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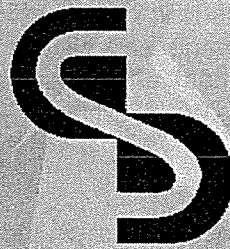
**Additional Opportunities for  
Energy Efficiency in New Hampshire**

**Final Report – January 2009**

*Prepared for the*

**New Hampshire Public Utilities Commission**

*Prepared and Submitted by:*



**GDS Associates, Inc.**

**Engineers and Consultants**

*In partnership with*

**RLW Analytics and Research Into Action**

*With Telephone Survey Support Provided by*

**RKM Research and Communication**

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## ACKNOWLEDGEMENTS

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This report provides valuable and up-to-date electric and natural gas (and associated propane and oil) energy efficiency potential savings information for New Hampshire's regulators and utility decision-makers. It will also be useful to electric and gas energy efficiency program designers and implementers and for others who may need a template for their own energy efficiency potential studies. This report includes a thorough and up-to-date assessment of the impacts that energy efficiency measures and programs can have on electricity and gas, propane and oil use in New Hampshire. Clearly there remains a significant amount of cost effective energy savings potential to be tapped within the state.

## NOTICE

This report was prepared by GDS Associates, Inc., in the course of performing work contracted for and sponsored by the New Hampshire Public Utilities Commission, with review participation by National Grid (electric and gas), the New Hampshire Electric Cooperative, Northern Utilities, Public Service Company of New Hampshire, and Unitil Energy Services (hereinafter the "Sponsors"). The opinions expressed in this report do not necessarily reflect those of the Sponsors or the State of New Hampshire, and reference to any specific product, service, process, or method does not constitute an implied or expressed recommendation or endorsement of it. Further, the Sponsors, the State of New Hampshire, and the contractor make no warranties or representations, expressed or implied, as to the fitness for particular purpose or merchantability of any product, apparatus, or service, or the usefulness, completeness, or accuracy of any processes, methods, or other information contained, described, disclosed, or referred to in this report. The Sponsors, the State of New Hampshire, and the contractor make no representation that the use of any product, apparatus, process, method, or other information will not infringe privately owned rights and will assume no liability for any loss, injury, or damage resulting from, or occurring in connection with, the use of information contained, described, disclosed, or referred to in this report.

*Scott M. Albert, Principal & Northeast Region Manager  
GDS Associates, Inc., January 2009*

Second, these figures consider only cumulative annual savings, not lifetime savings<sup>15</sup>. In reality, annual savings are realized every year over the assumed measure life of the programs. The data was reported in the above manner to provide an appropriate comparison to the forecast 2008 usage. More details regarding this analysis are presented in Section 8 of this report.

To increase the likelihood of achieving the additional energy efficiency savings potential highlighted in this study, the following findings/recommendations are suggested (see Section 8 for more details):

To date, the efficiency programs offered in New Hampshire by the state's four largest electric utilities and two natural gas distribution companies have been successful and have saved a substantial amount of energy. Many of the programs have and are continuing to perform quite well in terms of cost per unit of energy saved and customer participation. Several other programs have shown positive trends becoming more cost effective on a yearly basis.

For all programs, but most notably in the electric market, the cost per kWh saved in the commercial and industrial sectors has been better than in the residential market. This might explain why in general, commercial and industrial customers have indicated a higher awareness of the utilities' efficiency programs available to them as well as an increased likelihood of program participation compared to residential customers. Given the scale of energy consumption in the commercial and industrial sectors, these customers continue to represent a substantial area for potential energy savings in the upcoming years.

- Recommendation: Additional penetration can be achieved through increased outreach to small commercial/industrial customers and by expanding current program offerings to include other cost effective measures not currently included in the companies' CORE and utility-specific programs.

Residential customer participation in the state's electric and natural gas energy efficiency programs has met or exceeded program expectations on a yearly basis. However, in the phone surveys more than half of respondents indicated that they were not aware of the programs offered by their utilities, or that they were even eligible. Of the customers who were aware of the programs, a high percentage participated and indicated they would participate in the future.

- Recommendation: This data underscores the importance of increasing consumer education on the programs available to residential customers and of the associated benefits.

One final finding from the study is that nearly all of the most cost effective energy efficiency measures are included in current programs in some manner. In several programs, however, the cost effective measures are targeted to a small percentage of consumers. The best example of this is the *Home Energy Solutions* program which targets consumers with 65% or greater electric heating. Customers with electric heat as their primary heating source represent approximately 4% of the total population based on the phone surveys.<sup>16</sup>

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<sup>15</sup> Cumulative annual savings were calculated by determining the annualized savings in a given year and summing those annual savings for each of the program years reviewed.

<sup>16</sup> The 4% represents total number of customers with electric heat as their primary source for heating. A smaller percentage than 4% would qualify for participation in the Home Energy Solutions program, since 65% or more of their space heating needs to be met with electric heat.

- Recommendation: Expanding the number and types of products and services available through the existing residential energy efficiency programs, and promotion of those programs to include a larger number of potential participants may lead to increased overall energy savings. It is important to recognize that such expansion would require providing services to customers that heat with fuels other than electric or natural gas. Issues regarding who would pay for the provision of services to such customers would need to be addressed.

### **1.8 Structure of this Report**

Section 2 of this report provides an overview of current and forecasted electric and natural gas energy usage in New Hampshire. Information on geographic, economic, demographic and energy usage characteristics of the State is also presented in Section 2. Section 3 of this report provides a detailed discussion of the research plan and methodologies used for the collection and analysis of all data in this report. Results from the participation, preferences and barriers questions asked as part of this project's phone surveys and site visit interviews are also presented in Section 3. Sections 4, 5 and 6 provide detailed results from the electric and non-electric energy efficiency potential analysis conducted for the residential, commercial and industrial sectors, respectively. Detailed results are presented in these sections regarding technical potential, maximum achievable potential, maximum achievable cost effective potential and the potentially obtainable scenario. Energy (kWh), capacity (kW), and associated therm (MMBTu) and environmental (tons of CO<sub>2</sub>) savings are presented along with additional description of the methodologies used, where applicable.

This project included a major enhancement to a majority of the technical potential studies that have been conducted across the country in the past. Rather than relying on best available information from existing secondary sources to estimate current levels of energy using equipment saturations and penetration of energy efficiency measures, significant primary data collection efforts were undertaken to help inform and derive New Hampshire-specific values where possible within the time requirements and work scope specified for this project. As such, this effort was completed through a combination of primary and secondary data collection and analysis activities. Detailed findings and an assessment of the value resulting from this enhanced, New Hampshire-specific data collection effort is presented in Section 7 of this report.

Section 8 assesses the amount of energy savings that past and current energy efficiency programs in the state have already captured. Recommendations for potential program modifications and measure offerings are also included in this section.