

Economically Achievable Energy Efficiency Potential in New England

Prepared By

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For

Northeast Energy Efficiency Partnerships, Inc.



November 17, 2004

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Northeast Energy Efficiency Partnerships, Inc., a leading regional nonprofit organization that promotes energy efficiency (EE) in New England, New York and the Mid-Atlantic states, commissioned **Optimal Energy, Inc.**, a Bristol, Vt.-based energy consulting company, to conduct secondary analysis on existing studies on EE potential and to extrapolate this data to determine the economically achievable EE potential in New England as a whole over a 10-year period. The study aims to answer some critical questions, including how much efficiency is needed to offset forecasted load growth; what the major “reservoirs” of EE potential are; how New England can capture this potential; the costs versus benefits of this potential; how EE can help meet regional climate change goals; and how EE can reduce natural gas demand for electric power generation in New England.

Those in the Northeast pay among the highest costs in the nation for electricity and natural gas, and those costs are only going to get higher this winter. According to the **U.S. Department of Energy**, natural gas users on average will see a 15 percent rate hike this winter. What’s more, because most of the new electricity generation in the Northeast is from gas-fired power plants, electricity customers will also see significant increases in their bills due to tightening supplies of and rising demand for natural gas. Although New England states have made great strides in implementing EE programs, the findings of this study indicate that there are still a number of untapped opportunities in EE, which is abundant in all customer sectors, end uses and markets, and that New Englanders are missing out on keeping millions of their energy dollars at home, improving the reliability of their electric grid and avoiding the harmful emissions of electricity generation.

Key Findings:

What is the Economically Achievable Energy Efficiency (EE) Potential in New England?

- EE is the potential for maximum market penetration of energy efficient measures that are cost-effective and would be adopted through a sustained campaign involving proven program and market interventions not bound by any budget constraints.
- By 2008 energy savings of 17,103 gigawatt hours (gWh) and demand savings 4,317 megawatts (MW) can be achieved, which would equal the annual electricity needs of 2.4 million households and the output of 14 electricity-generating plants of 300 MW each.
- By 2013 an energy savings of 24,375 gWh and demand savings of 8,383 MW can be achieved, equaling the annual electricity needs of Connecticut and New Hampshire households combined, and the output of 28 electricity generating plants of 300 MW each.

How much EE is needed to offset forecasted load growth?

- The Independent System Operator for New England (ISO-New England) forecasts that load growth will increase annually at a rate of 1.2 percent, or to 147,300 gWh by 2013.
- If New England can capture only 48 percent of the EE Potential, or 16,500 gWh, the it is possible to offset this projected growth.

What are the major “reservoirs” of EE potential?

- There is the potential to save 12,745 gWh in the residential sector, and 21,630 gWh in the commercial and industrial sector by 2013.
- “Lost opportunity” savings can capture 1/3 of the energy savings in the residential sector and ¼ in the commercial and industrial sector when customers purchase, or replace equipment, or homes and buildings are built or renovated. Retrofit programs can capture the remainder.
- Improved building energy codes and appliance efficiency standards **are the cheapest way** to realize a significant portion of New England’s EE potential.

How can New England capture this EE potential?

- Continuing with current EE programs will capture less than 20 percent of New England’s Achievable EE potential.
- To capture the remainder, states must implement and enforce building energy codes, adopt proposed state and federal minimum efficiency appliance standards, expand procurement rules for state and municipal facilities and equipment purchase, adopt or expand the resource acquisition role of EE to meet specific state and regional electric supply needs (e.g., demand response, transmission and distribution requirements, default service options), and increase ratepayer funding for EE programs

What are the costs versus benefits of this EE potential?

- EE is 67 percent cheaper than the average cost to supply electricity.
- The benefits of achieving full EE potential equals a combined present value savings of \$34.7 billion from 2004 to 2013, at a cost of only \$11 billion.
- Investing in EE in New England can **provide net benefits of between \$13 billion and \$23.7 billion** to the region’s economy.

How much can EE help reduce power plant emissions and help meet regional climate change goals?

- The New England Governors’ Conference (NEGC) Climate Change Action Plan Goal is to stabilize CO₂ Emission at 1990 Levels by 2010. Estimates by Northeast States for Coordinated Air Use Management (NESCAUM) indicate that CO₂ emissions were 116 million tons in 2000 for the Stationary Combustion Sector in New England, and will increase 19.7 percent by the year 2010. Thus, NEEP estimates that CO₂ emissions are projected to increase to 138 million tons by 2010, roughly 35 million tons above the proposed goal.
- The cumulative impact of EE strategies is a potential reduction of 23.94 million tons of CO₂, which is 68 percent of NEGC’s goal for the stationary combustion sector.
- Investments in EE can help New England **meet the NEGC climate change goals by between 21 and 68 percent for the Stationary Combustion sector by 2010.**

How much can EE help reduce natural gas demand for electric power generation in New England?

- EE can reduce forecasted natural gas demand in New England by between 11 percent and 68 percent by 2013, depending upon how much of the EE potential is captured.
- The current forecasted demand for natural gas is 378,916 billion BTUs in 2008 and 380,650 billion BTUs by 2013. The cumulative impact of strategies to realize all EE potential would reduce power plant natural gas demand by 33 percent in 2008 and 68 percent in 2013.

Recommendations to New England policymakers:

1. Integrate EE into regional system and distribution company planning and resource procurement processes.
2. Include EE in the needs assessment for new gas supply facilities.
3. Link energy facility planning with environmental and economic policies.
4. Give high priority to building energy code updates and high levels of compliance (i.e.,75 percent).
5. Support strong and timely adoption of federal appliance and product efficiency standards.
6. Continue to adopt state appliance and product efficiency standards.
7. Increase funding for EE investments as a clean and cheap energy supply resource.
8. Adopt or expand EE procurement rules for state and municipal buildings and equipment purchases.
9. Use increased electric EE to relieve gas supply constraints and to help mitigate energy price volatility.
10. Establish common, regional methods and assumptions for measuring EE savings in New England.