

Toxics Use Reduction Institute Conference

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Today's Agenda

- Introduction to NSTAR
- Energy Efficiency in MA
- NSTAR's Energy Efficiency Programs
 - NSTAR Electric
 - NSTAR Gas
- Observations and Future of EE
- Questions & Discussion

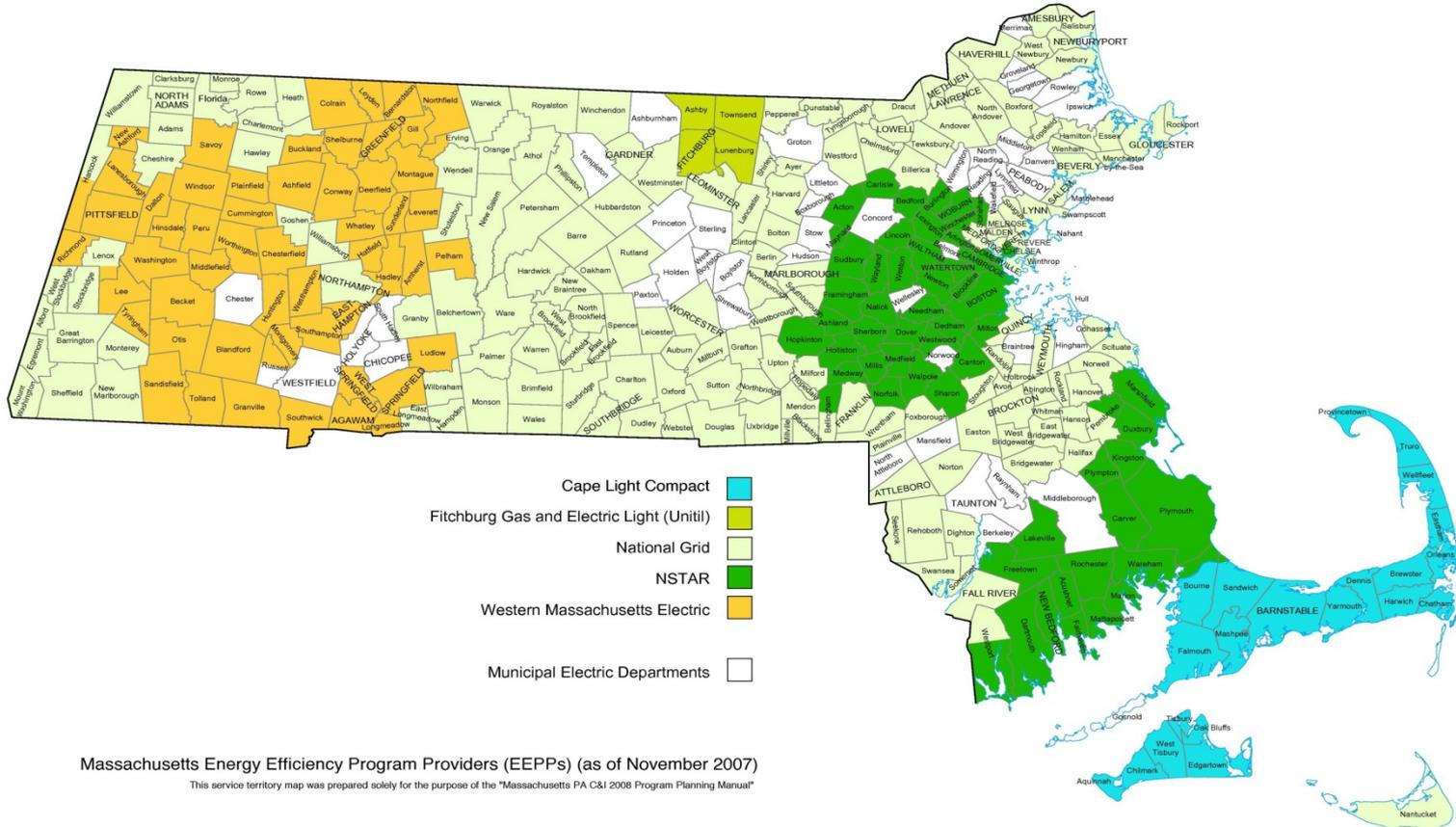


NSTAR – Who are we?

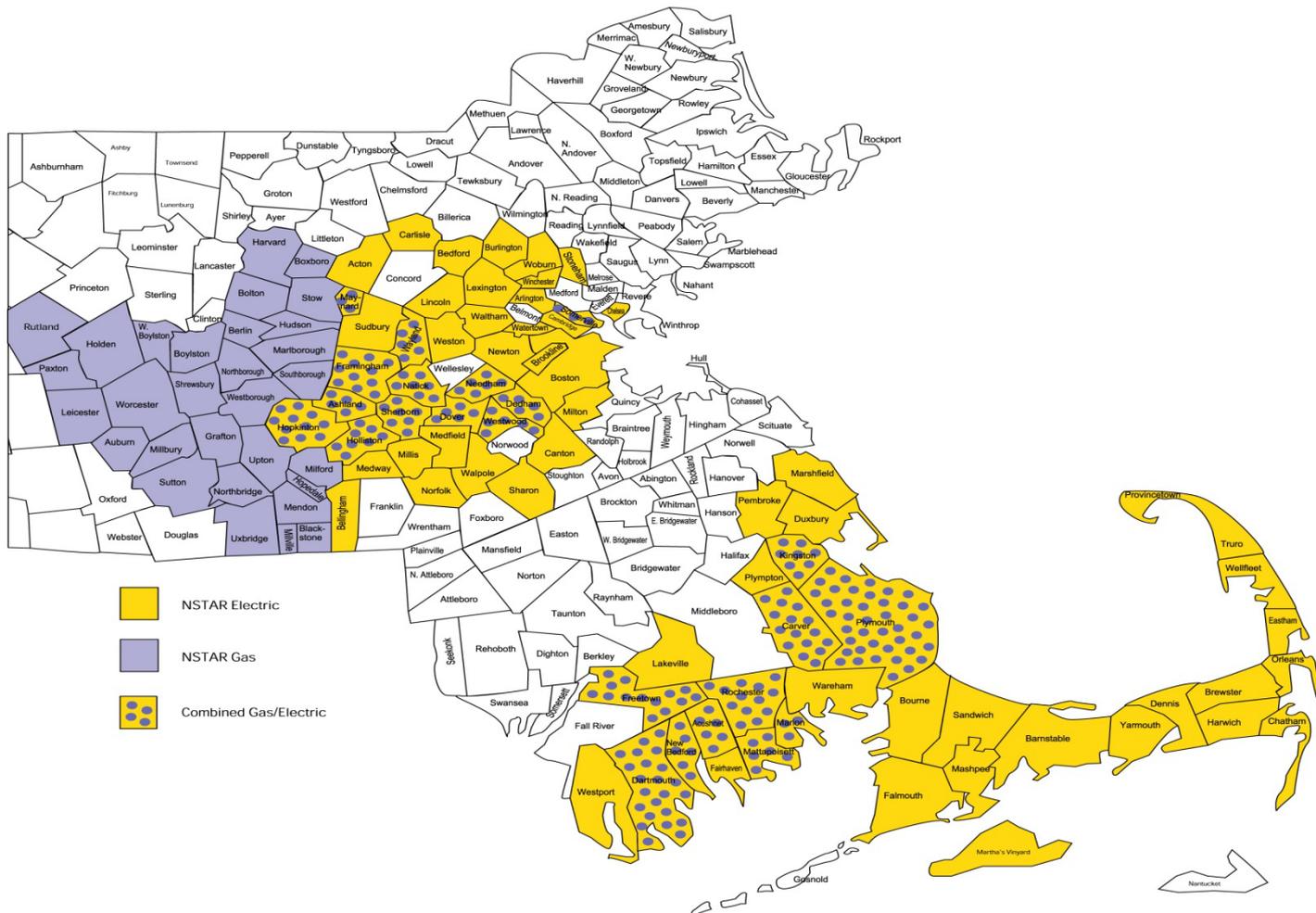
- NSTAR is the largest Massachusetts-based, investor-owned electric and gas utility that delivers electricity and natural gas to 1.4 million customers in Eastern Massachusetts.
- For over 20 years, NSTAR has offered both commercial and residential energy efficiency programs to its customers



MA Energy Efficiency Program Territory Map



NSTAR Electric and Gas Territory Map



NSTAR – Who are we?

- In the past five years alone, NSTAR's energy efficiency programs have helped customers save 6.5 million therms of natural gas and 800,000 megawatt-hours of electricity
- Such programs are available to both electric and gas customers, and are designed to not only reduce energy bills, but also to help the environment.



The Goal of Energy Efficiency Programs

- Transform the market toward energy efficiency design and practice
 - Easy participation for customers and market actors
- Energy Advisor to Customers
 - Educate customers on how to use energy more efficiently
 - Reduce cost of doing business
 - Offer education and training initiatives
- Improve overall standard practices design and installations

The Nation

WEDNESDAY, DECEMBER 4, 2008

sketches business incentives

Buildings: Energy and Environment

- ◆ Use 1/3 of the Nation's primary energy.
(This becomes over 50% when taking into account the energy use of the infrastructure needed to support buildings.)
- ◆ Use 2/3 of the Nation's electricity and 1/3 greenhouse gas emissions

4.84
daq
2.35
Markets
The US dollar
0.9885 euro
no change
10-year Treasury
4.15% ▲ 6.09
Bloomberg
Mass

Fund firm to cut staff
Pioneer Investment
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Business

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Why are we in the business of helping our customers consume less energy?

- **Benefits to the Customer**
 - o Financial incentives reduce construction costs
 - o Added value enhances investment
 - o Lower operating costs help sustain operations
 - o Improved building performance good for employees, shoppers, students
 - o Fewer Emissions
- **Benefits to the Energy Efficiency Program Provider**
 - o Avoid higher cost power (peak hours/days) and avoid transmission and sub station upgrades and expansions.
 - o DRIPE – Demand Reduction Induced Pricing Effect
- **Benefits to the Environment**
 - o Reduced emissions
 - o Impact climate change



Energy Efficiency Program Funding

- **Energy Efficiency Charge Mandated by Law**
- **Legislation renewed through 2012**
 - Customers contribute through utility rates
 - EE Programs and Renewable Technology Programs
 - Level funding set at \$0.0025/kWh for EE Programs
 - Renewable Programs set at \$0.0005/kWh
- **Example: Commercial Customer EE Program Contribution**
 - **Average Monthly Use of 100,000 kWh**
 - *Monthly EE contribution:* $\$0.0025/\text{kWh} \times 100,000 \text{ kWh} = \mathbf{\$250}$
 - *Yearly EE contribution:* $\$250 \times 12 \text{ mo./yr.} = \mathbf{\$3,000}$
 - *5-Year EE contribution:* $\$3,000 \times 5 \text{ years} = \mathbf{\$15,000}$



Energy Efficiency Program Administration

- **Utilities Implement Energy Efficiency Programs**
 - Stable and mature EE Programs statewide
 - Trend toward comprehensiveness and whole building efficiency approach (interaction and integration of systems)
 - Consistency in both EE Programs offered by various utilities and Regional Market Transformation Efforts
- **Massachusetts Technology Collaborative (MTC)**
 - Implements renewable technology programs
 - PV installations, wind power, etc.



2007 Energy Efficiency Programs Results

PROGRAM NAME	Incentives Paid \$\$\$	Estimated Gross Annual Savings (kWh)	\$/kWh
Construction Solutions	\$5,000,000	30,995,000	0.16
Business Solutions	\$8,400,000	77,445,000	0.11
Small Business Solutions	\$8,000,000	23,964,000	0.33
TOTAL 2006	\$21,400,000	132,404,000	0.16

Customers saved more than **\$16 million** off their electric bill annually assuming an energy cost of \$0.12/kWh



Commercial/ Industrial (C&I) Energy Efficiency Programs

- **Large Business Programs:**
 - ***Construction Solutions Program***
 - ***Lost Opportunity or New Construction***
 - ✓ Installation of energy efficient equipment and systems for new construction, major renovations and replacement of failed equipment
 - ✓ Comprehensiveness and optimized systems through technical assistance
 - ✓ Incentives up to 75% of incremental costs
 - ✓ Incentives up to 90% of incremental costs for comprehensiveness
 - ***Business Solutions Program***
 - ***Retrofit***
 - ✓ Targets energy efficient opportunities for existing buildings and equipment
 - ✓ Replaces inefficient equipment or systems
 - ✓ Reduces owners operating costs
 - ✓ Incentives up to 50%



C&I New Construction Programs

➤ **Lost Opportunity or New Construction Applications:**

- ✓ **Compressed Air**
- ✓ **Energy Efficient Lighting & Controls**
- ✓ **Cool Choice - Unitary Packaged HVAC**
- ✓ **Chillers and Refrigeration**
- ✓ **MotorUp - Premium-Efficiency Motors**
- ✓ **Variable Speed Drives**
- ✓ **Massachusetts Custom Programs**

➤ ***New Construction Program Providers in MA***

- ***CLC: C&I Lost Opportunity***
- ***National Grid: Design 2000plus***
- ***NSTAR: Construction Solutions***
- ***Unitil/FG&E: Large Business Services***
- ***WMECo: Lost Opportunity and Major Renovations
Energy Solutions***



C&I Retrofit Programs

➤ C&I Retrofit Applications:

- ✓ Compressed Air
- ✓ Energy Efficient Lighting & Controls
- ✓ EMS
- ✓ Variable Speed Drives (with Premium Efficiency Motors)
- ✓ Custom Programs

➤ *C&I Retrofit Programs in MA*

- *CLC: Medium & Large C&I Retrofit (> 200 kW)*
- *National Grid: Energy Initiative (> 200 kW)*
- *Unitil/FG&E: Large Business Solutions (> 100 kW)*
- *WMECo: Express Service*



Commercial/ Industrial Energy Efficiency Programs (continued)

- Small Business Solutions Program:
 - Retrofit lighting and other custom services
 - For non-Strategic Account customers with monthly demand of 300 kilowatts or less
 - ✓ Provides a free energy audit and recommendation for energy efficiency improvements
 - ✓ Incentives of up to 70% of the cost of the installation of better performing equipment
 - ✓ Offers financing of the remaining 30% balance – interest free for up to 12 months

Energy Efficiency Programs Are Flexible

Participation possible at many levels

- [Prescriptive application](#) for most common EE measures.
 - Easy to use applications
 - Pre-determined incentives for various measures

- [Custom application](#) for any other EE measure submitted for program incentive consideration.
 - Emphasis on comprehensiveness, the interaction of building systems, and building performance.
 - Project Engineers on staff to assist in the custom application process.

- [Comprehensive Design](#)
 - Custom approach...for maximum benefits



Other Energy Efficiency Programs & Services

- Demand Response – Wholesale Market Related Programs
- Engineering Services & Technical Assistance
- Lamp & Ballast Recycling Service
- Whole Building Assessment
- NE Building Operators Certification (BOC)
- Financing for Energy Efficiency Programs



How well is your Building? Energy Star Benchmarking

- Building performance...how efficiently building systems work together
- Compares a customer's facility to "like" facilities to assess energy utilization proficiency,
- Provides benchmarking with EPA "Portfolio Manager"
- Targets various building types including:
 - Office buildings, K-12 schools, hospitals, supermarkets, warehouses, medical offices, hotels, etc.
- Benefits include:
 - Benchmarking training and support
 - Energy audit including identification of energy efficiency opportunities, O&M maintenance strategies, etc.,
 - Energy efficiency incentive program participation,
 - On-going support.

Retro-Commissioning (RCx)

- It is highly probable that your building was never commissioned!
- “Tuning up” existing facilities to optimize the building performance,
- Ensure that building systems are performing as designed,
- Optimizes building performance by:
 - Study of building systems, controls, sequence of operation, O&M strategies, etc.,
 - Managing how people and buildings interact and work with each other,
 - Quantifying energy cost benefits and savings,
 - Implementing “low cost/no cost” recommendations,
 - Establishing a comprehensive energy plan going forward,
- Ideally, it’s best to first conduct Energy Star Benchmarking
- Utilities pay a portion of the RCx comprehensive investigation of the facility
- Low Cost/No cost measures that have 1 year payback or less must be implemented within 6 months



Typical Industrial and Manufacturing specific energy efficiency measures

- **Energy efficient lighting systems**
 - HID to HIF (T-5 & high Lumen T-8),
 - Test installation of new proposed systems,
 - Lumen and Foot-candle levels,
 - LEDs may change lighting culture!!!!
- **Compressed Air: Leak Detection and Remediation Program**
 - one unit CAIR = 5 x cost of one unit electricity
 - Typical compressed air leak load 25% of system cfm
 - Offer CAIR System Assessment and Leak Detection Training
- **VFD and Premium Efficiency Motors:** variable load process
- **Process cooling:** Plate and frame heat exchanger for winter process loads,

Education and Training

- Training
 - Building Operator Certification (BOC)
 - End-use (e.g. pumps, fans, motors, compressed air, etc.) technical trainings in conjunction w/MAEEP
 - Certified Energy Manager (CEM) & Certified Lighting Efficiency Professional (CLEP) in conjunction with AEE-New England Chapter
- Energy Advisor
 - Online educational tool
 - www.nstar.com
 - Ability to access EE information 24/7
 - Organized from the perspective of different users with a customer organization
 - Commercial Advisor
 - O&M Advisor
 - Purchasing Advisor



NSTAR Gas Energy Efficiency Programs

- T-1 rate and G-53 rate NSTAR Gas customers will begin contributing into the energy efficiency programs,
- Eligible for energy efficiency program services and incentives,
- Prescriptive and custom programs tracks,
- Custom Program: EE measure with quantifiable therm savings
 - ✓ viable EE measure = project economics simple payback <10 yrs
 - ✓ Incentive structure = \$1.00/therm for first year energy savings or 50% of incremental cost, whichever is greater
- GasNetworks: collaboration of regional utilities offering prescriptive instant rebates for qualifying energy efficiency natural gas equipment.



In Closing...

- There are mature and robust Energy Efficiency programs available to savvy customers who want to save energy and reduce their cost of doing business
 - Programs include Financial, Technical, and Educational incentives
- How well is your building? Benchmarking, RCx, Leak Detection Program System Assessments, can be an effective means to diagnose O&M effectiveness and plan energy efficiency over a period of time,
- Advances in lighting technologies have made it cost effective to consider retrofitting existing lighting systems,
 - Energy benefits
 - Non energy benefits
- Consider your facility type and perform a test installation of energy efficiency lighting systems prior to committing to a facility wide install,
- NSTAR Gas incentives for T-1 and G-53 customers....





THANK-YOU

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For more info, log on to:

www.nstar.com