STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DG 20-105

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty
2021 Depreciation Study

DIRECT TESTIMONY

OF

CATHERINE A. McNAMARA

AND

ERICA L. MENARD

April 29, 2022

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I. INTRODUCTION

Q. Please state your full name, business address, and position.

A. (CM) My name is Catherine A. McNamara. My business address is 15 Buttrick Road, Londonderry, New Hampshire. My title is Rates Analyst II, Rates and Regulatory Affairs.

(EM) My name is Erica L. Menard. My business address is 15 Buttrick Road, Londonderry, New Hampshire. My title is Director, Rates and Regulatory Affairs.

Q. By whom are you employed?

A. We are employed by Liberty Utilities Service Corp. ("LUSC"), which provides services to Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty ("Liberty" or "the Company") and Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty.

Q. On whose behalf are you testifying?

A. We are testifying on behalf of the Company.

Q. Ms. McNamara, please describe your educational background, and your business and professional experience.

A. I graduated from the University of Massachusetts, Boston, in 1993 with a Bachelor of Science in Management with a concentration in Accounting. In November 2017, I joined LUSC as an Analyst in Rates and Regulatory Affairs. Prior to my employment at LUSC, I was employed by Eversource as a Senior Analyst in the Investment Planning group from 2015 to 2017. From 2008 to 2015, I was a Supervisor in the Plant Accounting

department. Prior to my position in Plant Accounting, I was a Financial Analyst/General Ledger System Administrator within the Accounting group from 2000 to 2008.

Q. Ms. Menard, please describe your educational background, and your business and professional experience.

A. I joined LUSC in March 2022. Prior to joining LUSC, I held various positions at Eversource Energy from 2003 to 2022. Most recently, I was the Manager of Revenue Requirements for New Hampshire responsible for the rate and regulatory filings presented to this Commission. I also held various positions at Eversource responsible for financial planning and analysis of operational and capital expenditures, business planning functions, sales forecasting, and performance management. Prior to my employment at Eversource, I was employed by ICF Consulting in Fairfax, Virginia, from 1997 to 2003 with responsibilities for implementing load profiling and load settlement software for various utilities worldwide. I hold a Bachelor of Arts in Economics and Business Administration from the University of Maine and a Master of Business Administration from the University of New Hampshire.

Q. Ms. McNamara, and Ms. Menard, have you previously testified in regulatory proceedings before the New Hampshire Public Utilities Commission (the "Commission")?

A. Yes, we have.

Q. What is the purpose of your updated testimony?

A. The purpose of our testimony is to present the full depreciation study performed by Management Applications Consulting, Inc. ("MAC") and to adjust the step 2 calculation filed on April 8, 2022, to reflect the findings of the study.

II. DEPRECIATION STUDY

Q. Please explain why the Company is submitting a depreciation study.

A. The Company is required to conduct a full depreciation study as defined in Section 3.2 of the Settlement Agreement in Docket No. DG 20-105.

> The Company shall also obtain a new full depreciation study based on 2021 end of year plant balances, which study shall review and incorporate the results of the cost of removal study. The depreciation study shall be used to assess and update the depreciation reserve imbalance by making the necessary adjustments to the annual amortization amount of $1,657,796. The determination of the depreciation lives and rates applicable to various plant accounts shall adjust the annual depreciation expense amounts. Liberty shall file the updated depreciation study along with a report on its findings by May 1, 2022, for review by Staff and the OCA as part of the second step adjustment review. Any adjustments based on the updated depreciation study shall be reflected in the second step increase to take effect on August 1, 2022.

The Company contracted with MAC, and a full depreciation study was performed and is provided in Attachment CAM/ELM-1.

Q. Did the Company perform a Cost of Removal study during calendar year 2021 based on a sampling of different sized mains and services capital projects to determine the cost of removal percentages that should be applied to mains and services?

A. Yes, a Cost of Removal study was conducted using a selection of 2021 mains and services projects. The Company calculated a cost of removal of 4.7% based on that analysis, as compared to the current rate of 10%.

Q. Were results of the cost of removal study provided to MAC?

A. Yes, the results of the Company's cost of removal study were provided to MAC, the consultants contracted to perform the depreciation study for the Company.

Q. Please provide a summary of MAC's findings in the depreciation study.

A. As shown in Attachment CAM/ELM-1, Schedule B, MAC recommends changes to the depreciation rates for certain FERC accounts as shown in Table 1 below.

TABLE 1. COMPARISON OF PROPOSED VS CURRENT WHOLE LIFE DEPRECIATION ACCRUAL RATES @12/31/2021

FERC ACCOUNT NUMBER	DESCRIPTION	CURRENT ASL	PROPOSED ASL	CURRENT ANNUAL ACCRUAL ACCRUAL RATES %	PROPOSED WHOLE LIFE DEPREC. ACCRUAL RATES	DIFFERENCE BETWEEN PROPOSED AND CURRENT WHOLE LIFE ANNUAL ACCRUAL
		(1)	(2)	(3)	(4)	(5)
	PRODUCTION PLANT					
319.00	GAS MIXING EQUIPMENT	35.0	20.0	2.86	5.00	14,805
	DISTRIBUTION PLANT					
380.00	SERVICES	45.0	50.0	3.55	3.20	-696,385
381.00	METERS	32.0	30.0	3.13	3.33	39,985
381.10	METERS-INSTRUMENT	32.0	30.0	3.13	3.33	509
382.00	METER INSTALLATIONS	32.0	30.0	3.13	3.33	54,141
	GENERAL PLANT					
390.00	STRUCTURES AND IMPROVEMENTS	35.0	40.0	2.86	2.50	-93,113
391.00	OFFICE FURNITURE AND EQUIP.	18.0	15.0	5.28	6.34	19,842
	TOTAL DEPREC. GAS PLANT	46.3	47.6	2.68	2.58	-660,216

As a result of the depreciation study, the overall Average Service Life ("ASL") for all depreciable Company plant changes from an existing 46.3 years to 47.6 years as described on page 9 of the depreciation study, resulting in a reduction to annual depreciation accrual expense of $660,216.

Q. Based on the findings in the study, what are the recommendations from MAC?

A. A summary of MAC's recommendations on page 12 of Attachment CAM/ELM-1 are described below:

1. Continue to amortize approved levels until completion (4/30/2024) to mitigate the remaining reserve variance levels.

2. Continue to evaluate actual removal costs for at least two additional years to establish a reasonable three-year average for all applicable accounts as a one year cost of removal ("COR") result does not in itself determine a definitive level to establish a firm COR percentage going forward. However, it does present information as to the necessity to reduce the current 10% level.

3. Implement a stepwise reduction to the COR rate going forward from the current 10% level to a 7.5% midpoint or approximately 50% of the current level (10%) to the recent one-year calculation of 4.74%. Continue to utilize the 7.5% step until the next review and analysis of COR which would present a three-year average level.

4. Perform a future depreciation study with the following metrics integrated into the analysis:

    a. The new three-year COR threshold

    b. Depreciation study in approximately five years

    c. Update the cost of removal levels that are currently approved to more complete recovery levels for mains and services

    d. Update depreciation parameters, where appropriate, for all accounts

5. The Company should request approval of the accrual rates shown in column (8) of the accrual rate Schedule A included in Attachment CAM/ELM-1.

6. The Company should stop depreciating after January 2022 for plant account (391.20 Office Furniture & Equipment – Laptop Computers) which is almost fully depreciated, unless new dollars are added to the account.

7. Every effort should be undertaken to book retirements on a timely basis as this impacts the resulting depreciation parameters.

Q. Did MAC review and incorporate the results of the cost of removal study?

A. Yes, MAC reviewed the Company's cost of removal study. The results have been incorporated into the recommendations on page 12 of Attachment CAM/ELM-1.

Q. Will the Company be revising the cost of removal rate ("COR") on a forward going basis?

A. Yes, based on recommendations and consultation with MAC, the Company is planning to change the COR rate from 10% to 7.5%. This change will occur at the same time the depreciation rates are approved and implemented.

Q. Based on the results of the depreciation study, are any adjustments necessary to the $1,657,796 annual amortization of the depreciation reserve deficiency that was determined in Docket No. DG 17-048?

A. No, based on recommendations and consultation with MAC, the Company does not recommend any changes to the amount currently being amortized. The current amortization began on May 1, 2018, and will be fully amortized by April 30, 2024. The recommendation is to allow the amortization to continue through the end of the amortization period. This is to further assist with reducing the amount of the depreciation reserve deficiency in combination with actions such as reducing the COR percentage.

Q. Have the proposed depreciation rates been factored into the Company's second step?

A. Yes, the Company revised the initial revenue requirement calculation to factor in the proposed depreciation rates. Please see Attachment CAM/ELM-2 for an illustrative revenue requirement from the second step adjustment originally filed on April 8, 2022, factoring in the proposed changes to the depreciation rates. The proposed changes to depreciation rates impact the step adjustment calculation in two ways. First, the proposed changes to depreciation rates have been applied to the plant additions in the step adjustment, where applicable. Second, the $660,216 annual reduction to depreciation expense applicable to the existing plant has been included in the calculation. Through the Settlement Agreement in this docket, the Company was allowed to recover up to $3,200,000 for plant in service during 2021. The resulting change in the overall revenue requirement with the inclusion of the depreciation expense reduction is a decrease of $660,216 as compared to the original step adjustment filing for a total revenue requirement of $2,539,784. This is a reduction to the revenue requirement of approximately 21 percent from the original step adjustment request. Revised tariff rates associated with the change in depreciation rates and expenses will be provided at a later time after the depreciation changes are approved.

Q. Does the Company need Commission approval of the proposed depreciation rates to change the current depreciation rates?

A. Yes, the Company needs the Commission to approve the revised depreciation rates before they can be applied. The Settlement Agreement requires a review of the depreciation

study by the DOE and the OCA. The Company intends to hold a technical session with the DOE and the OCA to review the study and answer any questions. If the depreciation rates are approved, the Company's step adjustment request would be revised as presented in Attachment CAM/ELM-2.

Q. Does this conclude your testimony?

A. Yes, it does.

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORP.

DEPRECIATION RATE STUDY

Depreciation Accrual Rates
Based on Gas Plant in Service
At December 31, 2021

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

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LETTER OF TRANSMITTAL

MANAGEMENT APPLICATIONS CONSULTING, INC.

1103 Rocky Drive • Suite 201 • Reading, PA 19609-1157 • 610/670-9199 • fax 610/670-9190 •www.manapp.com

April 27, 2022

Ms. Erica Menard
Director, Rates and Regulatory Affairs
Liberty Energy Utilities (New Hampshire) Corp.
15 Buttrick Road
Londonderry, NH 03053

Dear Ms. Menard:

In accordance with the authorization of your organization, Management Applications Consulting, Inc. (MAC) has completed a depreciation rate study of the depreciable gas utility property of Liberty Utilities (EnergyNorth Natural Gas) Corp.'s plant in service as of December 31, 2021. The results of this study are presented in the attached report.

The study was accomplished by our organization, with the assistance of Ms. Catherine McNamara and others within your organization. Our depreciation study develops accrual rates defined as straight line, broad group, and whole life.

We appreciate the opportunity to have been of service.

Respectfully,

MANAGEMENT APPLICATIONS CONSULTING, INC.

Paul M. Normand

Enclosures

PMN/rjp

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021**

I. FOREWORD

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

I. FOREWORD

This report presents the results of a detailed study of the relevant characteristics of the depreciable gas plant in service of Liberty Utilities (EnergyNorth Natural Gas) Corp's property. The recommendations regarding annual depreciation accrual calculations have been developed on plant in service at December 31, 2021 and are applicable until subsequent studies indicate the need for revision. In our opinion, based on our analyses, experience and judgment, the straight line, broad group, whole life depreciation accrual rates developed herein will provide for the proper and timely recovery of capital invested in the depreciable gas properties.

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021**

II. SUMMARY

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

II. SUMMARY

A. FINDINGS

Management Applications Consulting, Inc. ("MAC") has completed a study of the service life characteristics of certain capital investments of Liberty Utilities (EnergyNorth Natural Gas) Corp.'s ("EnergyNorth" or "the Company") depreciable gas property as of December 31, 2021. The study develops average service lives, mortality characteristics, net salvage estimates, whole life accrual rates, and the reserve variance for each depreciable investment group (subaccounts and accounts).

Net salvage is gross salvage less cost to retire/remove. Based upon these elements, the study develops straight line depreciation accrual rates using the whole life technique.

1. Service Life

This study results in differences in Average Service Life (ASL) estimates from those on which the existing accrual rates are based, as shown below:

	Proposed	Existing[1]
Total Depreciable Plant average service life (years)	47.6	46.3

Both of these composite lives are based on the use of the proposed and existing average life estimates using plant in service at December 31, 2021 (reference Schedule B, Page 2).

2. Curve Types

The most commonly recognized curve type or frequency distribution is the "bell curve." Our depreciation study used a group of well recognized distributions known as the Iowa curves which were developed in the 1920s and 1930s at Iowa State University and are the most widely used and accepted curves in the industry for establishing survivor curves and average service life.

[1] Based on Docket No. DG 17-048 Depreciation Study.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

3. Net Salvage

The overall objective of depreciation is to recover the original cost investment less any salvage values plus the removal cost according to the various Uniform Systems of Accounts. The accrual rates proposed in this study reflect net salvage values based upon the most recent actual historical experience of the Company, modified by our judgment and experience.

		Whole Life	
Plant Function	Balance at 12/31/2021 ($000)	Accruals w/o Net Salvage ($000)	Accruals with Net Salvage ($000)
Production	5,432	170	170
Storage	105	3	3
LNG Gas	4,848	139	139
Transmission	11,849	200	229
Distribution	640,169	12,756	16,061
General	35,777	1,421	1,414
Total Depreciable Gas Plant	698,179	14,688	18,016

In order to provide additional information with respect to the cost of removal component included in the proposed Accrual Rates, Schedule A, column (8) use the calculation presented in column (14).

4. Magnitude of Depreciation Accrual Expenses

The following table provides a comparison of the depreciation accrual expense developed by applying the effective existing and proposed accrual rates to the functional level rates of this study to the December 31, 2021 balances:

Plant Function	Balance at 12/31/2021 ($000)	Estimated Accruals/w Proposed Rates ($000)	Estimated Accruals/w Existing Rates ($000)	Estimated Change in Accruals $ (000)
Production Plant	5,432	170	155	15
Storage Plant	105	3	3	0
LNG Gas	4,848	139	139	0
Transmission	11,849	229	229	0
Distribution	640,169	16,061	16,663	-602
General	35,777	1,414	1.488	-73
Total Depreciable Gas Plant	698,179	18,016	18,676	-660

Note that the existing and proposed rates, above, are taken from Schedule B which details a comparison of accrual rate recovery by applicable account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

5. Comparison of Proposed Accrual Rates

Our study developed two separate accrual rate schedules as follows:

Schedule A	Whole Life Schedule with Net Salvage – Column 8 of this schedule presents the proposed accrual rates with Net Salvage.
Schedule B	Comparison of Depreciation Accrual Rates @ 12/31/21 plant balances.

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021**

B. RECOMMENDATIONS

Based on our results of analyzing the Company's depreciable property, we recommend the following:

1. Continue to amortize approved levels until completion (4/30/2024) to mitigate the remaining reserve variance levels.

2. Continue to evaluate actual removal costs for at least two additional years to establish a reasonable three-year average for all applicable accounts.

3. A one year COR result does not in itself determine a definitive level to establish a firm (COR) percentage going forward. However, it does present information as to the necessity to reduce the current 10% level.

4. We recommend a stepwise reduction consistent with our comments above. Our recommendation is therefore to reduce the current 10% level to a 7.5% midpoint or approximately 50% of the current level (10%) to the recent one-year calculation of 4.74%

5. The recorded 7.5% step reduction should be utilized until the next review and analysis of COR which would present a three-year average level.

6. Perform a future depreciation study with the following metrics integrated in the analysis:

   a.) The new three-year COR threshold

   b.) Depreciation study in approximately five years

   c.) Update the cost of removal levels that are currently approved to more complete recovery levels for mains and services

   d.) Update depreciation parameters, where appropriate, for all accounts

7. Company requests approval of the accrual rates shown in column (8) of the accrual rate Schedule A included in this report. Reference Schedule B for any account accrual rate changes (current vs. proposed).

8. We have identified in this study one plant account that is almost fully depreciated and the Company should stop depreciating after January 2022 unless new dollars are added to the account.

Account	Description
391.20	Office Furniture & Equip.-Laptop Computers

9. We recommend that every effort should be undertaken to book retirements on a timely basis as this impacts the resulting depreciation parameters.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

C. SUMMARY OF PROPOSED ACCRUAL RATES AND NET SALVAGE FACTORS

The following table lists each plant account and the average service life proposed along with the accrual rate with and without net salvage with the net salvage component shown separately. These plant accounts include all of the fully depreciated accounts identified in Section B.3., above, should the Company install future equipment in these accounts until the next depreciation study.

Account Number	Description	Iowa Curve	ASL	Accrual Rate without Net Salvage	Accrual Rate with Net Salvage	COR Rate %
PRODUCTION PLANT						
305.00	Structures and Improvements	R 1.0	35.0	2.86	2.86	0.00
319.00	Gas Mixing Equipment	R 1.0	20.0	5.00	5.00	0.00
320.00	Other Equipment – LNG	R 1.0	35.0	2.86	2.86	0.00
320.10	Other Equipment – Production	R 1.0	35.0	2.86	2.86	0.00
STORAGE PLANT						
361.00	Structures and Improvements – LNG	R 1.0	35.0	2.86	2.86	0.00
363.50	Other Equipment – LNG	R 1.0	35.0	2.86	2.86	0.00
LNG GAS TERMINATING AND PROCESSING PLANT						
364.20	Structures and Improvements – LNG	R 1.0	35.0	2.86	2.86	0.00
364.80	Other Equipment – LNG	R 1.0	35.0	2.86	2.86	0.00
TRANSMISSION PLANT						
367.00	Mains	R 3.0	60.0	1.67	1.92	0.25
369.00	Measuring and Regulating Station Equip.	S 4.0	35.0	2.86	2.86	0.00
DISTRIBUTION PLANT						
375.00	Structures and Improvements	R 1.0	35.0	2.86	2.86	0.00
376.00	Mains	R 3.0	60.0	1.67	1.92	0.25
377.00	Compressor Station Equipment	R 1.0	35.0	2.86	2.86	0.00
378.00	Meas. And Reg. Station Equipment-General	S 2.0	35.0	2.86	2.86	0.00
379.00	Meas. And Reg. Station Equipment-City Gate	S 3.0	35.0	2.86	2.86	0.00
380.00	Services	R 4.0	50.0	2.00	3.20	1.20
381.00	Meters	S 3.0	30.0	3.33	3.33	0.00
381.10	Meters – Instrument	S 3.0	30.0	3.33	3.33	0.00
381.20	Meters – ERTS	SQ	15.0	6.67	6.67	0.00
382.00	Meter Installations	R 3.0	30.0	3.33	3.33	0.00
385.00	Industrial Measuring & Regulating Equipment	S 6.0	19.0	5.26	5.26	0.00
387.00	Other Equipment	S 6.0	19.0	5.26	5.26	0.00
GENERAL PLANT						
390.00	Structures and Improvements	R 3.0	40.0	2.50	2.50	0.00
391.00	Office Furniture and Equip.	S 4.0	15.0	6.67	6.34	0.00
391.10	Office Furniture and Equip. – Computers	S 4.0	10.0	10.00	10.00	0.00
391.20	Office Furniture and Equip. – Laptop Comp.	S 4.0	5.0	20.00	20.00	0.00
393.00	Stores Equipment	SQ	30.0	3.33	3.33	0.00
394.00	Tools, Shop & Garage Equipment	S 6.0	19.0	5.26	5.26	0.00
397.00	Communication Equipment	SQ	10.0	10.00	10.00	0.00
398.00	Miscellaneous General Equipment	S 5.0	15.0	6.67	6.67	0.00

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
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Gas Plant in Service at December 31, 2021**

III. INTRODUCTION

III. INTRODUCTION

A. STUDY AUTHORIZATION

In the first quarter of 2022, Management Applications Consulting, Inc. (MAC), of Reading, Pennsylvania was authorized to conduct a depreciation rate study of Liberty Utilities (EnergyNorth Natural Gas) Corp.'s utility properties.

The study included detailed analyses of the depreciable gas plant in service at December 31, 2021 for the purpose of recommending depreciation accrual rates reflective of current facts and projections. The techniques used were those generally recognized and accepted in the industry and included analyses of historical plant investment experience and of the Company's forecasts of expected capital, as well as reviews of recent available cost of removal (COR) and salvage experience.

B. DEFINITION OF DEPRECIATION

The overall objective of depreciation is to provide an orderly recovery of capital investment in depreciable property in a systematic and rational manner over a life term that assures full recovery of that investment. Regulatory accounting also provides for the amortization of any costs of removal expected to be incurred less anticipated salvage, i.e., net salvage, at the time the property is finally retired or removed from service by incorporating net salvage adjustments into the annual depreciation accrual rates. This approach ensures that these costs will be properly recovered by those using the facilities over the useful service life of an asset.

There are several definitions of depreciation. The definitions promulgated by the Federal Energy Regulatory Commission (FERC) and the National Association of Regulatory Utility Commissioners (NARUC) are essentially identical. Following is the NARUC definition:

> *"Depreciation", as applied to depreciable electric (gas) plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric (gas) plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities (and, in the case of natural gas companies, the exhaustion of natural resources).*

Liberty Utilities (EnergyNorth Natural Gas) Corp.
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C. GENERAL APPROACH TO CONDUCTING DEPRECIATION STUDIES

The MAC depreciation study analyses are consistent with the generally accepted approaches employed in the industry to determine appropriate annual depreciation accrual rates. In addition to reviewing and analyzing historical accounting records, engineering judgment is used in assessing historical experience as a possible factor to consider into the future. To this end, MAC becomes familiar with the property and its operations via site inspections and discussions with appropriate management personnel as to past practices and experience, as well as future plans and expectations, which could have had or may yet affect mortality patterns, average service lives, cost of removal or salvage. These approaches to preparing a depreciation study are typical of industry practices and provide a solid foundation for determining life estimates.

D. DEPRECIATION PROCESS

The depreciation process consists of selecting one of the more prevalent categories from each of the following three areas in order to develop a complete system in a study of utility plant:

Method	Procedure	Technique
Straight Line	Broad Group	Remaining Life (RL)
Life Span	Vintage (aged)	Whole Life (WL)
	Equal Life Group (ELG)	

E. DEPRECIATION SYSTEM (MODEL)

Our depreciation system for this study consists of using a straight line method, broad group procedure, average whole life depreciation technique which uses the same accrual factor each year over the service life of the various plant accounts and subaccounts being analyzed. Due to the existence of very large quantities of assets, utility plant is generally grouped into broad groups of plant accounts and subaccounts in which the unit of measure is the original cost dollar, as opposed to individual property units.

Finally, depreciable plant must be recovered over a defined period of time, and our depreciation model used the whole life technique for calculating the annual accrual rates proposed as prescribed by the New Hampshire Public Utilities Commission (PUC). These rates are derived by using an estimated service life and a mortality distribution based on Iowa curves and include the calculated net salvage for each plant account:

$$\text{Whole Life Accrual Rate} = \frac{100\% - \text{Net Salvage}}{\text{Average Service Life}}$$

The account-by-account summary results are presented in the attached Schedule A of Depreciation in column (4) without any net salvage and column (8) with the net salvage factored into the proposed accrual rate.

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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IV. DEVELOPMENT OF DEPRECIATION STUDY

IV. DEVELOPMENT OF DEPRECIATION STUDY

A. DATABASE

The starting point of our depreciation study is the development of a database which utilizes the Company's additions, retirements, adjustments, transfers and plant balances by depreciable account and subaccount. Our analyses varied by account in order to develop appropriate databases from which to prepare our study based on available data. MAC was also given the vintage survivors and minimal vintage retirement history. An actuarial data base was created from this information.

B. ANALYSIS OF HISTORY

The historical life analysis employed in this study was the Simulated Plant Record – Balances (SPR_BAL). The SPR-BAL analysis was introduced in 1947 by Mr. Alex Bauhan of Public Service Electric and Gas and is widely used and accepted in the industry.

The analyses are trial-and-error procedures in which the survivor statistics for various empirical (usually Iowa) curves are applied to the actual annual addition amounts to generate simulated year-end balances which are then compared to actual year-end balances. The best-fitting life is found for each curve type, and the curve-life combinations are ranked according to the sum of the squared differences between actual and simulated balances. In the procedure, there are three key statistical reliability indications developed for each curve-life combination. They are: the conformance index (CI), which is mathematically interrelated to the sum of the squared differences between the book and simulated balances; the retirement experience index (REI), or retirement index (RI); and the cycle index. The retirement index is the percent retired from the oldest addition with the given indicated curve-life combination. The cycle index is the age of the oldest addition as a percent of the maximum probable life of the given curve-life combination. Maximum Probable Life (MPL) is the age at which the survivor curve drops to zero surviving. With a standard bell/symmetrical curve, the MPL is twice the average service life.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
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Gas Plant in Service at December 31, 2021

The relationships for CI[2] and RI[3] are shown below:

CI	Value
Over 75	Excellent
50 to 75	Good
25 to 50	Fair
Under 25	Poor

RI	Value
Over 75	Excellent
50 to 75	Good
33 to 50	Fair
17 to 33	Poor
Under 17	Valueless

The findings of life analyses of history, such as the SPR analyses, regrettably are often over-emphasized; however, the key role of the depreciation analyst is life-estimation, not life analysis. Any depreciation study requires informed judgment. The depreciation expert must know the equipment within the group being studied; he must be familiar with the types of life analyses employed, the effect on these life analyses of a number of events. The proposed recommendations embody all of the underlying results as a foundation with which to indicate a direction to be considered in arriving at the final chosen depreciation parameters and results for this study. We are predicting the expected remaining life of a Company's various asset categories.

C. SALVAGE, COST OF REMOVAL (COR) AND NET SALVAGE ANALYSIS

The Company provided limited historical data for gross salvage and cost of removal by account, the net salvage values were simply calculated as their difference:

$$\text{Net Salvage (NS)} = \text{Gross Salvage (GS)} - \text{Cost of Removal (COR)}$$

The inclusion of a net salvage component in determining the annual accrual rate for each account is a well-recognized and appropriate calculation. Our proposed net salvage and cost of removal are shown in the attached Schedule A of this study.

[2] Public Utility Depreciation Practices, NARUC, August 1996, p. 96.
[3] Public Utility Depreciation Practices, NARUC, August 1996, p. 97.

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
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V. DISCUSSION OF RESULTS

Liberty Utilities (EnergyNorth Natural Gas) Corp.
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V. DISCUSSION OF RESULTS

A. APPLICATION OF COST RECOVERY

The whole life accrual rate is a function of two variables: the estimated net salvage (salvage less cost to retire) and the average service life of the group. The continued use of accrual rates properly developed at one point in time as a function of all circumstances known and projected at that time can be assumed to be appropriate for a limited number of years; however, if the lives and net salvage are not re-estimated periodically, the rates may not provide the appropriate recovery of capital.

Obviously, when a change in either net salvage or life expectations is observed, the book depreciation reserve compared to the computed or theoretical reserve immediately appears as either over or under accrued. Realistic trends in either the service life or net salvage cannot generally be discerned on an annual basis; therefore, if such changes begin to occur immediately upon completion of a depreciation rate study, it might be five years later (in the subsequent study) until the effect of the change is fully observed and reflected in revised accrual rates.

In general, the variance in the reserve is simply the difference between theoretical reserve based on an updated set of factors as developed in a depreciation study and the existing book reserves which reflect the historical reserve adjustments previously approved. The theoretical reserve calculation, however, is based on a new set of accrual rates, and applying these results to the current plant balances as if they were constant historical factors will generally result in a variance. In many cases, there will be changes in depreciation rate parameters followed by changes in theoretical reserves and resulting variances. These changes should be gradual and implemented over several studies to mitigate any abrupt impacts whenever possible.

One reasonable method to eliminate or reduce this difference (variance) between the book and theoretical depreciation reserve is to amortize the variance over some reasonable time period, as previously mentioned. By this we mean one computes the annual depreciation accrual in the normal manner and each year adds to or subtracts from that normal accrual an amortization amount, derived as described previously.

For some categories of property, particularly mass properties, statistical mortality studies of past retirement experience may provide historical indications of the dispersion of retirements and of average service life if there has been sufficient retirement activity over a reasonable period of time. Such information may provide some indication as to what to expect in the future; however, it should not be taken for granted that the future will mirror the past, especially when present policies, plans, or external circumstances indicate otherwise.

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B. AVERAGE SERVICE LIFE AND SURVIVOR CURVES

Survivor curves are graphical representations of the surviving property for each age for the life of a group of assets, such as a plant account. The survivor curve selected from analyses of the Company's database for each account then establishes the average and remaining life for that group. These survivor curve characteristics are generally best reflected for utility property by the use of a well-established system of generalized survivor curves known in the industry as Iowa curves. For example, for Services Account 380, our recommended Iowa curve is a 45-year R 4.0. The 60 years represent the average service life estimate, and the other component is the shape of the curve. Finally, the number following the letter for each curve represents the height of each curve with the higher values representing a reduced range and maximum life. The letter designation indicates the skewness with an "R" indicating a skewness towards a later retirement tendency. The other possible letter, which is an "L," indicates earlier retirements, and an "S" for a symmetrical implies that the greatest retirement frequency is at the ASL.

C. THEORETICAL DEPRECIATION RESERVE

The objective of depreciation is complete and timely recovery of depreciable plant investment less any net salvage. Periodic reviews and revisions to accrual rates help to minimize the magnitude of the revisions which may be necessary to keep the recovery process in tune. Obviously, when a change in either life expectations or net salvage is made, the book depreciation reserve immediately appears either over or under accrued. Changes to either the life or net salvage cannot generally be discerned on an annual basis; therefore, if such changes began to occur immediately upon completion of one depreciation rate study, it might be more than five years later (in another study) before the effect of the change is observed and the accrual rates properly adjusted to reflect it.

The theoretical depreciation reserve is a calculated level of reserve requirement based on a new set of depreciation parameters chosen in a study. In other words, the theoretical reserve is the future amounts of depreciation expense to be charged if the future retirements follow the recommended mortality characteristics in this study. The theoretical reserve is therefore the best estimate of reserve levels from the study if all future retirements occur as proposed by the recommended parameters for each account.

These derived theoretical reserve calculations can be compared to the Company's actual booked reserve for each account to provide further information to the analysis as to any significant (greater than 10%) imbalances (+ or – differences). The approach to adjusting any of these differences for some plant accounts is called a rebalancing of booked reserves in line with the theoretical reserves to better reflect the best proposed depreciation study parameters and results until the next study. This process eliminates (minimizes) any account imbalances that have occurred historically based on prior parameters and associated accrual rates.

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VI. ACCOUNT-BY-ACCOUNT ANALYSIS AND RECOMMENDATIONS

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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VI. ACCOUNT-BY-ACCOUNT ANALYSIS AND RECOMMENDATIONS

Appendix A contains the depreciation accrual schedules from the Company's last study (calendar year 2016) which are referenced in the following discussion of each primary account for the Company along with the Company's current Commission-approved accrual rates in Appendix B.

NOTES:

1 – *Current $ Value* from Schedule A
2 – *Prior Plant $* from Appendix A – Depreciation Schedule @12/31/2016
3 – *Booked* and *Theoretical Reserves* from Schedule A
4 – *Ratio %* referenced to account 2021 Plant Balance
5 – *Percent* that each account is to Total Depreciable Plant (Schedule A)
6 – *Account Descriptions* containing parentheses at the end reflect a prior study (PUC) account numerical designation (for reference purposes)
7 – *Conformance Index (CI)* – Reference page 20
8 – *Retirement Index (RI)* – Reference page 20
9 – The *number shown in the parentheses (xxxx)* for each account to the right of the description references the prior study PUC account designation – See Appendix A

Note: See page 55 for all amortized accounts (303.10, 303.20, 303.40, 303.50, 303.60, 392.00 and 396.00.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

PRODUCTION PLANT

Account: 305.00 Structures and Improvements (1308.1)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	852,167	0.1	1,975,163
Booked Reserve:	135,156	15.9	
Theoretical Reserve:	414,746	48.8	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account consists of various facility-related costs.

Service Life Analysis

Our review of this account indicates that no change to the 35.0- year ASL and R 1.0 Iowa curve type is warranted.

Net Salvage

Our review of the historical data provides no support to any change to the current 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
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Account: 319.00 Gas Mixing Equipment

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	691,821	0.1	N/A
Booked Reserve:	301,851	43.6	
Theoretical Reserve:	209,352	30.3	

Recommendations		
	Prior	Proposed
Average Service Life:	20.0	20.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	5.00	5.00
Without Net Salvage	5.00	5.00

Account Description

This account contains gas mixing equipment for mixing manufactured and natural gas.

Service Life Analysis

Our review of this account indicates that an R 1.0 Iowa curve with a 20.0-year ASL are appropriate parameters for this account.

Net Salvage

We propose 0% net salvage for this account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 320.00 Other Equipment – LNG (1330)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	461,363	0.1	2,556,209
Booked Reserve:	-13,334	-2.9	
Theoretical Reserve:	76,738	16.6	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes various equipment related to the production of Liquefied Natural Gas facilities.

Service Life Analysis

Our review of this account indicates that no change is warranted to the ASL of 35 years and the R 1.0 Iowa curve.

Net Salvage

Our review of the historical data provides no support for any change to the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 320.10 Other Equipment – Production (1330)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	3,426,407	0.5	8,777,306
Booked Reserve:	404,978	11.8	
Theoretical Reserve:	2,140,520	62.5	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes equipment used in the production of gas.

Service Life Analysis

Our review of this account indicates no change to the R 1.0 Iowa curve and 35.0-year ASL is warranted.

Net Salvage

Our review of the historical data indicates no support for a change to the current approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

STORAGE PLANT

Account: 361.00 Structures and Improvements – LNG (1330)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	96,980	0.0	57,345
Booked Reserve:	24,172	24.9	
Theoretical Reserve:	23,372	24.1	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account consists of structures and improvements used in connection with storage of gas in holders.

Service Life Analysis

We recommend maintaining the current 35-year ASL with an R 1.0 Iowa curve type.

Net Salvage

Our review of the historical data indicates no support for any change to the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 363.50 Other Equipment – LNG (1330)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	7,646	0.0	7,646
Booked Reserve:	2,553	33.4	
Theoretical Reserve:	2,513	32.9	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account consists of other equipment used in connection with the storage of gas.

Service Life Analysis

Our review of the other LNG accounts suggests that this equipment be assigned the same depreciation parameters, and we recommend keeping the ASL at a 35-year level while maintaining the same R 1.0 Iowa curve type.

Net Salvage

Our review of the historical data provides no support for changing the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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LNG GAS TERMINATING AND PROCESSING PLANT

Account: 364. 20 Structures and Improvements - LNG

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	952,003	0.1	N/A
Booked Reserve:	474,687	49.9	
Theoretical Reserve:	218,338	22.9	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes the cost in place of structures and improvements used in connection with liquefied natural gas terminaling and processing operations. This account was created from dollars transferred in from Accounts 305.00, 311.00, 366.00, and 369.00.

Service Life Analysis

We recommend a 35-year ASL with an R 1.0 Iowa curve type.

Net Salvage

We propose 0% net salvage for this account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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Account: 364. 80 Other Equipment

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	3,896,019	0.5	N/A
Booked Reserve:	2,623,007	67.3	
Theoretical Reserve:	1,661,847	42.7	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes the cost installed of equipment used in liquefied natural gas operations. This account was created from dollars transferred in from 320.00, 320.10, and 369.00.

Service Life Analysis

We recommend a 35-year ASL with an R 1.0 Iowa curve type, the same depreciation parameters as account 364.20.

Net Salvage

We propose 0% net salvage for this account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

TRANSMISSION PLANT

Account: 367.00 Mains (1356)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	11,710,542	1.6	234,672,697
Booked Reserve:	3,894,029	33.3	
Theoretical Reserve:	4,313,267	36.8	

Recommendations		
	Prior	Proposed
Average Service Life:	60.0	60.0
Retirement Curve:	R 3.0	R 3.0
Future Net Salvage:	-15%	-15%
Accrual Rates:		
With Net Salvage	1.92	1.92
Without Net Salvage	1.67	1.67

Account Description

This account contains the cost of installed transmission system mains. In 2017 the bulk of the plant account dollars were transferred into a new Account 376-Distribution Mains (page 36).

Service Life Analysis

Our analyses of this account were based on total assets since the Company could not provide any historical details by material type. Our recommendations are to keep the current R 3.0 Iowa curve and 60-year ASL.

Net Salvage

No change in the net salvage of -15% is proposed at this time.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 369.00 Measuring and Regulating Station Equipment (1358)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	138,182	0.0	4,909,208
Booked Reserve:	-72,870	-52.7	
Theoretical Reserve:	69,417	50.2	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	S 4.0	S 4.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This equipment is used to maintain pressure in the Company's Distribution infrastructure. The majority of the plant dollars in this account at the end of 2017 were transferred to accounts 378 and 379.

Service Life Analysis

We recommend keeping the current 35-year ASL along with the S 4.0 Iowa curve.

Net Salvage

Our review of the available historical data provides no support for changing the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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Distribution Plant

Account: 375.00 Structures and Improvements

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	1,761,490	0.2	N/A
Booked Reserve:	309,313	17.6	
Theoretical Reserve:	216,622	12.3	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes structures and improvements used in connection with distribution operations. This account was created from dollars transferred in from accounts 366.20 and 366.30.

Service Life Analysis

The curve/life approved for accounts 366.20 and 366.30 in the 2016 study was an R 1.0 35-year ASL. Based on our experience with distribution plant, we recommend staying with the R 1.0 Iowa curve and 35-year ASL.

Net Salvage

There is no available historical data available to support a cost of removal level. We therefore propose 0% net salvage for this account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 376.00 Mains (1356)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	366,964,216	51.0	N/A
Booked Reserve:	68,131,515	18.6	
Theoretical Reserve:	83,989,995	23.9	

Recommendations		
	Prior	Proposed
Average Service Life:	60.0	60.0
Retirement Curve:	R 3.0	R 3.0
Future Net Salvage:	-15%	-15%
Accrual Rates:		
With Net Salvage	1.92	1.92
Without Net Salvage	1.67	1.67

Account Description

This account contains various types and sizes of pipe for the Company's distribution network. The account has the largest account balance in the depreciable gas plant. In 2017 the majority of the plant dollars were transferred from Account 367-Transmission Mains.

Service Life Analysis

Our analyses of this account were based on total assets since the Company could not provide any historical details by material type. Our recommendations are to maintain the same ASL of 60 years and current R 3.0 Iowa curve based on the results. We note that no retirements were recorded for the year 2018. We note that succeeding years have increasing retirements.

Net Salvage

No change in the net salvage of -15% is proposed at this time.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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Account: 377.00 Compressor Station Equipment

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	2,246,186	0.3	N/A
Booked Reserve:	321,205	14.3	
Theoretical Reserve:	256,266	11.4	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	R 1.0	R 1.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

Account 377.00 includes the cost installed of compressor station equipment used in connection with the distribution system. This account is new since the 2016 prior study.

Service Life Analysis

No analysis was undertaken for this account since there have been no retirements booked. We propose an R 1.0 Iowa curve and 35-year ASL.

Net Salvage

We propose 0% net salvage for this account.

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Depreciation Accrual Rates Based on
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Account: 378.00 Measuring and Regulating Equipment-General (1358)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	8,592,345	1.2	N/A
Booked Reserve:	4,662,297	54.3	
Theoretical Reserve:	3,819,817	44.5	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	S 2.0	S 2.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes the cost installed of meters, gauges, and other equipment used in connection with the distribution system. The Company averages replacing/installing one new regulator station per year. This account was created from plant dollars transferred from accounts 305.00, 320.10, 366.20 and 369.00.

Service Life Analysis

No analysis was undertaken for this account since there has been very limited retirement history in the past ten years. We propose an S 2.0 Iowa curve and 35-year ASL.

Net Salvage

We propose 0% net salvage for this account.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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Account: 379.00 Measuring and Regulating Equipment-City Gate (1358)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	5,431,082	0.8	N/A
Booked Reserve:	1,612,222	29.7	
Theoretical Reserve:	1,490,217	27.4	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	35.0
Retirement Curve:	S 3.0	S 3.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.86
Without Net Salvage	2.86	2.86

Account Description

This account includes the cost installed of meters, gauges, and other equipment used in measuring and regulating the receipt of gas at entry points to the distribution system. This account was brought into service the end of 2017 from plant dollars transferred from accounts 305.00, 320.00, 320.10, 366.20 and 369.00.

Service Life Analysis

No retirements have occurred in the years 2017-2021 therefore no analyses were performed. We propose an Iowa curve of S 3.0 Iowa curve with a 35-year ASL.

Net Salvage

This account has no cost of removal history and therefore propose 0% net salvage.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

DISTRIBUTION PLANT

Account: 380.00 Services (1359)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	198,967,012	27.7	146,720,226
Booked Reserve:	93,924,182	47.2	
Theoretical Reserve:	87,428,408	38.4	

Recommendations		
	Prior	Proposed
Average Service Life:	45.0	50.0
Retirement Curve:	R 4.0	R 4.0
Future Net Salvage:	-60%	-60%
Accrual Rates:		
With Net Salvage	3.55	3.20
Without Net Salvage	2.22	2.00

Account Description

This account consists mainly of various small pipe sizes and types for connecting customers to the Company's mains. About 74% of services are plastic and the Company has a goal to replace 1,000 services annually.

Service Life Analysis

Our analyses of this account were based on total assets since the Company could not provide any historical details by material type for analysis. Our analyses indicate an increase in service life is warranted. We therefore propose a change from the current 45-year ASL to a 50-year ASL with an R 4.0 Iowa curve.

Net Salvage

Our review of the available historical data supports higher than the current approved levels. However, recent retirement data was not available for the years 2018 and 2020. Note that the 2021 retirement levels are consistent with 2017 and 2019. We also recommend maintaining the current approved level until the next study.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 381.00 Meters (1360)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	19,992,831	2.8	14,628,345
Booked Reserve:	4,661,801	23.3	
Theoretical Reserve:	6,124,130	30.6	

Recommendations		
	Prior	Proposed
Average Service Life:	32.0	30.0
Retirement Curve:	R 3.0	S 3.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	3.13	3.33
Without Net Salvage	3.13	3.33

Account Description

This account consists of various sizes of meters that record gas consumption at customer locations in the Company's Service area.

Service Life Analysis

Our analyses of this account indicate that a change in the current 32-year ASL is warranted, and we recommend a slightly lower 30-year ASL with a minor change of the Iowa curve from the current R 3.0 to an S 3.0.

Net Salvage

Our review of the historical data indicates no support for any change to the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
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Account: 381.10 Meters – Instrument (1360)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	254,439	0.0	188,398
Booked Reserve:	113,219	44.5	
Theoretical Reserve:	111,711	43.9	

Recommendations		
	Prior	Proposed
Average Service Life:	32.0	30.0
Retirement Curve:	R 3.0	S 3.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	3.13	3.33
Without Net Salvage	3.13	3.33

Account Description

Various equipment supporting metering.

Service Life Analysis

The same depreciation parameters for this account were applied as recommended for Account 381.00 meters.

Net Salvage

Our recommended net salvage of 0% is the same as Account 381.00 Meters.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 381.20 Meters – ERTS (1360)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	6,347,958	0.9	5,647,769
Booked Reserve:	4,456,153	70.2	
Theoretical Reserve:	4,768,023	75.1	

Recommendations		
	Prior	Proposed
Average Service Life:	15.0	15.0
Retirement Curve:	SQ	SQ
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	6.67	6.67
Without Net Salvage	6.67	6.67

Account Description

The equipment in this account consists of remote metering modules installed on existing meters. ERTS is Encoder, Receiver, Transmitter device.

Service Life Analysis

Our recommendation is no change to the 15-year ASL for this electronic equipment to reflect the rapidly changing life of electronic equipment and security.

Net Salvage

Our proposed net salvage of 0% represents the value of electronic instrumentation after 15 years with technology changes.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 382.00 Meter Installations (1360)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	27,070,444	3.8	14,360,005
Booked Reserve:	5,791,940	21.4	
Theoretical Reserve:	6,039,287	22.3	

Recommendations		
	Prior	Proposed
Average Service Life:	32.0	30.0
Retirement Curve:	R 3.0	R 3.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	3.13	3.33
Without Net Salvage	3.13	3.33

Account Description

This equipment relates to the remaining costs and piping to accept the various types of meters at customer locations.

Service Life Analysis

Our analyses of this account indicate that a change in the current 32-year ASL is warranted, and we recommend a lower 30-year ASL with the same current Iowa curve of R 3.0.

Net Salvage

Our experience indicates a very small amount of net salvage can be anticipated, but we are recommending 0% net salvage consistent with the Account 381 Meters.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 385.00 Industrial Measuring & Regulating Equipment

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	53,375	0.0	N/A
Booked Reserve:	7,819	14.6	
Theoretical Reserve:	15,451	28.9	

Recommendations		
	Prior	Proposed
Average Service Life:	19.0	19.0
Retirement Curve:	S 6.0	S 6.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	5.26	5.26
Without Net Salvage	5.26	5.26

Account Description

This account shall include the cost of special and expensive installations of measuring and regulating station equipment.

Service Life Analysis

No analyses were performed, and based on our knowledge of this equipment, we propose an S 6.0 Iowa curve with a 19.0-year ASL.

Net Salvage

The account has no cost of removal history, and therefore we propose 0% net salvage.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 387.00 Other Equipment (1377)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	2,487,707	0.4	908,013
Booked Reserve:	1,355,277	54.5	
Theoretical Reserve:	1,306,073	52.5	

Recommendations		
	Prior	Proposed
Average Service Life:	19.0	19.0
Retirement Curve:	S 6.0	S 6.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	5.26	5.26
Without Net Salvage	5.26	5.26

Account Description

This account consists of miscellaneous tools utilized to support the Company's generation.

Service Life Analysis

Our analyses of the historical data indicate that the current depreciation parameters of a 19-year ASL and an S 6.0 Iowa curve type should be maintained.

Net Salvage

A review of the available historical data provides no support for changing the currently approved 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

GENERAL PLANT

Account: 390.00 Structures and Improvements (1308.7)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	25,864,673	3.6	22,070,702
Booked Reserve:	6,287,342	24.3	
Theoretical Reserve:	5,188,262	20.1	

Recommendations		
	Prior	Proposed
Average Service Life:	35.0	40.0
Retirement Curve:	R 1.0	R 3.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	2.86	2.50
Without Net Salvage	2.86	2.50

Account Description

This account shall include the cost of structures and improvements used for utility purposes. A major cost for this account relates to the Company's purchase of a building at 15 Buttrick Road, Londonderry, NH. This building was completely renovated and is the location of the new main office for the Company.

Service Life Analysis

Our analyses indicate that an increase in ASL is warranted, and we recommend increasing the current 35-year ASL to 40 years and revising the current R 1.0 Iowa curve to an R 3.0 curve.

Net Salvage

Our review of the available historical data provides no support for any change to the existing 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 391.00 Office Furniture and Equipment (1372.1)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	1,871,855	0.3	285,566
Booked Reserve:	225,753	12.1	
Theoretical Reserve:	301,276	16.1	

Recommendations		
	Prior	Proposed
Average Service Life:	18.0	15.0
Retirement Curve:	S 4.0	S 4.0
Future Net Salvage:	5%	5%
Accrual Rates:		
With Net Salvage	5.28	6.34
Without Net Salvage	5.56	6.67

Account Description

This account shall include the cost of office furniture and equipment owned by the Company.

Service Life Analysis

Our analyses shows the existing depreciation parameters should be revised slightly lower to an ASL of 15.0 years with the same S 4.0 Iowa curve.

Net Salvage

We have maintained the currently approved 5% net salvage based on our experience for similar facilities.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 391.10 Office Furniture and Equipment – Computers (1372.1)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	883,183	0.1	1,840,911
Booked Reserve:	66,754	7.6	
Theoretical Reserve:	600,581	68.0	

Recommendations		
	Prior	Proposed
Average Service Life:	10.0	10.0
Retirement Curve:	S 4.0	S 4.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	10.00	10.00
Without Net Salvage	10.00	10.00

Account Description

This account consists of various computer-related equipment and peripherals for use in supporting the Company's infrastructure.

Service Life Analysis

Our review of the equipment placed in service for this account supports the current 10-year ASL with an S 4.0 Iowa curve.

Net Salvage

Based on our review of the equipment in this account and the recommended 10-year ASL, we recommend to maintain the existing 0% net salvage level until the Company's next study. This is in part due to the recommended 10-year average service life coupled with the fact that a major portion of this account's equipment will reach technical obsolescence well before the estimated life.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 391.20 Office Furniture and Equipment – Laptop Computers (1372.1)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	878,732	0.1	679,916
Booked Reserve:	866,695	98.6	
Theoretical Reserve:	777,138	88.4	

Recommendations		
	Prior	Proposed
Average Service Life:	5.0	5.0
Retirement Curve:	S 4.0	S 4.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	20.00	20.00
Without Net Salvage	20.00	20.00

Account Description

This equipment represents more local personal computers used by personnel to perform their job-related duties.

Service Life Analysis

Our recommendation to maintain the 5-year ASL using an S 4.0 type Iowa curve reflect our experience with this type of equipment.

Net Salvage

Based on our experience, laptop computers have little value after just a few years supporting our 0% net salvage.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 393.00 Stores Equipment (1374)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	107,831	0.0	99,421
Booked Reserve:	38,003	35.2	
Theoretical Reserve:	37,401	34.7	

Recommendations		
	Prior	Proposed
Average Service Life:	30.0	30.0
Retirement Curve:	SQ	SQ
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	3.33	3.33
Without Net Salvage	3.33	3.33

Account Description

This account contains various smaller equipment used to support distribution facilities.

Service Life Analysis

No analyses were undertaken for this account due to the limited data availability, and we recommend maintaining the current 30-year ASL with an SQ curve type.

Net Salvage

Our review of the available data provides no support for any change to the existing 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 394.00 Tools, Shop & Garage Equipment (1377)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	4,359,715	0.6	825,963
Booked Reserve:	1,147,390	26.3	
Theoretical Reserve:	1,188,607	27.3	

Recommendations		
	Prior	Proposed
Average Service Life:	19.0	19.0
Retirement Curve:	S 6.0	S 6.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	5.26	5.26
Without Net Salvage	5.26	5.26

Account Description

Miscellaneous equipment used to support distribution plant.

Service Life Analysis

The results of our analyses for this account were immaterial and provided no support for any change to the existing 19-year ASL and an S 6.0 Iowa curve combination.

Net Salvage

Our review of the available historical data provided no support for any change to the existing 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 397.00 Communication Equipment (1378)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	941,816	0.1	443,965
Booked Reserve:	652,209	69.3	
Theoretical Reserve:	556,907	59.1	

Recommendations		
	Prior	Proposed
Average Service Life:	10.0	10.0
Retirement Curve:	SQ	SQ
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	10.00	10.00
Without Net Salvage	10.00	10.00

Account Description

This account consists of various electronic equipment used by Company personnel.

Service Life Analysis

Our historical analyses proved to be immaterial. We recommend maintaining the current 10-year ASL with an SQ-type curve.

Net Salvage

As with any electronics, the rapidly changing technology along with a 10-year ASL supports little value for this type of equipment, and we recommend maintaining the current 0% net salvage level.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Account: 398.00 Miscellaneous General Equipment (1379)

	Current Value	Ratio %	Prior Plant
Test Year:	2021		2016
Plant Balance:	869,377	0.1	348,302
Booked Reserve:	322,526	37.1	
Theoretical Reserve:	298,865	34.4	

Recommendations		
	Prior	Proposed
Average Service Life:	15.0	15.0
Retirement Curve:	S 5.0	S 5.0
Future Net Salvage:	0%	0%
Accrual Rates:		
With Net Salvage	6.67	6.67
Without Net Salvage	6.67	6.67

Account Description

This account has various smaller equipment used to support distribution facilities.

Service Life Analysis

Our analyses were all inconclusive, and we found no support to change our existing 15-year ASL with an S 5.0 Iowa curve.

Net Salvage

Our review of available historical data provide no support for any change to the existing 0% net salvage.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Amortized Plant

Account: Capitalized Software and General Plant

	Current Value	Ratio %	Prior Plant
Test Year:	2021		N/A
Plant Balance:	(See Below)		
Booked Reserve:			
Theoretical Reserve			
Earliest Activity:			

Recommendations		
	Prior	Proposed
Average Service Life:	(See Below)	
Retirement Curve:		
Future Net Salvage:		
Accrual Rates:		
With Net Salvage		
Without Net Salvage		

Account Description

These plant accounts continue to be amortized due to their dollar amount and the sheer number of items which are generally quite burdensome to track. (See Schedule A, Page 2). The following table presents each account along with its existing and proposed amortization period.

Service Life Analysis

We recommend keeping the current amortization periods as noted below:

Account	Description	Plant $ @012/31/21	Book Reserves @12/31/2021	Current ASL	Proposed ASL	Current Accrual Rate with Net Salvage	Proposed Accrual Rate with Net Salvage
303.10	Capitalized Software – 3 Years	2,332,280	1,019,860	3.0	3.0	33.33	33.33
303.20	Capitalized Software – 5 Years	12,961,962	13,365,176	5.0	5.0	20.00	20.00
303.40	Capitalized Software – 10 Years	3,893,722	3,173,692	10.0	10.0	10.00	10.00
303.50	Capitalized Software – 10 Years	779,858	537,439	10.0	10.0	10.00	10.00
303.60	Capitalized Software – 10 Years	1,034,809	671,164	10.0	10.0	10.00	10.00
392.00	Transportation Equipment	11,420,704	7,944,855	5.0	5.0	20.00	20.00
396.00	Power Operated Equipment	862,889	691,862	5.0	5.0	20.00	20.00

Net Salvage

Our review of the historical data suggests 0% net salvage is appropriate for all amortized accounts.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

VII. ACCRUAL RATE SCHEDULE AND DESCRIPTIONS

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Schedule A

Schedule of Proposed Depreciation Accrual Rates – Whole Life Schedule with Reserve Variance @ 12/31/21

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORPORATION
SCHEDULE OF DEPRECIATION ACCRUAL RATES @12/31/2021
WHOLE LIFE SCHEDULE WITH RESERVE VARIANCE

SCHEDULE A

FERC ACCOUNT NUMBER	DESCRIPTION	PLANT BALANCE @12/31/2021	DISP TYPE	ASL	ACCRUAL RATE W/O NET SALV.	ACCRUAL WITHOUT NET SALV.	NET SALV. %	SALV. FACTOR	ACCRUAL RATE W/ NET SALV.	ACCRUAL WITH NET SALV.	THEO. RSV. WITHOUT NET SALV.	THEO. RSV. WITH NET SALV.	BOOK RSV. @12/31/2021	RESERVE VARIANCE	COR RATE %
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	PRODUCTION PLANT														
305.00	STRUCTURES AND IMPROVEMENTS	852,167	R 1.0	35.0	2.86	24,372	0	1.00	2.86	24,372	415,746	415,746	135,156	280,590	0.00
319.00	GAS MIXING EQUIPMENT	691,821	R 1.0	20.0	5.00	34,591	0	1.00	5.00	34,591	209,352	209,352	301,851	-92,499	0.00
320.00	OTHER EQUIPMENT-LNG	461,363	R 1.0	35.0	2.86	13,195	0	1.00	2.86	13,195	76,738	76,738	-13,334	90,072	0.00
320.10	OTHER EQUIPMENT	3,426,407	R 1.0	35.0	2.86	97,995	0	1.00	2.86	97,995	2,140,520	2,140,520	404,978	1,735,542	0.00
	TOTAL DEPREC. PRODUCTION PLANT	5,431,758		31.9	3.13	170,153			3.13	170,153	2,842,356	2,842,356	828,651	2,013,705	
	STORAGE PLANT														
361.00	STRUCTURES AND IMPROVEMENTS-LNG	96,980	R 1.0	35.0	2.86	2,774	0	1.00	2.86	2,774	23,372	23,372	24,172	-800	0.00
363.50	OTHER EQUIPMENT-LNG	7,646	R 1.0	35.0	2.86	219	0	1.00	2.86	219	2,513	2,513	2,553	-40	0.00
	TOTAL DEPREC. STORAGE PLANT	104,626		35.0	2.86	2,993			2.86	2,993	25,885	25,885	26,725	-840	
	LNG GAS TERMINATING AND PROCESSING PLANT														
364.20	STRUCTURES AND IMPROVEMENTS-LNG	952,003	R 1.0	35.0	2.86	27,227	0	1.00	2.86	27,227	218,338	218,338	474,687	-256,349	0.00
364.80	OTHER EQUIPMENT	3,896,019	R 1.0	35.0	2.86	111,426	0	1.00	2.86	111,426	1,661,847	1,661,847	2,623,007	-961,160	0.00
	TOTAL DEPREC. LNG TERM. AND PROCESS. PLANT	4,848,022		35.0	2.86	138,653			2.86	138,653	1,880,185	1,880,185	3,097,694	-1,217,509	
	TRANSMISSION PLANT														
367.00	MAINS	11,710,542	R 3.0	60.0	1.67	195,566	-15	1.15	1.92	224,842	3,750,667	4,313,267	3,894,029	419,238	0.25
369.00	MEASURING AND REGULATING STATION EQUIP.	138,182	S 4.0	35.0	2.86	3,952	0	1.00	2.86	3,952	69,417	69,417	-72,870	142,287	0.00
	TOTAL DEPREC. TRANSMISSION PLANT	11,848,724		59.5	1.68	199,518			1.93	228,794	3,820,084	4,382,684	3,821,159	561,525	
	DISTRIBUTION PLANT														
375.00	STRUCTURES AND IMPROVEMENTS	1,761,490	R 1.0	35.0	2.86	50,379	0	1.00	2.86	50,379	216,622	216,622	309,313	-92,691	0.00
376.00	MAINS	366,964,216	R 3.0	60.0	1.67	6,128,302	-15	1.15	1.92	7,045,713	73,034,778	83,989,995	68,131,515	15,858,480	0.25
377.00	COMPRESSOR STATION EQUIPMENT	2,246,186	R 1.0	35.0	2.86	64,241	0	1.00	2.86	64,241	256,266	256,266	321,205	-64,939	0.00
378.00	MEAS. AND REG. STATION EQUIPMENT-GENERAL	8,592,345	S 2.0	35.0	2.86	245,741	0	1.00	2.86	245,741	3,819,817	3,819,817	4,662,297	-842,480	0.00
379.00	MEAS. AND REG. STATION EQUIPMENT-CITY GATE	5,431,082	S 3.0	35.0	2.86	155,329	0	1.00	2.86	155,329	1,490,217	1,490,217	1,612,222	-122,005	0.00
380.00	SERVICES	198,967,012	R 4.0	50.0	2.00	3,979,340	-60	1.60	3.20	6,366,944	54,642,755	87,428,408	93,924,182	-6,495,774	1.20
381.00	METERS	19,992,831	S 3.0	30.0	3.33	665,761	0	1.00	3.33	665,761	6,124,130	6,124,130	4,661,801	1,462,329	0.00
381.10	METERS-INSTRUMENT	254,439	S 3.0	30.0	3.33	8,473	0	1.00	3.33	8,473	111,711	111,711	113,219	-1,508	0.00
381.20	METERS-ERTS	6,347,958	SQ	15.0	6.67	423,409	0	1.00	6.67	423,409	4,768,023	4,768,023	4,456,153	311,870	0.00
382.00	METER INSTALLATIONS	27,070,444	R 3.0	30.0	3.33	901,446	0	1.00	3.33	901,446	6,039,287	6,039,287	5,791,940	247,347	0.00
385.00	INDUSTRIAL MEASURING & REGULATING EQUIPMENT	53,375	S 6.0	19.0	5.26	2,808	0	1.00	5.26	2,808	15,451	15,451	7,819	7,632	0.00
387.00	OTHER EQUIPMENT	2,487,707	S 6.0	19.0	5.26	130,853	0	1.00	5.26	130,853	1,306,073	1,306,073	1,355,277	-49,204	0.00
	TOTAL DEPREC. DISTRIBUTION PLANT	640,169,085		50.2	1.99	12,756,082			2.51	16,061,097	151,825,130	195,566,000	185,346,943	10,219,057	
	GENERAL PLANT														
390.00	STRUCTURES AND IMPROVEMENTS	25,864,673	R 3.0	40.0	2.50	646,617	0	1.00	2.50	646,617	5,188,262	5,188,262	6,287,342	-1,099,080	0.00
391.00	OFFICE FURNITURE AND EQUIP.	1,871,855	S 4.0	15.0	6.67	124,853	5	0.95	6.34	118,676	317,133	301,276	225,753	75,523	0.00
391.10	OFFICE FURNITURE AND EQUIP.-COMPUTERS	883,183	S 4.0	10.0	10.00	88,318	0	1.00	10.00	88,318	600,581	600,581	66,754	533,827	0.00
391.20	OFFICE FURNITURE AND EQUIP.-LAPTOP COMP.	878,732	S 4.0	5.0	20.00	175,746	0	1.00	20.00	175,746	777,138	777,138	866,695	-89,557	0.00
393.00	STORES EQUIPMENT	107,831	SQ	30.0	3.33	3,591	0	1.00	3.33	3,591	37,401	37,401	38,003	-602	0.00
394.00	TOOLS, SHOP & GARAGE EQUIPMENT	4,359,715	S 6.0	19.0	5.26	229,321	0	1.00	5.26	229,321	1,188,607	1,188,607	1,147,390	41,217	0.00
397.00	COMMUNICATION EQUIPMENT	941,816	SQ	10.0	10.00	94,182	0	1.00	10.00	94,182	556,907	556,907	652,209	-95,302	0.00
398.00	MISCELLANEOUS GENERAL EQUIPMENT	869,377	S 5.0	15.0	6.67	57,987	0	1.00	6.67	57,987	298,865	298,865	322,526	-23,661	0.00
	TOTAL DEPREC. GENERAL PLANT	35,777,182		25.2	3.97	1,420,615			3.95	1,414,438	8,964,894	8,949,037	9,606,672	-657,635	
	TOTAL DEPREC. GAS PLANT	698,179,397		47.6	2.10	14,688,014			2.58	18,016,128	169,358,534	213,646,147	202,727,844	10,918,303	
													Note: Col.13/Col. 11	5.11%	

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORPORATION
SCHEDULE OF DEPRECIATION ACCRUAL RATES @12/31/2021
WHOLE LIFE SCHEDULE WITH RESERVE VARIANCE

SCHEDULE A

FERC ACCOUNT NUMBER	DESCRIPTION	PLANT BALANCE @12/31/2021	DISP TYPE	ASL	ACCRUAL RATE W/O NET SALV.	ACCRUAL WITHOUT NET SALV.	NET SALV. %	SALV. FACTOR	ACCRUAL RATE W/ NET SALV.	ACCRUAL WITH NET SALV.	THEO. RSV. WITHOUT NET SALV.	THEO. RSV. WITH NET SALV.	BOOK RSV. @12/31/2021	RESERVE VARIANCE	COR RATE %
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	AMORTIZED PLANT														
	CAPITALIZED SOFTWARE														
303.10	CAPITALIZED SOFTWARE- 3 YEARS	2,332,280		3.0	33.33	777,349	0	1.00	33.33	777,349			1,019,860		0.00
303.20	CAPITALIZED SOFTWARE- 5 YEARS	12,961,962		5.0	20.00	2,592,392	0	1.00	20.00	2,592,392			13,365,176		0.00
303.40	CAPITALIZED SOFTWARE- 10 YEARS	3,893,722		10.0	10.00	389,372	0	1.00	10.00	389,372			3,173,692		0.00
303.50	CAPITALIZED SOFTWARE- 10 YEARS	779,858		10.0	10.00	77,986	0	1.00	10.00	77,986			537,439		0.00
303.60	CAPITALIZED SOFTWARE- 10 YEARS	1,034,809		10.0	10.00	103,481	0	1.00	10.00	103,481			671,164		0.00
	TOTAL ACCOUNT 303	21,002,631		5.3	18.76	3,940,580			18.76	3,940,580			18,767,331		
392	TRANSPORTATION EQUIPMENT	11,420,704		5.0	20.00	2,284,141	0	1.00	20.00	2,284,141			7,944,855		0.00
396	POWER OPERATED EQUIPMENT	862,889		5.0	20.00	172,578	0	1.00	20.00	172,578			691,862		0.00
	TOTAL AMORTIZED PLANT	33,286,224		5.2	19.22	6,397,299			19.22	6,397,299			27,404,048		
	TOTAL DEPREC. & AMORTIZED GAS PLANT	731,465,621		34.7	2.88	21,085,313			3.34	24,413,427			230,131,892		
1050	PLANT HELD FOR FUTURE USE	852,305													
1210	OPI-LAND-RETAINED	13,665													
1211	OPI-STRUCTURES-RETAINED	133,284											133,284		
3020	FRANCHISES AND CONSENTS	250,950													
3040	LAND RIGHTS OWNED	97,504													
3641	LNG PROCSS LAND AND LAND RIGHTS	57,315													
3740	DISTR LAND & LAND RIGHTS	376,710													
3890	GNL LAND RIGHTS	121,489													
	DIFF. IN BOOK RSV VS. PUC ANNUAL REPORT												45,029		
	TOTAL GAS PLANT IN SERVICE	733,368,843											230,310,205		

WHOLE LIFE SCHEDULE WITH RESERVE VARIANCE

EXPLANATORY NOTES

The Schedule includes indicated (theoretical) reserves both with and without net salvage, the book reserve, and the reserve variance.

The following is an explanation of each column of the Schedule:

1. Column (1) presents the book balance for each account or subaccount at the indicated date.

2. Column (2) labeled "DISP TYPE" is designated as either Forecast or some selected Iowa curve type as discussed in the text.

3. Column (3) indicates the direct weighted average dollar service life in years for each investment group, except where Column (3) shows "Forecast", in which instance the life is a harmonically weighted average dollar service life. Another exception is any life which is a composite of two or more locations and/or two or more accounts (or subaccounts), in which case the composite life is a harmonically weighted composite life derived by dividing the sum of accruals for the group into the depreciable balance of Column (1).

4. Column (4) is the unadjusted whole life accrual rate developed by dividing unity by Column (3), and expressing the quotient as a percentage.

5. Column (5) is the whole life accrual with no salvage adjustment, based upon the average service life associated with each investment group. These accruals are developed by multiplying Column (1) by Column (4).

6. Column (6) is the percent net salvage expectation; net salvage equals gross salvage minus removal cost.

7. Column (7) is the salvage factor, derived by subtracting the (signed) net salvage ratio from unity; e.g., a salvage factor of 1.10 is the result of 1.00 minus an expected net salvage ratio of minus 0.10; i.e., 1.00 - (-0.10) = 1.10.

8. Column (8) is the whole life accrual rate, reflecting adjustment for net salvage expectations; it is developed by multiplying Column (4) by Column (7), and expressing the product as a percentage.

WHOLE LIFE SCHEDULE WITH RESERVE VARIANCE

EXPLANATORY NOTES

9. Column (9) is the whole life accrual, adjusted for net salvage expectations. It is developed by multiplying Column (8) by Column (1).

10. Column (10) shows indicated depreciation reserves, unadjusted for net salvage expectations, calculated on the basis of the average service life and dispersion characteristics (or forecasts) associated with each investment group.

11. Column (11) is the indicated depreciation reserve, adjusted for net salvage expectations by multiplying Column (10) by Column (7).

12. Column (12) "BOOK RSV. @12/31/2021" contains book reserves by accounts, or subaccounts. In some instances, the book reserves are allocated from the functional book reserve level on the basis of the adjusted indicated reserves in Column (11). If book reserves are known and maintained at a finer level, or only at a larger level, these figures are used or allocated as appropriate.

13. Column (13) shows the difference between adjusted indicated reserves (Column 11) and book reserves (Column 12); i.e., Column (11) minus Column (12).

14. Column (14), "COR Rate %" contains the cost of removal percent that is included in the accrual rate with net salvage.

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

Schedule B

Comparison of Proposed vs. Current Whole Life Depreciation Accrual Rates @ 12/31/21

Docket No. DG 22-028
Exhibit 2

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORPORATION
COMPARISON OF PROPOSED VS CURRENT WHOLE LIFE DEPRECIATION ACCRUAL RATES @12/31/2021
SCHEDULE B

Docket No. DG 20-105
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FERC ACCOUNT NUMBER	DESCRIPTION	PLANT BALANCE @12/31/2021	CURRENT ASL	CURRENT NET SALVAGE %	CURRENT ANNUAL ACCRUAL ACCRUAL RATES %	CURRENT ANNUAL DEPREC ACCRUAL	PROPOSED ASL	PROPOSED NET SALVAGE %	PROPOSED WHOLE LIFE DEPREC. ACCRUAL RATES	PROPOSED WHOLE LIFE ANNUAL DEPREC. ACCRUAL	DIFFERENCE BETWEEN PROPOSED AND CURRENT WHOLE LIFE ANNUAL ACCRUAL
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	PRODUCTION PLANT										
305.00	STRUCTURES AND IMPROVEMENTS	852,167	35.0	0	2.86	24,372	35.0	0	2.86	24,372	0
319.00	GAS MIXING EQUIPMENT	691,821	35.0	0	2.86	19,786	20.0	0	5.00	34,591	14,805
320.00	OTHER EQUIPMENT-LNG	461,363	35.0	0	2.86	13,195	35.0	0	2.86	13,195	0
320.10	OTHER EQUIPMENT-PRODUCTION	3,426,407	35.0	0	2.86	97,995	35.0	0	2.86	97,995	0
	TOTAL DEPREC. PRODUCTION PLANT	5,431,758	35.0	0	2.86	155,348	31.9		3.13	170,153	14,805
	STORAGE PLANT										
361.00	STRUCTURES AND IMPROVEMENTS-LNG	96,980	35.0	0	2.86	2,774	35.0	0	2.86	2,774	0
363.50	OTHER EQUIPMENT-LNG	7,646	35.0	0	2.86	219	35.0	0	2.86	219	0
	TOTAL DEPREC. STORAGE PLANT	104,626	35.0		2.86	2,992	35.0		2.86	2,993	0
	LNG GAS TERMINATING AND PROCESSING PLANT										
364.20	STRUCTURES AND IMPROVEMENTS-LNG	952,003	35.0	0	2.86	27,227	35.0	0	2.86	27,227	0
364.80	OTHER EQUIPMENT	3,896,019	35.0	0	2.86	111,426	35.0	0	2.86	111,426	0
	TOTAL DEPREC. LNG TERM. AND PROCESS. PLANT	4,848,022	35.0		2.86	138,653	35.0		2.86	138,653	0
	TRANSMISSION PLANT										
367.00	MAINS	11,710,542	60.0	-15	1.92	224,842	60.0	-15	1.92	224,842	0
369.00	MEASURING AND REGULATING STATION EQUIP.	138,182	35.0	0	2.86	3,952	35.0	0	2.86	3,952	0
	TOTAL DEPREC. TRANSMISSION PLANT	11,848,724	59.5		1.93	228,794	59.5		1.93	228,794	0
	DISTRIBUTION PLANT										
375.00	STRUCTURES AND IMPROVEMENTS	1,761,490	35.0	0	2.86	50,379	35.0	0	2.86	50,379	0
376.00	MAINS	366,964,216	60.0	-15	1.92	7,045,713	60.0	-15	1.92	7,045,713	0
377.00	COMPRESSOR STATION EQUIPMENT	2,246,186	35.0	0	2.86	64,241	35.0	0	2.86	64,241	0
378.00	MEAS. AND REG. STATION EQUIPMENT-GENERAL	8,592,345	35.0	0	2.86	245,741	35.0	0	2.86	245,741	0
379.00	MEAS. AND REG. STATION EQUIPMENT-CITY GATE	5,431,082	35.0	0	2.86	155,329	35.0	0	2.86	155,329	0
380.00	SERVICES	198,967,012	45.0	-60	3.55	7,063,329	50.0	-60	3.20	6,366,944	-696,385
381.00	METERS	19,992,831	32.0	0	3.13	625,776	30.0	0	3.33	665,761	39,985
381.10	METERS-INSTRUMENT	254,439	32.0	0	3.13	7,964	30.0	0	3.33	8,473	509
381.20	METERS-ERTS	6,347,958	15.0	0	6.67	423,409	15.0	0	6.67	423,409	0
382.00	METER INSTALLATIONS	27,070,444	32.0	0	3.13	847,305	30.0	0	3.33	901,446	54,141
385.00	INDUSTRIAL MEASURING & REGULATING EQUIPMENT	53,375	19.0	0	5.26	2,808	19.0	0	5.26	2,808	0
387.00	OTHER EQUIPMENT	2,487,707	19.0	0	5.26	130,853	19.0	0	5.26	130,853	0
	TOTAL DEPREC. DISTRIBUTION PLANT	640,169,085	48.9		2.60	16,662,846	50.2		2.51	16,061,097	-601,750
	GENERAL PLANT										
390.00	STRUCTURES AND IMPROVEMENTS	25,864,673	35.0	0	2.86	739,730	40.0	0	2.50	646,617	-93,113
391.00	OFFICE FURNITURE AND EQUIP.	1,871,855	18.0	5	5.28	98,834	15.0	5	6.34	118,676	19,842
391.10	OFFICE FURNITURE AND EQUIP.-COMPUTERS	883,183	10.0	0	10.00	88,318	10.0	0	10.00	88,318	0
391.20	OFFICE FURNITURE AND EQUIP.-LAPTOP COMP.	878,732	5.0	0	20.00	175,746	5.0	0	20.00	175,746	0
393.00	STORES EQUIPMENT	107,831	30.0	0	3.33	3,591	30.0	0	3.33	3,591	0
394.00	TOOLS, SHOP & GARAGE EQUIPMENT	4,359,715	19.0	0	5.26	229,321	19.0	0	5.26	229,321	0
397.00	COMMUNICATION EQUIPMENT	941,816	10.0	0	10.00	94,182	10.0	0	10.00	94,182	0
398.00	MISCELLANEOUS GENERAL EQUIPMENT	869,377	15.0	0	6.67	57,987	15.0	0	6.67	57,987	0
	TOTAL DEPREC. GENERAL PLANT	35,777,182	24.0		4.16	1,487,709	25.2		3.95	1,414,438	-73,271
	TOTAL DEPREC. GAS PLANT	698,179,397	46.3		2.68	18,676,343	47.6		2.58	18,016,128	-660,216

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Docket No. DG 22-028
Exhibit 2

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORPORATION
COMPARISON OF PROPOSED VS CURRENT WHOLE LIFE DEPRECIATION ACCRUAL RATES @12/31/2021
SCHEDULE B

Docket No. DG 20-105
Attachment CAM/ELM-1
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FERC ACCOUNT NUMBER	DESCRIPTION	PLANT BALANCE @12/31/2021	CURRENT ASL	CURRENT NET SALVAGE %	CURRENT ANNUAL ACCRUAL ACCRUAL RATES %	CURRENT ANNUAL DEPREC ACCRUAL	PROPOSED ASL	PROPOSED NET SALVAGE %	PROPOSED WHOLE LIFE DEPREC. ACCRUAL RATES	PROPOSED WHOLE LIFE ANNUAL DEPREC. ACCRUAL	DIFFERENCE BETWEEN PROPOSED AND CURRENT WHOLE LIFE ANNUAL ACCRUAL
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	AMORTIZED PLANT										
	CAPITALIZED SOFTWARE										
303.00	CAPITALIZED SOFTWARE-3 YEARS	2,332,280	3.0	0	33.33	777,349	3.0	0	33.33	777,349	0
303.20	CAPITALIZED SOFTWARE- 5 YEARS	12,961,962	5.0	0	20.00	2,592,392	5.0	0	20.00	2,592,392	0
303.40	CAPITALIZED SOFTWARE- 10 YEARS	3,893,722	10.0	0	10.00	389,372	10.0	0	10.00	389,372	0
303.50	CAPITALIZED SOFTWARE- 10 YEARS	779,858	10.0	0	10.00	77,986	10.0	0	10.00	77,986	0
303.60	CAPITALIZED SOFTWARE- 10 YEARS	1,034,809	10.0	0	10.00	103,481	10.0	0	10.00	103,481	0
	TOTAL ACCOUNT 303	21,002,631	5.3		18.76	3,940,580	5.3		18.76	3,940,580	0
392	TRANSPORTATION EQUIPMENT	11,420,704	5.0	0	20.00	2,284,141	5.0	0	20.00	2,284,141	0
396	POWER OPERATED EQUIPMENT	862,889	5.0	0	20.00	172,578	5.0	0	20.00	172,578	0
	TOTAL AMORTIZED PLANT	33,286,224	5.2		19.22	6,397,299	5.2		19.22	6,397,299	0
	TOTAL DEPREC. & AMORTIZED GAS PLANT	731,465,621	34.1		3.43	25,073,642	34.7		3.34	24,413,427	-660,216
1050	PLANT HELD FOR FUTURE USE	852,305									
1210	OPI-LAND-RETAINED	13,665									
1211	OPI-STRUCTURES-RETAINED	133,284									
3020	FRANCHISES AND CONSENTS	250,950									
3040	LAND RIGHTS OWNED	97,504									
3641	LNG PROCSS LAND AND LAND RIGHTS	57,315									
3740	DISTR LAND & LAND RIGHTS	376,710									
3890	GNL LAND RIGHTS	121,489									
	TOTAL GAS PLANT IN SERVICE	733,368,843									

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021

APPENDICES

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021**

Appendix A

Prior Depreciation Study for Calendar Year 2016 (Schedule A)

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORPORATION
SCHEDULE OF DEPRECIATION ACCRUAL RATES @12/31/16
WHOLE LIFE SCHEDULE WITH RESERVE VARIANCE

SCHEDULE A

FERC ACCOUNT NUMBER	DESCRIPTION	PLANT BALANCE @12/31/16	DISP TYPE	ASL	ACCRUAL RATE W/O NET SALV.	ACCRUAL WITHOUT NET SALV.	NET SALV. %	SALV. FACTOR	ACCRUAL RATE W/ NET SALV.	ACCRUAL WITH NET SALV.	THEO. RSV. WITHOUT NET SALV.	THEO. RSV. WITH NET SALV.	BOOK RSV. @12/31/16	RESERVE VARIANCE	COR RATE %
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
303.00	CAPITALIZED SOFTWARE	14,745,889	S 4.0	6.2	16.13	2,378,512	0	1.00	16.13	2,378,512	5,708,940	5,708,940	4,975,703	733,237	0.00
	PRODUCTION PLANT														
305.00	STRUCTURES AND IMPROVEMENTS	1,975,163	R 1.0	35.0	2.86	56,490	0	1.00	2.86	56,490	818,047	818,047	1,374,447	-556,400	0.00
311.00	LP GAS EQUIPMENT	258,481	R 1.0	35.0	2.86	7,393	0	1.00	2.86	7,393	59,141	59,141	63,766	-4,625	0.00
320.00	OTHER EQUIPMENT-LNG	2,556,209	R 1.0	35.0	2.86	73,108	0	1.00	2.86	73,108	357,489	357,489	364,891	-7,402	0.00
320.10	OTHER EQUIPMENT-PRODUCTION	6,777,306	R 1.0	35.0	2.86	251,031	0	1.00	2.86	251,031	4,967,873	4,967,873	7,765,237	-2,797,364	0.00
	TOTAL DEPREC. PRODUCTION PLANT	13,567,159		35.0	2.86	388,021			2.86	388,021	6,202,550	6,202,550	9,568,341	-3,365,791	
	STORAGE PLANT														
361.00	STRUCTURES AND IMPROVEMENTS-LNG	57,345	R 1.0	35.0	2.86	1,640	0	1.00	2.86	1,640	13,371	13,371	9,179	4,192	0.00
363.50	OTHER EQUIPMENT-LNG	7,646	R 1.0	35.0	2.86	219	0	1.00	2.86	219	1,783	1,783	1,560	223	0.00
	TOTAL DEPREC. STORAGE PLANT	64,991		35.0	2.86	1,859			2.86	1,859	15,154	15,154	10,739	4,415	
	TRANSMISSION PLANT														
366.20	STRUCTURES AND IMPROVEMENTS	269,809	R 1.0	35.0	2.86	7,717	0	1.00	2.86	7,717	119,856	119,856	177,630	-57,774	0.00
366.30	STRUCTURES AND IMPROVEMENTS-OTHER	353,851	R 1.0	35.0	2.86	10,120	0	1.00	2.86	10,120	192,616	192,616	278,219	-85,403	0.00
367.00	MAINS	234,872,697	R 3.0	60.0	1.67	3,919,034	-15	1.15	1.92	4,505,716	55,056,671	63,315,172	54,187,131	9,128,041	0.25
369.00	MEASURING AND REGULATING STATION EQUIP.	4,909,208	S 4.0	35.0	2.86	140,403	0	1.00	2.86	140,403	1,782,000	1,782,000	1,869,616	-197,616	0.00
	TOTAL DEPREC. TRANSMISSION PLANT	240,205,566		59.0	1.70	4,077,274			1.94	4,663,956	57,151,343	65,409,844	56,532,596	8,877,248	
	DISTRIBUTION PLANT														
380.00	SERVICES	146,720,226	R 4.0	45.0	2.22	3,257,189	-60	1.60	3.55	5,208,568	43,052,385	66,883,816	66,714,617	2,169,199	1.33
381.00	METERS	14,628,345	R 3.0	32.0	3.13	457,867	0	1.00	3.13	457,667	6,058,054	6,058,054	7,838,363	-1,780,309	0.00
381.10	METERS-INSTRUMENT	188,398	R 3.0	32.0	3.13	5,897	0	1.00	3.13	5,897	46,943	46,943	31,378	15,565	0.00
381.20	METERS-ERTS	5,647,769	SQ	15.0	6.67	376,706	0	1.00	6.67	376,706	4,689,816	4,689,816	2,073,245	2,616,571	0.00
382.00	METER INSTALLATIONS	14,360,005	R 3.0	32.0	3.13	449,468	0	1.00	3.13	449,468	3,013,872	3,013,872	2,510,354	503,518	0.00
387.00	OTHER EQUIPMENT	906,013	S 6.0	19.0	5.26	47,761	0	1.00	5.26	47,761	410,276	410,276	339,112	71,164	0.00
	TOTAL DEPREC. DISTRIBUTION PLANT	182,452,756		39.7	2.52	4,594,889			3.59	6,546,268	57,271,346	83,102,777	79,507,089	3,595,706	
	GENERAL PLANT														
390.00	STRUCTURES AND IMPROVEMENTS	22,070,702	R 1.0	35.0	2.86	631,222	0	1.00	2.86	631,222	2,218,786	2,218,786	3,314,051	-1,095,265	0.00
391.00	OFFICE FURNITURE AND EQUIP.	285,566	S 4.0	18.0	5.56	15,877	6	0.95	5.28	15,078	44,136	41,929	26,275	15,654	0.00
391.10	OFFICE FURNITURE AND EQUIP.-COMPUTERS	1,840,911	S 4.0	10.0	10.00	184,091	0	1.00	10.00	184,091	1,179,639	1,179,639	297,543	882,096	0.00
391.20	OFFICE FURNITURE AND EQUIP.-LAPTOP COMP.	679,916	S 4.0	5.0	20.00	135,983	0	1.00	20.00	135,983	349,087	349,087	81,882	267,205	0.00
393.00	STORES EQUIPMENT	99,421	SQ	30.0	3.33	3,311	0	1.00	3.33	3,311	19,569	19,569	28,007	-8,438	0.00
394.00	TOOLS, SHOP & GARAGE EQUIPMENT	825,963	S 6.0	19.0	5.26	43,446	0	1.00	5.26	43,446	270,641	270,641	347,637	-76,996	0.00
394.10	TOOLS, SHOP & GARAGE EQUIPMENT-CNG STATION	221,199	S 6.0	19.0	5.26	11,635	0	1.00	5.26	11,635	203,415	203,415	192,912	10,503	0.00
397.00	COMMUNICATION EQUIPMENT	443,965	SQ	10.0	10.00	44,397	0	1.00	10.00	44,397	343,778	343,778	212,912	130,866	0.00
398.00	MISCELLANEOUS GENERAL EQUIPMENT	346,302	S 5.0	15.0	6.67	23,232	0	1.00	6.67	23,232	127,856	127,856	151,520	-23,664	0.00
	TOTAL DEPREC. GENERAL PLANT	26,815,945		24.5	4.08	1,093,194			4.07	1,092,394	4,756,907	4,754,700	4,652,739	101,961	
	TOTAL DEPREC. GAS PLANT	477,852,305		38.1	2.62	12,533,748			3.15	15,071,009	131,106,240	165,193,965	155,247,187	9,946,778	
	AMORTIZED PLANT														
392	TRANSPORTATION EQUIPMENT	2,566,140		5.0	20.00	513,228	0	1.00	20.00	513,228			623,499		0.00
396	POWER OPERATED EQUIPMENT	491,943		5.0	20.00	98,389	0	1.00	20.00	98,389			430,651		0.00
	TOTAL AMORTIZED PLANT	3,058,083		5.0	20.00	611,617			20.00	611,617			1,054,150		
	TOTAL DEPREC. & AMORTIZED GAS PLANT	480,910,388		38.6	2.73	13,145,364			3.26	15,682,626			156,301,337		
1211	OPI-STRUCTURES-RETAINED												133,284		
304/365	LAND & LAND RIGHTS	592,016													
389.00	GNL LAND & LAND RIGHTS	16,606													
1012	ARO	139,286													
	DIFF. IN ACCOUNT 367 & 380 BAL. VS PUC ANNUAL REPORT	6,352													
	TOTAL GAS PLANT IN SERVICE	481,665,650											156,434,621		

**Liberty Utilities (EnergyNorth Natural Gas) Corp.
Depreciation Accrual Rates Based on
Gas Plant in Service at December 31, 2021**

Appendix B

Approved Staff Depreciation Parameters

Appendix 6
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DG 17-048

DG 17-048
Depreciation Accrual Rates

FERC ACCOUNT NUMBER	DESCRIPTION	ASL	NET SALVAGE %	WHOLE LIFE DEPREC. ACCRUAL RATES (Note 1)
303.00	CAPITALIZED SOFTWARE	6.2	0	16.13
	PRODUCTION PLANT			
305.00	STRUCTURES AND IMPROVEMENTS	35.0	0	2.86
311.00	LP GAS EQUIPMENT	35.0	0	2.86
320.00	OTHER EQUIPMENT-LNG	35.0	0	2.86
320.10	OTHER EQUIPMENT-PRODUCTION	35.0	0	2.86
	STORAGE PLANT			
361.00	STRUCTURES AND IMPROVEMENTS-LNG	35.0	0	2.86
363.50	OTHER EQUIPMENT-LNG	35.0	0	2.86
	TRANSMISSION PLANT (Note 2)			
366.20	STRUCTURES AND IMPROVEMENTS (reclass to 375)	35.0	0	2.86
366.30	STRUCTURES AND IMPROVEMENTS-OTHER (reclass to 375)	35.0	0	2.86
367.00	MAINS (reclass to 376)	60.0	-15	1.92
369.00	MEASURING AND REGULATING STATION EQUIP. (reclass to 3	35.0	0	2.86
	DISTRIBUTION PLANT			
380.00	SERVICES	45.0	-60	3.55
381.00	METERS	32.0	0	3.13
381.10	METERS-INSTRUMENT	32.0	0	3.13
381.20	METERS-ERTS	15.0	0	6.67
382.00	METER INSTALLATIONS	32.0	0	3.13
387.00	OTHER EQUIPMENT	19.0	0	5.26
	GENERAL PLANT			
390.00	STRUCTURES AND IMPROVEMENTS	35.0	0	2.86
391.00	OFFICE FURNITURE AND EQUIP.	18.0	5	5.28
391.10	OFFICE FURNITURE AND EQUIP.-COMPUTERS	10.0	0	10.00
391.20	OFFICE FURNITURE AND EQUIP.-LAPTOP COMP.	5.0	0	20.00
393.00	STORES EQUIPMENT	30.0	0	3.33
394.00	TOOLS, SHOP & GARAGE EQUIPMENT	19.0	0	5.26
394.10	TOOLS, SHOP & GARAGE EQUIPMENT-CNG STATION	19.0	0	5.26
397.00	COMMUNICATION EQUIPMENT	10.0	0	10.00
398.00	MISCELLANEOUS GENERAL EQUIPMENT	15.0	0	6.67

Note 1: The calculation of deprecation accrual rates is based on the whole-life technique as follows:
1-(net salvage percent) divided by average service life

Note 2: Incorrectly classified as transmission plant, corrected through reclass as distribution plant.

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty
Illustrative Step 2 Adjustment - Revenue Requirement

Docket No. DG 20-105
Attachment CAM/ELM-2
Page 1 of 1

Description	IT	Transmission Mains	Distribution Mains	Services	Meters	Transportation	GEN-Tools-Shop-Garage Equip	Total
FERC Account	*303 - 5 Year*	*367*	*376*	*380*	*381*	*392*	*394*	
Capital Spending	$ 351,408	$ 23,086,343	$ 511,291	$ 605,038	$ 2,405,716	$ 970,393	$ 247,679	$ 28,177,868
Deferred Tax Calculation								
Tax Method	MACRS5	MACRS20	MACRS20	MACRS20	MACRS20	MACRS5	MACRS7	
Tax Depreciation Rate	20.00%	3.75%	3.75%	3.75%	3.75%	20.00%	14.29%	
Bonus Depreciation @ 0.00%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tax Basis	$ 351,408	$ 23,086,343	$ 511,291	$ 605,038	$ 2,405,716	$ 970,393	$ 247,679	$ 28,177,868
MACRS Depreciation	$ 70,282	$ 865,738	$ 19,173	$ 22,689	$ 90,214	$ 194,079	$ 35,393	$ 1,297,568
Tax Depreciation - Federal	$ 70,282	$ 865,738	$ 19,173	$ 22,689	$ 90,214	$ 194,079	$ 35,393	$ 1,297,568
Tax Depreciation - State	$ 70,282	$ 865,738	$ 19,173	$ 22,689	$ 90,214	$ 194,079	$ 35,393	$ 1,297,568
Book Depreciation Rate	20.00%	1.92%	1.92%	3.20%	3.33%	20.00%	5.26%	
Book Depreciation	$ 70,282	$ 443,258	$ 9,817	$ 19,361	$ 80,110	$ 194,079	$ 13,028	$ 829,934
Tax over (under) Book - Federal	$ -	$ 422,480	$ 9,357	$ 3,328	$ 10,104	$ -	$ 22,365	$ 467,634
Tax over (under) Book - State	0	422,480	9,357	3,328	10,104	0	22,365	467,634
Deferred Taxes - Federal @ 21.00%	0	88,721	1,965	699	2,122	0	4,697	98,203
Deferred Taxes - State @ 7.60%	0	32,108	711	253	768	0	1,700	35,540
Deferred Tax Balance	$ -	$ 120,829	$ 2,676	$ 952	$ 2,890	$ -	$ 6,397	$ 133,743
Rate Base Calculation								
Plant in Service	$ 351,408	$ 23,086,343	$ 511,291	$ 605,038	$ 2,405,716	$ 970,393	$ 247,679	$ 28,177,868
Accumulated Depreciation	(70,282)	(443,258)	(9,817)	(19,361)	(80,110)	(194,079)	(13,028)	$ (829,934)
Deferred Tax Balance	0	(120,829)	(2,676)	(952)	(2,890)	0	(6,397)	$ (133,743)
Rate Base	$ 281,126	$ 22,522,256	$ 498,798	$ 584,725	$ 2,322,716	$ 776,314	$ 228,255	$ 27,214,190
Revenue Requirement Calculation								
Return on Rate Base @ 8.75%	$ 24,628	$ 1,973,062	$ 43,697	$ 51,225	$ 203,482	$ 68,009	$ 19,996	$ 2,384,099
Depreciation Expense	70,282	443,258	9,817	19,361	80,110	194,079	13,028	$ 829,934
Property Tax @ $6.60 per $1000	2,319	152,370	3,375	3,993	15,878	6,405	1,635	$ 185,974
Annual Revenue Requirement	**$ 97,229**	**$ 2,568,690**	**$ 56,889**	**$ 74,579**	**$ 299,470**	**$ 268,492**	**$ 34,659**	**$ 3,400,007**

Keene CNG Phase I Expansion Revenue Requirement Adjustment (per risk sharing calculation)	(21,959)
Total Annual Revenue Requirement Related 2021 Plant Additions	$ 3,378,048
Cap to Revenue Requirement per Settlement Agreement in DG 20-105	3,200,000
Adjustment to Depreciation Expense per Attachment CAM/ELM-1 Schedule B page 2	(660,216)
Resulting Total Annual Revenue Requirement	2,539,784

Rate of Return Calculation*	Capital Structure	Cost of Capital	Weighted Cost of Capital	Tax Rate	Pre-Tax WACC
Equity	52.0%	9.30%	4.84%	27.004%	6.64%
Debt	48.0%	4.42%	2.12%		2.12%
	100.0%	13.72%	6.96%		8.76%

*As approved in the Settlement Agreement in Docket No. DG 20-105 with exception of the effective tax rate