and 7-11. See Attachment DG, page 1.

5. Sum of lines 2-4.

6. Line 1 divided by line 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.

11. Sum of lines 7 - 10.

12. Line 7 divided by line 11. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio. However, the shareholder incentive is supposed to be included as an EE cost in determining the benefit/cost ratio. For the purpose of calculating the shareholder incentive, the Company has calculated the planned benefit/cost ratio including the shareholder incentive for one iteration and will compare the actual benefit/cost ratio including the shareholder incentive to the planned benefit/cost ratio including shareholder incentives when determining the earned shareholder incentive.

Program Cost-Effectiveness - 2014 PLAN

	Total Resource Benefit/Cost Ratio	Present Value				Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
		Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)								
Residential Programs												
ENERGY STAR Homes	2.36	\$466	\$157	\$40	32	668	9	8	32	601	14,755	
Home Performance w/Energy Star	1.68	\$854	\$295	\$212	42	468	9	3	70	1,656	32,708	
ENERGY STAR Lighting	1.37	\$279	\$128	\$76	452	3,758	188	63	22,363	-	-	
ENERGY STAR Appliances	2.47	\$1,683	\$350	\$332	423	4,517	90	48	2,304	2,293	38,419	
Home Energy Assistance	1.04	\$305	\$295	\$0	50	776	15	4	34	808	10,402	
U-S: High Efficiency Heat Pump	3.21	\$255	\$54	\$26	154	3,846	42	1	6	-	-	
FCM Reporting		\$0	\$0	\$0	0	0	0	0	-	-	-	
Subtotal Residential	1.96	\$3,842	\$1,279	\$686	1,152	14,032	354	127	24,809	5,358	96,284	
Commercial/Industrial Programs												
Large Business Energy Solutions	2.64	\$877	\$127	\$205	918	11,934	200	91	18	-	-	
Small Business Energy Solutions	1.44	\$889	\$356	\$262	743	9,697	92	156	54	-	-	
Other (Education)		\$0	\$34	\$0	0	0	0	0	-	-	-	
Municipal Program	1.31	\$427	\$157	\$169	367	4,774	39	68	28	14	352	
FCM Reporting		\$0	\$0	\$0	0	0	0	0	-	-	-	
Subtotal C&I	1.67	\$2,193	\$675	\$635	2,028	26,405	331	314	100	14	352	
Smart Start		\$0	\$10	\$0	0	0	0	0	-	-	-	
Subtotal Other		\$0	\$10	\$0	0	0	0	0	0	-	-	
Total	1.84	\$6,034	\$1,964	\$1,322	3,181	40,438	685	441	24,909.0	5,372	96,635	

Annual kWh Savings	3,180,750	66.9%	kWh > 55%
Annual MMBTU Savings (in kWh)	1,574,426	33.1%	
Total Annual Energy Savings	4,755,175	100.0%	

Lifetime kWh Savings	40,437,679	58.8%	kWh > 55%
Lifetime MMBTU Savings (in kWh)	28,322,220	41.2%	
Total Lifetime Energy Savings	68,759,899	100.0%	

Present Value Benefits - 2014 PLAN

	CAPACITY						ENERGY				
	Total Benefits	Summer Generation	Winter Generation	Transmission	Distribution	DRIVE	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Non Electric Resource
Residential Programs											
ENERGY STAR Homes	\$466,406	\$19,262	\$0	\$2,943	\$9,767	\$0	\$12,287	\$16,407	\$6,067	\$7,625	\$392,048
Home Performance w/Energy Star	\$853,975	\$2,407	\$0	\$482	\$1,599	\$0	\$8,011	\$14,623	\$2,454	\$2,140	\$822,259
ENERGY STAR Lighting	\$278,634	\$33,936	\$0	\$7,866	\$26,106	\$0	\$61,895	\$83,025	\$28,674	\$37,132	\$0
ENERGY STAR Appliances	\$1,663,895	\$40,938	\$0	\$8,318	\$27,607	\$0	\$72,514	\$108,448	\$30,331	\$36,333	\$1,339,407
Home Energy Assistance	\$304,865	\$4,285	\$0	\$786	\$2,610	\$0	\$14,500	\$26,309	\$3,090	\$3,529	\$249,755
High Efficiency Heat Pump	\$255,044	\$2,417	\$0	\$363	\$1,204	\$0	\$80,398	\$165,977	\$2,226	\$2,458	\$0
Subtotal Residential	\$3,822,819	\$103,245	\$0	\$20,759	\$68,893	\$0	\$249,606	\$414,789	\$72,842	\$89,216	\$2,803,469
Commercial/Industrial Programs											
Large Business Energy Solutions	\$876,803	\$107,679	\$0	\$19,480	\$64,648	\$0	\$237,223	\$352,883	\$55,362	\$39,530	\$0
Small Business Energy Retrofit	\$889,472	\$186,632	\$0	\$33,673	\$111,753	\$0	\$203,776	\$160,935	\$110,187	\$82,517	\$0
Municipal Program	\$426,631	\$80,638	\$0	\$14,588	\$48,413	\$0	\$105,120	\$81,309	\$50,391	\$37,844	\$8,329
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal C&I	\$2,192,907	\$374,949	\$0	\$67,740	\$224,813	\$0	\$546,118	\$595,126	\$215,939	\$159,891	\$8,329
Smart Start	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$6,015,725	\$478,194	\$0	\$88,499	\$293,707	\$0	\$795,724	\$1,009,915	\$288,781	\$249,107	\$2,811,798

Member Incentive Calculation 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.61	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	26,405,296	0
4. Threshold Lifetime kWh Savings (65%) ²	17,163,442	
5. Budget	\$674,561	\$0
6. Benefit / Cost Percentage of Budget	3.75%	
7. Lifetime kWh Percentage of Budget	3.75%	
8. Commercial/Industrial Incentive	\$50,592	
9. Cap (10%)	\$67,456	
Residential Incentive		
10. Benefit / Cost Ratio	1.86	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	14,032,383	0
13. Threshold Lifetime kWh Savings (65%) ²	9,121,049	
14. Budget	\$1,278,858	\$0
15. Benefit / Cost Percentage of Budget	3.75%	
16. Lifetime kWh Percentage of Budget	3.75%	
17. Residential Incentive	\$95,914	
18. Cap (10%)	\$127,886	
19. TOTAL INCENTIVE EARNED	\$146,506	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

Planned Versus Actual Benefit / Cost Ratio by Sector
2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 2,192,907	\$ -
2. Implementation Expenses	\$ 674,561	\$ -
3. Customer Contribution	\$ 635,476	\$ -
4. Estimated Shareholder Incentive	<u>\$ 50,592</u>	<u> </u>
5. Total Costs (including shareholder incentive)	\$ 1,360,629	\$ -
6. Benefit/Cost Ratio - C&I Sector	1.61	0.00
 Residential:		
7. Benefits (Value) From Eligible Programs	\$ 3,841,522	\$ -
8. Implementation Expenses	\$ 1,278,858	\$ -
9. Customer Contribution	\$ 686,075	\$ -
10. Estimated Shareholder Incentive	<u>\$ 95,914</u>	<u> </u>
11. Total Costs (including shareholder incentive)	\$ 2,060,847	\$ -
12. Benefit/Cost Ratio - Residential Sector	1.86	0.00

**Actual Lifetime Energy Savings by Sector and Program
 2014**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business Energy Solutions	11,934,041	0
Small Business Energy Solutions	9,696,768	0
Other (Education)	0	0
Municipal Program	4,774,486	0
FCM Reporting	<u>0</u>	<u>0</u>
 Total Commercial & Industrial Included for Incentive Calculation	 26,405,296	 0
Residential:		
ENERGY STAR Homes	667,745	0
Home Performance w/Energy Star	468,010	0
ENERGY STAR Lighting	3,757,690	0
ENERGY STAR Appliances	4,516,778	0
Home Energy Assistance	775,937	0
U-S: High Efficiency Heat Pump	3,846,223	0
FCM Reporting	<u>0</u>	<u>0</u>
 Total Residential Included for Incentive Calculation	 14,032,383	 0

Program Cost-Effectiveness - 2014 PLAN

	Present Value										
	Total Resource Benefit/Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
ENERGY STAR Homes	5.21	\$5,999.2	\$962.9	\$187.8	515.6	10,656.0	161.0	140.9	329	8,313	206,888
Home Performance w/Energy Star	2.34	\$8,782.4	\$2,127.8	\$1,623.4	282.6	3,092.9	165.9	90.7	1,254	16,200	338,515
ENERGY STAR Lighting ¹	1.46	\$1,799.6	\$918.9	\$317.2	4,040.0	25,209.8	1,766.5	591.4	65,452	-	-
ENERGY STAR Appliances	2.61	\$8,972.8	\$1,851.1	\$1,581.6	3,040.0	31,957.3	570.9	410.5	16,652	12,067	188,374
Home Energy Assistance	1.35	\$3,839.0	\$2,835.6	\$0.0	394.1	4,779.7	50.5	43.3	343	6,858	141,114
U-S: EnergyStar Homes (Geothermal)	1.27	\$792.8	\$302.2	\$321.0	473.2	11,830.2	124.3	4.8	42	-	-
U-S: Customer Engagement Program	0.56	\$127.4	\$226.8	\$0.0	1,896.0	1,896.0	199.1	216.4	25,000	-	-
U-S: Other Residential Program											
FCM Reporting			\$60.0								
Subtotal Residential	2.28	\$30,313.3	\$9,285.4	\$4,031.0	10,641.6	89,422.0	3,038.2	1,498.2	109,073	43,439	874,892
Commercial/Industrial Programs											
Large Business Energy Solutions	2.03	\$22,427.1	\$5,030.6	\$6,040.9	17,966.6	239,223.2	2,528.3	3,132.1	363	3,213	80,129
Small Business Energy Solutions	1.96	\$9,149.8	\$2,397.3	\$2,268.6	6,148.6	79,998.4	769.2	1,311.4	1,120	3,397	72,016
Other (Education)		\$0.0	\$224.5	\$0.0	0.0	-	-	-	5	-	-
Municipal Program	1.81	\$5,369.9	\$1,454.5	\$1,517.4	3,474.8	44,373.5	1,443.1	800.7	383	2,276	48,011
C&I RFP Energy Rewards Program	2.47	\$2,393.1	\$551.0	\$417.5	2,456.2	28,086.3	321.1	477.2	14	-	-
CI Partnerships		\$0.0	\$20.6	\$0.0	0.0	-	-	-	6	-	-
U-S: Other		\$0.0	\$0.0	\$0.0	0.0	-	-	-	-	-	-
FCM Reporting			\$140.0	\$0.0	0.0	-	-	-	-	-	-
Subtotal C&I	1.96	\$39,340.0	\$9,818.5	\$10,244.4	30,046.3	391,681.5	5,061.7	5,721.3	1,891	8,886	200,156
Smart Start		\$0.0	\$45.0	\$0.0	0.0	-	-	0	-	-	-
Other		\$0.0	\$0.0	\$0.0	0.0	-	-	0	-	-	-
Subtotal Other		\$0.0	\$45.0	\$0.0	0.0	0.0	0.0	0.0	0	-	-
Total	2.08	\$69,653.3	\$19,149.0	\$14,275.4	40,687.9	481,103.4	8,099.9	7,219.5	110,964.3	52,325	1,075,047

Note 1: Plan includes 65,452 customers purchasing a total of 261,809 lighting products.

Annual kWh Savings	40,687,864	72.6%	kWh > 55%
Annual MMBTU Savings (in kWh)	15,335,473	27.4%	
Total Annual Energy Savings	56,023,337	100.0%	

Lifetime kWh Savings	481,103,445	60.4%	kWh > 55%
Lifetime MMBTU Savings (in kWh)	315,078,336	39.6%	
Total Lifetime Energy Savings	796,181,781	100.0%	

Present Value Benefits - 2014 PLAN

	CAPACITY					ENERGY					
	Total Benefits	Summer Generation	Winter Generation	Transmission	Distribution	DRIVE	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Non Electric Resource
Residential Programs											
ENERGY STAR Homes	\$5,999,198	\$334,605	\$0	\$50,858	\$168,784	\$0	\$198,536	\$264,924	\$96,484	\$122,618	\$4,762,390
Home Performance w/Energy Star	\$8,782,449	\$33,622	\$0	\$8,868	\$29,432	\$0	\$52,536	\$94,120	\$14,734	\$14,698	\$8,534,438
ENERGY STAR Lighting	\$1,799,627	\$208,194	\$0	\$59,409	\$197,164	\$0	\$394,591	\$529,725	\$178,129	\$232,416	\$0
ENERGY STAR Appliances	\$8,972,797	\$366,163	\$0	\$73,207	\$242,955	\$0	\$504,502	\$731,369	\$235,993	\$274,799	\$6,543,808
Home Energy Assistance	\$3,839,035	\$48,002	\$0	\$8,884	\$29,483	\$0	\$77,358	\$112,032	\$36,167	\$42,306	\$3,484,802
U-S: EnergyStar Homes (Geothermal)	\$792,810	\$12,408	\$0	\$1,863	\$6,181	\$0	\$244,728	\$499,058	\$14,696	\$13,876	\$0
U-S: Customer Engagement Program	\$127,392	\$10,617	\$0	\$3,848	\$12,772	\$0	\$30,738	\$40,799	\$12,081	\$16,538	\$0
U-S: Other Residential Program	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Subtotal Residential	\$30,313,308	\$1,013,611	\$0	\$206,937	\$686,771	\$0	\$1,502,990	\$2,272,026	\$588,284	\$717,251	\$23,325,439
Commercial/Industrial Programs											
Large Business Energy Solutions	\$22,427,087	\$3,865,243	\$0	\$691,121	\$2,293,662	\$0	\$3,757,898	\$4,073,837	\$3,203,015	\$2,641,780	\$1,900,530
Small Business Energy Retrofit	\$9,149,811	\$1,561,902	\$0	\$282,374	\$937,128	\$0	\$1,808,963	\$1,304,448	\$903,474	\$601,607	\$1,749,915
Municipal Program	\$5,369,940	\$923,610	\$0	\$168,706	\$559,895	\$0	\$999,388	\$722,344	\$498,093	\$331,812	\$1,166,092
Other (Education)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
U-S: C&I RFP Pilot	\$2,393,123	\$466,704	\$0	\$90,199	\$299,349	\$0	\$289,016	\$368,625	\$470,456	\$408,775	\$0
U-S: Partnership	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Subtotal C&I	\$39,339,962	\$6,817,459	\$0	\$1,232,401	\$4,090,034	\$0	\$6,855,265	\$6,469,254	\$5,075,038	\$3,983,975	\$4,816,537
Smart Start	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Total	\$69,653,270	\$7,831,070	\$0	\$1,439,337	\$4,776,805	\$0	\$8,358,255	\$8,741,280	\$5,663,322	\$4,701,225	\$28,141,976

Shareholder Incentive Calculation 2014

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.89	0.00
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	391,681,458	0
4. Threshold Lifetime kWh Savings (65%) ²	254,592,948	
5. Budget	\$9,818,533	\$0
6. Benefit / Cost Percentage of Budget	3.75%	
7. Lifetime kWh Percentage of Budget	3.75%	
8. C/I Shareholder Incentive	\$736,390	
9. Cap (10%)	\$981,853	
Residential Incentive		
10. Benefit / Cost Ratio	2.16	0.00
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	89,421,987	0
13. Threshold Lifetime kWh Savings (65%) ²	58,124,291	
14. Budget	\$9,285,435	\$0
15. Benefit / Cost Percentage of Budget	3.75%	
16. Lifetime kWh Percentage of Budget	3.75%	
17. Residential Incentive	\$696,408	
18. Cap (10%)	\$928,544	
19. TOTAL INCENTIVE EARNED	\$1,432,798	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.

Planned Versus Actual Benefit / Cost Ratio by Sector
2014

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 39,339,962	\$ -
2. Implementation Expenses	\$ 9,818,533	\$ -
3. Customer Contribution	\$ 10,244,381	\$ -
4. Estimated Shareholder Incentive	<u>\$ 736,390</u>	<u> </u>
5. Total Costs (including shareholder incentive)	\$ 20,799,304	\$ -
6. Benefit/Cost Ratio - C&I Sector	1.89	0.00
 Residential:		
7. Benefits (Value) From Eligible Programs	\$ 30,313,308	\$ -
8. Implementation Expenses	\$ 9,285,435	\$ -
9. Customer Contribution	\$ 4,031,036	\$ -
10. Estimated Shareholder Incentive	<u>\$ 696,408</u>	<u> </u>
11. Total Costs (including shareholder incentive)	\$ 14,012,879	\$ -
12. Benefit/Cost Ratio - Residential Sector	2.16	0.00

**Actual Lifetime Energy Savings by Sector and Program
2014**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large Business Energy Solutions	239,223,246	0
Small Business Energy Solutions	79,998,356	0
Other (Education)	0	0
Municipal Program	44,373,514	0
C&I RFP Energy Rewards Program	28,086,342	0
CI Partnerships	0	0
FCM Reporting	<u>0</u>	<u>0</u>
Total Commercial & Industrial Included for Incentive Calculation	391,681,458	0
Residential:		
ENERGY STAR Homes	10,656,034	0
Home Performance w/Energy Star	3,092,910	0
ENERGY STAR Lighting	25,209,816	0
ENERGY STAR Appliances	31,957,307	0
Home Energy Assistance	4,779,714	0
U-S: EnergyStar Homes (Geothermal)	11,830,206	0
U-S: Customer Engagement Program	1,896,000	0
U-S: Other Residential Program	0	0
FCM Reporting	<u>0</u>	<u>0</u>
Total Residential Included for Incentive Calculation	89,421,987	0

Program Cost-Effectiveness - 2014 PLAN

	Total Resource Benefit/Cost Ratio	Present Value Benefit (\$000)	Present Value Utility Costs ⁽¹⁾ (\$000)	Present Value Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
ENERGY STAR Homes	2.5	\$ 1,513	\$ 212	\$ 403	153	3,266	126	153	50	2,023	49,228
Home Performance with Energy Star	3.1	\$ 1,086	\$ 236	\$ 113	25	417	11	25	56	1,803	41,273
ENERGY STAR Lighting ⁽²⁾	1.0	\$ 344	\$ 244	\$ 99	554	5,188	217	554	32,339	-	-
ENERGY STAR Appliances ⁽²⁾	1.6	\$ 823	\$ 310	\$ 214	308	3,323	51	308	2,512	1,446	23,594
Home Energy Assistance	1.9	\$ 983	\$ 522	\$ -	73	856	13	73	92	1,848	36,614
Res K-12 Education & Code Training	0.0	\$ -	\$ 52	\$ -	-	-	-	-	-	-	-
Residential Financing	0.0	\$ -	\$ 65	\$ -	-	-	-	-	-	-	-
ISO-Related Expenses Res/LI	0.0	\$ -	\$ 7	\$ -	-	-	-	-	-	-	-
Subtotal Residential	1.9	\$ 4,749	\$ 1,647	\$ 829	1,113	13,050	418	1,113	35,049	7,119.9	150,709
Commercial/Industrial Programs											
Large C&I Business	1.5	\$ 2,386	\$ 784	\$ 771	2,202	30,549	362	2,202	25	-494	-7,407
Small C&I Business	1.6	\$ 1,338	\$ 495	\$ 319	1,083	14,076	185	1,083	74	-	-
Municipals	2.0	\$ 725	\$ 239	\$ 129	444	5,771	60	444	24	393	8,414
C&I Education, Codes & Audits	0.0	\$ -	\$ 19	\$ -	-	-	-	-	-	-	-
ISO-Related Expenses C&I	0.0	\$ -	\$ 11	\$ -	-	-	-	-	-	-	-
Subtotal C&I	1.6	\$ 4,448	\$ 1,548	\$ 1,219	3,729	50,396	607	3,729	123	-101	1,007
Total	1.8	\$ 9,197	\$ 3,195	\$ 2,048	4,842	63,445	1,025	4,842	35,172	7,019	151,716

(1) Utility Costs include direct program costs plus projected Shareholder Incentive.

(2) Target number of products purchased.

Annual kWh Savings	4,841,570	70.2%	kWh > 55%
Annual MMBTU Savings (in kWh)	2,057,021	29.8%	
Total Annual Energy Savings	6,898,591	100.0%	

Lifetime kWh Savings	63,445,354	58.8%	kWh > 55%
Lifetime MMBTU Savings (in kWh)	44,463,650	41.2%	
Total Lifetime Energy Savings	107,909,004	100.0%	

Present Value Benefits - 2014 PLAN

2014 NH CORE EE Plan

	Total Benefits	CAPACITY				ENERGY				Non Electric Resource
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	
Residential Programs										
ENERGY STAR Homes	\$1,512,698	\$36,771	\$0	\$5,585	\$18,535	\$78,594	\$113,081	\$5,884	\$4,821	\$1,249,428
Home Performance w/Energy Star	\$1,086,146	\$6,907	\$0	\$1,302	\$4,322	\$8,738	\$12,767	\$1,813	\$1,160	\$1,049,137
ENERGY STAR Lighting	\$343,870	\$40,153	\$0	\$8,041	\$26,686	\$78,977	\$105,917	\$36,637	\$47,458	\$0
ENERGY STAR Appliances	\$822,822	\$49,761	\$0	\$10,640	\$35,312	\$41,158	\$42,513	\$44,893	\$35,526	\$563,020
Home Energy Assistance	\$983,473	\$9,388	\$0	\$2,032	\$6,744	\$14,405	\$16,978	\$6,429	\$6,175	\$921,323
Subtotal Residential	\$4,749,009	\$142,979	\$0	\$27,600	\$91,598	\$221,872	\$291,256	\$95,655	\$95,140	\$3,782,908
Commercial/Industrial Programs										
C&I Municipals	\$724,621	\$126,034	\$0	\$23,648	\$78,482	\$120,088	\$85,949	\$59,786	\$39,882	\$190,752
Large C&I	\$2,385,858	\$443,998	\$0	\$81,484	\$270,424	\$579,401	\$608,062	\$233,293	\$217,402	-\$48,206
Small C&I	\$1,337,637	\$326,969	\$0	\$61,338	\$203,566	\$293,392	\$208,661	\$146,292	\$97,419	\$0
Subtotal C&I	\$4,448,116	\$897,002	\$0	\$166,470	\$552,472	\$992,881	\$902,672	\$439,371	\$354,703	\$142,546
Total	\$9,197,125	\$1,039,981	\$0	\$194,070	\$644,070	\$1,214,752	\$1,193,928	\$535,027	\$449,844	\$3,925,453

September 13, 2013

**Shareholder Incentive Calculation
 2014**

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.6	0.0
2. Threshold Benefit / Cost Ratio ¹	1.0	
3. Lifetime kWh Savings	50,395,627	0
4. Threshold Lifetime kWh Savings (65%) ²	32,757,158	
5. Budget	\$1,548,053	\$0
6. Benefit / Cost Percentage of Budget	3.75%	
7. Lifetime kWh Percentage of Budget	3.75%	
8. C/I Shareholder Incentive	\$ 116,104	<input type="text"/>
9. Cap (10%)	\$ 154,805	
Residential Incentive		
10. Benefit / Cost Ratio	1.9	0.0
11. Threshold Benefit / Cost Ratio ¹	1.0	
12. Lifetime kWh Savings	13,049,727	0
13. Threshold Lifetime kWh Savings (65%) ²	8,482,323	
14. Budget	\$1,647,205	
15. Benefit / Cost Percentage of Budget	3.75%	
16. Lifetime kWh Percentage of Budget	3.75%	
17. Residential Incentive ³	\$ 118,665	<input type="text"/>
18. Cap (10%)	\$ 164,720	
19. TOTAL PLANNED / EARNED INCENTIVE	\$ 234,769	<input type="text"/>

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Residential PI excludes the planned expenditures for Unitil's Revolving Loan Fund

**Planned Versus Actual Benefit / Cost Ratio by Sector
 2014**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
1. Benefits (Value) From Eligible Programs	\$ 4,448,116	\$ -
2. Implementation Expenses	\$ 1,431,949	\$ -
3. Customer Contribution	\$ 1,218,563	\$ -
4. Shareholder Incentive	\$ 116,104	\$ -
5. Total Costs	\$ 2,766,616	\$ -
6. Benefit/Cost Ratio - C&I Sector	1.6	0.0
Residential:		
6. Benefits (Value) From Eligible Programs	\$ 4,749,009	\$ -
7. Implementation Expenses	\$ 1,528,540	\$ -
8. Customer Contribution	\$ 828,991	\$ -
9. Shareholder Incentive	\$ 118,665	\$ -
10. Total Costs	\$ 2,476,196	\$ -
11. Benefit/Cost Ratio - Residential Sector	1.9	0.0

**Actual Lifetime Energy Savings by Sector and Program
 2014**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial:		
Large C&I Business	30,549,034	0
Small C&I Business	14,075,640	0
Municipals	5,770,953	0
Total Commercial & Industrial Included for Incentive Calculation	50,395,627	0
Residential:		
Home Energy Assistance Program	855,658	0
Home Energy Solutions Program	417,410	0
ENERGY STAR Homes Program	3,265,778	0
ENERGY STAR Appliance Program	3,323,237	0
ENERGY STAR Lighting Program	5,187,643	0
Total Residential Included for Incentive Calculation	13,049,727	0

Attachment GG: Total Resource Benefit Cost Analysis

Unitil-Gas - Gas Energy Efficiency
New Hampshire Program Year Two

Summary of Benefits and Costs Program Year 2014 (January 1, 2014 - December 31, 2014)

Programs	TRC Benefit / Cost	TRC Net Benefits	Total Benefits (\$000)	Total Costs (\$000)	Utility Costs (\$000)	Participant Costs (\$000)	Annual MMBTU Savings	Lifetime MMBTU Savings	Participant
Residential									
ENERGY STAR Homes	1.0	\$ 1.9	\$ 175.9	\$ 173.9	\$ 87.3	\$ 86.6	792	17,537	13
Gas Home Perf w ENERGY STAR	1.2	\$ 30.9	\$ 162.8	\$ 131.8	\$ 87.3	\$ 44.6	849	17,928	19
Res Heating & Water Heating Equipment	1.0	\$ 4.2	\$ 643.7	\$ 639.5	\$ 436.4	\$ 203.1	3,964	75,533	410
Low Income Home Energy Assistance	1.3	\$ 82.5	\$ 334.7	\$ 252.2	\$ 252.2	\$ -	1,829	37,039	43
Residential Education	NA	\$ (7.0)	\$ -	\$ 7.0	\$ 7.0	\$ -	-	-	-
Residential Energy Code Training	NA	\$ (3.0)	\$ -	\$ 3.0	\$ 3.0	\$ -	-	-	-
Residential Loan Buydown	NA	\$ (17.0)	\$ -	\$ 17.0	\$ 17.0	\$ -	-	-	-
Subtotal Res & LI	1.1	\$ 92.5	\$ 1,317.0	\$ 1,224.5	\$ 890.2	\$ 334.3	7,434	148,037	485
Commercial & Industrial									
Large Business Energy Solutions	3.2	\$ 1,972.7	\$ 2,860.3	\$ 887.6	\$ 330.7	\$ 556.9	22,349	414,375	13
Small Business Energy Solutions	1.7	\$ 313.1	\$ 762.9	\$ 449.8	\$ 274.6	\$ 175.2	5,053	106,504	139
C&I Codes, Energy Audits, Education	NA	\$ (6.0)	\$ -	\$ 6.0	\$ 6.0	\$ -	-	-	-
Subtotal C&I	2.7	\$ 2,279.8	\$ 3,623.2	\$ 1,343.4	\$ 611.3	\$ 732.1	27,402	520,879	152
Total	1.9	\$ 2,372.3	\$ 4,940.2	\$ 2,567.9	\$ 1,501.6	\$ 1,066.3	34,836	668,916	637

Attachment GG: Shareholder Incentive

Unitil-Gas Energy Efficiency

Year 2 - January 1, 2014 - December 31, 2014

Target Shareholder Incentive

Commercial/Industrial Incentive

1. Target Benefit/Cost Ratio	2.70
2. Threshold Benefit/Cost Ratio	1.00
3. Target lifetime MMBTU	520,879
4. Threshold MMBTU	338,571
5. Budget	611,327
6. CE Percentage	4.00%
7. Lifetime MMBTU Percentage	4.00%

8. Target C/I Incentive **\$48,877**

9. Cap \$73,315

Residential Incentive

10. Target Benefit/Cost Ratio	1.08
11. Threshold Benefit/Cost Ratio	1.00
12. Target lifetime MMBTU	148,037
13. Threshold MMBTU	96,224
14. Budget	\$890,246
15. CE Percentage	4.00%
16. Lifetime MMBTU Percentage	4.00%

17. Target Residential Incentive **\$71,177**

18. Cap \$106,766

19. TOTAL TARGET INCENTIVE **\$120,054**

Line No. Notes:

- 1) Lns 1, 3, 5, 10, 12, and 14. See Attachment GG, page 1.
- 2) Lns 2, 6, 7, 11, 15, and 16. Report to the New Hampshire Public Utilities Commission on Ratepayer-Funded Energy Efficiency Issues in New Hampshire, Docket No. DR 96-150, page 21.
- 3) Ln 4 = 65% of Ln 3.
- 4) Ln 8 = 8% of Ln 5.
- 5) Ln 9 = 12% of Ln 5.
- 6) Ln 13 = 65% of Ln 12.
- 7) Ln 17 = 8% of Ln 14.
- 8) Ln 18 = 12% of Ln 14.
- 9) Ln 19 = Ln 8 plus Ln 17.

Attachment GG: Shareholder Incentive

Unitil-Gas Energy Efficiency

Year 2 - January 1, 2014 - December 31, 2014

Target Benefit-Cost Ratio by Sector

Commercial & Industrial:	<u>Planned</u>
1. Benefits (Value) From Eligible Programs	\$3,623,182
2. Implementation Expenses (incl Evaluation)	\$562,450
3. Customer Contribution	\$732,067
4. Shareholder Incentive	\$48,877
5. Total Costs Including Shareholder Incentive	\$1,343,394
6. Benefit/Cost Ratio - C&I Sector	2.70
Residential:	
7. Benefits (Value) From Eligible Programs	\$1,317,038
8. Implementation Expenses (incl Evaluation)	\$819,069
9. Customer Contribution	\$334,262
10. Shareholder Incentive	\$71,177
11. Total Costs Including Shareholder Incentive	\$1,224,509
12. Benefit/Cost Ratio - Residential Sector	1.08

Line No. Notes:

- 1) Lns 1 - 4 and Lns 7-10. See Attachment GG, page 1.
- 2) Ln 5 = Sum of Lns 2 - 4.
- 3) Ln 6 = Ln 1 ÷ Ln 5. The shareholder incentive mechanism described by the New Hampshire Energy Efficiency Working Group and approved by the Commission in Order No. 23,574 includes a circular calculation. A portion of the earned shareholder incentive is related to the benefit/cost ratio (BCR). However, the shareholder incentive is supposed to be included as an EE cost in determining the BCR. For the purpose of calculating the shareholder incentive, the Company has calculated the planned BCR including the shareholder incentive for one iteration and will compare the actual BCR including the shareholder incentive to the planned BCR including shareholder incentives when determining the earned incentive.
- 4) Ln 11 = Sum of Ln 8 - 10.
- 5) Ln 12 = Ln 7 ÷ Ln 11. See note 3) for further information.

NH CORE Energy Efficiency Program - 2014 Budget Details

RESIDENTIAL PROGRAMS		Internal Adm	External Adm	Cust Rebts/Services	Internal Impl.	Marketing	(see Note 1)	Total
							Evaluation	
	LU-Electric	\$7,706	\$9,632	\$62,608	\$8,669	\$2,890	\$4,816	\$96,320
	NHEC	\$6,057	\$6,416	\$94,360	\$41,631	\$1,150	\$7,874	\$157,488
	PSNH	\$15,740	\$0	\$794,342	\$75,256	\$29,443	\$48,146	\$962,928
	Unitil	\$14,084	\$279	\$127,706	\$41,232	\$1,950	\$9,750	\$195,000
ENERGY STAR Homes		\$43,586	\$16,327	\$1,079,016	\$166,788	\$35,433	\$70,586	\$1,411,735
	LU-Electric	\$8,669	\$10,836	\$70,434	\$9,752	\$3,251	\$5,418	\$108,360
	NHEC	\$4,921	\$5,213	\$69,718	\$31,710	\$10,000	\$6,398	\$127,960
	PSNH	\$15,019	\$0	\$602,579	\$71,812	\$183,500	\$45,943	\$918,853
	Unitil	\$16,816	\$3,382	\$89,320	\$79,232	\$25,000	\$11,250	\$225,000
ENERGY STAR Lighting		\$45,425	\$19,431	\$832,051	\$192,506	\$221,751	\$69,009	\$1,380,172
	LU-Electric	\$17,819	\$22,274	\$144,780	\$20,047	\$6,682	\$11,137	\$222,739
	NHEC	\$12,871	\$13,634	\$240,084	\$56,688	\$10,000	\$16,733	\$350,010
	PSNH	\$30,258	\$0	\$1,507,649	\$144,673	\$76,000	\$92,557	\$1,851,137
	Unitil	\$20,490	\$5,466	\$143,042	\$104,231	\$7,496	\$4,275	\$285,000
ENERGY STAR Appliances		\$81,439	\$41,374	\$2,035,555	\$325,639	\$100,178	\$124,702	\$2,708,886
	LU-Electric	\$13,966	\$17,458	\$113,476	\$15,712	\$5,237	\$8,729	\$174,579
	NHEC	\$11,357	\$12,030	\$196,471	\$59,519	\$1,150	\$14,765	\$295,292
	PSNH	\$34,781	\$0	\$1,795,372	\$166,298	\$25,000	\$106,392	\$2,127,844
	Unitil	\$13,898	\$1,882	\$125,608	\$57,404	\$7,042	\$10,833	\$216,667
NH Home Performance w/ENERGY Sta		\$74,002	\$31,370	\$2,230,928	\$298,933	\$38,429	\$140,720	\$2,814,382
	LU-Electric	\$26,064	\$32,580	\$211,768	\$29,322	\$9,774	\$16,290	\$325,797
	NHEC	\$11,328	\$12,000	\$235,658	\$19,840	\$1,000	\$14,728	\$294,554
	PSNH	\$46,350	\$0	\$2,420,854	\$221,612	\$5,000	\$141,780	\$2,835,595
	Unitil	\$34,934	\$2,500	\$297,995	\$118,367	\$4,828	\$24,138	\$482,762
Home Energy Assistance		\$118,675	\$47,080	\$3,166,275	\$389,140	\$20,602	\$196,936	\$3,938,708
	LU-Electric	\$0	\$0	\$0	\$4,500	\$0	\$0	\$4,500
	NHEC	\$2,650	\$2,807	\$27,000	\$16,652	\$1,000	\$3,445	\$53,554
	PSNH	\$8,648	\$0	\$450,127	\$101,349	\$2,500	\$26,454	\$589,079
	Unitil	\$1,203	\$25,834	\$0	\$97,074	\$0	\$0	\$124,111
Other Residential Programs		\$12,501	\$28,641	\$477,127	\$219,575	\$3,500	\$29,899	\$771,244
Total Residential Programs		\$375,628	\$184,223	\$9,820,952	\$1,592,582	\$419,892	\$631,851	\$13,025,127
COMMERCIAL, INDUSTRIAL AND MUNICIPAL PROGRAMS								
	LU-Electric	\$56,419	\$62,936	\$458,408	\$63,472	\$17,071	\$35,262	\$693,568
	NHEC	\$4,877	\$5,166	\$77,913	\$29,277	\$1,000	\$8,566	\$126,799
	PSNH	\$82,230	\$0	\$3,975,900	\$695,976	\$25,000	\$251,532	\$5,030,637
	Unitil	\$43,135	\$5,798	\$471,057	\$161,231	\$7,247	\$36,235	\$724,702
Large Business Energy Solutions		\$186,661	\$73,899	\$4,983,277	\$949,955	\$50,318	\$331,595	\$6,575,706
	LU-Electric	\$29,356	\$36,695	\$238,520	\$33,026	\$11,009	\$18,348	\$366,954
	NHEC	\$13,696	\$14,508	\$250,548	\$58,555	\$1,000	\$17,806	\$356,113
	PSNH	\$39,186	\$0	\$1,886,592	\$331,661	\$20,000	\$119,865	\$2,397,304
	Unitil	\$30,271	\$2,284	\$292,251	\$104,678	\$4,569	\$22,845	\$456,899
Small Business Energy Solutions		\$112,509	\$53,488	\$2,667,911	\$527,920	\$36,578	\$178,864	\$3,577,269
	LU-Electric	\$12,453	\$15,566	\$112,855	\$14,010	\$4,670	\$7,783	\$167,337
	NHEC	\$6,054	\$6,413	\$109,336	\$26,734	\$1,000	\$7,870	\$157,407
	PSNH	\$23,775	\$0	\$1,151,780	\$201,227	\$5,000	\$72,726	\$1,454,508
	Unitil	\$11,549	\$2,605	\$139,071	\$54,278	\$2,207	\$11,037	\$220,748
New Municipal Program		\$53,831	\$24,584	\$1,513,042	\$296,248	\$12,877	\$99,417	\$2,000,000
	LU-Electric	\$1,306	\$1,633	\$10,613	\$11,970	\$490	\$816	\$26,828
	NHEC	\$1,317	\$1,395	\$27,849	\$12,953	\$1,000	\$0	\$44,514
	PSNH	\$13,013	\$0	\$625,132	\$295,136	\$8,000	\$39,804	\$981,086
	Unitil	\$2,152	\$1,615	\$0	\$25,833	\$0	\$0	\$29,600
Other C&I Programs		\$17,788	\$4,643	\$663,594	\$345,892	\$9,490	\$40,621	\$1,082,028
Total Non-Residential Programs		\$316,959	\$132,030	\$8,314,783	\$1,823,767	\$96,386	\$551,080	\$13,235,003
TOTAL (Both Sectors)		\$692,587	\$316,253	\$18,135,734	\$3,416,348	\$516,277	\$1,182,930	\$26,260,130

Note 1: Evaluation amounts are based on 5% of total budgets. Actual program expenses will vary from numbers shown.

TOTAL PROGRAM FUNDING

New Hampshire CORE Energy Efficiency Goals - 2014

PROGRAMS		LU Electric		NHEC		PSNH		UNITIL		TOTALS
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	27	1,038,066	32	667,745	329	10,656,034	50	3,265,778	438	15,627,623
B/C Ratio / Planned Budget	6.10	\$96,320	2.36	\$157,488	5.21	\$962,928	2.46	\$195,000		\$1,411,735
/ Lifetime MMBTU Savings		21,268		14,755		206,888		49,228		292,139
ENERGY STAR Lighting										
Number of Units / Lifetime kWh Savings	6,793	2,615,391	22,363	3,757,690	65,452	25,209,816	32,339	5,187,643	126,947	36,770,539
B/C Ratio / Planned Budget	1.26	\$108,360	1.37	\$127,960	1.46	\$918,853	1.00	\$225,000		\$1,380,172
/ Lifetime MMBTU Savings		0		0		0		0		0
ENERGY STAR Appliances										
Number of Rebates / Lifetime kWh Savings	1,656	2,832,541	2,304	4,516,778	16,652	31,957,307	2,512	3,323,237	23,124	42,629,864
B/C Ratio / Planned Budget	2.27	\$222,739	2.47	\$350,010	2.61	\$1,851,137	1.57	\$285,000		\$2,708,886
/ Lifetime MMBTU Savings		24,691		38,419		188,374		23,594		275,077
Home Performance w/ENERGY STAR										
Number of Rebates / Lifetime kWh Savings	74	231,888	70	468,010	1,254	3,092,910	56	417,410	1,454	4,210,218
B/C Ratio / Planned Budget	2.56	\$174,579	1.68	\$295,292	2.34	\$2,127,844	3.11	\$216,667		\$2,814,382
/ Lifetime MMBTU Savings		20,571		32,708		338,515		41,273		433,068
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	40	718,833	34	775,937	343	4,779,714	92	855,658	509	7,130,142
B/C Ratio / Planned Budget	1.64	\$325,797	1.04	\$294,554	1.35	\$2,835,595	1.88	\$482,762		\$3,938,708
/ Lifetime MMBTU Savings		18,391		10,402		141,114		36,614		206,521
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	85	21,519,008	18	11,934,041	363	239,223,246	25	30,549,034	491	303,225,329
B/C Ratio / Planned Budget	1.41	\$693,568	2.64	\$126,799	2.03	\$5,030,637	1.53	\$724,702		\$6,575,706
/ Lifetime MMBTU Savings		9,349		0		80,129		(7,407)		82,071
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	166	11,462,209	54	9,696,768	1,120	79,998,356	74	14,075,640	1,414	115,232,974
B/C Ratio / Planned Budget	1.23	\$366,954	1.44	\$356,113	1.96	\$2,397,304	1.64	\$456,899		\$3,577,269
/ Lifetime MMBTU Savings		7,869		0		72,016		0		79,885
Municipal Program										
Number of Participants / Lifetime kWh Savings	24	4,826,269	28	4,774,486	383	44,373,514	24	5,770,953	459	59,745,222
B/C Ratio / Planned Budget	2.09	\$167,337	1.31	\$157,407	1.81	\$1,454,508	1.97	\$220,748		\$1,999,999
/ Lifetime MMBTU Savings		9,640		352		48,011		8,414		66,416
Educational Programs										
B/C Ratio / Planned Budget		\$16,328		\$34,242		\$224,516		\$70,600	0	\$345,686
Company Specific Programs / ISO-NE FCM Work										
Number of Participants / Lifetime kWh Savings	0	0	6	3,846,223	25,063	41,812,548	0	0	25,069	45,658,771
B/C Ratio / Planned Budget		\$15,000		\$53,554		\$1,300,649	\$0	\$83,111		\$1,452,314
/ Lifetime MMBTU Savings				0		0				
Smart Start (NHEC/PSNH), Res. Financing (UES)										
Number of Participants / Planned Budget				\$10,272		\$45,000			0	\$55,272
Utility Performance Incentive										
B/C Ratio / Planned Budget		\$164,024		\$146,506		\$1,432,798		\$234,769		\$1,978,097
TOTAL PLANNED BUDGET		\$2,351,005		\$2,110,197		\$20,581,766		\$3,195,258		\$28,238,227

**SBC and RGGI Funding Allocation
2014 Budget**

Utility	Total Funds	Total SBC	Total RGGI Funds	RGGI Municipal	RGGI Non-Municipal	Total Funds Net of RGGI Municipal	SBC Allocation ¹	RGGI Non-Municipal Allocation ¹
LU-Electric	\$2,351	\$1,863	\$488	\$167	\$321	\$2,184	85.32%	14.68%
NHEC	\$2,110	\$1,688	\$422	\$157	\$264	\$1,953	86.46%	13.54%
PSNH	\$20,582	\$16,366	\$4,215	\$1,455	\$2,761	\$19,127	85.57%	14.43%
Unitil	\$3,195	\$2,551	\$644	\$221	\$423	\$2,975	85.78%	14.22%
Total	\$28,238	\$22,469	\$5,769	\$2,000	\$3,769	\$26,238		

¹ Allocation of SBC and RGGI funds after \$2M allocation to the Municipal Program which is 100% RGGI.

SBC FUNDING
Includes SBC, FCM, Carryforward and Interest

New Hampshire CORE Energy Efficiency Goals - 2014

PROGRAMS	LU Electric		NHEC		PSNH		UNITIL		TOTALS	
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	23	885,630	28	577,338	282	9,117,906	43	2,801,300	375	13,382,174
B/C Ratio / Planned Budget	6.10	\$82,175	2.36	\$136,165	5.21	\$823,936	2.46	\$167,266		\$1,209,542
/ Lifetime MMBTU Savings		18,145		12,758		177,025		42,227		250,154
ENERGY STAR Lighting										
Number of Units / Lifetime kWh Savings	5,796	2,231,331	19,335	3,248,928	56,005	21,570,946	27,739	4,449,826	108,875	31,501,032
B/C Ratio / Planned Budget	1.26	\$92,447	1.37	\$110,635	1.46	\$786,222	1.00	\$192,999		\$1,182,304
/ Lifetime MMBTU Savings		0		0		0		0		0
ENERGY STAR Appliances										
Number of Rebates / Lifetime kWh Savings	1,413	2,416,594	1,992	3,905,241	14,249	27,344,483	2,155	2,850,587	19,808	36,516,905
B/C Ratio / Planned Budget	2.27	\$190,031	2.47	\$302,621	2.61	\$1,583,937	1.57	\$244,466		\$2,321,055
/ Lifetime MMBTU Savings		21,065		33,217		161,183		20,238		235,704
Home Performance w/ENERGY STAR										
Number of Rebates / Lifetime kWh Savings	63	197,836	61	404,645	1,073	2,646,469	48	358,044	1,245	3,606,994
B/C Ratio / Planned Budget	2.56	\$148,943	1.68	\$255,312	2.34	\$1,820,704	3.11	\$185,851		\$2,410,810
/ Lifetime MMBTU Savings		17,550		28,280		289,653		35,403		370,886
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	34	613,275	29	670,881	293	4,089,794	79	733,961	436	6,107,911
B/C Ratio / Planned Budget	1.64	\$277,955	1.04	\$254,674	1.35	\$2,426,296	1.88	\$414,100		\$3,373,025
/ Lifetime MMBTU Savings		15,690		8,993		120,745		31,407		176,835
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	72	18,359,029	16	10,318,265	311	204,692,963	21	26,204,172	420	259,574,429
B/C Ratio / Planned Budget	1.41	\$591,720	2.64	\$109,631	2.03	\$4,304,498	1.53	\$621,631		\$5,627,481
/ Lifetime MMBTU Savings		7,977		0		68,563		(6,354)		70,186
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	142	9,779,030	47	8,383,901	958	68,451,126	63	12,073,720	1,210	98,687,778
B/C Ratio / Planned Budget	1.23	\$313,068	1.44	\$307,898	1.96	\$2,051,269	1.64	\$391,916		\$3,064,151
/ Lifetime MMBTU Savings		6,714		0		61,621		0		68,335
New Municipal Program										
Number of Participants / Lifetime kWh Savings	0	0	0	0	0	0	0	0	0	0
B/C Ratio / Planned Budget	0.00	\$0	0.00	\$0	0.00	\$0	0.00	\$0		\$0
/ Lifetime MMBTU Savings		0		0		0		0		0
Educational Programs										
B/C Ratio / Planned Budget		\$13,930		\$29,606		\$192,109		\$60,559	0	\$296,203
Company Specific Programs / ISO-NE FCM Work										
Number of Participants / Lifetime kWh Savings			5	3,325,474	21,445	35,777,185			21,450	39,102,660
B/C Ratio / Planned Budget		\$12,797		\$46,303		\$1,112,909		\$71,290		\$1,243,300
/ Lifetime MMBTU Savings				0		0				
Smart Start (NHEC/PSNH), Res. Financing (UES)										
Number of Participants / Planned Budget				\$8,881		\$38,505		\$0	0	\$47,386
										\$0
Utility Performance Incentive¹										
B/C Ratio / Planned Budget		\$129,230		\$116,463		\$1,132,641		\$187,178		\$1,565,512
TOTAL PLANNED BUDGET		\$1,852,298		\$1,678,191		\$16,273,024		\$2,537,257		\$22,340,769

¹ Performance incentive is applied to RGGI municipal program, and the remaining performance incentive balance is allocated between SBC and RGGI non-municipal using the allocation percentages on page 3.

RGGI FUNDING

New Hampshire CORE Energy Efficiency Goals - 2014

PROGRAMS	LU Electric	NHEC	PSNH	UNITIL	TOTALS					
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	4	152,436	4	90,407	48	1,538,127	7	464,478	63	2,245,449
B/C Ratio / Planned Budget	6.10	\$14,144	2.36	\$21,323	5.21	\$138,992	2.46	\$27,734		\$202,193
/ Lifetime MMBTU Savings		3,123		1,998		29,863		7,001		41,985
ENERGY STAR Lighting										
Number of Units / Lifetime kWh Savings	998	384,059	3,028	508,762	9,448	3,638,869	4,599	737,817	18,072	5,269,508
B/C Ratio / Planned Budget	1.26	\$15,912	1.37	\$17,325	1.46	\$132,630	1.00	\$32,001		\$197,868
/ Lifetime MMBTU Savings		0		0		0		0		0
ENERGY STAR Appliances										
Number of Rebates / Lifetime kWh Savings	243	415,947	312	611,537	2,404	4,612,825	357	472,650	3,316	6,112,959
B/C Ratio / Planned Budget	2.27	\$32,708	2.47	\$47,389	2.61	\$267,199	1.57	\$40,534		\$387,831
/ Lifetime MMBTU Savings		3,626		5,202		27,191		3,356		39,373
Home Performance w/ENERGY STAR										
Number of Rebates / Lifetime kWh Savings	11	34,052	9	63,365	181	446,441	8	59,367	209	603,224
B/C Ratio / Planned Budget	2.56	\$25,636	1.68	\$39,980	2.34	\$307,140	3.11	\$30,816		\$403,572
/ Lifetime MMBTU Savings		3,021		4,428		48,862		5,870		62,182
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	6	105,558	5	105,056	50	689,920	13	121,697	73	1,022,230
B/C Ratio / Planned Budget	1.64	\$47,842	1.04	\$39,880	1.35	\$409,299	1.88	\$68,661		\$565,683
/ Lifetime MMBTU Savings		2,701		1,408		20,369		5,208		29,685
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	12	3,159,979	2	1,615,776	52	34,530,283	4	4,344,862	71	43,650,901
B/C Ratio / Planned Budget	1.41	\$101,848	2.64	\$17,168	2.03	\$726,139	1.53	\$103,071		\$948,226
/ Lifetime MMBTU Savings		1,373		0		11,566		-1,053		11,886
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	24	1,683,179	7	1,312,867	162	11,547,230	11	2,001,920	204	16,545,196
B/C Ratio / Planned Budget	1.23	\$53,886	1.44	\$48,215	1.96	\$346,035	1.64	\$64,983		\$513,118
/ Lifetime MMBTU Savings		1,156		0		10,395		0		11,551
New Municipal Program										
Number of Participants / Lifetime kWh Savings	24	4,826,269	28	4,774,486	383	44,373,514	24	5,770,953	459	59,745,222
B/C Ratio / Planned Budget	2.09	\$167,337	1.31	\$157,407	1.81	\$1,454,508	1.97	\$220,748		\$1,999,999
/ Lifetime MMBTU Savings		9,640		352		48,011		8,414		66,416
Educational Programs										
B/C Ratio / Planned Budget		\$2,398		\$4,636		\$32,407		\$10,041		\$49,482
Company Specific Programs / ISO-NE FCM Work										
Number of Participants / Lifetime kWh Savings			1	520,749	3,618	6,035,363	0	0	3,618	6,556,112
B/C Ratio / Planned Budget		\$2,203		\$7,251		\$187,740		\$11,821		\$209,014
/ Lifetime MMBTU Savings				0		0		0		
Smart Start (NHEC/PSNH), Res. Financing (UES)										
Number of Participants / Planned Budget		\$0		\$1,391		\$6,495		\$0		\$7,886
										\$0
Utility Performance Incentive¹										
B/C Ratio / Planned Budget		\$34,794		\$30,043		\$300,157		\$47,592		\$412,585
TOTAL PLANNED BUDGET		\$498,707		\$432,007		\$4,308,742		\$658,001		\$5,897,457

1 Performance incentive is applied to RGGI municipal program, and the remaining performance incentive balance is allocated between SBC and RGGI non-municipal using the allocation percentages on page 3.

NH CORE Energy Efficiency Program - 2014 Budget Details

Liberty Utilities - Gas

Residential	External		Cust Rebts/		Marketing	Evaluation	Total
	Internal Adm	Adm	Services	Internal Impl.			
ENERGY STAR Homes	\$7,560	\$9,450	\$61,425	\$8,505	\$2,835	\$4,725	\$94,500
ENERGY STAR Lighting							
ENERGY STAR Appliances	\$61,320	\$76,650	\$498,225	\$68,985	\$22,995	\$38,325	\$766,500
Home Performance with ENERGY STAR	\$61,320	\$76,650	\$498,225	\$68,985	\$22,995	\$38,325	\$766,500
Home Energy Assistance	\$63,000	\$96,154	\$653,846	\$70,875	\$0	\$39,375	\$923,250
Education							
Energy Code Training							
Building Practices & Demo	\$15,480	\$19,350	\$125,775	\$17,415	\$5,805	\$9,675	\$193,500
Total - Residential	\$208,680	\$278,254	\$1,837,496	\$234,765	\$54,630	\$130,425	\$2,744,250
Commercial & Industrial							
Large Business Energy Solutions	\$111,557	\$139,446	\$906,397	\$125,501	\$41,834	\$69,723	\$1,394,458
Small Business Energy Solutions	\$79,898	\$99,873	\$649,174	\$89,886	\$29,962	\$49,936	\$998,729
Codes, Audit Training & Education	\$0	\$16,157	\$0	\$16,157	\$0	\$0	\$32,314
Total - C&I	\$191,455	\$255,476	\$1,555,571	\$231,544	\$71,796	\$119,659	\$2,425,501
Grand Total	\$400,135	\$533,730	\$3,393,067	\$466,309	\$126,426	\$250,084	\$5,169,751

Unitil - Gas

Residential	External		Cust Rebts/		Marketing	Evaluation	Total
	Internal Adm	Adm	Services	Internal Impl.			
Residential Lost Opportunity	\$6,230	\$600	\$46,133	\$21,837	\$800	\$4,400	\$80,000
Residential Retrofit 1-4	\$5,342	\$483	\$48,728	\$19,647	\$800	\$5,000	\$80,000
Residential Heating & Water Heating	\$20,455	\$18,415	\$275,000	\$61,130	\$5,000	\$20,000	\$400,000
Residential Education	\$224	\$560	\$0	\$6,216	\$0	\$0	\$7,000
Residential Energy Code Training	\$0	\$300	\$0	\$2,700	\$0	\$0	\$3,000
Residential Loan Buydown	\$272	\$85	\$14,450	\$2,193	\$0	\$0	\$17,000
Low-Income Retrofit 1-4	\$14,078	\$1,816	\$146,940	\$55,311	\$2,321	\$11,603	\$232,069
Total - Residential	\$46,602	\$22,259	\$531,251	\$169,033	\$8,921	\$41,003	\$819,069
Commercial & Industrial							
Large Business: New	\$5,385	\$252	\$62,452	\$17,477	\$901	\$3,603	\$90,069
Large Business: Retrofit	\$13,279	\$1,367	\$137,921	\$49,597	\$2,674	\$9,092	\$213,931
Total Large Business	\$18,664	\$1,619	\$200,373	\$67,074	\$3,575	\$12,695	\$304,000
Small Business: New	\$13,287	\$831	\$137,573	\$43,899	\$5,000	\$11,061	\$211,650
Small Business: Retrofit	\$2,700	\$92	\$24,997	\$10,563	\$408	\$2,040	\$40,800
Total Small Business	\$15,987	\$923	\$162,569	\$54,462	\$5,408	\$13,101	\$252,450
Codes Audits & Education	\$192	\$480	\$0	\$5,328	\$0	\$0	\$6,000
Total - C&I	\$34,843	\$3,022	\$362,943	\$126,864	\$8,983	\$25,796	\$562,450
Grand Total	\$81,445	\$25,281	\$894,193	\$295,897	\$17,904	\$66,799	\$1,381,519

New Hampshire Gas Energy Efficiency Goals - 2014

PROGRAMS	Unitil - Gas		Liberty Utilities - Gas		TOTALS	
ENERGY STAR Homes						
Number of Homes / Lifetime MMBTU Savings	13	75,533	37	25,315	50	100,848
B/C Ratio / Planned Budget	1.0	\$80,000	1.82	\$94,500		\$174,500
Home Performance w/ ENERGY STAR						
Number of Units / Lifetime MMBTU Savings	19	17,537	522	343,209	541	360,746
B/C Ratio / Planned Budget	1.2	\$80,000	2.43	\$766,500		\$846,500
ENERGY STAR Appliances						
Number of Rebates / Lifetime MMBTU Savings	410	17,928	1,781	173,723	2,191	191,651
B/C Ratio / Planned Budget	1.0	\$400,000	1.34	\$766,500		\$1,166,500
Residential Codes and Education						
B/C Ratio / Planned Budget		\$10,000	0.00	\$0		\$10,000
Low Income Retrofit 1-4						
Number of Units / Lifetime MMBTU Savings	43	37,039	182	116,239	225	153,278
B/C Ratio / Planned Budget	1.3	\$232,069	1.13	\$923,250		\$1,155,319
Large Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	13	387,175	188	607,669	201	994,844
B/C Ratio / Planned Budget	3.2	\$304,000	1.40	\$1,394,458		\$1,698,458
Small Business Energy Solutions						
Number of Participants / Lifetime MMBTU Savings	139	133,704	549	353,931	688	487,635
B/C Ratio / Planned Budget	1.7	\$252,450	1.18	\$998,729		\$1,251,179
Codes Audits & Education						
B/C Ratio / Planned Budget		\$6,000		\$32,314		38,314
Company Specific Programs						
B/C Ratio / Planned Budget		\$17,000		\$193,500		210,500
Company TOTAL						
Number of Participants / Lifetime MMBTU Savings	637	668,916	3,259	1,620,086	3,896	2,289,002
B/C Ratio / Planned Budget		\$1,381,519		\$5,169,751		\$6,551,270
Utility Performance Incentive						
B/C Ratio / Planned Budget		\$120,054		\$413,580		\$533,634
TOTAL PLANNED BUDGET		\$1,501,573		\$5,583,331		\$7,084,904

Liberty Utilities Electric Home Energy Assistance Program

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012		2013 Plan	2014 Plan	2012		2013 Plan	2014 Plan	2012	2013	2012		2012		2013 Plan	2014 Plan	2012		2012		2013 Plan	2014 Plan
					Plan	Actual			Plan	Actual					Plan	Actual	Plan	Actual			Plan	Actual	Plan	Actual		
AMP Baseload	54	30			206.0	206.0			13.0	13.0			100%		144,612.0	80,340.0					0.0	0.0			0.0	0.0
Electric Weatherization	2	50			595.0	595.0			20.0	20.0			100%		23,800.0	595,000.0					0.0	0.0			0.0	0.0
CFLs	312	354			63.0	63.0			8.0	8.0			100%		157,248.0	178,416.0					0.0	0.0			0.0	0.0
Fixtures	49	128			126.0	126.0			20.0	20.0			100%		123,480.0	322,560.0					0.0	0.0			0.0	0.0
Replacement Refrigerator	33	7			1016.0	1016.0			19.0	19.0			100%		637,032.0	135,128.0					0.0	0.0			0.0	0.0
DHWater Measure (elec)	25	18			419.0	419.0			15.0	15.0			100%		157,125.0	113,130.0					0.0	0.0			0.0	0.0
DHWater Measure (OIL)	13	11			0.0	0.0			15.0	15.0			100%		-	-					7.4	0.0			1,440.0	0.0
Tstats	8	191			288.0	288.0			10.0	10.0			100%		23,040.0	550,080.0					0.0	0.0			0.0	0.0
AMP Oil Wx	27	19			143.0	143.0			15.0	20.0			100%		57,915.0	54,340.0					35.0	35.0			14,175.0	13,300.0
Refrigerator removal	0	16			0.0	134.7			0.0	5.0			100%		-	10,775.0					0.0	0.0			0.0	0.0
Freezer replacement	0	3			0.0	726.0			0.0	19.0			100%		-	41,382.0					0.0	0.0			0.0	0.0
Weatherization Package (Electric Heat)			1.1	3.0			2,799.0	2,799.0			19.8	19.8	86.20%				52,258.2	143,161.0			0.0	0.0			0.0	0.0
Weatherization Package (Kerosene Heat)			16.1	13			0.0	0.0			20.6	20.6	86.20%				0.0	0.0			14.7	19.5			4,192.7	4,498.6
Weatherization Package (Liquid Propane Heat)			4.8	8			0.0	0.0			21.4	21.4	86.20%				0.0	0.0			12.9	19.1			1,151.2	2,809.5
Weatherization Package (Natural Gas Heat)			16.6	0			0.0	0.0			19.4	19.4	86.20%				0.0	0.0			6.9	22.0			1,921.2	0.0
Weatherization Package (Wood Heat)			2.7	2			0.0	0.0			20.9	20.9	86.20%				0.0	0.0			21.6	30.3			1,044.1	1,093.3
Weatherization Package (Oil Heat)			13.4	17			0.0	0.0			20.0	20.0	86.20%				0.0	0.0			19.8	29.7			4,584.0	8,839.0
Weatherization Package (Other)			0.0	0			0.0	0.0			0.0	0.0	86.20%				0.0	0.0							0.0	0.0
Electric Svgs on Fossil Heated Homes			53.7	40			1,059.0	1,059.0			14.3	14.3	86.20%				700,802.9	525,972.2			0.0	0.0			0.0	0.0
Ancillary Savings: Boiler Circulator Pump Savings				46				9.0				20.0	86.20%													7,159.1
Ancillary Savings: Furnace Fan Savings				12				86.0				20.0	86.20%													17,109.7
Ancillary Savings: Furnace w/new ECM Motor				1				733.0				20.0	86.20%													7,329.4
Ancillary Savings: Central AC				1				77.0				20.0	86.20%													769.9
Ancillary Savings: Room AC (per unit)				44				23.0				20.0	86.20%													17,331.9
Heating System Replacements																										
Mobile Home Furnaces, Kerosene				4.0				0.0				17.0	100.0%													225.1
Furnaces, LP				2.0				0.0				18.0	100.0%													303.8
Boilers, Oil				5.0				0.0				25.0	100.0%													621.3

Liberty Utilities Electric Home Performance with ENERGY STAR®

Measure*	Quantity				Annual Savings per Unit (kWh)		Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)		Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
	EnergyWise SF Elec	16	4					12	12			100%	100.0%			0.00	0.00			0.00	0.00		
EnergyWise SF Non Elec	82	43					8	8			100%	100.0%			0.00	0.00			0.00	0.00			
EW Multi Electric CFL	826	1,300					5	5			100%	100.0%			0.00	0.00			0.00	0.00			
EW Multi Electric DHWs	47	0.0					15	15			100%	100.0%			0.00	0.00			0.00	0.00			
EW Multi Electric Heat Fixtures	463	784					20	20			100%	100.0%			0.00	0.00			0.00	0.00			
EW Multi Electric Heat REFRIG	35	0.0					13	13			100%	100.0%			0.00	0.00			0.00	0.00			
Lighting only projects (6 CFLs, possible ref. voucher)			0.0	0.0	138.0	138.0			7.4	7.4		100.0%	0.0	-			0.0	0.0			0.0	0.0	
Weatherization for > 30% Electric Heat (MultiFamily)			0.0	0.0	1,000.0	1,000.0			13.7	13.7		100.0%	0.0	-			0.0	0.0			0.0	0.0	
Baseload SF			4.6	5.0	138.0	138.0			5.0	7.0		100.0%	3,173.0	4,815.2			0.0	0.0			0.0	0.0	
Baseload MF			36.1	17.1	138.0	138.0			5.0	7.0		100.0%	24,906.3	16,424.5			0.0	0.0			0.0	0.0	
Light Fixtures			0.0	10.0	373.8	23.0			8.0	20.0		100.0%	0.0	4,600.0			0.0	0.0			0.0	0.0	
Refrigerator			0.0	4.0	-	586.2			0.0	7.0		100.0%	0.0	16,412.8			0.0	0.0			0.0	0.0	
Hot Water Savings Measures			0.0	1.0	-	80.4			14.0	4.0		100.0%	0.0	321.7			0.0	0.0			0.0	0.0	
Fuel Neutral, SF, Electric, CFLs			32.8	37.0	138.0	138.0			5.0	8.0		100.0%	22,647.0	40,839.1			0.0	0.0			0.0	0.0	
Fuel Neutral Pilot (Oil)-SF- 52%			26.4	29.3	-	0.0			21.0	21.0		100.0%	0.0	-			28.6	28.6			15,814.5	17,542.2	
Fuel Neutral Pilot (LP) - SF - 20%			3.1	4.5	-	0.0			20.9	20.5		100.0%	0.0	-			22.5	22.52			1,451.5	2,077.1	
Fuel Neutral Pilot (Gas) - SF - 3%			0.1	0.0	-	0.0			18.6	18.6		100.0%	0.0	-			15.5	15.5			38.0	0.0	
Fuel Neutral Pilot (Wood) - SF- 18%			1.8	2.0	-	0.0			21.1	20.5		100.0%	0.0	-			19.0	19.0			723.6	779.9	
Fuel Neutral Pilot (Kerosene) - SF - 2%			0.3	0.3	-	0.0			22.1	21.0		100.0%	0.0	-			32.7	32.7			213.6	171.7	
Fuel Neutral Pilot (Electric) - SF - 5%			1.1	1.0	6,552.2	6,552.2			18.0	18.0		100.0%	131,827.7	118,105.9			0.0	0.0			0.0	0.0	
Heating System Replacements (Oil Boilers?)			1.4	0.0	-	0.0			20.0	20.0		100.0%	0.0	-			11.4	11.4			324.5	0.0	
Ancillary Savings: Boiler Circulator Pump Savings				29.1		9.0				20.0		100.0%		5,231.4								0.0	0.0
Ancillary Savings: Furnace Fan Savings				7.3		86.0				20.0		100.0%		12,497.3								0.0	0.0
Ancillary Savings: Furnace w/new ECM Motor				0.4		733.0				20.0		100.0%		5,325.9								0.0	0.0
Ancillary Savings: Central AC				0.4		77.0				20.0		100.0%		559.5								0.0	0.0
Ancillary Savings: Room AC (per unit)				14.7		23.0				20.0		100.0%		6,754.2								0.0	0.0

Liberty Utilities Electric ENERGY STAR® Homes Program

Liberty Utilities Electric
 NHPUC Docket No. DE 12-262
 Attachment I (2014 Plan)
 ENERGY STAR® Homes Program

Measure*	Quantity				Total Lifetime Savings (kWh)		Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
RNC ES Homes (Heating) All Fuel Types	25	10					5.0	588.7			3,118.8	147,175.0		
RNC ES Homes (Cooling), all units	25	10					0.0	0.0			0.0	0.0		
RNC ES Homes (Water Heating) All Fuel Types	25	10					1.3	50.8			502.5	7,620.0		
Indoor Fixture	50	0			0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0
Screw In Bulb	300	386	233.5	266.4	26,842.4	30,624.7	0.0		0.0	0.0	0.0		0.0	0.0
Interior HW Fixtures			70.0	26.6	87,225.2	33,171.9			0.0	0.0			0.0	0.0
Exterior Fixtures			0.0		-	0.0			0.0	0.0			0.0	0.0
Clothes Washer	17	8	3.5	4.0	10,041.8	7,286.4	1.2	0.7	0.7	0.74	220	61.6	28.4	32.5
Dishwasher	3	11	14.0	18.7	4,622.6	5,856.1	0.0	0.5	0.4	0.19	0.0	110.0	56.0	35.2
Refrigerator	25	10	18.7	21.0	23,757.2	28,728.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Room AC			0.0	0.0	-	0.0			0.0	0.0			0.0	0.0
Central AC			0.0	0.0	-	0.0			0.0	0.0			0.0	0.0
Thermostat			17.5	20.0	-	0.0			0.0	0.0			0.0	0.0
Oil Heated Home (5%)			1.2	2.0	15,169.8	25,990.9			29.0	50.00			846.1	2,500.0
Gas Heated Home (55%)			12.8	0.0	154,561.4	0.0			23.7	25.00			7,609.7	0.0
LP Heated Home (35%)			8.2	17.0	103,365.9	215,050.0			44.0	44.00			8,988.3	18,700.0
Elec Baseboard Heated Home (5%)			1.2	2.0	89,795.8	366,150.0			0.0	0.0			0.0	0.0
ASHP Heated Home			0.0	5.6	-	325,207.8			0.0	0.0			0.0	0.0

Liberty Utilities Electric ENERGY STAR® Lighting Program

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Catalog CFLs	51	608	350.8	330.0	40	42	23.0	23.0	5	5	5	5	80.3%	62.3%	8,191	102,857	25,128	23,638
Catalog Interior Fixtures (Lamps and HW Fixtures)	29	25	46.2	44.0	107	56	62.3	62.3	8	8	8	8	96.4%	96.4%	23,953	10,919	22,166	21,130
Catalog Exterior Fixtures	29	15	23.1	21.0	107	14	62.3	62.3	5	5	5	5	100.0%	100.0%	15,530	1,000	7,186	6,538
Catalog Torchieres	15	-	13.8	13.0	120	-	69.4	69.4	8	8	8	8	93.5%	93.5%	13,464	-	7,183	6,744
Catalog LED Fixtures	0	3	4.6	4.0	0	0	27.7	27.7	20	20	20	20	95.0%	95.0%	0	2	2,426	2,103
Catalog LED Bulbs	0	16	23.1	21.0	0	22	27.7	27.7	20	20	20	20	95.0%	95.0%	0	6,600	12,132	11,040
Retail LED Bulbs	0	-	0.0	986.3	-	-	27.7	27.7	5	5	20	20	80.3%	95.0%	0	-	0	518,445
Retail CFLs	14,210	6,082	942.8	637.0	39	42	23.0	23.0	5	5	5	5	80.3%	62.3%	2,225,073	1,030,596	67,530	45,628
Retail CFL Multi-packs	0	-	26,310.0	24,686.0	-	-	23.0	23.0	8	8	5	5	96.4%	62.3%	0	-	188,457.16	1,768,244
Retail Interior Fixtures (Lamps and HW Fixtures)	73	126	263.1	247.0	106	56	62.3	62.3	8	8	8	8	96.4%	96.4%	59,619	54,595	126,345	118,614
Retail Exterior Fixtures	73	11	17.5	16.0	106	14	62.3	62.3	5	5	5	5	100.0%	100.0%	38,654	727	5,461	4,982
Retail Torchieres	15	-	4.4	4.0	104	-	69.4	69.4	8	8	8	8	93.5%	93.5%	11,714	-	2,275	2,075
Retail LED Fixtures	0	-	87.7	164.0	0	-	27.7	27.7	8	8	20	20	100.0%	95.0%	0	-	46,102	86,210

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012		2013		2012		2013		2012		2013		2012	2013	2012		2013		2012		2013		2012		2013	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Clothes Washer Tier 1 Electric DHW	19	33			126	126			11	11			100%	100%	26,334	45,738			0.00	0.00			0.0	0.0		
Clothes Washer Tier 1 Gas DHW	7	0			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Clothes Washer Tier 1 Oil DHW	24	41			0	0			11	11			100%	100%	0	-			0.26	0.00			68.6	0.0		
Clothes Washer Tier 1 Electric Dryer	49	71			63	63			11	11			100%	100%	33,957	49,203			0.00	0.00			0.0	0.0		
Clothes Washer Tier 1 Other Dryer	2	3			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Clothes Washer Tier 2 Electric DHW	12	42			141	141			11	11			100%	100%	18,612	65,142			0.00	0.00			0.0	0.0		
Clothes Washer Tier 2 Gas DHW	4	6			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Clothes Washer Tier 2 Oil DHW	15	28			0	0			11	11			100%	100%	0	-			0.29	0.00			47.9	0.0		
Clothes Washer Tier 2 Electric Dryer	31	72			84	84			11	11			100%	100%	28,644	66,528			0.00	0.00			0.0	0.0		
Clothes Washer Tier 2 Other Dryer	1	4			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Clothes Washer Tier 3 Electric DHW	84	231	323.1	664.0	200	200	260.7	165.6	11	11	11	11	100%	100%	184,800	508,200	926,429.4	1,209,542.4	0.00	0.00	0.7	0.1	0.0	0.0	2618.0	978.7
Clothes Washer Tier 3 Gas DHW	30	88			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Clothes Washer Tier 3 Oil DHW	105	377			0	0			11	11			100%	100%	0	-			0.42	0.00			485.1	0.0		
Clothes Washer Tier 3 Electric Dryer	210	661			115	115			11	11			100%	100%	265,650	836,165			0.00	0.00			0.0	0.0		
Clothes Washer Tier 3 Other Dryer	7	35			0	0			11	11			100%	100%	0	-			0.00	0.00			0.0	0.0		
Energy Star Room A/C	85	142	105.6	180.0	20	20	16.2	16.2	9	9	9	9	100%	100%	15,300	25,560	15,358.4	26,173.5	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Energy Star Refrigerator	300	366	161.5	515.8	107	107	107.0	114.0	12	12	12	12	100%	100%	385,200	469,944	207,418.2	705,655.4	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Energy Star Room Air Purifiers	25	5	3.7	9.0	58	58	390.6	390.6	9	9	9	9	100%	100%	13,050	2,610	13,105.9	31,640.9	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Energy Star Dehumidifiers	0	0			0	0			0	12			100%	100%	0	-	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Energy Star Water Coolers	0	0			0	0			0	10			100%	100%	0	-	0.0	0.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Smartstrip Power Strip	85	26	8.1	19.0	57	57	75.0	79.0	5	5	5	5	100%	100%	24,225	7,410	3,030.7	7,505.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
2nd Refrigerator Pickup/Turnin	80	26	12.4	61.0	413	413	835.0	835.0	8	8	8	8	100%	100%	264,320	85,904	83,007.1	407,480.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
2nd Freezer Pickup/Turnin	0	0	6.2	27.0	0	0	663.0	663.0	8	8	8	8	100%	100%	0	-	32,954.3	143,208.0	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Room AC Pickup/Turnin	0	0	0.6	2.0	0	0	18.0	16.2	5	5	5	5	100%	100%	0	-	55.9	161.6	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.0
Fuel Neutral Heating, Hot Water and Controls																										
Energy Star Central AC (385 Hours ON in NH)			3.3	5.0			110.3	110.3			14	14	100.00%	100.00%			5,071.4	7,720.4			0.00	0.00			0.0	0.0
Energy Star Mini Split Heat Pump (SEER >=19, HSPF>=10), Cooling			5.9	10.0			122.9	104.9			12	12	100.00%	100.00%			8,716.9	12,592.7			0.00	0.00			0.0	0.0
Energy Star Mini Split Heat Pump (SEER >=19, HSPF>=10), Heating				10.0			-2,158.1	751.0			12	12	100.00%	100.00%			0.0	90,120.5			2.45	2.5			0.0	294.0
Energy Star Mini Split Heat Pump (SEER >=14.5, HSPF>=8.2), Cooling			4.3	7.0			-2,158.1	34.4			12	12	100.00%	100.00%			-110,459.3	2,887.6			0.00	0.00			0.0	0.0
Energy Star Mini Split Heat Pump (SEER >=19, HSPF>=8.2), Heating			1.6	7.0			-2,158.1	142.2			12	12	100.00%	100.00%			-42,643.2	11,946.0			0.00	0.00			0.0	0.0
ES Furnace w/ECM (LP), AFUE >=95%			7.9	23.0			168.0	168.0			18	18	100.00%	100.00%			23,836.7	69,552.0			4.50	4.5			638.5	1,863.0
ES Furnace w/ECM (LP), AFUE >=96%			3.9	7.0			168.0	168.0			18	18	100.00%	100.00%			11,918.3	21,168.0			5.50	5.5			390.2	693.0
ES Furnace w/ECM (LP), AFUE >=97%			1.3	2.0			168.0	168.0			18	18	100.00%	100.00%			3,972.8	6,048.0			5.90	5.9			139.5	212.4
ES Furnace w/ECM (Oil), AFUE >=85%			3.9	13.0			168.0	168.0			18	18	100.00%	100.00%			11,918.3	39,312.0			18.00	18.0			1,277.0	4,212.0
ES Furnace w/ECM (Oil), AFUE >=90%			1.3	0.7			168.0	168.0			18	18	100.00%	100.00%			3,972.8	2,237.8			20.70	20.7			489.5	275.7
ES Boiler (LP), AFUE>=90%			7.9	12.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			10.40	10.4			1,639.6	2,496.0
ES Boiler (LP), AFUE>=96%			2.6	3.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			13.10	13.1			688.4	786.0
ES Boiler (Oil), AFUE>=85%			49.9	20.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			5.38	5.4			5,371.7	2,152.0
ES Boiler (Oil), AFUE>=90%			6.6	10.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			10.75	10.8			1,412.3	2,150.0
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			0.7	1.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			17.80	17.8			233.8	356.0
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			0.7	1.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			17.80	17.8			233.8	356.0
Water Heater: LP Tankless, EF>=0.82 (1/1/09 Criteria)			15.8	12.0			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			9.70	9.7			3,058.4	2,328.0
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			0.7	0.5			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			0.00	0.0			0.0	0.0
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			0.7	0.5			0.0	0.0			20	20	100.00%	100.00%			0.0	0.0			0.00	0.0			0.0	0.0
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			0.7	1.0			0.0	0.0			13	13	100.00%	100.00%			0.0	0.0			0.00	0.0			0.0	0.0
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES=EF>=2.0)			0.7	1.0			1,775.0	1,775.0			10	10	100.00%	100.00%			11,659.5	17,750.0			0.00	0.0			0.0	0.0
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES=EF>=2.0)			0.7	0.5			2,672.0	2,672.0			10	10	100.00%	100.00%			17,551.7	13,360.0			0.00	0.0			0.0	0.0
BRC: Gas, Boiler Reset Controls							0.0	0.0			15	15	100.00%	100.00%			0.0	0.0			9.60	9.6			0.0	0.0
BRC: LP, Boiler Reset Controls			5.9	0.5			0.0	0.0			15	15	100.00%	100.00%			0.0	0.0			0.00	9.6			0.0	72.0
BRC: Oil, Boiler Reset Controls			7.9	0.5			0.0	0.0			15	15	100.00%	100.00%			0.0	0.0			0.00	9.6			0.0	72.0
TSTAT: LP, 7-Day Programmable Thermostats			0.7	10.0			14.4	14.4			15	15	100.00%	100.00%			141.9	2,159.7			7.70	3.2			75.9	480.0
TSTAT: Oil, 7-Day Programmable Thermostats			0.7	10.0			14.4	14.4			15	15	100.00%	100.00%			141.9	2,159.7			7.70	3.2			75.9	480.0
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			0.7	5.0			14.4	14.4			15	15	100.00%	100.00%			141.9	1,079.9			3.20	6.6			31.5	495.0
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			0.7	5.0			14.4	14.4			15	15	100.00%	100.00%			141.9	1,079.9			3.20	6.6			31.5	495.0

Liberty Utilities Large Business Energy Solutions Program

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012		2013		2012		2013		2012		2013		2012	2013	2012		2013		2012		2013		2012		2013	
	2012 Plan	Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Large New Equipment and Construction																										
D2 CAIR	N/A	2			N/A	8,533			15	15			100.00%		1,576,230	255,979			0.0	0.0			0.0	0.0		
D2 Cool Choice	N/A	3			N/A	2,869			13	12			100.00%		516,573	99,325			0.0	0.0			0.0	0.0		
D2 Custom	N/A	5			N/A	48,107			16	18			100.00%		4,773,069	4,227,023			0.0	0.0			0.0	0.0		
D2 Lights	N/A	8			N/A	62,282			15	15			100.00%		1,657,955	7,335,516			0.0	0.0			0.0	0.0		
D2 VSD	N/A	5			N/A	60,466			15	15			100.00%		580,901	4,534,977			0.0	0.0			0.0	0.0		
D2 MotorUp	N/A	1			N/A	0			15	15			100.00%		0	0			0.0	0.0			0.0	0.0		
NEW EQUIPMENT TRACK																										
Cooling			3.4	1.5			34,776.7	13,186.0			15	15	92.5%	92.5%			1,631,571	274,434			0.0	0.0			0.0	0.0
Heating			0.3	0.0			53,278.3	0.0			15	15	92.5%	92.5%			245,792	0			0.0	0.0			0.0	0.0
Lighting			1.0	3.5			66,783.4	46,059.0			15	15	92.5%	92.5%			923,279	2,204,787			0.0	0.0			0.0	0.0
Lighting LED			0.0	0.0			-	0.0			15	15	92.5%	92.5%			0	0			0.0	0.0			0.0	0.0
Lighting (Occ Sensors Only)			0.3	0.0			24,628.0	0.0			10	10	92.5%	92.5%			66,008	0			0.0	0.0			0.0	0.0
Other			0.6	3.4			131,370.3	45,117.0			15	15	92.5%	92.5%			1,180,151	2,121,321			0.0	0.0			0.0	0.0
Process			2.4	0.8			54,812.6	7,099.0			15	15	92.5%	92.5%			1,858,531	73,874			0.0	0.0			0.0	0.0
Lighting - Parking Lot Lights																					0.0	0.0			0.0	0.0
RETROFIT TRACK																										
EI HVAC	N/A	0			N/A	0			13	13			100.00%		0	0			0.0	0.0			0.0	0.0		
EI CAIR	N/A	0			N/A	0			13	13			100.00%		515,304	0			0.0	0.0			0.0	0.0		
EI Custom	N/A	5			N/A	201,744			13	13			100.00%		6,600,339	12,946,939			0.0	0.0			0.0	0.0		
EI Light	N/A	22			N/A	76,111			13	13			100.00%		31,625,265	21,767,857			0.0	0.0			0.0	0.0		
EI VSD	N/A	1			N/A	346,953			13	13			100.00%		795,621	4,510,384			0.0	0.0			0.0	0.0		
Cooling			2.6	0.0			65,104	0.0		12.4	13	13	94.0%	94.0%			1,979,233	0			0.0	0.0			0.0	0.0
Heating			1.3	0.0			17,369	0.0		13.1	20	20	94.0%	94.0%			425,376	0			0.0	0.0			0.0	0.0
Lighting			11.6	29.3			52,212	26,433.0		12.9	13	13	94.0%	94.0%			7,361,638	9,453,409			0.0	0.0			0.0	0.0
Lighting - LED			1.2	0.0			88,342	0.0		13.0	13	13	94.0%	94.0%			1,334,371	0			0.0	0.0			0.0	0.0
Lighting - Occ Sensors only			2.3	0.0			30,253	0.0		9.1	9	9	94.0%	94.0%			624,809	0			0.0	0.0			0.0	0.0
Other			0.8	8.1			27,788	74,672.0		13.0	14	13	94.0%	94.0%			300,662	7,391,184			0.0	0.0			0.0	0.0
Lighting - Parking Lot Lights			1.2	0.0			51,130	0.0		13.0	13	13	94.0%	94.0%			731,208	0			0.0	0.0			0.0	0.0
Process			7.0	0.0			65,380	0.0		11.8	12	12	94.0%	94.0%			5,033,707	0			0.0	0.0			0.0	0.0
Other			0.0	0.0			27,788	0.0		0.0	14	14	94.0%	94.0%			0	0			0.0	0.0			0.0	0.0
Fuel Neutral Heating, Hot Water and Controls																										
Energy Star Central Air Conditioner			0.000	0.0			0.0	0.0			14	14	100%				0.0	0.0			0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump			0.3	0.0			(2,035.25)	0.0			12	12	100%				-7,102.9	0.0			0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump (for homes w/LP heat)			0.1	0.0			0.000	0.0			12	12	100%				0.0	0.0			0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			0.0	0.0			0.0	0.0			12	12	100%				0.0	0.0			171.9	0.0			48.0	0.0
ENERGY STAR Qualified Freestanding Water Heater >= 0.67 EF			0.0	4.8			0.0	0.0			13	13	100.0%				0.0	0.0			0.0	3.0			0.0	186.6
Furnace, Oil (forced hot air) >= 85% AFUE w/ECM (up to 150 MBH)			0.0	4.8			0.0	0.0			18	18	100.0%				0.0	0.0			0.0	16.1			0.0	1,384.1
Furnace, Oil (forced hot air) >= 95% AFUE w/ECM (up to 150 MBH)			0.0	4.6			0.0	0.0			18	18	100.0%				0.0	0.0			0.0	16.1				
Furnace, LP (forced hot air) >= 97% AFUE w/ECM (up to 150 MBH)			0.0	4.8			0.0	0.0			18	18	100.0%				0.0	0.0			0.0	18.5			0.0	1,590.4
Boilers, LP >= 90% thermal efficiency (1000 to 1700 MBH), Condensing			0.9	0.0			0.0	0.0			25	25	100.0%				0.0	0.0			142.6	142.6			3,110.4	0.0
Boilers, LP >= 90% thermal efficiency (1701 to 2000 MBH), Condensing			1.4	0.0			0.0	0.0			25	25	100.0%				0.0	0.0			249.0	249.0			8,871.0	0.0
7-Day Programmable Thermostats (Gas)			0.0	4.8			0.0	0.0			15	15	100.0%				0.0	0.0			7.7	7.7			0.0	551.6
Boiler Reset Controls, LP, After Market, 1 shift operation			0.0	4.8			0.0	0.0			15	15	100.0%				0.0	0.0			19.3	19.3			4.2	0.0
Boiler Reset Controls, Oil, After Market, 1 shift operation			0.0	0.0			0.0	0.0			15	15	100.0%				0.0	0.0			19.3	19.8			4.2	0.0
Boiler Reset Controls, LP, After Market, >1 shift operation			0.0	4.8			0.0	0.0			15	15	100.0%				0.0	0.0			35.5	35.5			7.7	0.0
Boiler Reset Controls, Oil, After Market, >1 shift operation			0.0	0.0			0.0	0.0			15	15	100.0%				0.0	0.0			35.5	35.5			7.7	0.0
Steam Traps, Oil (greater than 10 steam traps requires pre-approval)			0.0	4.8			0.0	0.0			3	3	100.0%				0.0	0.0			25.7	25.7			1.1	368.2
Unit LP Heaters >= 90% thermal efficiency (up to 300 MBH), Condensing			0.0	0.0			0.0	0.0			18	18	100.0%				0.0	0.0			30.0	30.0			1.6	0.0
Unit Oil Heaters >= 82% thermal efficiency (up to 300 MBH)			0.0	0.0			0.0	0.0			18	18	100.0%				0.0	0.0			30.0	30.0			1.6	0.0
Low Intensity LP Infrared Heaters (all sizes, EFF=>90%)			0.0	0.0			0.0	0.0			17	17	100.0%				0.0	0.0			48.3	48.3			4.8	0.0
Low Intensity Oil Infrared Heaters (all sizes, EFF=>85%)			0.0	0.0			0.0	0.0			17	17	100.0%				0.0	0.0			48.3	48.3			2.4	0.0

Liberty Utilities Small Business Energy Solutions Program

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012		2013		2012		2013		2012		2013		2012	2013	2012		2013		2012		2013		2012		2013	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	%	%	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Small Business Energy Solutions	1	75			692,223	7,742			11	12			100.00%		7,614,457	7,083,530			0.0	0.0			0.0	0.0		
D2 CAIR																										
D2 Cool Choice																										
D2 Custom																										
D2 Lights																										
D2 VSD																										
Vendor Miser																										
NEW EQUIPMENT TRACK																										
Cooling			1.2	0.5			32,168	3,557			15.0	15.0		92.5%			537,929.2	26,848.2			0.0	0.0			0.0	0.0
Heating			0.1	0.0			49,286	0			15.0	15.0		92.5%			81,043.9	0.0			0.0	0.0			0.0	0.0
Lighting			0.4	21.5			61,774	3,557			15.0	15.0		92.5%			304,403.6	1,061,097.6			0.0	0.0			0.0	0.0
Lighting LED				0.0			0	0			15.0	15.0		92.5%			0.0	0.0			0.0	0.0			0.0	0.0
Lighting (Occ Sensors Only)			0.1	0.0			22,784	0			10.0	10.0		92.5%			21,765.3	0.0			0.0	0.0			0.0	0.0
Other			0.2	2.0			121,518	3,557			15.0	15.0		92.5%			389,096.6	98,706.8			0.0	0.0			0.0	0.0
Process			0.9	0.5			50,702	3,557			15.0	15.0		92.5%			612,761.6	26,231.3			0.0	0.0			0.0	0.0
RETROFIT TRACK																										
Cooling			0.0	0.0			0	0			12.9	13.0		100.00%			0.0	0.0			0.0	0.0			0.0	0.0
Lighting - New Construction			15.7	0.0			13,788	0			15.9	15.9		100.00%			3,432,068.4	0.0			0.0	0.0			0.0	0.0
Lighting - Retrofit			18.3	101.1			19,981	7,665			12.8	13.0		100.00%			4,692,832.2	10,074,946.5			0.0	0.0			0.0	0.0
Lighting - Direct Install			21.0	0.0			14,489	0			12.9	12.9		100.00%			3,906,001.7	0.0			0.0	0.0			0.0	0.0
Lighting - Catalog Sales			72.9	0.0			46	0			6.0	6.0		100.00%			20,256.0	0.0			0.0	0.0			0.0	0.0
Smart Strips			8.8	0.0			75	0			5.0	5.0		100.00%			3,305.0	0.0			0.0	0.0			0.0	0.0
Process			0.0	1.8			0	7,665			0.0	13.0		100.00%			0.0	174,378.8			0.0	0.0			0.0	0.0
Other			0.0	0.0			0	0			0.0	13.0		100.00%			0.0	0.0			0.0	0.0			0.0	0.0
Fuel Neutral Heating, Hot Water and Controls																										
Energy Star Central Air Conditioner			2.3	0.0			110	0			14.0	14.0		100.0%			3,510.5	0.0			0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump			8.8	0.0			-2,035	0			12.0	12.0		100.0%			-215,933.7	0.0			0.0	0.0			0.0	0.0
Energy Star Mini Split Heat Pump (w/LP heat)			2.5	0.0			0	0			12.0	12.0		100.0%			0.0	0.0			15.4	15.4			468	0.0
Energy Star Mini Split Heat Pump (w/Oil heat)			6.3	0.0			0	0			12.0	12.0		100.0%			0.0	0.0			17.1	17.1			1,296	0.0
ENERGY STAR Qualified Freestanding Water Heater >= 0.67 EF			0.0	5.5			0	0			13.0	13.0		100.0%			0.0	0.0			3.0	3.0			0.0	215.5
On Demand Tankless Water Heater, LP, >= .82 EF w/Electronic Ignition			2.5	0.0			0	0			20.0	20.0		100.0%			0.0	0.0			7.1	7.1			0.0	360.0
On Demand Tankless Water Heater, LP, >= .95 EF w/Electronic Ignition			1.5	0.0			0	0			20.0	20.0		100.0%			0.0	0.0			9.9	9.6			0.0	300.0
Furnace, Gas (forced hot air) >= 95% AFUE w/ECM (up to 150 MBH)			0.0	5.4			0	0			18.0	18.0		100.0%			0.0	0.0			16.1	16.1			0.0	1,557.7
Furnace, Oil (forced hot air) >= 85% AFUE w/ECM (up to 150 MBH)			0.0	5.5			0	0			18.0	18.0		100.0%			0.0	0.0			16.1	16.1			0.0	1,598.9
Furnace, Gas (forced hot air) >= 97% AFUE w/ECM (up to 150 MBH)			0.0	5.5			0	0			18.0	18.0		100.0%			0.0	0.0			18.5	18.5			0.0	1,837.2
Boilers, LP >= 90% AFUE (up to 300 MBH), Condensing			1.3	0.0			0	0			25.0	25.0		100.0%			0.0	0.0			22.8	22.8			0.0	719.9
Boilers, Oil >= 85% AFUE (up to 300 MBH)			2.5	0.0			0	0			25.0	25.0		100.0%			0.0	0.0			22.8	22.8			0.0	1,439.9
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			1.3	0.0			0	0			25.0	25.0		100.0%			0.0	0.0			42.0	42.3			0.0	1,325.0
Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			2.5	0.0			0	0			25.0	25.0		100.0%			0.0	0.0			42.4	42.3			0.0	2,675.0
7-Day Programmable Thermostats (Gas)			0.0	5.5			0	0			15.0	15.0		100.0%			0.0	0.0			7.7	7.7			0.0	637.2
Boiler Reset Controls, Gas, After Market, 1 shift operation			0.0	5.5			0	0			15.0	15.0		100.0%			0.0	0.0			19.3	19.3			0.0	1,597.2
Boiler Reset Controls, Oil, After Market, 1 shift operation			1.3	0.0			0	0			15.0	15.0		100.0%			0.0	0.0			19.3	19.3			0.0	365.7
Boiler Reset Controls, Gas, After Market, >1 shift operation			1.3	0.0			0	0			15.0	15.0		100.0%			0.0	0.0			35.5	35.5			0.0	672.6
Steam Traps, Gas (greater than 10 steam traps requires pre-approval)			0.0	5.5			0	0			3.0	3.0		100.0%			0.0	0.0			25.7	25.7			0.0	425.4

Liberty Utilities Municipal Energy Efficiency Program (per SB123)

Measure*	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2014 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan		
Municipal																												
NEW EQUIPMENT TRACK																												
Cooling				0.5				11,684.0				15.0		100.0%				87,630				0.0				0.0		
Lighting				1.5				40,812.0				15.0		100.0%				918,270				0.0				0.0		
Other				1.1				39,978.0				15.0		100.0%				680,865				0.0				0.0		
Process				0.0				6,290.0				15.0		100.0%				0				0.0				0.0		
RETROFIT TRACK																												
Lighting				6.0				40,812.0				12.8		100.0%				3,139,504				0.0				0.0		
Other				0.0				39,978.0				13.0		100.0%				0				0.0				0.0		
Fuel Neutral Heating, Hot Water and Controls																												
On Demand Tankless Water Heater, Gas, >=.82 EF w/Electronic Ignition				5.2				0.0				15.0		100.0%				0.0				7.1				558.7		
On Demand Tankless Water Heater, Gas, >=.95 EF w/Electronic Ignition				5.2				0.0				15.0		100.0%				0.0				9.6				754.6		
Boilers (up to 300 MBH), Condensing (for homes with LP heat)				5.6								25.0		100.0%				0.0				22.8				3,185.2		
Boilers (up to 300 MBH) (for homes with oil heat)				5.6								25.0		100.0%				0.0				22.8				3,185.2		
Boiler Reset Controls, LP, After Market, 1 shift operation				5.2				0.0				15.0		100.0%				0.0				19.3				1,518.7		
Technical Assessments				1.0				0.0				1.0		100.0%				0.0				0.0				0.0		

Liberty Utilities Gas Home Energy Assistance Program

Measure	Quantity	Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate			Total Lifetime Savings (mmbtu)			
	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Low Income	181.6	13.6	13.5	17.2	32.0	20.0	20.0	20.0	20.0	100.0%	100.0%	100.0%	102,544.0	62,832.0	89,172.0	116,239.3

Liberty Utilities Gas Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (mmbtu)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013 & 2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Single Family (1-4 Units)	1,408.0	1,186.0	24.0	50.6	19.1	14.1	33.6	32.9	20.0	20.0	20.0	20.0	100%	100%	538,017.9	334,452.0	16,120.0	33,290.7
Multi-Family (5+ Units)	-	-	544.0	471.0	19.1	-	32.9	32.9	20.0	20.0	20.0	20.0	100%	100%	-	-	358,060.0	309,918.0

Liberty Utilities Gas ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (mmbtu)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013 & 2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Energy Star Homes	34.0	12.0	37.0	37.2	27.2	27.2	26.9	27.2	25.0	25.0	25.0	25.0	100%	100%	23,120.0	8,160.0	24,875.0	25,314.5

Liberty Utilities Gas ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				In-Service / Realization Rate			Total Lifetime Savings (mmbtu)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
High Efficiency Gas Steam Boiler																			
Tankless Water Heaters (EF 0.82)	85.0	67.0	90.0	45.0	9.7	9.7	8.0	9.7	20.0	20.0	20.0	20.0	100%	100%	100%	16,490.0	12,998.0	14,400.0	8,730.0
Indirect Water Heater (attached to gas Energy Star FHW boiler)	170.0	108.0	175.0	70.0	8.0	8.0	3.7	8.0	20.0	20.0	20.0	20.0	100%	100%	100%	27,200.0	17,280.0	12,960.0	11,200.0
Stand Alone Storage Water Heater (EF 0.67)	3.0	4.0	62.0	3.0	3.7	3.7	3.7	3.7	13.0	13.0	13.0	13.0	100%	100%	100%	144.3	192.4	2,982.2	144.3
Combo condensing boiler w/ On-Demand DWH 90%	35.0	151.0	40.0	55.0	21.1	21.1	17.8	17.8	20.0	20.0	20.0	20.0	100%	100%	100%	14,770.0	63,722.0	14,240.0	19,580.0
Furnace (forced hot air) 92% AFUE	0.0	0.0			0.0	0.0			0.0	18.0			100%			0.0	0.0		
Furnace (forced hot air) 92% AFUE w/ECM	0.0	1.0			0.0	11.8			0.0	18.0			100%			0.0	212.4		
Furnace (forced hot air) 94% AFUE w/ECM	180.0	150.0			18.0	14.2			18.0	18.0			100%			58,320.0	38,340.0		
Furnace (forced hot air) 95% AFUE w/ECM		36.0	192.0	265.0		18.0	4.5	4.5		18.0	18.0	18.0	100%	100%	100%		11,664.0	15,552.0	21,465.0
Furnace (forced hot air) 96% AFUE w/ECM	21.0	154.0	30.0		20.7	20.7	5.9		18.0	18.0	18.0		100%	100%		7,824.6	57,380.4	3,186.0	
Furnace 97+AFUE (<150) w/ECM Motor			17.0	42.4			18.5	5.9			18.0	18.0		100%	100%			5,670.0	4,501.7
Boiler (forced hot water) 85% AFUE	0.0	50.0			0.0	7.2			0.0	20.0			100%			0.0	7,200.0		
Boiler (forced hot water) 95% AFUE	10.0	124.0	12.0	52.0	21.3	21.3	13.1	13.1	20.0	20.0	20.0	20.0	100%	100%	100%	4,260.0	52,824.0	3,144.0	13,624.0
Boiler (forced hot water) 90% AFUE	190.0	132.0	99.0	75.0	13.7	14.2	10.4	10.4	20.0	20.0	20.0	20.0	100%	100%	100%	52,060.0	37,488.0	20,600.0	15,600.0
Early Retirement Steam Boiler (Retire >=82% AFUE)				4.0								10			100%				1,756.0
Early Retirement Steam - EE: 82% + AFUE				4.0								20			100%				280.0
Early Retirement FHW - Retirement:90 AFUE (65%-90%)				16.0								10			100%				3,776.0
Early Retirement FHW - EE 90 AFUE (80%-90%)				16.0								20			100%				3,328.0
Boiler Reset Controls	7.0	10.0	18.0	8.0	7.9	7.9	4.5	4.5	15.0	15.0	15.0	15.0	100%	100%	100%	829.5	1,185.0	1,215.0	540.0
Tankless Water Heater (EF 0.95)	12.0	32.0			10.3	10.3			20.0	20.0			100%	100%	100%	2,472.0	6,592.0		
Condensing Gas Water Heater (EF 0.94)	1.0	0.0		4.0	25.0	0.0			8.5	15.0	15.0	15.0	100%		100%	375.0	0.0		510.0
Tankless Water Heater (EF 0.94)		33.0	30.0	35.0		7.8	10.1	10.3		20.0	20.0	20.0	100%	100%	100%		5,148.0	6,060.0	7,210.0
7-Day Programmable Thermostats	600.0	437.0	1,410.0	910.0	7.7	7.5	3.2	3.2	15.0	10.0	15.0	15.0	100%	100%	100%	69,300.0	32,775.0	67,680.0	43,680.0
Heat Recovery Ventilator				5.0								20.0			100%				770.0
WiFiThermostats (Heating only)			81.0	100.0			6.6	6.6			15.0	15.0		100%	100%			8,025.0	9,900.0
WiFiThermostats (Cooling & Heating)			322.0	72.0			6.6	6.6			15.0	15.0		100%	100%			31,875.0	7,128.0

Liberty Utilities Gas Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (mmbtu)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (mmbtu)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013 & 2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan
CEEP	0	0			0.0	0.0			15.0	15			100%		-	-		
Large Business Retrofit	180	85	25.0	10.000	266.2	319.0	414.4	3041.4000	15.0	15	15.0	14.5800	100%	100%	718,740.0	413,324.7	155,400.0	443,436.1
Large Business New Equipment Custom	6	130	4.0	4.000	634.1	110.05	634.3	785.5060	18.0	19	18.0	19.4280	100%	100%	68,486.4	278,958.7	45,666.0	61,043.3
Furnace 95+ AFUE (<150) w/ECM Motor			9.0	10.000			16.1	4.3000			18.0	18.0000		100%			2,610.0	774.0
Furnace 97+ AFUE (<150) w/ECM Motor			1.0	3.000			21.0	5.9000			18.0	18.0000		100%			378.0	318.6
Infrared			12.0	12.000			48.3	48.3000			17.0	17.0000		100%			9,860.0	9,853.2
Water Heater - Tankless, On-Demand >=.82								7.1000				20.0000						-
Water Heater - Tankless, On-Demand >=.94								9.4000				20.0000						-
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.82)			12.0	12.000			20.7	20.7000			15.0	15.0000		100%			3,720.0	3,726.0
Water Heater - Tankless, On-Demand >=.82								25.0000				15.0000						-
Water Heater - Tankless, On-Demand >=.94								3.0000				13.0000						-
Water Heater - Integrated w/Condensing Boiler >= 90% AFUE								24.6000				20.0000						-
Condensing Boiler >= 90% AFUE (Up to 300 MBH)								22.8000				25.0000						-
Condensing Boiler >= 95% AFUE (Up to 300 MBH)								29.3000				25.0000						-
Condensing boiler 301-499 mbh			7.0	8.342			56.1	56.1000			25.0	25.0000		100%			9,825.0	11,699.3
Condensing boiler 500-999 mbh			2.0	2.000			103.0	103.0000			25.0	25.0000		100%			5,150.0	5,150.0
Condensing boiler 1000-1700 mbh			2.9	3.000			189.3	189.2000			25.0	25.0000		100%			13,525.0	14,190.0
Condensing boiler 1701+ mbh			3.0	4.000			331.3	331.2000			25.0	25.0000		100%			24,850.0	33,120.0
Condensing Unit Heaters			6.0	0.000			41.0	40.9000			18.0	18.0000		100%			4,428.0	-
Fryers			2.0	2.000			58.5	58.6000			12.0	12.0000		100%			1,404.0	1,406.4
High Efficiency Gas Steamer (Energy Star >=38% efficiency)			1.0	1.000			107.0	106.6000			12.0	12.0000		100%			1,284.0	1,279.2
High Efficiency Gas Convection Oven (>=40% efficiency)			1.0	1.000			31.0	30.6000			12.0	12.0000		100%			372.0	367.2
High Efficiency Gas Combination Oven (>=40% efficiency)			1.0	1.000			110.0	110.3000			12.0	12.0000		100%			1,320.0	1,323.6
High Efficiency Gas Conveyer Oven (>=40% efficiency)			1.0	1.000			85.0	84.5000			12.0	12.0000		100%			1,020.0	1,014.0
High Efficiency Gas Rack Oven (>=50% efficiency)			1.0	1.000			211.0	211.3000			12.0	12.0000		100%			2,532.0	2,535.6
High Efficiency Gas Griddle			1.0	1.000			19.0	18.5000			12.0	12.0000		100%			228.0	222.0
Pre Rinse Spray Valve			30.0	34.000			32.6	12.6000			5.0	5.0000		100%			4,888.2	2,142.0
Boiler Reset Controls (retrofit only)			8.0	16.000			17.8	35.5000			15.0	15.0000		100%			2,130.0	8,520.0
Steam Traps			33.0	42.000			20.2	25.7000			3.0	3.0000		100%			1,998.9	3,238.2
Thermostat			15.0	20.000			1.9	7.7000			15.0	15.0000		100%			427.5	2,310.0

Liberty Utilities Gas Small Business Energy Solutions Program

Measure	Quantity				Savings per Unit	Measure Life				In-Service & Realization Rate		Total Lifetime Savings (mmbtu)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan		2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013 & 2014	2012 Plan	2012 Actual	2013 Plan
Small Business Custom	27.0	915.0				15	8			100%		131,342	311,066		
Furnace (forced hot air) 92% AFUE	0.0	0.0				18	18			100%		0	0		
Furnace 92+ AFUE (<150) w/ECM Motor	0.0	0.0				18	18			100%		0	0		
Furnace 94+ AFUE (<150) w/ECM Motor	0.0	0.0				18	18			100%		0	0		
Furnace 95+ AFUE (<150) w/ECM Motor	0.0	2.0		50	4.3	18	18		18	100%	100%	0	745		3,870.0
Furnace 96+ AFUE (<150) w/ECM Motor	0.0	6.0				18	13			100%		0	1,604		
Furnace 97+ AFUE (<150) w/ECM Motor				16	5.9				18		100%				1,715.0
Small Business Retrofit Custom			25.0	29	115.4			15	21		100%			121,620	71,228.1
Small New Equipment Custom			7.0	12	280.0			18	18		100%			79,902	60,481.5
Infrared	70.0	22.0	22.0	25	48.3	17	17	17	17	100%	100%	88,536	27,826	27,826	20,527.5
On demand, Tankless Water Heater >=.82,	15.0	3.0	12.0	18	7.1	20	20	20	20	100%	100%	2,130	426	1,704	2,556.0
On demand, Tankless Water Heater >=.94,				12	9.4				20		100%				2,256.0
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.82)	57.0	49.0	45.0	55	20.7	15	20	15	15	100%	100%	25,992	29,792	20,520	17,077.5
Condensing Stand Alone >95% TE, >75000 btu	10.0	1.0	5.0	12	25.0	15	15	15	15	100%	100%	3,750	375	1,875	4,500.0
Integrated water heater/condensing boiler (0.9 EF, 0.9 AFUE)	7.0	0.0	8.0	12	24.6	20	0	20	20	100%	100%	3,438	0	3,930	5,904.0
Boiler >=95% AFUE, <= 300 mbh	7.0	0.0	5.0	11	29.3	25	0	25	25	100%	100%	3,868	0	2,763	8,057.5
Condensing boiler <= 300 mbh	48.0	56.0	55.0	65	22.8	25	25	25	25	100%	100%	26,520	45,220	30,388	37,050.0
Condensing boiler 301-499 mbh	48.0	2.0	21.0	22	56.1	25	25	25	25	100%	100%	50,760	3,915	22,208	30,855.0
Condensing boiler 500-999 mbh	14.0	19.0	11.0	13	103.0	25	25	25	25	100%	100%	26,985	69,683	21,203	33,475.0
Condensing boiler 1000-1700 mbh	9.0	2.0	0.0	0	189.2	25	25	25	25	100%	100%	32,085	13,205	0	0.0
Condensing boiler 1701+ mbh	4.0	0.0	0.0	0	331.2	25	0	25	25	100%	100%	24,900	0	0	0.0
Condensing Unit Heaters	0.0	0.0	5.0	10	40.9	18	0	18	18	100%	100%	0	0	3,683	7,362.0
Hydronic boiler <= 300mbh	0.0	2.0	0.0	0	0.0	25	25	25	25	100%	100%	0	840	0	0.0
Hydronic boiler 301-499 mbh	0.0	0.0	0.0	0	0.0	25	0	25	25	100%	100%	0	0	0	0.0
Hydronic boiler 500-999 mbh	0.0	0.0	0.0	0	0.0	25	0	25	25	100%	100%	0	0	0	0.0
Hydronic boiler 1000-1700 mbh	0.0	0.0	0.0	0	0.0	25	0	25	25	100%	100%	0	0	0	0.0
Hydronic boiler 1701+ mbh	0.0	3.0	0.0	0	0.0	25	25	25	25	100%	100%	0	11,250	0	0.0
Fryers	12.0	8.0	9.0	15	58.6	12	12	12	12	100%	100%	8,438	5,626	6,329	10,548.0
High Efficiency Gas Steamer (Energy Star >=38% efficiency)	3.0	0.0	2.0	5	106.6	10	0	12	12	100%	100%	4,608	0	3,686	6,396.0
High Efficiency Gas Convection Oven (>=40% efficiency)	3.0	11.0	2.0	5	30.6	12	12	12	12	100%	100%	893	3,274	595	1,836.0
High Efficiency Gas Combination Oven (>=40% efficiency)	3.0	0.0	3.0	3	110.3	12	0	12	12	100%	100%	1,451	0	1,451	3,970.8
High Efficiency Gas Conveyer Oven (>=40% efficiency)	3.0	1.0	2.0	3	84.5	12	12	12	12	100%	100%	3,042	1,014	2,028	3,042.0
High Efficiency Gas Rack Oven (>=50% efficiency)	1.0	1.0	1.0	3	211.3	12	12	12	12	100%	100%	2,536	2,536	2,536	7,606.8
High Efficiency Gas Griddle	1.0	1.0	1.0	3	18.5	12	12	12	12	100%	100%	222	222	222	666.0
Pre Rinse Spray Valve	15.0	1.0	52.0	100	12.6	5	5	5	5	100%	100%	2,520	168	8,736	6,300.0
Boiler Reset Controls (retrofit only)	4.0	0.0	3.0	8	35.5	20	0	15	15	100%	100%	2,840	0	1,598	4,260.0
Steam Traps	30.0	385.0	8.0	12	25.7	1	3	3	3	100%	100%	759	53,573	617	925.2
Thermostat	30.0	9.0	9.0	30	7.7	15	10	15	15	100%	100%	1,125	693	338	3,465.0

NHEC Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				NEB Realization Rate	Total Lifetime MMBTU Savings								
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012		2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan			
	Electric Savings for Fossil Heated Homes			57				1,747			10.79					956,047																
Baseload (Lighting)				34				427							64,460																	
Baseload (Refrigerators)				17				776							222,575																	
Baseload (HW Measures)				24				241							35,953																	
Weatherization - Electric Heat				8				2,799							441,228																	
Weatherization - Kerosene Heated				23									13.85	13.85									25	22		98%		6,912	1,176			
Weatherization - Wood Heated				3										9.99										47		98%			1,388			
Weatherization - Oil Heated				34									10.99	12.88									17	32		98%		5,799	7,797			
Heating System Replacements				5									15.00																			
Average Home	61	59			1,360	1,688			12.0	10.0			88.80%	100.00%			884,022	884,377							22.87	21	13			14,866	1,592	7,381
AS: Boiler Circulator Pump Savings				19										20.0																		
AS: Room AC (per unit)				26										20.0																		
Heating System Replacements																																
- Mobile Home Furnaces, Kerosene				3										17											3.31		98%				166	
- Furnaces, LP				2										18											8.44		98%				298	
- Boilers, Oil				3										25.0											5		98%				366	

Planning Assumptions

1. The 2014 plan is based on actual completions through July 2013. Program changes made in 2013 resulted in an increase in the average incentive per home, causing a reduction in the number of homes planned for 2014 as compared to the estimate made in 2013.
2. Added Ancillary Energy Savings from Cadmus Report.
3. Added Heating System Replacements for 2014.

NHEC Home Performance with Energy Star Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012		2013		2012		2013		2012		2013		2012		2012		2012		2012		2012		2012			
	2012 Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan	2012	2014	2012 Plan	Actual	2013 Plan	2014 Plan	Plan	Actual	Plan	Plan	Plan	Actual	Plan	Plan
Weatherization: Electric Heat			9				4,388	4,388			10.9	10.9	100.00%	100.00%			421,887									
Weatherization: LP Heat			11	10							22.3	18.8	100.00%	100.00%											5,358	4,260
Weatherization: Oil Heat			45	45							20.6	19.7	100.00%	100.00%											26,537	24,078
Weatherization: Kerosene			3	5							19.6	19.5	100.00%	100.00%											1,081	2,074
Weatherization: Wood Heat			4	5							18.9	22.1	100.00%	100.00%											1,200	2,533
Baseload (Lighting)				70				294				6.0		100.00%												
Electric Baseload: Single Family			17	70			369	128			7.8	8.3	100.00%	100.00%			48,173									
Average Electric Home	59.0	19			5,787	2,324			11	16.0					3,721,620											
AS: Boiler Circulator Pump Savings				45				9.0					20.0													8,100
AS: Furnace Fan Savings				5				86.0					20.0													8,600
AS: Room AC (per unit)				52				23.0					20.0													23,920

Planning Assumptions

1. For CFL savings, we assumed EISA was fully in place for 2012 and our contractors installed 6 CFLs per home audited/weatherized (2.7 hrs/day x 365 days/year x (49.9-18.4)/1,000) x 6 = 186.3 kWh/year.
2. Added Ancillary Energy Savings from Cadmus Report.

NHEC Energy Star Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013/2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
	ES CFL Lights	343	55	38	29	39.09	39	23	23	5.00	5.00	5.00	5.00	80%	80%/100%	53,835		3,524	3,334								
ES Light Fixture (Interior)	57	437	90	68	105.86	105.86	62	62	20.00	20.00	20.00	20.00	100%	100%	120,677		112,683	84,686									
ES Clothes Washer	40	16	26	19	223	223	261	166	11.00	11.00	11.00	11.00	100%	100%	98,120		73,778	34,610				0.74					
ES Dishwasher	57	18	36	27	33	33	33	31	10.00	10.00	10.00	10.00	100%	100%	18,810		11,745	8,478				0.19					
ES Refrigerator	49	76	36	27	107	107	106	114	12.00	12.00	12.00	12.00	100%	100%	62,916		45,273	36,936									
ES Central AC	34	5	2	2	263	214	198	110	14.00	14.00	14.00	14.00	100%	100%	125,188		5,930	3,088									
Oil Heated Homes		1											100%	100%				0									
Liquid Propane Heated Homes	34	64	29	26	506	136	757	757	25.00	25.00	25.00	25.00	100%	100%	430,100		543,640	491,966			66	66			47,242	42,751	
GSHP Heated Homes	23		14	6	0				25.00		25.00	25.00	100%	100%													
ES Thermostats									12	12																	

Planning Assumptions

1. Goal reduced in response to continued sluggish new home construction in NHEC service territory.

NHEC Energy Star Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Catalog Sales: CFLs	908	1,286	1,676	1,118	39.55		23	23	5	5.00	5.00	5.00	80%	62%	144,189		120,043	80,082
Retail Sales: CFLs	4,499	2,173	1,676	1,883	39.09		23	23	5	5.00	5.00	5.00	80%	62%	706,129		120,043	134,878
Retail Sales: Multipacks	33,152	23,595	21,304	19,903	39.09		23	23	5	5.00	5.00	5.00	80%	62%	5,203,285		1,525,975	1,425,640
Retail Sales: Interior Fixture	395	608	568	492	105.86		62	62	8	8.00	8.00	8.00	96%	96%	322,467		272,812	236,268
Retail Sales: Exterior Fixture	118	22	57	0	105.86		62	62	5	5.00	5.00	5.00	100%	100%	62,456		17,688	0
Retail Sales: Torchieres		3	36	0			69	69		8.00	8.00	8.00	94%	94%			18,537	0
Retail Sales: LED Fixtures	395	1,366	284	224	47.03		28	28	20	20.00	20.00	20.00	95%	95%	352,989		149,317	117,751
Retail Sales: LED Bulbs			2,841	3,354			28	28		1.00	20.00	20.00	95%	95%			1,493,174	1,763,107

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
 This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

NHEC Energy Star Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
	Energy Star Clothes Washer	823	785	858	712	223.00		261	166	11	11.00	11.00	11.00	100%	100%	2,018,828		2,461,138	1,296,979			0.74	0.74			6,964	5,777
Energy Star Room A/C	191	344	200	415	16.16		16	16	9	9.00	9.00	9.00	100%	100%	27,773		29,024	34,015									
Smartstrip Power Strip	57	61	60		75.04		75	75	5	5.00	5.00	5.00	100%	100%	21,386		22,469	26,332									
Energy Star Refrigerator	574	843	599	692	107.00		107	107	12	12.00	12.00	12.00	100%	100%	737,016		768,871	888,528									
2nd Refrigerator/Freezer Pickup	249	212	200	79	413.00		835	835	8	8.00	8.00	8.00	100%	100%	822,696		1,333,348	527,720									
2nd Freezer Pickup			60	4			663	663			8.00	8.00	100%	100%			317,608	21,216									
Energy Star Room Air Purifiers	19	11	20	4	268.00		391	391	9		9.00	9.00	100%	100%	45,828		70,173	14,063									
Energy Star Central Air Conditioner			5				110	110			14.00	14.00	100%	100%			7,144										
Energy Star Mini Split Heat Pump, SEER 14.5, HSPF 8.2 cooling				57				34.370				12.00	100%	100%				23,509									
Energy Star Mini Split Heat Pump, SEER 14.5, HSPF 8.2 heating				57				142.210				12.00	100%	100%				97,272				4.90				3,352	
Energy Star Mini Split Heat Pump, SEER 19, HSPF 10 cooling			4	57			123	104.930				8.00	100%	100%			3,932	71,772							0		
Energy Star Mini Split Heat Pump, SEER 19, HSPF 10 heating			4	57			-2,158	751.000				8.00	100%	100%			-69,060	513,684			17.14	4.90			548	3,352	
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM			11	11			168	168				18.00	100%	100%			33,579	32,041					4.50			858	
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM			6	5			168	168				18.00	100%	100%			16,789	16,020			4.50	5.55			450	529	
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM			2	5			168	168				18.00	100%	100%			5,596	16,020			5.55	5.90			185	563	
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM			6	5			168	168				18.00	100%	100%			16,789	16,020			5.90	18.00			590	1,716	
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM			2	5			168	168				18.00	100%	100%			5,596	16,020			18.00	20.70			600	1,974	
Boil: LP Boiler, FHW, AFUE >= 90%			11	5								20.00	100%	100%			20.70	10.40			20.70	10.40			4,597	1,102	
Boil: LP Boiler, FHW, AFUE >=96%			4	11								20.00	100%	100%			10.40	13.10			10.40	13.10			770	2,776	
Boil: Oil Boiler, FHW, AFUE >=85%			70	21								20.00	100%	100%			13.10	5.38			13.10	5.38			18,425	2,279	
Boil: Oil Boiler, FHW, AFUE >=90%			9	11								20.00	100%	100%			5.38	10.75			5.38	10.75			995	2,279	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			1	11								20.00	100%	100%			10.75	17.80			10.75	17.80			199	3,772	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			1	11								20.00	100%	100%			17.80	17.80			17.80	17.80			329	3,772	
DHW: LP, Tankless Water Heaters (EF>= 0.82)			22	5								20.00	100%	100%			17.80	9.70			17.80	9.70			7,906	1,028	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			1	11								20.00	100%	100%			9.70	8.00			9.70	8.00			180	1,695	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			1	21								20.00	100%	100%			8.00	8.00			8.00	8.00			148	3,391	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			1	5								13.00	100%	100%			8.00	3.70			8.00	3.70			96	255	
DHW: Energy Star Heat Pump 50 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			1	32			1,775	1,775				10.00	100%	100%			16,425	564,208			3.70				34		
DHW: Energy Star Heat Pump 80 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			1	11			2,672	2,672				10.00	100%	100%			24,725	283,110									
BRC: Gas, Boiler Reset Controls			0	5								15.00	100%	100%													
BRC: LP, Boiler Reset Controls			8	5								15.00	100%	100%											9.60		763
BRC: Oil, Boiler Reset Controls			11	5								15.00	100%	100%							9.60	9.60			1,599	763	
TSTAT: LP, 7-Day Programmable Thermostats			1	5			14	14				15.00	100%	100%			200	1,144			9.60	3.20			133	254	
TSTAT: Oil, 7-Day Programmable Thermostats			1	5			14	14				15.00	100%	100%			200	1,144			7.70	3.20			107	254	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			1				14	14				15.00	100%	100%			200				7.70	6.60			107		
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			1				14	14				15.00	100%	100%			200				6.60	6.60			92		

Planning Assumptions

1. Clothes Washer Annual kWh Savings updated based on mix of Electric Water Heating customer and per EnergyStar.gov Savings Calculator.
2. Room Air Purifier Annual kWh Savings updated per EnergyStar.gov Savings Calculator.
3. Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
4. All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

NHEC Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
	Snowmaking-Retrofit	1	3	1	2	321,194		333,129	333,129	13.0	13.0	13.0	13.0	94.0%	89.0%	3,716,215		4,519,386	7,708,605							
Lighting-Retrofit	17	19	6	13	21,720		44,921	29,141	13.0	13.0	13.0	13.0	94.0%	89.0%	4,272,107		3,656,535	4,383,098								
VFD-Retrofit			2	1			38,743	38,743			13.0	13.0	94.0%	89.0%			1,051,212	448,257								
Refrigeration-Retrofit			1				19,371	19,371			13.0	13.0	94.0%	89.0%			262,796									
Motors-Retrofit				2				5,870			13.0	13.0	94.0%	89.0%				135,832								
HVAC-Retrofit											13.0	13.0	94.0%	89.0%												
Process	5				20,677				13.0		13.0	13.0	94.0%		1,196,164											

NHEC Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
Lighting-Retrofit	28	53	58	46	11,042	8,278	12,623	13,604	13.0	13.0	13.0	13.0	92.90%	100%	3,967,037		10,780,416	8,135,192									
Refrigeration-Retrofit	2		6	5	20,357	2,669	13,242	19,101	13.0	13.0	13.0	13.0	92.90%	100%	522,401		1,002,768	1,241,565									
VFD-Retrofit	1				20,677								92.90%	100%													
Lighting-New Construction			9				42,705					15.0	15.0	92.5%	100.0%			5,587,285									
HVAC-New Construction			4	3			6,925	6,925				15.0	15.0	92.5%	100.0%			411,843	311,634								
Refrigeration-New Construction		2	2				46,695					15.0	15.0	92.5%	100.0%			1,666,177									

NHEC Municipal Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
	Municipal Lighting				17				18,860				13		100%				4,168,060								
Parking Lot Lights				4				13,038				13		100%				677,976									
Boilers (up to 300 MBH)				1							25		100%									25.20				630	

NHEC Company Specific Programs
 A. High Efficiency Heat Pump Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
	A. GSHP (Heating)	20		14	6	18,232		33,057	24,272	25		25	25	100.00%	100.00%	9,116,000		11,682,515	3,640,800							
A. GSHP (Cooling)	20		14	6	286		96	53	25		25	25	100.00%	100.00%	143,000		34,024	7,992								
A. GSHP (Hot Water)	20		14	6	1,811		1,389	1,316	25		25	25	100.00%	100.00%	905,500		490,935	197,390								
A. ASHP (Heating)											25	25	100.00%	100.00%												
A. ASHP (Cooling)											25	25	100.00%	100.00%												
A. ASHP (Hot Water)											25	25	100.00%	100.00%												

Planning Assumptions

A. Energy Star Homes - Geothermal & Air Source Heat Pump

1. GSHP = Ground Source (Geothermal) Heat Pump; ASHP = Air Source Heat Pump; Split System Heat Pump (ex. Mitsubishi "Mr. Slim")
2. Home Energy Raters incorporating a new Heat Pump COP calculation for the rated home to more accurately account for pumping power requirements. This reduced savings by 8% from 2011.
3. The User Defined Reference Home for New Hampshire continues to be updated to reflect code changes. Revisions will include a change to the efficiency of the reference heating system efficiency, resulting in a 5% reduction in savings.
4. Planning for additional homes to have Air Source Heat Pumps installed in 2012 due to their cold climate heating improvements. (Some may choose to go through the ENERGY STAR Homes program.)

PSNH Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012		2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
																2012 Plan	Actual	2013 Plan	2014 Plan									
Electric Savings for Fossil Heated Homes	740.0	720	643.9	334.8	1,117.0	1,114.6	1,059.0	1,214.7	13.4	12.06	14.31	11.75	86.20%	86.20%	9,511,864	8,342,157	8,408,970	4,120,384										
Weatherization - Electric Heat	20.0	1	13.1	8.6	3,187.0	1,516.6	2,799.0	3,931.6	17.4	20.03	19.78	12.74	86.20%	86.20%	957,672	26,183	627,049	370,607										
Weatherization - Kerosene Heated	111.0	166	193.2	83.7					20.9	13.02	20.62	20.31	86.20%	86.20%	0	0	0	0	15.00	17.27	17.00	19.47	29,967	32,123	58,362	28,536		
Weatherization - LP Heated	59.2	35	57.9	40.2					19.3	12.09	21.39	19.70	86.20%	86.20%	0	0	0	0	15.00	15.22	15.00	19.05	14,796	5,508	16,024	12,997		
Weatherization - NG Heated	229.4	114	199.6	63.6					17.2	13.11	19.43	20.46	86.20%	86.20%	0	0	0	0	15.00	15.07	8.00	8.00	51,017	19,257	26,744	8,975		
Weatherization - Wood Heated	14.8	22	32.2	16.7					20.3	13.70	20.95	21.10	86.20%	86.20%	0	0	0	0	15.00	47.08	25.00	30.27	3,885	12,500	14,534	9,217		
Weatherization - Oil Heated	325.6	131	161.0	130.6					18.9	13.03	19.99	21.13	86.20%	86.20%	0	0	0	0	15.00	19.42	23.00	29.69	79,610	28,506	63,810	70,613		
Weatherization - Other													86.20%	86.20%	0	0	0	0					0	0	0	0		
Weatherization - Baseload									13.0	1.00			86.20%	86.20%	0	0	0	0					0	0	0	0		
AS = Ancillary Energy Savings from Wxn																												
AS: Boiler Circulator Pump Savings				267.8				9.0				20.00	86.20%															
AS: Furnace Fan Savings				67.0				86.0				20.00	86.20%															
AS: Furnace w/new ECM Motor				3.3				733.0				20.00	86.20%															
AS: Central AC				3.3				77.0				20.00	86.20%															
AS: Room AC (per unit)				255.0				23.0				20.00	86.20%															
AS: Other (tbd)													86.20%															
Heating System Replacements																												
- Mobile Home Furnaces, Kerosene				84.3				0.0				17.00	100.00%		0	0	0	0					3.31	0	0	0	4,746	
- Furnaces, LP				23.6				0.0				18.00	100.00%		0	0	0	0					8.44	0	0	0	3,587	
- Boilers, Oil				19.7				0.0				25.00	100.00%		0	0	0	0					4.97	0	0	0	2,443	

Planning Assumptions

1. MMBTU savings for 2013 only include savings resulting from SBC funded weatherization, projected to be 19-30 MMBTUs per home with a max incentive of \$8,000 (WAP collaboration funding is expected to pay for other additional MMBTU Savings). For gas heated homes, it is expected that the gas companies will pay for most of the weatherization project and will claim associated MMBTU savings.
2. Added Ancillary Energy Savings (AS) from the Cadmus Evaluation (NH HVAC Load and Savings Research, 4-5-2013)
3. Added Heating System Replacements for 2014.

PSNH Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012		2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
																2012 Plan	Actual	2013 Plan	2014 Plan									
HES - ELECTRIC																												
Weatherization-Baseload: Electric Heat/Lighting		0								11.0			100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-Baseload: LP Heat/Lighting													100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-Baseload: Oil Heat/Lighting													100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-Baseload: Electric Savings													100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-HVAC: Electric/Wood Heat		0								22.1			100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-HVAC: LP Heat													100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-HVAC: Oil Heat													100.00%	100.00%	0	0	0	0							0	0	0	0
Weatherization-HVAC: Elec w/LP Backup													100.00%	100.00%	0	0	0	0							0	0	0	0
Electric Baseload: Single Family	51.3	172	64.4	77.2	186.3	282.0	294.0	138.0	5.0	8.0	7.9	7.0	100.00%	100.00%	47,774	386,901	149,169	74,317							0	0	0	0
Electric Baseload: Multi-Family	402.7	284	505.5	273.2	186.3	539.9	294.0	138.0	5.0	13.0	7.9	7.0	100.00%	100.00%	375,001	1,995,063	1,170,908	263,070							0	0	0	0
FUEL-NEUTRAL PILOT ELECTRIC SAVINGS																												
Pilot Wxn - Electric Heat Savings	562.2				186.3				5.0				100.00%	100.00%	523,563	0	0	0							0	0	0	0
Fuel Neutral Pilot (Kerosene)													100.00%	100.00%	0	0	0	0							0	0	0	0
Fuel Neutral Pilot (LP)													100.00%	100.00%	0	0	0	0							0	0	0	0
Fuel Neutral Pilot (Gas)													100.00%	100.00%	0	0	0	0							0	0	0	0
Fuel Neutral Pilot (Oil)													100.00%	100.00%	0	0	0	0							0	0	0	0
Fuel Neutral Pilot (Wood)													100.00%	100.00%	0	0	0	0							0	0	0	0
Fuel Neutral Pilot (ElecBaseload)	5.62185				6,533.8				14.6				100.00%	100.00%	536,291	0	0	0							0	0	0	0
FUEL NEUTRAL HPwES																												
Light Fixtures				115.1				23.0				20.0	100.00%	100.00%	0	0	0	52,941										
Refrigerator				86.3				586.2				7.0	100.00%	100.00%	0	0	0	354,248										
Hot Water Saving Measures				115.1				80.4				4.0	100.00%	100.00%	0	0	0	37,031										
SF, Electric, CFLs		439	459.7	587.3		293.006	378.0	138.0		8.1314	8.1	8.0	100.00%	100.00%	0	1,045,935	1,410,809	648,254						0	0	0	0	
Wxn Oil Heated Homes	314.8235	344	369.6	463.4		0.0		0	20.2	21.00	21.0	21.0	100.00%	100.00%	0	0	0	0	22.30	27.99	28.56	29.00	141,535	202,219	221,439	281,936		
Wxn LP Heated Homes	112.437	39	43.2	70.5		0.0		0	20.4	20.73	20.9	20.5	100.00%	100.00%	0	0	0	0	22.30	28.14	22.52	23.00	51,150	23,046	20,324	33,230		
Wxn Gas Heated Homes	16.86554	1	1.8	2.3		0.0		0	16.9	14.43	18.6	18.7	100.00%	100.00%	0	0	0	0	22.30	21.78	15.51	15.51	6,343	305	532	680		
Wxn Wood Heated Homes	101.1933	22	25.3	37.0		0.0		0	20.6	21.16	21.1	20.5	100.00%	100.00%	0	0	0	0	22.30	77.15	19.02	28.00	46,576	35,642	10,133	21,238		
Wxn Kerosene Heated Homes	11.2437	2	4.1	2.3		0.0		0	16.9	22.07	22.1	21.0	100.00%	100.00%	0	0	0	0	22.30	22.07	32.70	29.00	4,240	971	2,991	1,431		
Wxn Electrically Heated Homes		13	15.6	11.7		6,020.2	6,552.2	6,552.2		15.68	18.0	18.0	100.00%	100.00%	0	1,227,305	1,845,888	1,387,306						0	0	0	0	
AS = Ancillary Energy Savings																												
AS: Boiler Circulator Pump Savings				495.0				9.0				20.0	100.00%	100.00%	0	0	0	89,098										
AS: Furnace Fan Savings				34.5				86.0				20.0	100.00%	100.00%	0	0	0	59,399										
AS: Furnace w/new ECM Motor				1.7				733.0				20.0	100.00%	100.00%	0	0	0	25,313										
AS: Central AC				1.7				77.0				20.0	100.00%	100.00%	0	0	0	2,659										
AS: Room AC (per unit)				215.8				23.0				20.0	100.00%	100.00%	0	0	0	99,276										
AS: Other (tbd)				0.0																								

Planning Assumptions

- For CFL savings, we assumed EISA was fully in place for 2012 and our contractors installed 6 CFLs per home audited/weatherized (2.0 hrs/day x 365 days/year x (49.9-18.4)/1,000) x 6 = 186.3 kWhs/year.
- Added Ancillary Energy Savings (AS) from the Cadmus Evaluation (NH HVAC Load and Savings Research, 4-5-2013)

PSNH ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan
	ES CFL Lights	3,844	1,106	3,121	3,293	39.1	39.1	23.0	23.0	5	5	5	5	80.30%	100.00%	603,270	173,589	358,877	378,599					0	0	0
ES Light Fixture (Interior)	1,153	879	312	329	105.9	105.9	62.3	62.3	20	20	20	20	100.00%	100.00%	2,441,232	1,860,971	388,727	410,089					0	0	0	0
ES Light Fixture (Exterior)		0	0	0	105.9	105.9	62.3	62.3	5	5	5	5	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Clothes Washer	57.7	71.0	46.8	33	223.0	223.0	223.0	165.6	11	11	11	11	100.00%	100.00%	141,416	174,164	114,851	59,983	0.14	0.95	0.7376	0.7376	91	739	380	267
ES Dishwasher	230.6	330.0	218.5	214	33.0	33.0	33.0	31.4	10	10	10	10	100.00%	100.00%	76,105	108,900	72,103	67,208	0.40	0.40	0.1888	0.18880	922	1,320	413	404
ES Refrigerator	307.5	387.0	249.7	296	106.0	106.0	106.0	114.0	12	12	12	12	100.00%	100.00%	391,127	492,264	317,629	405,419					0	0	0	0
ES Room AC		0.0	0.0	0	16.2	16.2	16.2	16.2	9	9	9	9	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Central AC		0.0	0.0	0	263.0	263.2	263.0	110.3	14	14	14	14	100.00%	100.00%	0	0	0	0					0	0	0	0
ES Thermostats	288.3	321.0	234.1	247	0.0	0.0	0.0	0.0	12	12	12	12	100.00%	100.00%	0	0	0	0					0	0	0	0
Oil Heated Homes	19.2	4.0	15.6	3	519.8	-171.0	519.8	519.8	25	25	25	25	100.00%	100.00%	249,747	-17,100	202,817	42,793	28.99	60.03	46.00	50.00	13,928	6,003	17,948	4,116
Natural Gas Heated Homes	211.4	124.0	46.8	63	481.5	480.1	481.5	481.5	25	25	25	25	100.00%	100.00%	2,544,603	1,488,350	563,577	753,094	23.71	57.33	25.80	25.00	125,306	177,715	30,199	39,103
Liquid Propane Heated Homes	134.5	134.0	171.7	148	506.0	652.1	506.0	506.0	25	25	25	25	100.00%	100.00%	1,701,754	2,184,451	2,171,679	1,874,472	40.55	48.30	37.20	44.00	136,376	161,814	159,657	162,998
Electric Baseboard Heated Home	19.2	0.0	15.6	0	3,077.0	3,077.0	7,323.0	7,323.0	25	25	25	25	100.00%	100.00%	1,478,345	0	2,857,206	0					0	0	0	0
ASHP Heated Home		143.0	62.4	115	1,600.0	3,049.6	2,313.0	2,313.0	25	25	25	25	100.00%	100.00%	0	10,902,399	3,609,841	6,664,377					0	0	0	0
Wood Heated Homes		0.0				0.0			25	25	25	25	100.00%	100.00%	0	0	0	0		0.00			0	0	0	0
GSHP Heated Homes		0.0				0.0			25	25	25	25	100.00%	100.00%	0	0	0	0					0	0	0	0
GSHP/NG Heated Homes		0.0				0.0			25	25	25	25	100.00%	100.00%	0	0	0	0					0	0	0	0

Planning Assumptions

1. Planned participation - 329 homes. Planning for some multi-family homes heated & cooled with Air Source Heat PumpsSHP homes in 2014.
2. Annual kWh Savings reduced due to the new standards from the Energy Independence & Securities Act of 2007 that reduces base bulb wattage between 2012-2014.

PSNH ENERGY STAR® Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan
Catalog Sales: CFLs	3,851	12,559	2,859	3,171	39.6	39.55	23.00	23.00	5	5	5	5	80.30%	62.30%	611,473	1,994,355	204,772	227,131
Catalog Sales: Interior Fixtures	1,685	735	376	417	107.1	107.10	62.27	62.27	8	8	8	8	96.40%	96.40%	1,392,163	607,092	180,636	200,359
Catalog Sales: Exterior Fixtures	194	138	188	209	107.1	107.10	62.27	62.27	5	5	5	5	100.00%	100.00%	104,145	73,901	58,557	64,950
Catalog Sales: Torchieres	39	52	113	125	120.0	119.98	69.35	69.35	8	8	8	8	93.50%	93.50%	34,906	46,666	58,538	64,929
Catalog Sales: LED Fixtures	65	75	38	42	47.0	47.03	27.67	27.67	20	20	20	20	95.00%	95.00%	57,931	67,023	19,773	21,932
Catalog Sales: LEDs	648	0	188	209	47.0	47.03	27.67	27.67	20	20	20	20	95.00%	95.00%	579,313	0	98,867	109,662
Retail Sales: # CFLs (1-2 packs)	3,355	11,130	7,683		39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	526,541	2,262,625	550,324	0
Retail Sales: # CFLs (3-6 packs)	210,036	187,063	214,407	6,144	39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	32,966,010	38,028,167	15,357,877	440,066
Retail Sales: # CFL (> 6 packs)	0	0		237,818	39.1	50.63	23.00	23.00	5	5	5	5	80.30%	62.30%	0	0	0	17,034,795
Retail Sales: Interior Fixture	583	2,408	2,144	2,378	105.9	105.86	62.27	62.27	8	8	8	8	96.40%	96.40%	476,296	1,965,823	1,029,624	1,142,048
Retail Sales: Exterior Fixture	117	75	143	159	105.9	105.86	62.27	62.27	5	5	5	5	100.00%	100.00%	61,761	39,696	44,503	49,362
Retail Sales: Torchieres	29	0	36	40	104.4	104.37	69.35	69.35	8	8	8	8	93.50%	93.50%	22,775	0	18,537	20,561
Retail Sales: LED Fixtures	583	4,550	715	1,585	47.0	47.03	27.67	27.67	20	20	20	20	95.00%	95.00%	521,382	4,066,081	375,694	833,431
Retail Sales: # LEDs (102 packs)	1,167	6,867	7,147	9,513	47.0	47.03	27.67	27.67	20	20	20	20	95.00%	95.00%	1,042,885	6,136,654	3,756,939	5,000,588

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
 This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

PSNH ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
	Energy Star Clothes Washer	4,824.2	6,470.0	7,809.0	6,816.0	223.01	223.00	260.68	165.60	11	11	11	11	100.00%	100.00%	11,834,033	15,870,981	22,392,048	12,416,011		0.14	0.74	0.5360		10,238	63,359	40,187
Energy Star Room A/C	3,308.0	2,902.0	2,552.9	1,817.6	16.16	16.16	16.16	16.16	9	9	9	9	100.00%	100.00%	481,014	421,974	371,217	264,294						0	0	0	
Smartstrip Power Strip	1,102.7	469.0	195.2	196.9	75.04	75.04	75.04	79.00	5	5	5	5	100.00%	100.00%	413,746	175,978	73,252	77,778						0	0	0	
Energy Star Refrigerator	3,445.9	5,875.0	3,904.5	5,301.3	106.00	106.00	107.00	114.00	12	12	12	12	100.00%	100.00%	4,383,133	7,473,000	5,013,355	7,252,216						0	0	0	
2nd Refrigerator Pickup	964.8	0.0	300.3	605.9	413.00	413.00	835.00	835.00	8	8	8	8	100.00%	100.00%	3,187,831	0	2,006,303	4,047,185						0	0	0	
2nd Freezer Pickup		222.0	150.2	302.9	413.00	450.00	663.00	663.00	8	8	8	8	100.00%	100.00%		799,200	796,514	1,606,757						0	0	0	
Energy Star Freezers					67.00	67.00	114.00	41.00	11	11	12	12	100.00%	100.00%													
Energy Star Dishwasher (CEE Tier 2)					60.00	60.00	60.00	60.00	10	10	10	10	100.00%	100.00%						0.19	0.19	0.19		0	0	0	
Energy Star Dishwasher (w/Oil DHW)					33.00	33.00	33.00	35.00	10	10	10	10	100.00%	100.00%						0.19	0.19	0.19		0	0	0	
Energy Star Dehumidifiers					213.00	213.00	213.00	162.00	12	12	12	12	100.00%	100.00%													
Energy Star Room Air Purifiers	137.8	103.0	90.1	90.9	268.00	268.00	390.63	390.63	9	9	9	9	100.00%	100.00%	332,456	248,436	316,772	319,502							0	0	0
Room AC Pickup/Turn-in		3.0	15.0	15.1	18.00	18.00	16.16	16.16	5	5	5	5	100.00%	100.00%		270	1,213	1,224							0	0	0
Energy Star Set-top Boxes & Cable Boxes							100.00	100.00																			
Energy Star Water Coolers					361.00	361.00	361.00	361.00			10	10	100.00%	100.00%													
Energy Star Central Air Conditioner			43.1	30.1	263.23	263.23	110.29	110.29	14	14	14	14	100.00%	100.00%			66,525	46,496							0	0	0
Energy Star Mini Split Heat Pump			77.6				122.87				12	12	100.00%				0								0	0	0
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12				12	12	100.00%							15.43	15.43				0	0	0
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			57.6				-2,158.12				12	12	100.00%				0			17.14	17.14				0	0	0
Energy Star Mini Split Heat Pump (for homes w/LP heat)			20.0				-2,158.12				12	12	100.00%				0			15.43	15.43				0	0	0
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Cooling)				135.5				34.38			12	12		100.00%				55,898									0
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Heating)				135.5				142.21			12	12		100.00%				231,247									0
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Cooling)				376.4				104.94			12	12		100.00%				473,990									0
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Heating)				376.4				751.00			12	12		100.00%				3,392,141									22,142
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM			103.4	30.1			168.00	168.00			18	18	100.00%	100.00%			312,684	91,059		4.50	4.50				8,375	2,439	
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM			51.7				168.00	168.00			18	18	100.00%	100.00%			156,342			5.55	5.55				5,165	0	
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM			17.2	15.1			168.00	168.00			18	18	100.00%	100.00%			52,114	45,529		5.90	5.90				1,830	1,599	
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM			51.7				168.00	168.00			18	18	100.00%	100.00%			156,342			18.00	18.00				16,751	0	
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM			17.2				168.00	168.00			18	18	100.00%	100.00%			52,114			20.70	20.70				6,421	0	
Boil: LP Boiler, FHW, AFUE >= 90%			103.4	45.2							20	20	100.00%	100.00%						10.40	10.40				21,507	9,395	
Boil: LP Boiler, FHW, AFUE >=96%			34.5	45.2							20	20	100.00%	100.00%						13.10	13.10				9,030	11,834	
Boil: Oil Boiler, FHW, AFUE >=85%			654.9	210.8							20	20	100.00%	100.00%						5.38	5.38				70,425	22,668	
Boil: Oil Boiler, FHW, AFUE >=90%			86.2								20	20	100.00%	100.00%						10.75	10.75				18,533	0	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%			8.6								20	20	100.00%	100.00%						17.80	17.80				3,068	0	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%			8.6	15.1							20	20	100.00%	100.00%						17.80	17.80				3,068	5,360	
DHW: LP, Tankless Water Heaters (EF>= 0.82)			206.8	150.6							20	20	100.00%	100.00%						9.70	9.70				40,120	29,209	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)			8.6	30.1							20	20	100.00%	100.00%						8.00	8.00				1,379	4,818	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)			8.6	150.6							20	20	100.00%	100.00%						8.00	8.00				1,379	24,090	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)			8.6								13	13	100.00%	100.00%						3.70	3.70				414	0	
DHW: Energy Star Heat Pump 50 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			8.6	90.3			1,775.00	1,775.00			10	10	100.00%	100.00%			152,947	1,603,466							0	0	
DHW: Energy Star Heat Pump 80 Gal Water Heater, EF>=2.3 (ES=EF>=2.0)			8.6				2,672.00	2,672.00			10	10	100.00%	100.00%			230,239								0	0	
BRC: LP, Boiler Reset Controls			77.6								15	15	100.00%	100.00%			0			9.60	9.60				11,167	0	
BRC: Oil, Boiler Reset Controls			103.4	30.1							15	15	100.00%	100.00%			0	0		9.60	9.60				14,890	4,336	
TSTAT: LP, 7-Day Programmable Thermostats			8.6				14.40	14.40			15	15	100.00%	100.00%			1,861			7.70	3.20				995	0	
TSTAT: Oil, 7-Day Programmable Thermostats			8.6	90.3			14.40	14.40			15	15	100.00%	100.00%			1,861	19,510		7.70	3.20				995	4,336	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats			8.6	30.1			14.40	14.40			15	15	100.00%	100.00%			1,861	6,503		6.60	6.60				853	2,981	
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats			8.6	30.1			14.40	14.40			15	15	100.00%	100.00%			1,861	6,503		6.60	6.60				853	2,981	

Planning Assumptions

- Annual kWh Savings for Clothes Washers, Dehumidifiers, and Freezers updated using new EnergyStar.gov Savings Calculator values, 8-24-2013.
- Other Annual kWh Savings have been updated per recent studies in NH, New England or with NEEP.
- Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
- For the higher efficiency "cold climate" ductless minisplit (SEER>19.0, HSPF>10), assumed it would provide an extra 20% heating over Energy Star Unit.
- All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

PSNH Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
NEW EQUIPMENT TRACK																											
Cooling	43.6	42.0	44.2	34.1	53,315	15,502	34,777	29,101	15.8	15.6	15.0	15.0	92.5%	92.5%	34,000,960	9,392,427	21,310,899	13,775,376					0	0	0	0	
Heating	0.0	7.0	4.3	13.7	48,790	296,783	53,278	92,704	15.0	15.0	15.0	15.0	92.5%	92.5%	0	28,825,077	3,210,435	17,602,467					0	0	0	0	
Lighting	21.8	23.0	13.0	19.3	59,615	99,335	66,783	71,501	15.0	15.0	15.0	15.0	92.5%	92.5%	18,001,360	31,700,337	12,059,476	19,161,696					0	0	0	0	
Lighting (LED)	0.0	0.0	0.0	17.8			0	45,442	15.0	15.0	15.0	15.0	92.5%	92.5%	0	0	0	11,228,596					0	0	0	0	
Lighting (Occ Sensors Only)	0.0	14.0	3.8	10.1		22,996	24,628	15,758	15.0	10.0	10.0	10.0	92.5%	92.5%	0	2,985,114	862,163	1,476,646					0	0	0	0	
Other	0.0	5.0	8.5	0.0		44,940	131,370	131,253	15.0	17.4	15.0	15.0	92.5%	92.5%	0	3,617,925	15,414,643	0					0	0	0	0	
Process	29.0	26.0	31.9	2.4	78,123	93,636	54,813	109,625	15.9	14.1	15.0	15.0	92.5%	92.5%	33,346,145	31,790,747	24,275,347	3,652,850					0	0	0	0	
Lighting - Parking Lot Lights	-	5.0		23.9		188,373	0	68,414	15.0	15.0	15.0	15.0	92.5%	92.5%	0	13,068,363	0	22,667,049					0	0	0	0	
RETROFIT TRACK																											
Cooling	15.4	9.0	18.6	28.3	74,299	73,149.1	65,104	74,037	12.8	13.0	12.6	12.6	94.0%	94.0%	13,727,948	8,054,006	14,293,887	24,774,236					0	0	0	0	
Heating	-	9.0	9.4	10.1		145,354.2	17,369	52,796	13.0	10.8	20.1	13.4	94.0%	94.0%	0	13,311,178	3,072,035	6,712,134					0	0	0	0	
Lighting	46.5	55.0	83.6	74.1	91,962	53,499.4	52,212	58,442	12.7	13.0	13.0	13.0	94.0%	94.0%	51,032,269	35,956,959	53,165,257	52,766,721					0	0	0	0	
Lighting - LED	4.0	46.0	8.9	23.6	72,862	76,229.4	88,342	84,062	13.0	13.0	13.0	13.0	94.0%	94.0%	3,564,700	42,850,078	9,636,735	24,255,070					0	0	0	0	
Lighting - Occ Sensors only	5.9	12.0	16.9	18.6	28,951	20,380.8	30,253	30,130	9.0	9.0	9.4	9.4	94.0%	94.0%	1,435,386	2,069,054	4,512,326	4,945,904					0	0	0	0	
Other		2.0	6.1	-		19,241.0	27,788	10,632		13.2	13.6	13.6	94.0%	94.0%	0	477,435	2,171,361	0					0	0	0	0	
Lighting - Parking Lot Lights		5.0	8.5	16.9		46,155.2	51,130	47,681		13.0	13.0	13.0	94.0%	94.0%	0	2,820,083	5,280,733	9,867,577					0	0	0	0	
Process	29.5	38.0	50.5	50.7	85,195	44,759.6	65,380	47,153	13.4	12.2	11.7	11.7	94.0%	94.0%	31,725,299	19,458,153	36,353,093	26,320,722					0	0	0	0	
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Cental Air Conditioner			0.0				110.29	110.29			14.0	14.0	100.0%	100%				0	0								
Energy Star Mini Split Heat Pump			4.1				122.87				12.0	12.0	100.0%					0	0								
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12				12.0	12.0	100.0%					0	0	15.43	15.43						
Energy Star Mini Split Heat Pump (for homes w/LP heat)			0.8				-2,158.12				12.0	12.0	100.0%					0	0	15.43	15.43						
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			3.3				-2,158.12				12.0	12.0	100.0%					0	0	17.14	17.14						
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Cooling)				0.4				34.38				12.0		100%				0	155								
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Heating)				0.4				142.21				12.0		100%				0	640								
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Cooling)				1.5				104.94				12.0		100%				0	1,889								
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Heating)				1.5				751.00				12.0		100%				0	13,517			4.90		0	88		
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			1.0	0.469							25	25		100.0%						42.30	42.30	0	0	1,089	496		
Boilers, Oil >= 85% thermal efficiency (500 to 999 MBH)			2.1	0.937							25	25		100.0%						77.10	77.10	0	0	3,970	1,807		
Boilers, LP >= 90% thermal efficiency (1000 to 1700 MBH), Condensing			0.2	0.094							25	25		100.0%						142.60	142.60	0	0	734	334		
Boilers, Oil >= 85% thermal efficiency (1000 to 1700 MBH)			12.4	5.625							25	25		100.0%						142.60	142.60	0	0	44,062	20,052		
Boilers, Oil >= 85% thermal efficiency (1701 to 2000 MBH)			20.2	9.187							25	25		100.0%						249.00	249.00			125,665	57,189		
Boiler Reset Controls, Oil, After Market, 1 shift operation			1.2	0.562							15	15		100.0%						19.30	19.30			358	163		

Planning Assumptions

- The Energy Star Mini Split Heat Pump has been separated into a Energy Star Model (SEER=>14.5, HSPF=>8.7) and a higher efficiency cold climate heat pump (SEER=>19.0, HSPF=>10.0). The energy savings have also been modified to be the difference between a standard efficiency unit vs. Energy Star model vs. a higher efficiency cold climate model.

PSNH Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
Lighting - New Equipment & Construction			143.5	79.6			13,788	13,847		12.8	15.9	14.5	92.90%	100%	0	0	31,432,153	15,946,149									
Lighting - Retrofit	448.0	496.0	167.8	116.9	17,000	18,873.4	19,982	19,948	13.1	14.1	12.8	13.1	92.90%	100%	92,827,671	122,899,442	42,978,806	30,508,520									
Lighting - Direct Install			192.1	177.6			14,489	14,777		12.8	12.9	12.4	92.90%	100%	0	0	35,772,621	32,614,190									
Lighting - Catalog Sales SmartStrips	534.0	213.0	667.7	460.5	440	60.1	46.31	46	5.4	6.0	6.0	6.0	92.90%	100%	1,178,700	0	185,501	127,929									
	65	0.0	80.7	55.7	113.00		75.0	75	5	5.0	5.0	5.0	92.90%	100%	34,118	0	30,280	20,882									
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Central Air Conditioner			32.3				110.29	110.29			14.0	14.0	100.0%	100%			49,810	0									
Energy Star Mini Split Heat Pump			125.4				122.87				12.0		100.0%	100%			184,973	0									
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12				12.0		100.0%	100%			0	0	15.43	15.43			0	0			
Energy Star Mini Split Heat Pump (for homes w/LP heat)			35.8				-2,158.12				12.0		100.0%	100%			-928,235	0	15.43	15.43			6,637	0			
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			89.6				-2,158.12				12.0		100.0%	100%			-2,320,588	0	17.14	17.14			18,430	0			
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Cooling)				34.4				34.38				12.0		100%											14,211	0	
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Heating)				34.4				142.21				12.0		100%											58,790	0	
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Cooling)				68.9				104.94				12.0		100%											86,763	0	
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Heating)				68.9				751.00				12.0		100%											4.90	4,053	
Indirect Water Heater (attached to Gas Energy Star FHW boiler)											14	14	100.0%	100%					20.70	20.70	0	0	0	0			
Indirect Water Heater (attached to LP Energy Star FHW boiler)			0.0	4.6							14	14	100.0%	100%					20.70	20.70	0	0	0	0	1,331		
Indirect Water Heater (attached to Oil Energy Star FHW boiler)			0.0	23.0							14	14	100.0%	100%					20.70	20.70	0	0	0	0	6,656		
On Demand Tankless Water Heater, LP, >=.82 EF w/Electronic Ignition			35.8	11.5							20	20	100.0%	100%					7.10	7.10	0	0	5,090	1,631			
On Demand Tankless Water Heater, LP, >=.95 EF w/Electronic Ignition			21.5								20	20	100.0%	100%					9.59	9.59	0	0	4,125	0			
Furnace, LP (forced hot air) >= 95% AFUE w/ECM (up to 150 MBH)				6.9							18	18	100.0%	100%					16.10	16.10	0	0	0	1,997			
Boilers, LP >= 90% AFUE (up to 300 MBH), Condensing			17.9								25	25	100.0%	100%					22.80	22.80	0	0	10,215	0			
Boilers, Oil >= 85% AFUE (up to 300 MBH)			35.8	32.2							25	25	100.0%	100%					22.80	22.80	0	0	20,430	18,327			
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			17.9	11.5							25	25	100.0%	100%					42.30	42.30	0	0	18,952	12,143			
Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			35.8	23.0							25	25	100.0%	100%					42.30	42.30	0	0	37,904	24,287			
7-Day Programmable Thermostats (LP)				4.6							15	15	100.0%	100%					7.70	7.70	0	0	0	531			
7-Day Programmable Thermostats (Oil)				9.2							15	15	100.0%	100%					7.70	7.70	0	0	0	1,061			
Boiler Reset Controls, LP, After Market, 1 shift operation			17.9								15	15	100.0%	100%					19.30	19.30	0	0	5,188	0			
Boiler Reset Controls, Oil, After Market, 1 shift operation			17.9								15	15	100.0%	100%					19.30	19.30	0	0	5,188	0			

Planning Assumptions

- The Energy Star Mini Split Heat Pump has been separated into a Energy Star Model (SEER=>14.5, HSPF=>8.7) and a higher efficiency cold climate heat pump (SEER=>19.0, HSPF=>10.0). The energy savings have also been modified to be the difference between a standard efficiency unit vs. Energy Star model vs. a higher efficiency cold climate model.
- Used average energy savings from the Gas Networks, and expanded for oil and LP.

PSNH Municipal Energy Efficiency Program (per SB123)

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	
Lighting - New Equipment & Construction			143.5	35.0			13,788	11,448		12.8	15.9	14.7	92.90%	100%	0	0	31,432,153	5,907,616									
Lighting - Retrofit	448.0	496.0	167.8	61.0	17,000	18,873.4	19,982	22,028	13.1	14.1	12.8	12.8	92.90%	100%	92,827,671	122,899,442	42,978,806	17,188,909									
Lighting - Direct Install			192.1	135.7			14,489	12,436		12.8	12.9	12.3	92.90%	100%	0	0	35,772,621	20,761,366									
Lighting - Catalog Sales	534.0	213.0	667.7		440	60.1	46.31	46	5.4	6.0	6.0	6.0	92.90%	100%	1,178,700	0	185,501	0									
SmartStrips	65	0.0	80.7		113.00		75.0	75	5	5.0	5.0	5.0	92.90%	100%	34,118	0	30,280	0									
Fuel Neutral Heating, Hot Water and Controls																											
Energy Star Central Air Conditioner			32.3				110.29	110.29			14.0	14.0	100.0%	100%			49,810	0									
Energy Star Mini Split Heat Pump			125.4				122.87				12.0		100.0%				0	0									
Energy Star Mini Split Heat Pump (for homes w/Gas heat)							-2,158.12				12.0		100.0%				0	0	15.43	15.43				0	0		
Energy Star Mini Split Heat Pump (for homes w/LP heat)			35.8				-2,158.12				12.0		100.0%				0	0	15.43	15.43				0	0		
Energy Star Mini Split Heat Pump (for homes w/Oil heat)			89.6				-2,158.12				12.0		100.0%				0	0	17.14	17.14				0	0		
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Cooling)				22.8				34.38				12.0		100%										0	0		
Energy Star Mini Split Heat Pump (SEER>=14.5, HSPF>=8.2, Heating)				22.8				142.21				12.0		100%										0	0		
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Cooling)				45.5				104.94				12.0		100%										0	0		
Energy Star Mini Split Heat Pump (SEER>=19, HSPF>=10, Heating)				45.5				751.00				12.0		100%										0	2,677		
Indirect Water Heater (attached to Gas Energy Star FHW boiler)											14	14	100.0%	100%					20.70	20.70			0	0	0	0	
Indirect Water Heater (attached to LP Energy Star FHW boiler)			0.0	3.0							14	14	100.0%	100%					20.70	20.70			0	0	0	879	
Indirect Water Heater (attached to Oil Energy Star FHW boiler)			0.0	15.2							14	14	100.0%	100%					20.70	22.80			0	0	0	4,842	
On Demand Tankless Water Heater, LP, >=.82 EF w/Electronic Ignition			35.8	7.6							20	20	100.0%	100%					7.10	7.10			0	0	5,090	1,077	
On Demand Tankless Water Heater, LP, >=.95 EF w/Electronic Ignition			21.5								20	20	100.0%	100%					9.59	9.59			0	0	4,125	0	
Furnace, LP (forced hot air) >= 95% AFUE w/ECM (up to 150 MBH)				4.6							18	18	100.0%	100%					16.10	16.10			0	0	0	1,319	
Boilers, LP >= 90% AFUE (up to 300 MBH), Condensing			17.9								25	25	100.0%	100%					22.80	22.80			0	0	10,215	0	
Boilers, Oil >= 85% AFUE (up to 300 MBH)			35.8	21.2							25	25	100.0%	100%					22.80	22.80			0	0	20,430	12,105	
Boilers, LP >= 90% thermal efficiency (301 to 499 MBH), Condensing			17.9	7.6							25	25	100.0%	100%					42.30	42.30			0	0	18,952	8,020	
Boilers, Oil >= 85% thermal efficiency (301 to 499 MBH)			35.8	15.2							25	25	100.0%	100%					42.30	42.30			0	0	37,904	16,041	
7-Day Programmable Thermostats (LP)				3.0							15	15	100.0%	100%					7.70	7.70			0	0	0	350	
7-Day Programmable Thermostats (Oil)				6.1							15	15	100.0%	100%					7.70	7.70			0	0	0	701	
Boiler Reset Controls, LP, After Market, 1 shift operation			17.9								15	15	100.0%	100%					19.30	19.30			0	0	5,188	0	
Boiler Reset Controls, Oil, After Market, 1 shift operation			17.9								15	15	100.0%	100%					19.30	19.30			0	0	5,188	0	

Planning Assumptions

- The Energy Star Mini Split Heat Pump has been separated into a Energy Star Model (SEER=>14.5, HSPF=>8.7) and a higher efficiency cold climate heat pump (SEER=>19.0, HSPF=>10.0). The energy savings have also been modified to be the difference between a standard efficiency unit vs. Energy Star model vs. a higher efficiency cold climate model.
- Used average energy savings from the Gas Networks, and expanded for oil and LP.

ENERGY STAR® Homes - Heat Pump Program, C&I RFP Program, Customer Engagement Program

PSNH Company Specific Programs

- A. Energy Star Homes - Geothermal & Air Source Heat Pump Program
- B. C&I RFP Program
- C. Customer Engagement Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate			Total Lifetime Savings (kWh)			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012 Plan	2012 Actual	2013 Plan	2014 Plan	2012	2013	2014	2012 Plan	2012 Actual	2013 Plan	2014 Plan
A. GSHP (Heating)	51.7		54	33	21,499		15,303	11,583	25	25	25	25	100.00%	100.00%	27,772,064	0	20,642,251	9,611,083	
A. GSHP (Cooling)	51.7		54	33	158		81	90	25	25	25	25	100.00%	100.00%	204,351	0	108,924	74,678	
A. GSHP (Hot Water)	51.7		54	33	1,155		1,538	1,373	25	25	25	25	100.00%	100.00%	1,491,453	0	2,074,868	1,139,257	
A. GSHP (Lights & Appliances)	51.7		54	33	-177		-238	-159	25	25	25	25	100.00%	100.00%	-228,068	0	-321,282	-131,931	
A. GSHP (HVAC: All-in-1)		59				15,134			25	25	25	25	100.00%	100.00%	0	22,322,650	0	0	
A. ASHP (Heating)	14.5		15	9	9,671		17,244	4,790	25	25	25	25	100.00%	100.00%	3,513,613	0	6,542,007	1,089,279	
A. ASHP (Cooling)	14.5		15	9	71.19		468	130	25	25	25	25	100.00%	100.00%	25,865	0	177,549	29,633	
A. ASHP (Hot Water)	14.5		15	9	519.55		0	0	25	25	25	25	100.00%	100.00%	188,763	0	0	0	
A. ASHP (Lights & Appliances)	14.5		15	9	-79.45		288	80	25	25	25	25	100.00%	100.00%	-28,866	0	109,261	18,208	
A. ASHP (HVAC: All-in-1)		0				18,344			25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Heating)			0	0			9,671	9,671	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Cooling)			0	0			71	71	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Hot Water)			0	0			520	520	25	25	25	25	100.00%	100.00%	0	0	0	0	
A. Split Sys HP (Lights & Appliances)			0	0			-79	-79	25	25	25	25	100.00%	100.00%	0	0	0	0	
B. C&I RFP: Lighting	2.5	2	2.2	1.3	392,000	34,717	392,000	392,000	13.0	13	13.0	13.0	100.00%	100.00%	12,623,686	902,642	11,152,478	6,432,278	
B. C&I RFP: Process	5.2	5	6.1	5.3	212,000	231,053	212,000	212,000	11.5	13	11.5	11.5	100.00%	100.00%	12,663,160	15,018,432	14,916,470	12,904,784	
B. C&I RFP: Cooling	2.4	0	4.2	3.6	197,000	0	197,000	197,000	10.5	10	10.5	10.5	100.00%	100.00%	4,897,976	0	8,654,300	7,487,151	
B. C&I RFP: Lighting (Occ Sensors Only)		1	1.0	4.1		7,148	30,767	30,767		9	10	10.0	100.00%	100.00%	0	64,332	307,670	1,262,129	
B. C&I RFP: Lighting (Parking Lot Lights)		2	1.0	0.0		102,506	30,767	74,513		13	10	10.0	100.00%	100.00%	0	2,665,156	307,670	0	
B. C&I RFP: Heating		0	0.0	0.0		74,513		0		10			100.00%	100.00%	0	0	0	0	
C. Customer Engagement			25,000	25,000			108	76			1.0	1.0		100.00%			2,700,000	1,896,000	

Planning Assumptions

A. Energy Star Homes - Geothermal & Air Source Heat Pump

1. GSHP = Ground Source (Geothermal) Heat Pump; ASHP = Air Source Heat Pump; Split System Heat Pump.
2. Home Energy Raters incorporating a new Heat Pump COP calculation for the rated home to more accurately account for pumping power requirements. This reduced savings by 8% from 2011.
3. The User Defined Reference Home for New Hampshire continues to be updated to reflect code changes. Revisions will include a change to the efficiency of the reference heating system efficiency, resulting in a 5% reduction in savings.
4. Planning for additional homes to have Air Source Heat Pumps installed in 2013 due to their cold climate heating improvements. (Some may choose to go through the ENERGY STAR Homes program.)
5. For 2014, the cost of the HERS Rating (approximately \$1,200) has been added to the builder/customer incentive to make it easier for builders to participate.

B. C&I RFP Program

1. PSNH estimated smaller Lighting and Cooling projects and larger Process projects in 2012 than were done in 2010.

C. Customer Engagement Program: Energy savings were estimated by the contractor in their proposal.

Unitil ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
E-STAR Homes - CFLs	299	18	541	904	39	39	23	23	7	7	5	5	100%	100%	81,836	4,914	62,204	103,945	0	0	0	0	0	0	0	0
E-STAR Homes - Fixtures	0	40	38	151	0	106	62	28	20	20	20	20	100%	100%	-	84,800	46,871	83,370	0	0	0	0	0	0	0	0
E-STAR Homes - Dishwashers (elec HW)	30	4	47	42	74	74	33	26	10	10	11	10	100%	100%	22,313	2,960	17,077	10,834	0	0	0	0.15	0	0	0	0
E-STAR Homes - Dishwashers (non-elec HW)	9	0	0	0	33	0	0	0	10	10	11	10	100%	100%	2,877	0	0	0	1.9	0	0	0	627	0	0	0
E-STAR Homes - Refrigerators	39	3	35	18	107	107	107	114	12	12	12	12	100%	100%	49,909	3,852	45,304	24,049	0	0	0	0	0	0	0	0
E-STAR Homes - Clotheswashers	0	1	16	18	223	223	261	37	11	11	12	11	100%	100%	-	2,453	51,508	7,155	0	0	0	0.67	0	2	0	0
E-STAR Homes - Thermostats	0	5	16	38	0	0	0	0	10	10	15	15	100%	100%	-	0	0	0	0	0	6	0	0	1,581	0	
E-STAR Homes - Heating (Elec)	35	0	3	1	1,200	0	1,925	14,880	25	25	25	25	100%	100%	1,046,098	0	158,483	372,000	0	0	0	0	0	0	0	0
E-STAR Homes - Heating (Oil)	0	0	0	0	0	0	0	0	25	25	25	25	100%	100%	-	0	0	0	0	0	0	0	0	0	0	1
E-STAR Homes - Heating (Nat Gas)	0	0	11	0	0	0	0	0	25	25	25	25	100%	100%	-	0	0	0	0	0	30.0	0	0	0	8,118	0
E-STAR Homes - Heating (Propane)	0	3	28	38	0	706	1,136	247	25	25	25	25	100%	100%	-	52,950	801,647	232,174	0	56.8	62.7	50.35	0	4,261	44,232	47,405
E-STAR Homes - Geothermal/GSHP	4	2	5	3	12,500	29,275	79,041	29,523	25	25	25	25	100%	100%	1,250,000	1,463,750	9,296,216	2,221,593	0	59.7	0	0	0	2,985	0	0
E-STAR Homes - Cooling	9	3	28	19	131	42	227	177	25	25	25	25	100%	100%	28,550	3,150	160,188	83,323	0	0	0	0	0	0	0	0
E-STAR Homes - Water Heating (Elec)	35	0	3	1	0	0	3,012	693	15	15	15	15	100%	100%	0	0	148,785	10,395	0	0	0	0	0	0	0	0
E-STAR Homes - Water Heating (Oil)	0	0	0	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
E-STAR Homes - Water Heating (Nat Gas)	0	0	11	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0	0	4	0	0	0	649	0
E-STAR Homes - Water Heating (Propane)	0	5	28	38	0	959	0	0	15	15	15	15	100%	100%	0	71,925	0	0	0	2	4	2.89	0	140	1,715	1,633
E-STAR Homes - Water Heating (Geothermal)	0	0	0	3	0	0	0	2,541																		

Unitil Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
	CFLs	349	191	225	266	51	52	23	23	8	8	7	7	100%	100%	141,643	80,142	36,200	6,128	0	0	0	0	0	0	0
Exterior Fixtures	0	3	0	0	0	53	0	0	0	20	0	0	100%	100%	0	3,160	0	0	0	0	0	0	0	0	0	0
Refrigerator	0	1	0	0	0	646	0	0	0	7	0	0	100%	100%	0	4,522	0	0	0	0	0	0	0	0	0	0
Weatherization, Electric	0	0	0	0	0	0	0	0	20	20	20	20	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
Weatherization, Non-Electric	0	0	0	0	0	0	0	0	20	20	20	20	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
Air Sealing, Electric	6	19	5	6	3,062	11,535	829	829	15	15	15	15	100%	100%	266,785	3,287,607	58,227	4,627	0	0	0	0	0	0	0	0
Insulation, Electric	6	19	9	6	3,533	4,213	1,629	1,629	25	25	25	25	100%	100%	513,061	2,001,136	381,618	9,098	0	0	0	0	0	0	0	0
Insulation, Gas	0	4	0	0	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0	20	0	0	0	1,972	0	0
Air Sealing, Gas	0	4	0	0	0	42	0	0	15	15	15	15	100%	100%	0	2,513	0	0	0	10	0	0	0	628	0	0
Air Sealing, Oil	52	24	28	33	0	193	0	0	15	15	15	15	100%	100%	0	69,519	0	-	10	8	5	5	8,195	2,897	2,176	2,577
Insulation, Oil	52	24	28	33	0	0	0	9	25	25	25	25	100%	100%	0	0	0	300	12	22	24	24	15,760	13,398	16,516	19,564
Air Sealing, Propane	0	6	9	17	0	50	0	0	15	15	15	15	100%	100%	0	4,508	0	-	0	8	12	12	0	751	1,756	3,119
Insulation, Propane	0	6	9	17	0	0	0	86	25	25	25	25	100%	100%	0	0	0	1432	0	26	38	38	0	3,930	9,010	16,009
Air Sealing, Wood	0	0	0	0	0	0	0	0	15	15	15	15	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
Insulation, Wood	0	0	0	0	0	0	0	0	25	25	25	25	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
Baseload (CFLs only)	10	0	5	11	305	0	138	138	8	8	7	7	100%	100%	24,996	0	4,525	1,531	0	0	0	0	0	0	0	0
Thermostats, Non-Electric	5	10	0	0	0	0	0	0	10	10	15	15	100%	100%	0	0	0	0	4	4	0	0	199	406	0	0
Thermostats, Electric	23	2	0	0	1,113	157	0	0	10	10	15	15	100%	100%	258,700	3,140	0	0	0	0	0	0	0	0	0	0
DWH ISMs	16	8	0	0	0	0	0	0	7	7	7	7	100%	100%	0	0	0	0	2	1	0	0	240	35	0	0
High Efficiency Furnace	0	0	0	0	0	0	0	0	0	0	0	18	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0
Room AC ancillary savings	0	0	0	24	0	0	0	50	0	0	0	9	100%	100%	0	0	0	1,194	0	0	0	0	0	0	0	0
Central AC ancillary savings	0	0	0	13	0	0	0	77	0	0	0	15	100%	100%	0	0	0	983	0	0	0	0	0	0	0	0

Unitil ENERGY STAR® Lighting Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service & Realization Rate		Total Lifetime Savings (kWh)			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update
Retail Sales: # CFLs	12,261	31,442	19,564	26,518	39	39	23	23	5	5	5	5	80.3%	62.3%	1,924,460	4,935,970	1,401,358	1,899,882
Retail Sales: # CFLs Multi-Packs	41,800	0	0	0	39	39	23	23	5	6	5	5	80.3%	62.3%	6,560,660	0	0	0
Retail Sales: Interior Fixture	284	351	292	259	106	106	62	62	8	8	8	8	96.4%	96.4%	232,140	286,662	140,224	124,377
Retail Sales: Exterior Fixture	0	24	29	6	106	106	62	62	5	5	5	5	100.0%	100.0%	0	12,708	9,091	1,868
Retail Sales: Torchieres	0	1	0	0	104	104	69	0	8	8	8	8	93.5%	93.5%	0	781	0	0
Retail Sales: LED Fixtures	0	0	0	194	0	0	0	28	0	0	0	20	95.0%	95.0%	0	0	0	101,992
Retail Sales: # LEDs	28	651	292	5,821	47	47	28	28	20	20	20	20	95.0%	95.0%	25,478	581,343	153,497	3,060,274
Markdown Bulbs	0	9,294	20,400	0	0	0	23	0	7	7	5	5	80.3%	62.3%	0	0	1,461,240	0
Markdown LEDs	0	0	280	0	0	0	28	0	20	20	20	20	95.0%	95.0%	0	0	147,188	0
Markdown LED fixtures	0	0	120	0	0	0	28	0	20	20	20	20	95.0%	95.0%	0	0	63,081	0

Planning Assumptions

1. Assumed the Energy Independence and Security Act of 2007 was fully in place in Jan2012 (e.g., Used 72W halogen as base rather than 100W incandescent)
This reduces the kWh savings for all CFLs - the largest rebated product - by nearly 1/3.
2. Realization Rates for CFLs were modified from 80.3% to 62.3%, per KEMA Impact Evaluation, June 22, 2012.
3. Average hours on per energy efficient lights were ALL modified to 2 hours/day (from 3.4, or 41% reduction), per KEMA Impact Evaluation, June 22, 2012.
3. Assumed an increase in LED bulbs and fixture purchases in 2013-2014.

August 2014 assumptions

Based on past year of experience, eliminating markdowns or upstream sales

Unitil ENERGY STAR® Appliance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service / Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	
	Energy Star Clothes Washer	1,051	955	884	883.8	223	223	261	166	11	11	11	11	100%	100%	2,577,804	2,342,615	2,535,680	1,609,852	0.1	0.1	0.7	0.5	1,663	1,512	7,175	5,152
Energy Star Room A/C	162	442	393	707.0	16	16	16	16	9	9	9	9	100%	100%	23,508	63,648	57,148	103,081	0	0	0	0	0	0	0	0	0
2nd Refrigerator Pickup	162	40	20	35.4	413	413	835	835	8	8	8	8	100%	100%	534,157	132,160	131,268	236,140	0	0	0	0	0	0	0	0	0
Smartstrip Power Strip	65	46	98	17.7	75	75	79	79	5	5	5	5	100%	100%	24,250	17,250	38,810	6,982	0	0	0	0	0	0	0	0	0
Energy Star Refrigerator	162	863	590	681.8	107	107	107	114	12	12	12	12	100%	100%	207,584	1,108,092	756,951	932,642	0	0	0	0	0	0	0	0	0
Energy Star Room Air Purifiers	16	16	20	25.3	238	238	391	390	9	9	9	9	100%	100%	34,630	34,272	69,086	88,651	0	0	0	0	0	0	0	0	0
2nd Freezer Pickup	0	0	0	8	0	0	663	663	8	8	8	8	100%	100%	0	0	0	40,178	0	0	0	0	0	0	0	0	0
Room AC Pickup/Turn-in	0	0	0	0	0	0	16	16	5	5	5	5	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Star Freezers	0	0	0	0	0	0	114	114	11	11	12	12	100%	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy Star Central AC (385 Hours ON in NH)	0	0	4	0	0	0	110	110	0	0	14	14	100%	100%	0	0	5,886	0	0	0	0	0	0	0	0	0	0
Energy Star Mini Split Heat Pump	0	0	7	0	0	0	123	123	0	0	12	12	100%	100%	0	0	10,118	0	0	0	0	0	0	0	0	0	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Heating)	0	0	0	3	0	0	-2,158	142	0	0	12	12	100%	100%	0	0	0	4,309	0	0	0	0	0	0	0	0	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Cooling)	0	0	0	3	0	0	0	34	0	0	12	12	100%	100%	0	0	0	1,042	0	0	0	0	0	0	0	0	0
Mini Split HP SEER 19, EER 12.83 HSPF 10 (Heating)	0	0	0	8	0	0	-2,158	751	0	0	12	12	100%	100%	0	0	0	68,267	0	0	0	4.9	0	0	0	445	
Mini Split HP SEER 19, EER 12.83 HSPF 10 (Cooling)	0	0	0	8	0	0	0	105	0	0	12	12	100%	100%	0	0	0	9,539	0	0	0	0	0	0	0	0	
DHW: LP, Tankless Water Heaters (EF>= 0.82)	0	0	18	3	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	9.7	0	0	3,550	490	
DHW: LP, Indirect Water Heater (attached to LP Energy Star FHW boiler)	0	0	1	18	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	8.0	0	0	122	2,828	
DHW: Oil, Indirect Water Heater (attached to oil Energy Star FHW boiler)	0	0	1	18	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	8.0	0	0	122	2,828	
DHW: LP, Stand Alone Storage Water Heater (EF>=0.67)	0	0	1	5	0	0	0	0	0	0	13	13	100%	100%	0	0	0	0	0	0	0	3.7	0	0	37	243	
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES=EF>=2.0)	0	0	1	5	0	0	1,775	1,775	0	0	10	10	100%	100%	0	0	13,533	89,638	0	0	0	0.0	0	0	0	0	
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES=EF>=2.0)	0	0	1	3	0	0	2,672	2,672	0	0	10	10	100%	100%	0	0	20,373	67,469	0	0	0	0.0	0	0	0	0	
Boil: LP, Combo condensing boiler w/ On-Demand DWH 90%	0	0	1	0	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	17.8	0	0	271	0	
Boil: Oil, Combo condensing boiler w/ On-Demand DWH 90%	0	0	1	0	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	17.8	0	0	271	0	
Furn: LP, Furnace, FHA, AFUE >=95% w/ECM	0	0	9	10	0	0	168.00	168.00	0	0	18	18	100%	100%	0	0	27,668	30,543	0	0	0	4.5	0	0	741	818	
Furn: LP, Furnace, FHA, AFUE >=96% w/ECM	0	0	5	10	0	0	168	168	0	0	18	18	100%	100%	0	0	13,834	30,543	0	0	0	5.6	0	0	457	1,009	
Furn: LP, Furnace, FHA, AFUE >=97% w/ECM	0	0	2	0	0	0	168	168	0	0	18	18	100%	100%	0	0	4,611	0	0	0	0	5.9	0	0	162	0	
Furn: Oil, Furnace, FHA, AFUE >=85% w/ECM	0	0	5	0	0	0	168	168	0	0	18	18	100%	100%	0	0	13,834	0	0	0	0	18.0	0	0	1,482	0	
Furn: Oil, Furnace, FHA, AFUE >=90 w/ECM	0	0	2	0	0	0	168	168	0	0	18	18	100%	100%	0	0	4,611	0	0	0	0	20.7	0	0	568	0	
Boiler, LP, FHW, AFUE >= 90%	0	0	9	18	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	10.4	0	0	1,903	3,676	
Boiler, LP, FHW, AFUE >=96%	0	0	3	3	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	13.1	0	0	799	662	
Boiler, Oil, FHW, AFUE >=85%	0	0	58	18	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	5.4	0	0	6,232	1,901	
Boiler, Oil, FHW, AFUE >=90%	0	0	8	10	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	10.8	0	0	1,640	2,172	
TSTAT: LP, 7-Day Programmable Thermostats	0	0	1	10	0	0	14	14	0	0	15	15	100%	100%	0	0	165	2,181	0	0	0	3.2	0	0	88	485	
TSTAT: Oil, 7-Day Programmable Thermostats	0	0	1	10	0	0	14	14	0	0	15	15	100%	100%	0	0	165	2,181	0	0	0	3.2	0	0	88	485	
TSTAT: LP, WiFi Enabled 7-Day Programmable Thermostats	0	0	1	0	0	0	14	14	0	0	15	15	100%	100%	0	0	165	0	0	0	0	6.6	0	0	75	0	
TSTAT: Oil, WiFi Enabled 7-Day Programmable Thermostats	0	0	1	0	0	0	14	14	0	0	15	15	100%	100%	0	0	165	0	0	0	0	6.6	0	0	75	0	
BRC: LP, Boiler Reset Controls	0	0	7	3	0	0	0	0	0	0	15	15	100%	100%	0	0	0	0	0	0	0	4.5	0	0	463	170	
BRC: Oil, Boiler Reset Controls	0	0	9	3	0	0	0	0	0	0	15	15	100%	100%	0	0	0	0	0	0	0	4.5	0	0	618	170	

Planning Assumptions

1. Clothes Washer Annual kWh Savings updated based on mix of Electric Water Heating customer and per EnergyStar.gov Savings Calculator.
2. Room Air Purifier Annual kWh Savings updated per EnergyStar.gov Savings Calculator.
3. Central air conditioner and Mini Split Heat Pump Annual kWh savings added per EnergyStar.gov calculator, and conservatively assumed 50% of heat provided by heat pump, 50% provided by existing fossil system.
4. All Heating, Hot Water, Programmable Thermostats and Boiler Reset Control energy savings provided by U.S. Department of Energy during ARRA Program and adjusted with recent Gas Networks data if available.

Unitil Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				Installation or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings				
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	
	CFLs	437	247	245	583	51	65	23	23	8	8	7	7	91.2%	91.2%	161,787	127,650	36,026	85,603	0	0	0	0	0	0	0	0
Refrigerator	58	89	74	67	781	792	821	821	19	19	12	12	91.2%	91.2%	787,648	1,339,779	661,092	597,679	0	0	0	0	0	0	0	0	
Wx Electric, MF	0	9	7	0	0	1,428	1,474	1,474	20	20	20	20	91.2%	91.2%	0	262,301	197,895	0	0	0	0	0	0	0	0	0	
Wx Oil, MF	0	6	6	9	0	0	0	66	20	22	20	20	91.2%	91.2%	0	0	0	10,943	0	31	29	29	0	3701	3,381	4,759	
Wx Propane, MF	0	5	1	8	0	0	0	66	20	20	20	20	91.2%	91.2%	0	0	0	9,727	0	27	44	44	0	2505	1,283	6,421	
Wx Kerosene, MF	0	13	0	0	0	0	0	0	0	22	0	0	91.2%	91.2%	0	0	0	0	0	22	0	0	0	5725	0	0	
DHW MF Non-Elec	0	5	0	0	0	0	0	0	7	7	7	7	91.2%	91.2%	0	0	0	0	0	1	0	0	0	44	0	0	
DHW MF Elec	0	18	15	17	0	148	120	120	7	7	7	7	91.2%	91.2%	0	18,662	11,280	13,154	0	0	0	0	0	0	0	0	
Wx Electric	7	11	7	2	2,355	247	45	1,474	25	23	20	20	91.2%	91.2%	390,550	57,802	5,600	54,309	0	0	0	0	0	0	0	0	
Wx Gas	8	3	0	0	0	0	0	0	25	22	20	20	91.2%	91.2%	0	0	0	0	22	45	0	0	4,391	2,762	0	0	
Wx Oil	32	8	21	20	0	0	66	66	25	22	20	20	91.2%	91.2%	0	0	24,852	24,354	29	48	38	38	22,888	7,579	15,741	14,067	
Wx Propane	25	3	7	11	0	0	115	66	20	21	20	20	91.2%	91.2%	0	0	14,467	13,395	33	23	19	19	16,704	1,354	2,566	3,783	
Wx Kero	0	6	0	0	0	0	0	0	0	19	0	0	91.2%	91.2%	0	0	0	0	0	29	0	0	0	3,040	0	0	
Wx Wood	0	2	0	0	0	0	0	0	0	19	0	0	91.2%	91.2%	0	0	0	0	0	7	0	0	0	261	0	0	
DHW Elec	0	10	3	1	0	96	96	140	7	7	7	7	91.2%	91.2%	0	6,741	2,106	903	0	0	0	0	0	0	0	0	
DHW Non-Elec	0	8	5	10	0	0	0	0	7	7	7	7	91.2%	91.2%	0	0	0	0	0	1	1	1	0	55	25	45	
DWH Gas	7	0	0	0	0	0	0	0	7	7	7	7	91.2%	91.2%	0	0	0	0	11	7	0	0	540	0	0	0	
DHW Oil	26	0	0	10	0	0	0	0	7	7	7	7	91.2%	91.2%	0	0	0	0	2	1	0	0	423	0	0	0	
Thermostats Elec	0	0	0	0	0	0	0	0	10	15	15	15	91.2%	91.2%	0	0	0	0	0	21	0	0	0	0	0	0	0
Thermostats Non-Elec	0	12	0	0	0	0	0	0	10	15	15	15	91.2%	91.2%	0	0	0	0	0	13	0	0	0	2,110	0	0	
Interior Fixtures	0	4	0	0	0	422	0	0	20	20	20	20	91.2%	91.2%	0	33,720	0	0	0	0	0	0	0	0	0	0	0
Doors	0	2	0	0	0	4	0	0	0	20	20	20	91.2%	91.2%	0	160	0	0	0	3	0	0	0	101	0	0	
Oil Furnaces	0	0	0	7	0	0	0	168	0	0	0	18	91.2%	91.2%	0	0	0	20,472	0	0	0	18	0	0	0	2,045	
Oil Boilers	0	0	0	7	0	0	0	168	0	0	0	20	91.2%	91.2%	0	0	0	23,520	0	0	0	18	0	0	0	2,349	
AC Ancillary Savings	0	0	0	51	0	0	0	39	0	0	0	9	91.2%	91.2%	0	0	0	17,726	0	0	0	0	0	1	0	0	

Unitil C&I Municipal Program

Measure	Quantity	Annual Savings per Unit (kWh)	Measure Life	Realization Rate	Total Lifetime Savings (kWh)	Annual Savings per Unit (MMBTU)	Total Lifetime MMBTU Savings
	2014 Update	2014 Update	2014 Update	2014 Update	2014 Update	2014 Update	2014 Update
Lighting	15	30,435	13	100%	5,740,979	0	0
Central AC (Energy Star>=14.5 SEER), 3 ton	1	110	14	100%	1,868	0	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Heating)	1	142	12	100%	2,064	0	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Cooling)	1	34	12	100%	499	0	0
Mini Split HP SEER 19, EER 12.83 HSPF 10 (Heating)	2	751	12	100%	21,797	4.9	142
Mini Split HP SEER 19, EER 12.83 HSPF 10 (Cooling)	2	105	12	100%	3,046	0	0
Boilers (301 to 499 MBH) Oil	6	0	25	100%	0	42	6,398
Indirect Water Heater (attached to Oil Energy Star FHW boiler)	6	0	15	100%	0	21	1,879

Unitil Large Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Realization Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings					
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update		
NEW EQUIPMENT TRACK																												
Large C&I (Rolled-Up average)	14	0	0	0	43,798	0	0	0	15	15	15	15	100%	100%	9,197,573	0	0	0	0	0	0	0	0	0	0	0	0	
Lighting	0	8	6	2	0	7,654	58,349	55,995	15	15	15	15	100%	100%	0	4,082	4,846,325	1,629,455	0	0	0	0	0	0	0	0	0	
HVAC	0	2	6	1	0	7,177	27,693	27,693	15	23	15	15	100%	100%	0	624	2,683,415	402,933	0	0	0	0	0	0	0	0	0	
Non-Lighting (Rolled Up)	0	0	6	2	0	0	48,577	75,529	15	15	15	15	100%	100%	0	0	4,707,148	2,469,798	0	0	0	0	0	0	0	0	0	
ComprAir	0	2	0	0	0	85,289	0	0	15	15	15	15	100%	100%	0	11,372	0	0	0	0	0	0	0	0	0	0	0	
Motors	0	2	0	0	0	61,269	0	0	20	20	20	20	100%	100%	0	6,127	0	0	0	0	0	0	0	0	0	0	0	
VFDs	0	0	0	3	0	0	0	117,966	15	15	15	15	100%	100%	0	0	0	4,724,538	0	0	0	0	0	0	0	0	0	
RETROFIT TRACK																												
Non Lighting (Rolled Up Average)	10	0	4	3	56,335	0	82,048	68,952	13	13	13	13	89%	89%	6,778,689	0	3,920,115	2,130,058	0	0	0	0	0	0	0	0	0	0
Lighting	16	19	10	4	118,930	4,259	117,843	143,306	13	13	13	13	89%	89%	21,465,850	936,335	13,794,384	6,831,168	0	0	0	0	0	0	0	0	0	0
Freezer/Cooler LEDs	0	1	1	2	0	42,856	83,273	83,273	13	13	13	13	89%	89%	0	495,844	994,662	2,100,362	0	0	0	0	0	0	0	0	0	0
LEDs	0	0	2	2	0	0	77,951	86,473	13	13	13	13	89%	89%	0	0	2,234,629	2,181,074	0	0	0	0	0	0	0	0	0	0
Compressed Air	0	1	0	0	0	149,796	0	0	13	13	13	13	89%	89%	0	1,733,140	0	0	0	0	0	0	0	0	0	0	0	0
VFDs	0	4	3	5	0	35,645	95,100	48,606	13	13	13	13	89%	89%	0	1,649,633	3,180,608	2,868,094	0	0	0	0	0	0	0	0	0	0
CFL Bulbs	0	0	0	0	0	0	0	0	5	5	5	5	89%	89%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motors	0	1	0	0	0	26,280	0	0	20	20	20	20	89%	89%	0	467,784	0	0	0	0	0	0	0	0	0	0	0	0
Occupancy Sensors	0	2	0	0	0	93,266	0	0	9	9	9	9	89%	89%	0	1,494,121	0	0	0	0	0	0	0	0	0	0	0	0
Custom / CHP	0	6	0	1	0	13,158	0	346,458	13	13	13	15	89%	89%	0	913,456	0	4,625,214	0	0	0	-494	0	0	0	0	-6,595	
Fuel Neutral Heating, Hot Water and Controls																												
Oil: Air Source Heat Pump Split Systems (Energy Sta	0	0	0.8	0	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0	0	17	0	0	0	156	0	0	
Boilers (301 to 499 MBH), Condensing	0	0	1.5	0	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0	0	42	0	0	0	1,600	0	0	
Boilers (1000 to 1700 MBH)	0	0	2.3	0	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0	0	143	0	0	0	8,089	0	0	
Boilers (1701 to 2000 MBH)	0	0	3.8	0	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0	0	249	0	0	0	23,541	0	0	

Unitil Small Business Energy Solutions Program

Measure	Quantity				Annual Savings per Unit (kWh)				Measure Life				In-Service or Installation Rate		Total Lifetime Savings (kWh)				Annual Savings per Unit (MMBTU)				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
Lighting (New Construction)	0	0	5	0	0	0	13,788	0	13	13	13	13	112%	97%	0	0	812,990	0	0	0	0	0	0	0	0	0
Lighting (Retrofit)	46	61	33	0	18,520	193	20,343	0	13	13	13	13	112%	97%	12,512,118	171,205	8,581,033	0	0	0	0	0	0	0	0	0
Lighting Total				54				15,533				13	112%	97%	0	0	0	10,509,393				0				0
Lighting CFLs	0	1	0	0	0	990	0	0	0	5	0	0	112%	97%	0	5,544	0	0	0	0	0	0	0	0	0	0
Refrigerator/Freezer LEDs	0	0	1	1	0		46,807	14,281	13	13	13	13	112%	97%	0	0	674,724	133,124	0	0	0	0	0	0	0	0
Retro Non-Lighting	6	5	6	18	37,041	26,117	11,433	12,449	13	13	13	13	100%	120%	2,792,883	1,697,579	1,157,504	3,432,508	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	13	13	13	13	100%	97%	0	0	0	0	0	0	0	0	0	0	0	0
Occupancy Sensors	0	0	0	0	0	0	0	0	9	9	9	9	100%	97%	0	0	0	0	0	0	0	0	0	0	0	0
Unitary AC	0	0	0	0	0	0	0	0	15	15	15	15	100%	97%	0	0	0	0	0	0	0	0	0	0	0	0
Unitary HP	0	0	0	0	0	0	0	0	15	15	15	15	100%	97%	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Neutral Heating, Hot Water and Controls																										
Central Air Conditioner (Energy Star >= 14.5 SEER), 3 ton	0	0	2	1	0	0	110	110	0	0	14	14	100%	100%	0	0	3,773	1,140	0	0	0	0	0	0	0	0
LP: Air Source Heat Pump Split Systems (Energy Star >= 14.5 SEER)	0	0	3	0	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0	0	0	0	0	0	503	0
Oil: Air Source Heat Pump Split Systems (Energy Star >= 14.5 SEER)	0	0	7	0	0	0	0	0	0	0	12	12	100%	100%	0	0	0	0	0	0	0	0	0	0	1,396	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Heating)	0	0	3	1	0	0	0	142	0	0	12	12	100%	100%	0	0	0	1,263	0	0	0	0	0	0	0	0
Mini Split HP SEER 14.5, EER 12 HSPF 8.2 (Cooling)	0	0	7	1	0	0	0	34	0	0	12	12	100%	100%	0	0	0	305	0	0	0	0	0	0	0	0
On Demand Tankless Water Heater, EF >=0.82 EF w/Electronic Ignition	0	0	3	0	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	7.1	0	0	386	0
On Demand Tankless Water Heater >=.95 EF w/Electronic Ignition	0	0	16	0	0	0	0	0	0	0	20	20	100%	100%	0	0	0	0	0	0	0	9.6	0	0	3,124	0
Boilers (up to 300 MBH), Condensing	0	0	1	0	0	0	0	0	0	0	25	25	100%	100%	0	0	0	0	0	0	0	22.8	0	0	774	0

Unitil Gas Home Performance with ENERGY STAR®

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
Weatherization (per home)	0	0	0	0	0	0	0.0	0.0	20	20	0	0	100%	100%	0	0	0	0	0	0	0	0
Air Sealing	36	25	24	19	10.5	10.2	9.0	11.6	15	15	15	15	100%	100%	377	255	218	225	5,662	3,820	3,265	3377
Insulation	36	25	24	19	29.4	29.7	42.8	27.9	25	25	25	25	100%	100%	1,057	742	1,034	541	26,427	18,554	25,850	13524
Thermostats	0	5	5	10	0	4.7	7.7	5.75	15	15	15	15	100%	100%	0	23	37	56	0	349	561	837
DWH ISMs	0	2	5	4	0	8.1	7.0	7.01	7	7	7	7	100%	100%	0	16	34	27	0	114	237	190

Unitil Gas ENERGY STAR Appliances

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
Boiler Reset Controls	4	1	0	8	7.9	7.9	4.5	4.5	15	15	15	15	100%	100%	32	8	0	36	474	119	0	540
Boiler (forced hot water) 85% AFUE	0	44	0	0	7.2	7.2	0.0	0.0	20	20	0	0	100%	100%	0	317	0	0	0	6,336	0	0
Boiler (forced hot water) 90% AFUE	32	26	46	20	13.7	13.7	10.4	10.4	20	20	20	20	100%	100%	438	356	479	208	8,768	7,124	9,588	4,160
Boiler (forced hot water) >= 96% AFUE	8	39	12	72	21.3	21.3	13.1	13.1	20	20	20	20	100%	100%	170	831	151	943	3,408	16,614	3,019	18,864
Furnace (forced hot air) 92% AFUE	0	0	0	0	21.1	21.1	0.0	0.0	0	0	0	0	100%	100%	0	0	0	0	0	0	0	0
Furnace (forced hot air) 92% AFUE w/ ECM	0	8	0	0	11.8	11.8	0.0	0.0	18	18	0	0	100%	100%	0	94	0	0	0	1,699	0	0
Furnace (forced hot air) 94% AFUE w/ ECM	0	13	0	0	14.2	14.2	0.0	0.0	18	18	0	0	100%	100%	0	184	0	0	0	3,313	0	0
Furnace (forced hot air) 95% AFUE w/ECM	237	10	17	52	18.0	18.0	4.5	4.5	18	18	18	18	100%	100%	4,266	180	78	234	76,788	3,240	1,400	4,212
Furnace (forced hot air) 96% AFUE w/ ECM	40	24	0	0	20.7	20.7	0.0	0.0	18	18	18	18	100%	100%	828	497	0	0	14,904	8,942	0	0
Furnace (forced hot air) >= 97% AFUE	0	0	17	4	0.0	0.0	5.9	5.9	18	18	18	18	100%	100%	0	0	102	24	0	0	1,836	425
Integrated water heater/condensing boiler	0	41	29	24	21.1	21.1	17.8	17.8	20	20	20	20	100%	100%	0	865	513	427	0	17,302	10,256	8,544
Condensing Gas Water Heater (TE 95)	8	0	0	0	25.0	25.0	25.0	25.0	15	15	15	15	100%	100%	200	0	0	0	3,000	0	0	0
Heat Recovery Ventilator	0	1	0	0	7.7	7.7	7.7	7.7	20	20	20	20	100%	100%	0	8	0	0	0	154	0	0
High Efficiency Stand Alone Water Heater (0.62 EF)	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	100%	100%	0	0	0	0	0	0	0	0
High Efficiency Stand Alone Water Heater (0.67 EF)	0	0	0	12	0.0	0.0	3.7	3.7	13	13	13	13	100%	100%	0	0	0	44	0	0	0	566
Tankless Water Heaters (EF 0.82)	12	44	40	48	9.7	9.7	9.7	9.7	20	20	20	20	100%	100%	116	427	391	466	2,328	8,536	7,825	9,312
Tankless Water Heaters (EF 0.94)	4	13	9	60	10.3	10.3	10.1	10.3	20	20	20	20	100%	100%	41	134	87	618	824	2,678	1,746	12,360
Indirect Water Heater (attached to gas Energy Star FHW boiler)	12	46	40	48	8.0	8.0	8.0	8.0	20	20	20	20	100%	100%	96	368	323	384	1,920	7,360	6,453	7,680
Energy Star Programmable Thermostats	40	63	69	100	7.7	7.7	3.2	3.2	15	15	15	15	100%	100%	308	485	221	320	4,620	7,277	3,319	4,800
Wi-Fi Thermostats (controls gas heat only)	0	2	9	44	6.6	6.6	6.6	6.6	15	15	15	15	100%	100%	0	13	57	290	0	198	856	4,356

Unitil Gas ENERGY STAR® Homes Program

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Plan Update	2012 Plan	2012 Actual	2013 Plan	2014 Plan Update	2012 Plan	2012 Actual	2013 Plan	2014 Plan Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Plan Update	2012 Plan	2012 Actual	2013 Plan	2014 Plan Update
ES Homes (Heating)	31	36	16	13	22.5	26.2	34.4	45.0	25	25	25	25	100%	100%	708	942	536	587	17,697	23,560	13,398	14,677
ES Homes (Cooling)	0	26	0	7	0.0	0.0	0.0	0.0	25	25	25	25	100%	100%	0	0	0	0	0	0	0.0	0
ES Homes (Water Heating)	31	36	16	13	2.5	7.2	3.1	11.7	15	15	15	15	100%	100%	79	258	49	153	1,180	3,870	732	2,298
Dishwashers	31	7	16	8	1.9	1.9	0.4	1.5	10	10	10	10	100%	100%	60	13	6	13	598	133	62	127
Clotheswashers	0	0	5	4	0.0	0.0	0.2	10.1	14	14	11	11	100%	100%	0	0	1	42	0	0	10	465
Thermostats	55	7	0	0	7.7	0.0	0.0	0.0	10	10	10	10	100%	100%	424	0	0	0	4,239	0	0	0

Unitil Gas Home Energy Assistance Program

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
Weatherization (per home)	0	0	0	0	0.0	0.0	0.0	0.0	20	20	20	20	100%	100%	0	0	0	0	0	0	0	0
Air Sealing SF	30	14	9	30	19.2	7.2	23.2	13.1	15	15	15	15	100%	100%	578	101	209	392	8,668	1,512	3,141	5,883
Insulation SF	30	17	9	30	19.5	13.6	29.5	29.5	25	25	25	25	100%	100%	586	231	266	884	14,649	5,782	6,654	22,103
Air Sealing MF	0	7	21	13	0.0	11.2	6.2	6.2	15	15	15	15	100%	100%	0	79	130	79	0	1,179	1,943	1,186
Insulation MF	0	4	21	13	0.0	19.6	8.8	8.8	25	25	25	25	100%	100%	0	78	185	113	0	1,960	4,627	2,823
DHW ISMs (aerators & pipewrap) SF	0	0	9	30	0.0	0	3.0	3.0	4	4	4	7	100%	100%	0	0	27	88	0	0	106	618
DHW ISMs (aerators & pipewrap) MF	0	11	21	13	0.0	6.2	3.2	3.2	4	4	4	7	100%	100%	0	68	68	41	0	271	270	288
Heating System Replacement	0	0	1	4	0.0	0	10.4	30.0	20	20	20	20	100%	100%	0	0	14	135	0	0	281	2,695
Thermostats	0	4	21	13	0.0	5.5	7.5	8.0	15	10	15	15	100%	100%	0	22	158	103	0	222	2,366	1,540
Controls	0	0	0	0	0.0	0	0.0	0.0	15	15	15	15	100%	100%	0	0	0	0	0	0	0	0
Water Heater Stand Alone	0	0	0	0	0.0	0	0.0	0.0	13	13	13	13	100%	100%	0	0	0	0	0	0	0	0
Windows	0	2	0	0	0.0	10.7	0.0	0.0	25	25	25	25	100%	100%	0	21	0	0	0	536	0	0

Unitil Gas Small Business Energy Solutions

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
RETROFIT TRACK																						
Furnace 95+ AFUE (<150) w/ECM Motor	0	0	3	0	0.0	0.0	16.1	16.1	0	0	18	18	100%	100%	0	0	48	0	0	0	865	0
Condensing boiler <= 300 mbh	0	0	9	0	0.0	0.0	22.8	22.8	0	0	25	25	100%	100%	0	0	204	0	0	0	5,105	0
Infrared	0	0	18	0	0.0	0.0	48.3	48.3	0	0	17	17	100%	100%	0	0	865	0	0	0	14,708	0
Fryers	0	0	6	0	0.0	0.0	58.6	58.6	0	0	12	12	100%	100%	0	0	350	0	0	0	4,199	0
Boiler >=96% AFUE, <= 300 mbh	0	0	3	0	0.0	0.0	29.3	29.3	0	0	25	25	100%	100%	0	0	87	0	0	0	2,187	0
On demand, Tankless Water Heater >=.82,	0	0	3	0	0.0	0.0	7.1	7.1	0	0	20	20	100%	100%	0	0	21	0	0	0	424	0
High Efficiency Gas Convection Oven (>=44% efficiency)	0	0	6	0	0.0	0.0	30.6	30.6	0	0	12	12	100%	100%	0	0	183	0	0	0	2,192	0
Boiler Reset Controls	0	0	1	0	0.0	0.0	35.5	35.5	0	0	15	15	100%	100%	0	0	38	0	0	0	572	0
Custom Heating / Water Heating Equipment	0	0	0	1	0.0	0.0	0.0	306.9	0	0	0	15	100%	100%	0	0	0	283	0	0	0	4,244
Custom SCI Weatherization	0	0	3	4	0.0	0.0	141.1	141.1	0	0	25	25	100%	100%	0	0	421	520	0	0	10,530	13,006
NEW EQUIPMENT TRACK (Gas Networks)																						
On demand, Tankless Water Heater >=.94	0	0	0	7	0.0	0.0	0.0	9.4	0	0	0	20	100%	100%	0	0	0	66	0	0	0	1,316
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.	0	0	9	7	0.0	0.0	20.7	20.7	0	0	15	15	100%	100%	0	0	184	145	0	0	2,766	2,174
Condensing Boiler >=96% AFUE, <= 300 mbh	0	0	13	27	0.0	0.0	29.3	29.3	0	0	25	25	100%	100%	0	0	392	791	0	0	9,789	19,778
Condensing boiler 301-499 mbh	0	0	9	27	0.0	0.0	56.1	56.1	0	0	25	25	100%	100%	0	0	500	1515	0	0	12,495	37,868
Condensing boiler <= 300 MBH 90% AFUE	0	0	22	12	0.0	0.0	22.8	22.8	0	0	25	25	100%	100%	0	0	508	274	0	0	12,695	6,840
Boiler Reset Controls	0	0	3	5	0.0	0.0	35.5	35.5	0	0	15	15	100%	100%	0	0	95	178	0	0	1,423	2,663
High Efficiency Gas Convection Oven (>=44% efficiency)	0	0	0	7	0.0	0.0	0.0	30.6	0	0	0	12	100%	100%	0	0	0	214	0	0	0	2,570
Infrared Heaters	0	0	0	13	0.0	0.0	0.0	48.3	0	0	0	17	100%	100%	0	0	0	628	0	0	0	10,674
Thermostats	0	0	9	4	0.0	0.0	7.7	7.7	0	0	15	15	100%	100%	0	0	69	30	0	0	1,029	450
Fryer	0	0	0	7	0.0	0.0	0.0	58.6	0	0	0	12	100%	100%	0	0	0	410	0	0	0	4,922

Unitil Gas Large Business Energy Solutions

Measure	Quantity				Annual Savings per Unit (MMBTU)				Measure Life				Installation or Realization Rate		Total Annual MMBTU Savings				Total Lifetime MMBTU Savings			
	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012	2013	2012 Plan	2012 Actual	2013 Plan	2014 Update	2012 Plan	2012 Actual	2013 Plan	2014 Update
RETROFIT TRACK																						
C&I Retrofit Custom	10	2	2	5.0	622.2	8,061.6	4,469.8	4,132.0	18	15	18	18	100%	100%	6,222.2	16,123.2	8,981.0	20,551.4	111,999	241,847	161,659	369,925
Multi-Family Rolled Up	6	0	0	0	636.7	0.0	0.0	0.0	18	18	18	18	100%	100%	3,820.4	0.0	0.0	0.0	68,767	0	0	0
Multi-Family Windows	0	0	0	0	0.0	0.0	0.0	0.0	25	25	25	25	100%	100%	0.0	0.0	0.0	0.0	0	0	0	0
Multi-Family Reset Controls	0	10	0	0	0.0	35.5	0.0	0.0	20	20	20	20	100%	100%	0.0	355.0	0.0	0.0	0	7,100	0	0
Multi-Family Condensing Boiler	0	20	0	0	0.0	42.3	0.0	0.0	20	20	25	25	100%	100%	0.0	846.0	0.0	0.0	0	16,920	0	0
Multi-Family Water Heater - Indirect	0	3	0	0	0.0	30.4	0.0	0.0	15	15	15	15	100%	100%	0.0	91.2	0.0	0.0	0	1,368	0	0
NEW EQUIPMENT TRACK																						
Furnace 94+ AFUE w/ECM Motor	0	0	0	0	0.0	0.0	0.0	0.0	18	18	18	18	100%	100%	0	0	0	0	0	0	0	0
Furnace 95+ AFUE w/ECM Motor	4	0	0	0	18.0	0.0	0.0	4.3	18	18	18	18	100%	100%	72	0	0	0	1,296	0	0	0
Furnace 96+ AFUE w/ECM Motor	0	1	0	0	0	20.7	0.0	0.0	18	18	18	18	100%	100%	0	21	0	0	0	373	0	0
Furnace 97+ AFUE w/ECM Motor	0	0	1	0	0.0	0.0	18.5	5.9	18	18	18	18	100%	100%	0	0	21	0	0	0	375	0
Condensing boiler <= 300 mbh	0	10	6	0	0	22.1	22.8	22.8	25	25	25	25	100%	100%	0	221	128	0	0	5,525	3,207	0
Condensing boiler 301-499 mbh	9	14	12	0	42.3	42.3	56.1	56.1	25	25	25	25	100%	100%	381	592	663	0	9,518	14,805	16,570	0
Condensing boiler 500-999 mbh	9	7	9	0	77.1	77.1	103.0	103.0	25	25	25	25	100%	100%	694	540	927	0	17,348	13,493	23,179	0
Condensing boiler 1000-1700 mbh	0	4	3	4	0	142.6	189.2	189.2	25	25	25	25	100%	100%	0	570	532	757	0	14,260	13,305	18,920
Condensing boiler 1701+ mbh	0	0	0	3	0	249.0	331.2	331.2	25	25	25	25	100%	100%	0	0	0	994	0	0	0	24,840
Boiler >=96% AFUE, <= 300 mbh	0	0	3	0	0	22.1	29.3	29.3	0	25	25	25	100%	100%	0	0	82	0	0	0	2,061	0
Infrared	4	0	0	0	74.4	74.4	48.3	48.3	17	17	17	17	100%	100%	298	0	0	0	5,059	0	0	0
On demand, Tankless Water Heater >=.82,	0	0	0	1	7.1	7.1	7.1	7.1	20	20	20	20	100%	100%	0	0	0	7	0	0	0	142
On demand, Tankless Water Heater >=.94,	13	0	0	1	9.6	9.6	9.6	9.6	0	20	20	20	100%	100%	125	0	0	9	0	0	0	180
Indirect Water Heaters (Combined appliance efficiency rating >=85% (EF=.82)	9	5	8	0	30.4	30.4	20.7	20.7	15	15	15	15	100%	100%	274	152	175	0	4,104	2,280	2,620	0
Condensing Stand Alone >95% TE, >75000 btu	9	0	0	0	25.0	25.0	25.0	25.0	15	15	15	15	100%	100%	225	0	0	0	3,375	0	0	0
WATER HEATER TANK 0.67 EF	0	2	2	0	3.0	3.0	3.0	3.0	10	10	13	13	100%	100%	0	6	5	0	0	60	66	0
Integrated water heater/condensing boiler (0.9 EF, 0.9 AFUE)	9	6	5	0	24.6	24.6	24.6	24.6	20	25	20	20	100%	100%	221	148	111	0	4,428	3,690	2,214	0
Condensing Unit Heaters	18	0	0	0	40.9	40.9	40.9	40.9	18	18	18	18	100%	100%	736	0	0	0	13,252	0	0	0
Boiler Reset Controls	0	2	0	0	0.0	35.5	0.0	0.0	20	20	20	20	100%	100%	0	71	0	0	0	1,420	0	0
Fryers	9	2	7	0	58.6	58.6	58.6	58.6	12	12	12	12	100%	100%	527	117	429	0	6,329	1,406	5,143	0
High Efficiency Gas Steamer (Energy Star >=38% efficiency)	0	0	0	0	106.6	106.6	106.6	106.6	12	12	12	12	100%	100%	0	0	0	0	0	0	0	0
High Efficiency Gas Convection Oven (>=44% efficiency)	0	0	0	1	24.8	24.8	30.6	30.6	12	12	12	12	100%	100%	0	0	0	31	0	0	0	367
High Efficiency Gas Combination Oven (>=44% efficiency)	3	0	1	0	110.3	110.3	110.3	110.3	12	12	12	12	100%	100%	331	0	124	0	3,971	0	1,489	0
High Efficiency Gas Conveyor Oven (>=44% efficiency)	0	0	0	0	84.5	84.5	84.5	84.5	12	12	12	12	100%	100%	0	0	0	0	0	0	0	0
High Efficiency Gas Rack Oven (>=50% efficiency)	0	0	0	0	211.3	211.3	211.3	211.3	12	12	12	12	100%	100%	0	0	0	0	0	0	0	0
High Efficiency Gas Griddle	0	0	0	0	18.5	18.5	18.5	18.5	12	12	12	12	100%	100%	0	0	0	0	0	0	0	0
Steam Traps	0	38	0	0	25.7	25.7	0.0	0.0	3	3	3	3	100%	100%	0	977	0	0	0	2,930	0	0
Pre Rinse Spray Valve	0	0	0	0	33.6	33.6	12.6	12.6	0	0	5	5	100%	100%	0	0	0	0	0	0	0	0
Thermostats	53	0	0	0	7.7	0.0	0.0	7.7	0	0	0	0	100%	100%	408	0	0	0	0	0	0	0
Hydronic Boiler (301-499 mbh)	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	100%	100%	0	0	0	0	0	0	0	0
Custom Projects	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	100%	100%	0	0	0	0	0	0	0	0

ATTACHMENT M: OVERALL STATEWIDE BUDGETS AND GOALS FOR ELECTRIC AND GAS PROGRAMS

NH CORE ELECTRIC ENERGY EFFICIENCY PROGRAMS	EXPENSES (\$)	SAVINGS (Lifetime kWh)	NUMBER OF CUSTOMERS
RESIDENTIAL			
ENERGY STAR Homes	\$1,411,735	15,627,623	438
ENERGY STAR Lighting	\$1,380,172	36,770,539	126,947
ENERGY STAR Appliances	\$2,708,886	42,629,864	23,124
NH Home Performance w/ENERGY STAR	\$2,814,382	4,210,218	1,454
Home Energy Assistance	\$3,938,708	7,130,142	501
Other Residential Programs	<u>\$771,244</u>	<u>17,572,429</u>	<u>25,048</u>
TOTAL RESIDENTIAL	\$13,025,127	123,940,815	177,513
COMMERCIAL & INDUSTRIAL			
Large Business Energy Solutions	\$6,587,381	303,225,329	491
Small Business Energy Solutions	\$3,577,269	115,232,974	1,414
Municipal Program	\$1,988,325	59,745,222	459
Other C&I Programs	<u>\$1,082,028</u>	<u>28,086,342</u>	<u>20</u>
TOTAL COMMERCIAL & INDUSTRIAL	\$13,235,002	506,289,867	2,384
TOTAL	\$26,260,130	630,230,682	179,897

NH CORE GAS ENERGY EFFICIENCY PROGRAMS	EXPENSES (\$)	SAVINGS (Lifetime MMBTU)	NUMBER OF CUSTOMERS
RESIDENTIAL			
ENERGY STAR Homes	\$174,500	100,848	50
ENERGY STAR Lighting	\$0	0	0
ENERGY STAR Appliances	\$1,166,500	191,651	2,191
NH Home Performance w/ENERGY STAR	\$846,500	360,746	541
Home Energy Assistance	\$1,155,319	153,278	225
Other Residential Programs	<u>\$10,000</u>	<u>0</u>	<u>0</u>
TOTAL RESIDENTIAL	\$3,352,819	806,523	3,007
COMMERCIAL & INDUSTRIAL			
Large Business Energy Solutions	\$1,698,458	994,844	201
Small Business Energy Solutions	\$1,251,179	487,635	688
Other C&I Programs	<u>\$248,814</u>	<u>0</u>	<u>0</u>
TOTAL COMMERCIAL & INDUSTRIAL	\$3,198,451	1,482,479	889
TOTAL	\$6,551,270	2,289,002	3,896



Appendix I

**Residential Model Good/Better/Best Measures and Cost
Scenarios**

SF Electric Base House → Good		Cost/unit	unit	qty	Cost	
Add Insulation to R38 - Grade III - Attic	Add 6" Cellulose	\$ 0.87	sq ft	960	\$ 835.20	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
additional labor	labor	\$ 50.00	hour	5	\$ 250.00	Otter
Doors	36" Steel Insulated Doors	\$ 913.50	door	2	\$ 1,827.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	9	\$ 144.00	Otter
CFL Bulbs	15W Spiral	\$ 8.00	bulb	16	\$ 128.00	Otter
Audit					\$ 150.00	
					\$ 3,409.40	

SF Electric Base House → Better		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	960	\$ 835.20	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
additional labor	labor	\$ 50.00	hour	5	\$ 250.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	16	\$ 256.00	Otter
CFL Bulbs	15W Spiral	\$ 8.00	bulb	11	\$ 88.00	Otter
Windows	Double Pane Low E	\$ 400.00	window	14	\$ 5,600.00	
Doors	Slider	\$ 1,500.00	door	1	\$ 1,500.00	Otter + labor
Doors	36" Steel Insulated Doors	\$ 913.50	door	2	\$ 1,827.00	Otter
DHW	Marathon unit	\$ 600.00	unit	1	\$ 600.00	GDS/ECM
Refrigerator	ENERGY STAR Unit	\$ 1,865.00	unit	1	\$ 1,865.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
`	Per CFM	\$ 0.80	cfm	500	\$ 400.00	Otter
Audit					\$ 150.00	
					\$ 14,011.40	

SF Electric Base House → Best		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	960	\$ 835.20	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
additional labor	labor	\$ 50.00	hour	6	\$ 300.00	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	12	\$ 960.00	Otter
CFL Fixtures	Exterior Fixtures	\$ 80.00	fixture	3	\$ 240.00	Otter
CFL bulbs	Capsule	\$ 16.00	bulb	8	\$ 128.00	Otter
Premium Windows	Double Pane Low E - 0.32	\$ 500.00	window	14	\$ 7,000.00	
Doors	Slider - 0.32	\$ 2,100.00	door	1	\$ 2,100.00	Otter + Premiun
Doors	36" Steel Insulated Doors	\$ 913.50	door	2	\$ 1,827.00	Otter
Air sealing	Per CFM	\$ 0.80	cfm	1000	\$ 800.00	Otter
Foam Kit	kit	\$ 175.00	kit	1	\$ 175.00	foam kit
Foam/labor to exceed air sealing	Labor attic/mech	\$ 50.00	hour	8	\$ 400.00	Otter
Ductless Heatpump	2 unit	\$ 7,000.00	system	1	\$ 7,000.00	GDS ECM
Programmable T-stat	Unit + Labor	\$ 109.02	unit	2	\$ 218.04	Otter
Remove Baseboard	labor	\$ 50.00	hour	8	\$ 400.00	Otter
drywall finish/repair	baseboard repair 6' lengths	\$ 127.33	item	21	\$ 2,673.93	Otter
DHW	Marathon unit	\$ 600.00	unit	1	\$ 600.00	GDS ECM
Refrigerator	ENERGY STAR Unit	\$ 1,865.00	unit	1	\$ 1,865.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
RIM	2" spray foam unc bsmt	\$ 3.50	LF	128	\$ 448.00	Retrofit - Spray Foam estimate
Insulate FW	2" Rigid Foam installed	\$ 2.38	sq ft	1024	\$ 2,437.12	
Add Insulation to Walls	Blown in Fiberglass to Cavity	\$ 1.59	sq ft	2048	\$ 3,256.32	
Ventilation	Heat Recovery Ventilator	\$ 2,400.00	unit	1	\$ 2,400.00	
Audit					\$ 150.00	
					\$	36,853.81

MF Electric Base House → Good		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	666.5	\$ 579.86	Otter
Attic Hatch Insulation	R13.6 unit	\$ 200.09	unit	1	\$ 200.09	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
additional labor	labor	\$ 50.00	hour	3	\$ 150.00	Otter
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter
Air sealing	Per CFM	\$ 0.80	cfm	375	\$ 300.00	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Audit					\$ 150.00	
					\$	2,762.60

MF Electric Base House → Better		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	666.5	\$ 579.86	Otter
Attic Hatch Insulation	R13.6 unit	\$ 200.09	unit	1	\$ 200.09	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
additional labor	labor	\$ 50.00	hour	4	\$ 200.00	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Windows	Double Pane Low E	\$ 400.00	window	7	\$ 2,800.00	
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter
Air sealing	Per CFM	\$ 0.80	cfm	625	\$ 500.00	Otter
Refrigerator	ENERGY STAR Unit	\$ 765.00	unit	1	\$ 765.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
Foam Kit	kit	\$ 175.00	kit	1	\$ 175.00	Foam Kit
Foam/labor to exceed air sealing	Labor attic/mech	\$ 50.00	hour	4	\$ 200.00	Otter
Seal Marriage Wall - Attic	2" spray foam	\$ 3.50	LF	34	\$ 119.00	Retrofit - Spray Foam estimate
DHW	Instant	\$ 1,200.00	unit	1	\$ 1,200.00	GDS
Audit					\$ 150.00	
			\$		8,836.60	

MF Electric Base House → Best		Cost/unit	unit	qty	Cost	
Remove FG from Attic	Labor	\$ 50.00	hr	8	\$ 400.00	Otter
Spray Foam in Attic	6" Spray Foam	\$ 7.50	sq ft	666.5	\$ 4,998.75	Retrofit - Spray Foam estimate
Attic Hatch Insulation	R13.6 unit	\$ 200.09	unit	1	\$ 200.09	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
additional labor	labor	\$ 50.00	hour	4	\$ 200.00	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Fixtures	Exterior Fixtures	\$ 80.00	fixture	2	\$ 160.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Premium Windows	Double Pane Low E - 0.32	\$ 500.00	window	7	\$ 3,500.00	
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter
Air sealing	Per CFM	\$ 0.80	cfm	750	\$ 600.00	Otter
Refrigerator	ENERGY STAR Unit	\$ 765.00	unit	1	\$ 765.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
Foam Kit	kit	\$ 175.00	kit	1	\$ 175.00	foam kit
Foam/labor to exceed air sealing	Labor attic/mech	\$ 50.00	hour	6	\$ 300.00	Otter
Ductless Heatpump	1 unit	\$ 4,000.00	system	1	\$ 4,000.00	GDS/Talbot ECM
Programmable T-stat	Unit + Labor	\$ 109.02	unit	1	\$ 109.02	GDS/Talbot ECM
Remove Baseboard	labor	\$ 50.00	hour	8	\$ 400.00	Otter
drywall finish/repair	baseboard repair 6' lengths	\$ 127.33	item	5	\$ 636.65	Otter
DHW	Instant	\$ 1,200.00	unit	1	\$ 1,200.00	GDS
Seal Marriage Wall - Attic	2" spray foam	\$ 3.50	LF	34	\$ 119.00	Retrofit - Spray Foam estimate
Add Insulation to Walls	Blown in Fiberglass to Cavity	\$ 1.59	sq ft	702	\$ 1,116.18	
Slab - Perimeter Insulation	2" Rigid - 2' Deep	\$ 2.38	sq ft	104	\$ 247.52	Otter
Site Work - for FW perimeter	Labor	\$ 50.00	hour	8	\$ 400.00	Otter
Ventilation	Heat Recovery Ventilator	\$ 600.00	unit	1	\$ 600.00	Ceiling Mounted ERV
Audit					\$ 150.00	
					\$ 22,224.86	

SF NG/LP/Oil Base House → Good		Cost/unit	unit	qty	Cost	
Add Insulation to R30 Attic	Add 6" Cellulose	\$ 0.87	sq ft	960	\$ 835.20	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	1	\$ 33.17	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	180	\$ 628.20	Otter
Air sealing	Per CFM	\$ 0.80	cfm	1000	\$ 800.00	Otter
Attic, Bsmt -labor	labor	\$ 39.32	hour	13	\$ 511.16	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	9	\$ 144.00	Otter
CFL Bulbs	15W Spiral	\$ 8.00	bulb	16	\$ 128.00	Otter
Audit					\$ 150.00	
					\$ 3,304.93	

SF NG/LP/Oil Base House → Better		Cost/unit	unit	qty	Cost	
Cellulose 2x6 Basement Ceiling	5.5" Cellulose	\$ 1.07	sq ft	960	\$ 1,027.20	Otter
Add Insulation to R30 Attic	Add 6" Cellulose	\$ 0.87	sq ft	960	\$ 835.20	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	1	\$ 33.17	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	180	\$ 628.20	Otter
Attic, Bsmt -labor	labor	\$ 39.32	hour	16	\$ 629.12	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	9	\$ 144.00	Otter
CFL Bulbs	15W Spiral	\$ 8.00	bulb	16	\$ 128.00	Otter
Windows	Double Pane Low E	\$ 400.00	window	14	\$ 5,600.00	
Doors	Slider	\$ 1,500.00	door	1	\$ 1,500.00	Otter + labor
Doors	36" Steel Insulated Doors	\$ 913.50	door	2	\$ 1,827.00	Otter
Add Insulation to Walls	Blown in Fiberglass to Cavity	\$ 1.59	sq ft	2048	\$ 3,256.32	
Air sealing	Per CFM	\$ 0.80	cfm	1500	\$ 1,200.00	Otter
Audit					\$ 150.00	
					\$ 17,033.41	

SF NG/LP/Oil Base House → Best		Cost/unit	unit	qty	Cost	
Cellulose 2x6 Basement Ceiling	5.5" Cellulose	\$ 1.07	sq ft	960	\$ 1,027.20	Otter
Remove FG from Attic	Labor	\$ 50.00	hr	8	\$ 400.00	Otter
Spray Foam in Attic	6" Spray Foam	\$ 7.50	sq ft	960	\$ 7,200.00	Retrofit - Spray Foam estimate
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	32	\$ 75.20	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	1	\$ 33.17	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	180	\$ 628.20	Otter
Duct Sealing Labor	labor	\$ 39.32	hour	16	\$ 629.12	Otter
Foam Kit	kit	\$ 175.00	kit	1	\$ 175.00	foam kit
Foam/labor to exceed air sealing	Labor mech/bsmt	\$ 50.00	hour	8	\$ 400.00	Otter
Air sealing	Per CFM	\$ 0.80	cfm	1800	\$ 1,440.00	Otter
additional labor	labor	\$ 50.00	hour	8	\$ 400.00	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	12	\$ 960.00	Otter
CFL Fixtures	Exterior Fixtures	\$ 80.00	fixture	3	\$ 240.00	Otter
CFL bulbs	Capsule	\$ 16.00	bulb	8	\$ 128.00	Otter
Premium Windows	Double Pane Low E - 0.32	\$ 500.00	window	14	\$ 7,000.00	
Doors	Slider - 0.32	\$ 2,100.00	door	1	\$ 2,100.00	Otter + Premiun
Doors	36" Steel Insulated Doors	\$ 913.50	door	2	\$ 1,827.00	Otter
Add Insulation to Walls	Blown in Fiberglass to Cavity	\$ 1.59	sq ft	2048	\$ 3,256.32	
HE Furnace/Central Air	94 AFUE / 15 SEER	\$ 6,000.00	system	1	\$ 6,000.00	
Programmable T-stat	Unit + Labor	\$ 109.02	unit	2	\$ 218.04	Otter
DHW	Instant	\$ 1,200.00	unit	1	\$ 1,200.00	GDS
Refrigerator	ENERGY STAR Unit	\$ 1,865.00	unit	1	\$ 1,865.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
RIM	2" spray foam unc bsmt	\$ 3.50	LF	128	\$ 448.00	Retrofit - Spray Foam estimate
Insulate FW	2" Rigid installed	\$ 2.38	sq ft	1024	\$ 2,437.12	
Ventilation	Heat Recovery Ventilator	\$ 2,400.00	unit	1	\$ 2,400.00	
Audit					\$ 150.00	
				\$	43,202.37	

MF NG/LP/Oil Base House → Good		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	666.5	\$ 579.86	Otter
Attic Hatch Insulation	R13.6 unit	\$ 200.09	unit	1	\$ 200.09	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	0.25	\$ 8.29	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	84	\$ 293.16	Otter
Air sealing	Per CFM	\$ 0.80	cfm	250	\$ 200.00	Otter
additional labor	labor	\$ 50.00	hour	5	\$ 250.00	Otter
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Audit					\$ 150.00	
					\$ 3,064.05	

MF NG/LP/Oil Base House → Better		Cost/unit	unit	qty	Cost	
Add Insulation to Attic	Add 6" Cellulose	\$ 0.87	sq ft	666.5	\$ 579.86	Otter
Attic Hatch Insulation	R13.6 unit	\$ 200.09	unit	1	\$ 200.09	Otter
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	0.25	\$ 8.29	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	84	\$ 293.16	Otter
Air sealing	Per CFM	\$ 0.80	cfm	750	\$ 600.00	Otter
additional labor	labor	\$ 50.00	hour	10	\$ 500.00	Otter
Windows	Double Pane Low E	\$ 400.00	window	7	\$ 2,800.00	
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Programmable T-stat	Unit + Labor	\$ 109.02	unit	1	\$ 109.02	GDS/ECM
Seal Marriage Wall - Attic	2" spray foam	\$ 3.50	LF	34	\$ 119.00	Retrofit - Spray Foam estimate
DHW	Instant	\$ 1,200.00	unit	1	\$ 1,200.00	GDS
Audit					\$ 150.00	
					\$ 7,942.07	

MF NG/LP/Oil Base House → Best		Cost/unit	unit	qty	Cost	
Remove FG from Attic	Labor	\$ 50.00	hr	8	\$ 400.00	Otter
Spray Foam in Attic	6" Spray Foam	\$ 7.50	sq ft	666.5	\$ 4,998.75	Retrofit - Spray Foam estimate
Seal Marriage Wall - Attic	2" spray foam	\$ 3.50	LF	34	\$ 119.00	Retrofit - Spray Foam estimate
Add wind baffles to attic	Soffit/eave air chutes	\$ 2.35	4' length	9	\$ 21.15	Otter
Air sealing	Per CFM	\$ 0.80	cfm	1375	\$ 1,100.00	Otter
Duct Sealing	Mastic	\$ 33.17	gallon	0.25	\$ 8.29	Otter
Duct Insulation	R11 Vinyl	\$ 3.49	LF	84	\$ 293.16	Otter
Sealing extra Labor	labor	\$ 39.32	hour	16	\$ 629.12	Otter
CFL Fixtures	Interior Fixtures	\$ 80.00	fixture	5	\$ 400.00	Otter
CFL Fixtures	Exterior Fixtures	\$ 80.00	fixture	2	\$ 160.00	Otter
CFL Bulbs	Capsule	\$ 16.00	bulb	3	\$ 48.00	Otter
Premium Windows	Double Pane Low E - 0.32	\$ 500.00	window	7	\$ 3,500.00	
Doors	36" Steel Insulated Doors	\$ 913.50	door	1	\$ 913.50	Otter + Premiun
Refrigerator	ENERGY STAR Unit	\$ 765.00	unit	1	\$ 765.00	
Dishwasher	ENERGY STAR Unit	\$ 565.00	unit	1	\$ 565.00	
Foam Kit	kit	\$ 175.00	kit	1	\$ 175.00	foam kit
Foam/labor to exceed air sealing	Labor attic/mech	\$ 50.00	hour	6	\$ 300.00	Otter
HE Furnace/Central Air	94 AFUE / 15 SEER	\$ 6,000.00	system	1	\$ 6,000.00	[Oil 85 AFUE/ 15 SEER]
Programmable T-stat	Unit + Labor	\$ 109.02	unit	1	\$ 109.02	GDS/ECM
DHW	Instant	\$ 1,200.00	unit	1	\$ 1,200.00	GDS
Add Insulation to Walls	Blown in Fiberglass to Cavity	\$ 1.59	sq ft	702	\$ 1,116.18	
Slab - Perimeter Insulation	2" Rigid - 2' Deep	\$ 2.38	sq ft	104	\$ 247.52	Otter
Site Work - for FW perimeter	Labor	\$ 50.00	hour	8	\$ 400.00	Otter
Ventilation	Heat Recovery Ventilator	\$ 600.00	unit	1	\$ 600.00	Ceiling Mounted ERV
Audit					\$ 150.00	
					\$ 24,218.69	