

Energy Efficiency: The Next Frontier: Building on Twenty Years of Excellence

*AESP Spring Conference
May 6, 2008*

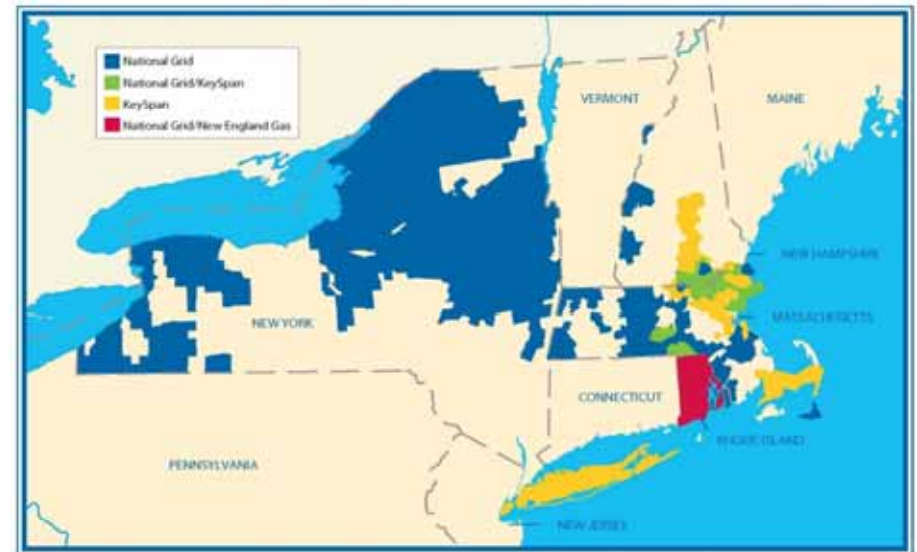
Michael McAteer – Manager Business Energy Efficiency Services



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National Grid and Energy Efficiency

- ◆ UK based company that has purchased six electric and gas utilities in the Northeast over last ten years – US Headquarters in Waltham, MA
- ◆ Most recent acquisition: Keyspan
- ◆ Focused on energy delivery business
- ◆ Approximately 4.4 million electric customers and 3.4 million gas customers
- ◆ Has delivered electric and gas efficiency programs since 1987 and 1997 respectively with no interruptions



- Efficiency programs are saving customers over \$250 million annually
- Over \$1.3 billion spent on efficiency
- Average cost/kwh saved: 3.4 cents

* Post completion of KeySpan merger and including Long Island Power Authority customers

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Matterhorn (1960)
Photographer: Bradford Washburn



Matterhorn (2005)
Photographer: David Arnold

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

20 Years of Savings in New England

Massachusetts, Rhode Island and New Hampshire (electric)

- ◆ Energy efficiency programs introduced in 1987 to address capacity constraints and environmental concerns
- ◆ Current annual budget \$75 million; collected through customer surcharge
- ◆ Programs designed for all customer sectors
- ◆ Modest shareholder incentives earned based on performance
- ◆ Participation by over 65% of all customers, 4.7 million customer projects
- ◆ \$250 million in annual savings on customers' electric bills
- ◆ Cumulative customer savings of over \$3.6 billion
- ◆ Cumulative savings of 26 billion kilowatt hours, enough to power 3 million homes for one year

14 Years Gas Savings in New England

Massachusetts, Rhode Island and New Hampshire (gas)

- ◆ Introduced energy efficiency programs in 1994
- ◆ Cumulative savings of 650 million therms of gas, same as heating 500,000 homes for one year
- ◆ Massachusetts budget proposed to increase from \$12 million to \$15 million in 2008, increasing 20% annually the following 4 years
- ◆ Proposal includes the collection of lost base revenues beginning 2008
- ◆ \$1.6 million each spent annually in New Hampshire and Rhode Island

TOGETHER, the ELECTRIC AND GAS energy efficiency programs have reduced greenhouse gas emissions in New England by 18.3 million tons, the equivalent of removing 2.3 million cars from our roads!

Advancing To New York

- ◆ **Filed Gas and Electric Portfolio in Upstate New York average \$46 million electric and \$12 million gas annually**
- ◆ **Company Administers LIPA's Clean Energy Initiative -\$46 million annual electric budget**
- ◆ **Collaboration with NYSERDA**

Awards and Recognition

National

- ◆ American Council for an Energy-Efficient Economy (ACEEE) - Exemplary Awards for 12 Efficiency Programs – 2007
- ◆ AESP Outstanding Achievement Program Implementation - 2008
- ◆ EPA/DOE Energy Star® Excellence in ENERGY STAR Education – March 2008 (9th consecutive award)
- ◆ EPA/DOE ENERGY STAR® Excellence in Home Performance & New Construction Awards – 2008, 2007, 2006
- ◆ EPA/DOE ENERGY STAR® Small Business Award – 2003



Regional

- ◆ US EPA Region 1 (New England office): Environmental Merit Award – May 2008, April 2007, May 2006, May 2005, April 2004, May 2002

Utilities as Energy Efficiency Providers

- ◆ Based on our experience, utilities can be effective in delivering energy efficiency programs due to:
 - ◆ Ability to leverage existing customer relationships and encourage investment in energy efficiency
 - ◆ Well established one-on-one relationships with all large business customers
 - ◆ Understanding of customers' ongoing energy needs
 - ◆ Existence of data systems and specific market research that provide customer / facility intelligence
 - ◆ Over 34 years of combined experience delivering electric and gas efficiency programs

Residential Energy Efficiency Portfolio

- ◆ **ENERGY STAR[®] programs**
 - ◆ Lighting- CFLs and fixtures
 - ◆ Appliances- Clothes washers
 - ◆ Heating Program (gas)
 - ◆ Central Air Conditioning
 - ◆ New Construction -
- ◆ **EnergyWise Program – Multifamily retrofit**
- ◆ **Single Family Low-Income Services**
- ◆ **MassSAVE – Residential retrofit**
- ◆ **Energy Efficiency Education**



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Commercial Portfolio: Address Built Environment

- ◆ Large Business Strategies:
 - ***Design 2000plus - 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 80% of incremental costs
 - ***Energy Initiative - Retrofit***
 - ✓ Targets energy efficient opportunities for existing buildings and equipment
 - ✓ Replaces inefficient equipment or systems
 - ✓ Reduces owners operating costs
 - ✓ Incentives up to 45%
- ◆ Small Business Strategies:
 - **Direct installation for lighting and other custom services**
 - **Audits target better performing equipment**
 - **Financing on bill key feature**
- Integration of Gas Strategies
 - **High Efficiency Heating**
 - **Custom and Prescriptive**
 - **Solar Thermal**
 - **Promote Advance Technologies**

Lessons Along the Way

- ◆ **Incentives Drive Transactions : roughly 50% of total cost and 75% of incremental cost**
- ◆ **Single Energy Solutions Providers**
- ◆ **Financing supports incentives not alternative**
- ◆ **On-bill financing can make or break EE projects**
- ◆ **Educating and training of legislators, regulators, utility executives and staff is essential**
- ◆ **Need a champion of EE in utilities at senior level**
- ◆ **Investment in new efficient technologies is critical**

An Example of On-Bill Financing: Small Business Strategy

- ◆ National Grid pays 70% of total project cost; customers pay 30%.
- ◆ Customers able to pay their share using on bill financing:
 - ◆ Interest free for 12 or 24 months
 - ◆ About 30% -- number of projects, not \$ amount -- opt for 12 or 24 months
 - ◆ One-time payment, discounted 15%.
 - ◆ About 70% opt for one time payment with discount.
 - ◆ Small percentage of customers choose to be manually billed
 - ◆ Example: Municipalities/Towns, National Accounts
- ◆ Legacy Utility Customer Information Systems often make on-bill financing extraordinarily costly to implement

Ramp Up: Drivers and Needs

- ◆ Vast efficiency potential still remains at 3.4 cents or less
 - ◆ High efficiency lighting in offices
 - ◆ CFLs and LEDs
 - ◆ Air conditioning and ventilation
 - ◆ Sufficient to support at least a 2 to 3 fold increase in annual spending
- ◆ Consumer awareness of value of energy efficiency is greater than ever before
- ◆ Demand for existing efficiency programs exceeds current budgets
- ◆ Significant level of workforce development is required to support ramp up in efficiency programs

Residential Building Science and Program Design

Keep Programs Premier and Protect Customers

- ◆ **Promote Best Practices in Residential Building Science**
 - ◆ Address Concerns: High Costs, Mold, Carbon Monoxide
 - ◆ Promote Optimization and Comprehensive Treatment in Building Construction
 - ◆ Thermography /Infiltration Diagnostics
- ◆ **Close coordination with**
 - ◆ Consortium for Energy Efficiency
 - ◆ ENERGY STAR (EPA/DOE)
 - ◆ Low-Income Energy Affordability Network



What Technology and Practices Coming Forward

- ◆ LED lighting
- ◆ Power Cost Monitors
- ◆ High Efficiency Residential Central Air Conditioning
- ◆ Approaching Carbon Neutrality Existing Home Retrofits
- ◆ Duct Sealing
- ◆ Ductless Mini-Splits



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Better Practices Sector Focus: High Performance Schools

Whitman Hanson Regional HS

Estimated Annual Electric Energy Savings	577,037 kWh
Estimated Annual Energy Avoided Cost Savings	\$100,060
National Grid Incentive	\$372,186



High Performance Equipment and Systems

- ◆ High Performance Envelope and Daylighting
- ◆ Optimized HVAC Distribution System
- ◆ High Efficiency Gas Boilers
- ◆ High Efficiency Lighting Systems and Controls
- ◆ Other “Green” and Renewable Systems Technologies

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Integrated Design Creates Greatest Value

Comprehensive Success with Integrated Design Strategies

- ◆ **11,092,296 sq. ft. affected all building sectors**
- ◆ **558,387 MWh over expected lifetime**
- ◆ **\$25,530,433 customer value**
- ◆ **\$8,822,802 incentives paid**
- ◆ **Added design cost \$.25/SF**
- ◆ **Operating cost savings \$.24/SF to \$.50/SF**



Retro-Commissioning – Next Opportunity To Ramp Up

Leading Edge ...

- ◆ **Examine low cost/no cost measures**
- ◆ **Match the capital improvement effort**
- ◆ **Grow capable firms to deliver services**
- ◆ **ESCOs and control firms play a key part in the success of the retro-commissioning efforts**

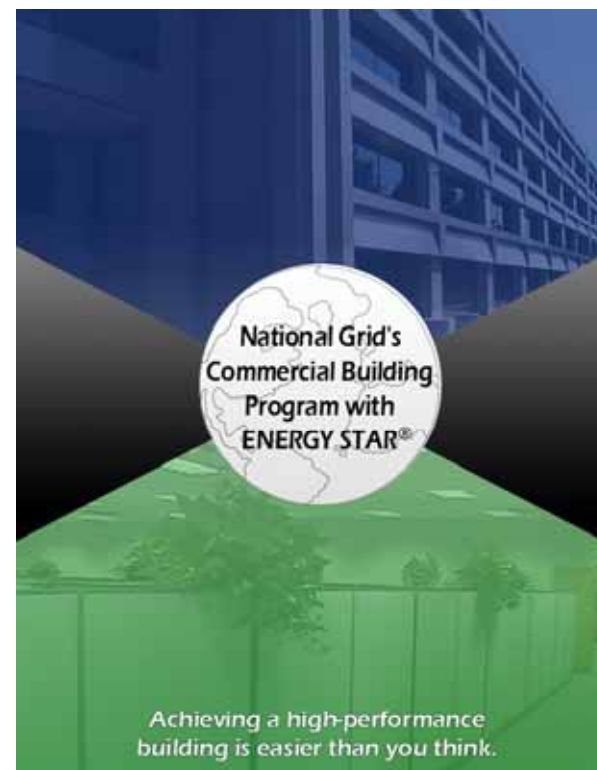


Early lessons

Energy efficiency opportunities significant (*low cost measures*)

Benchmarking – Portal to Large Scale Retrofit Success

- ◆ Provide expert advice on ways to lower energy costs
- ◆ Identify and implement cost-effective and energy-efficient projects
- ◆ Promote use of EPA's Energy Performance Rating System for ongoing performance measurement and Energy Profiler On Line
- ◆ Furnish written action plan with follow up recommendations and installation
- ◆ Track resource consumption and costs
- ◆ Stimulate resource efficiency interest among staff
- ◆ Compare facility energy use to that of similar facilities



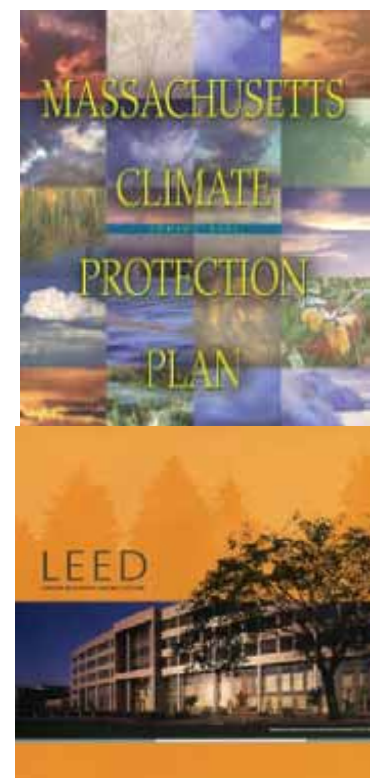
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Challenges To Remaining in Leadership Position

- ◆ Support Climate Change Initiatives with Cities and Towns
- ◆ Continue Strong Alliances with Leaders: NRDC, NBI, ACEEE, AIA, ASE, ASHRAE, CEE, CERES, EPA, DOE, USGBC, NEEP and others..
- ◆ Advance Legislative Agenda: Energy Policy Act ‘Getting To Fifty’ 50% Less Energy than Typical Code Buildings- AB “Core Performance” – Streamline Better Performing Buildings
- ◆ Utilities Well Poised to Integrate Market Choices

We must have a sense of collective purpose. We are the pioneers in the reawakening of our society. We are responsible for achieving a sustainable future.

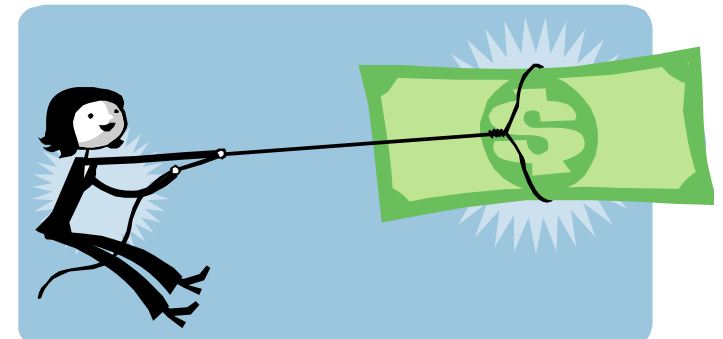
Terry Townsend, President
ASHRAE



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Sustainability Pays- Grow with Green Markets

- ◆ **Companies in the Dow Jones Sustainability Index outperform the general market**
- ◆ **Companies in the Domini Index (sustainable and socially responsible companies) outperform the Standard & Poor's index**
- ◆ **In the next five years, it is estimated that the green building market will grow up to 30% annually**



Next Five Years Key To Transition Clean Energy and Climate Solutions

- ◆ **A doubling or tripling of investment in efficiency**
- ◆ **Decoupling plus incentives to drive EE investment**
- ◆ **High expectations from legislators, regulators and other key decision makers for savings**
- ◆ **Growing customer demand to provide better and more energy services to help them control energy costs, improve reliability and address climate impacts**

Summary

- ◆ Changes in Built Environment Compliment Utility Services
- ◆ Utilities Well Poised to Integrate Market Choices:
 - High Performance Design; Green Design; Sustainable Design; Whole Building Design; LEED Design; and Energy Star Design, Climate Impact Options

