

Welcome

2013 Boston Green Tourism Presentation

Sponsored by Mass Save®



Mass Save[®] Utility and Energy Efficiency Program Sponsors





Agenda

- 2013 Program Highlights
- 2012 Year End Results
- Lighting
- Electric Non-Lighting & Custom Measures
- Natural Gas
- CHP
- Financing

2013 Program Highlights



2013 Portfolio Production Goals

- Increase of 2.8% kWh production goal across the electric portfolio from 2012
- 18% decrease from 2012 in the customer incentive budget
- More kWh with less \$\$\$



2012 Portfolio Results NSTAR Electric

NSTAR Electric Portfolio	Final Total Incentive	Final Annual kWh	Final Net Lifetime kWh Savings	Projects
Total Complete	\$73,487,875	341,964,991	4,519,175,193	4,264
Goal	\$104,225,214	377,393,856	5,055,847,238	
% Goal Completed	71%	91%	89%	



2012 NSTAR Electric Production by Quarter

Retrofit Program

Period	Number of Projects	Electric Incentives	Annual kWh	Net Lifetime kWh
Quarter 1	213	\$4,401,406	24,978,881	312,701,374
Quarter 2	207	\$4,603,573	23,254,819	311,692,725
Quarter 3	220	\$3,705,329	20,189,398	272,688,279
Quarter 4	617	\$22,443,029	126,629,667	1,767,641,104
Total	1,257	\$35,153,339	195,052,765	2,664,723,482



2012 Portfolio Results NSTAR Gas

NSTAR Gas Portfolio	Final Total Incentive	Final Annual Therms	Final Net Lifetime Therm Savings
Total Complete	\$4,008,660	3,500,640	33,633,148
Goal	\$6,080,682	4,903,523	47,800,602
% Goal Completed	71%	70%	70%



Prescriptive Incentives

- Prescriptive & Performance Lighting and Lighting Controls
- Unitary & Split HVAC Systems
- Variable Speed Drives
- Gas Heating
- Commercial Kitchen Equipment
- Compressed Air Systems

Plug & Play



Custom Measures & Incentives

Custom Measures

- Applicable to measures with higher savings than assumed with prescriptive measures and therefore, higher incentives are possible (ie: hours of operation, weather impacts)
- Prescriptive measures not available
- More complex measures

*Typically Up to 75% of
Incremental Cost*

Examples

- Chiller Projects
- Induction Lighting
- Refrigeration Measures
- ERV/HRV
- Industrial Processes



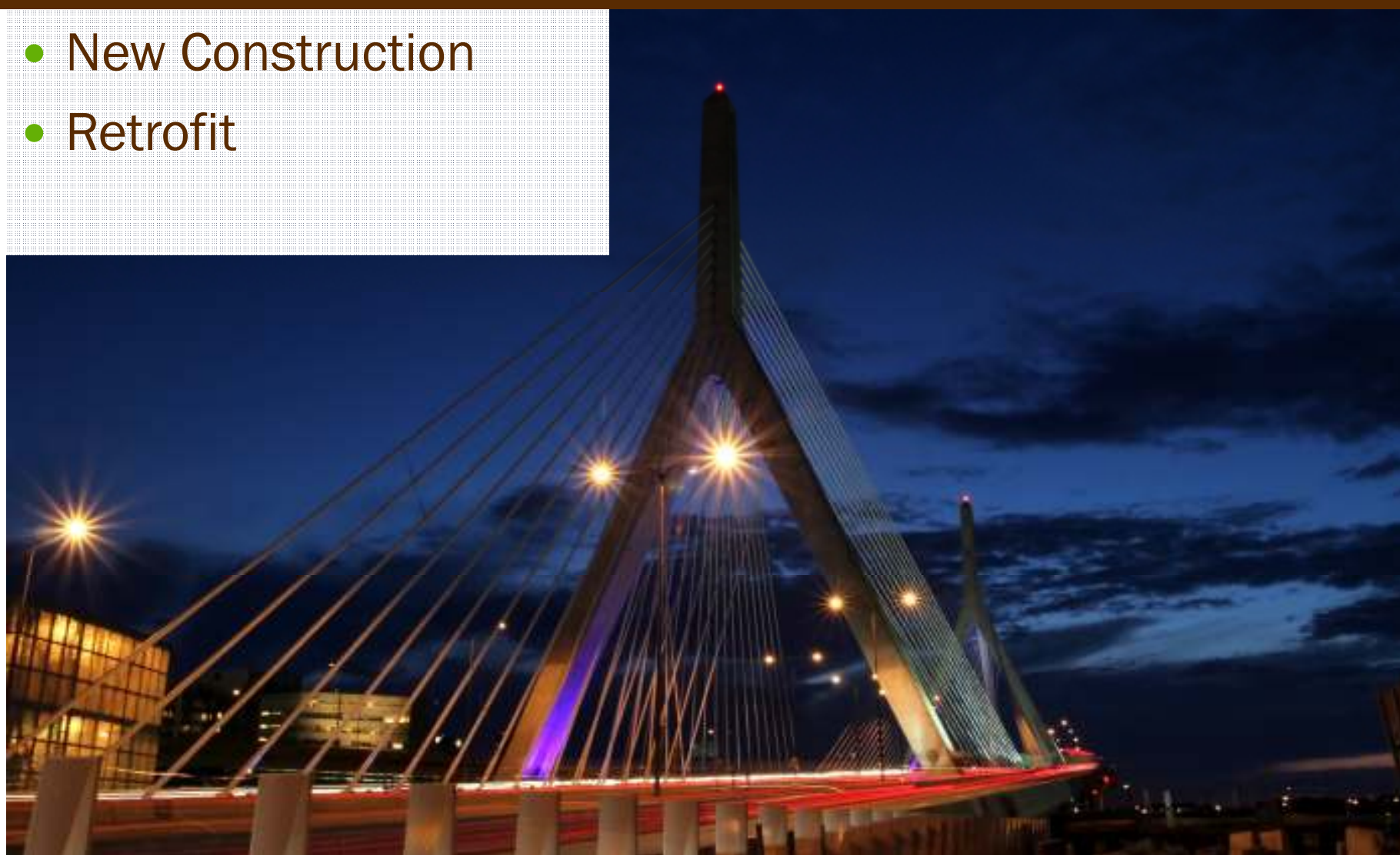
Lighting





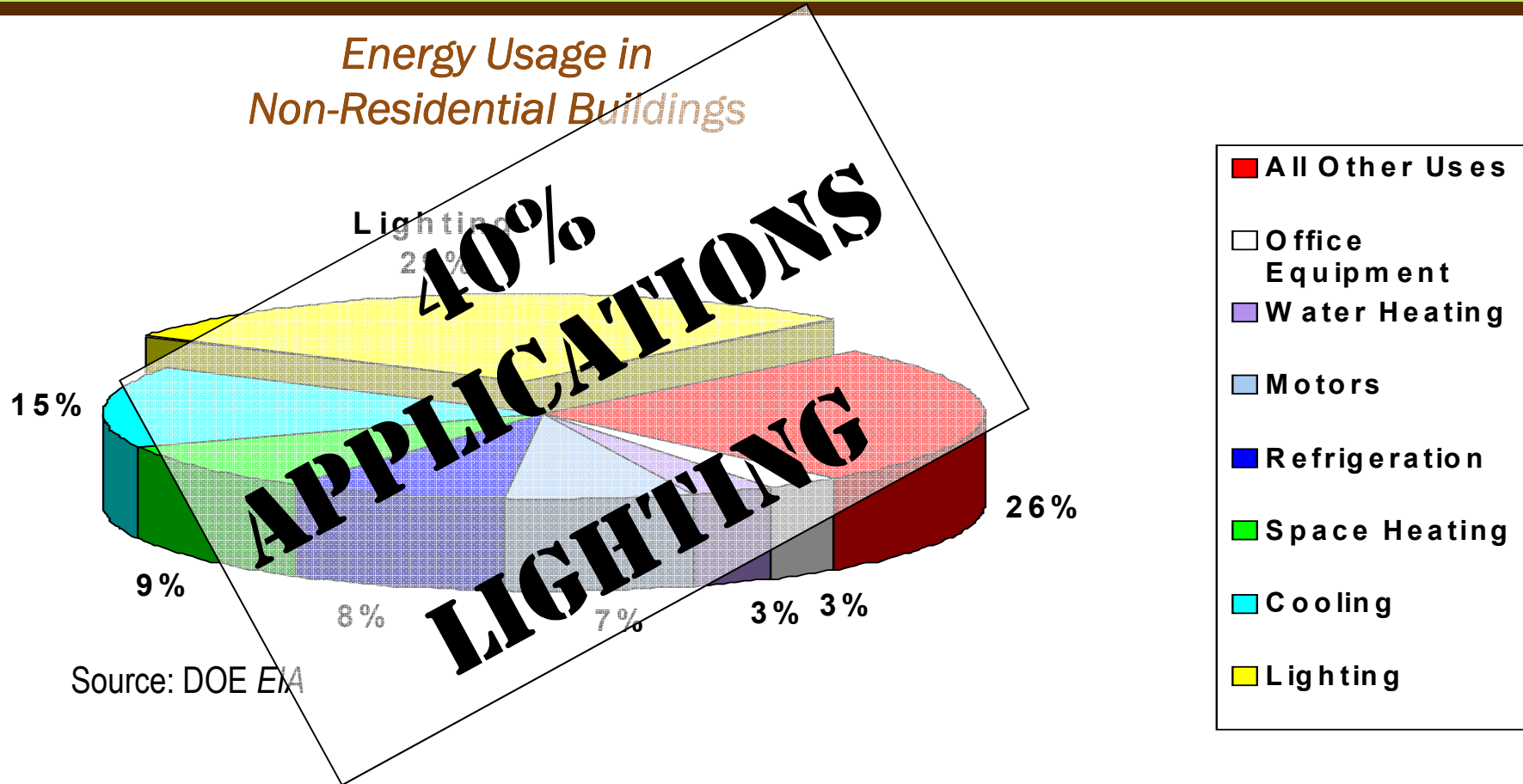
Agenda

- New Construction
- Retrofit



Why Lighting?

Energy Usage in Non-Residential Buildings



Lighting is the biggest end-use in non-residential buildings



Upgrade to LEDs and Start Saving

- Provide up to 80% energy and cost savings, last at least 10 times longer than traditional lamps, and generate less heat for greater customer comfort and lower A/C costs.
- All eligible LED replacement lamps are ENERGY STAR® qualified, provide excellent CRI (Color Rendering Index) and have instant-on capability – many are also dimmable.
- LEDs do not contain mercury
- Typical applications
 - Retail
 - Restaurants
 - Hotels
 - Museums and Galleries



Electric Non-Lighting Measures





NEW ENERGY STAR[®] Electric Kitchen Equipment

- Commercial Fryers \$150
- Commercial Steam Cookers \$1000
- Convection Oven \$500
- Combination Steam/Convection Oven \$2000
- Hot food Holding Cabinets
 - Full Size \$900
 - 3/4 Size \$750
 - 1/2 Size \$600
- Ice Machines
 - Ice Making Head \$250
 - Remote Conditioned/Split Unit \$200
 - Self Contained \$100
- Commercial Griddle \$400
- Pre-Rinse Spray Valves \$25
- Commercial Dishwasher
 - Under Counter or Door Type \$250
 - Single Tank Conveyer \$100



Motors and Variable Speed Drives

- Retrofit
 - Added a 1-3 hp category
 - \$1000 Drive; \$1200 Motor and Drive
 - 5 hp increased to match 7.5 hp incentive
 - \$2850 Drive; \$3450 Motor and Drive
 - 100 hp range expanded to include up to 150 hp
 - \$12,500 Drive; \$16,500 Motor and Drive
- New Construction
 - Added a 1-3 hp category
 - \$600 per Drive
 - 5 hp increased to match 7.5 hp
 - \$1500 per Drive



Cool Choice

- Existing Incentives remain unchanged from 2012
- Added
 - Air Cooled Variable Refrigerant Flow AC
 - Air Cooled Variable Refrigerant Flow Heat Pumps
 - Water Source Variable Refrigerant Flow Heat Pumps
- Qualifying efficiency levels reflect the nationally recognized CEE standards



Compressed Air

- Existing Incentives remain unchanged from 2012

- Compressed Air
 - 15-75 hp
 - Load/No Load \$100 per hp
 - VSD \$200 per hp

- Zero-Loss Condensate Drains
 - \$125 per drain

- Low Pressure Drop Filters
 - \$0.80 per standard cfm

- Storage Incentives
 - \$2.75 per gallon



Vending Misers

Existing Incentives remain unchanged from 2012

- Refrigerated Beverage Vending Machine \$ 115
- Glass Front Refrigerated Coolers \$ 115
- Non-Refrigerated vending Machines \$ 45



HVAC Chillers – Incentives and Size Categories Unchanged form 2012

Eligible Equipment			Proposed Equipment		Incentives						
Type	Unit Size-AHRI Net Tons	Minimum Efficiency(*) FL or IPLV	AHRI ratings		Base Unit Incentive (per ton)	Base Total	Performance Incentive: For each 0.1 EER point above or for each 0.01 kW/ton point below minimum criteria	Performance Total(**)	Requested Incentive Dollars		
			Net Tons	Unit Efficiency							
Water Chillers@ AHRI 550/590-98											
(A) Air Cooled Chiller w/ Condenser	< 150 <input type="radio"/>	FL: 10.52 EER <input type="radio"/> IPLV: 13.75 EER <input type="radio"/>	NT(A): _____	FL: _____ EER	\$20	BT(A): 0	\$3.25/ton	PT(A): \$0	RI(A): \$ _____		
	≥ 150 <input type="radio"/>	FL: 10.52 EER <input type="radio"/> IPLV: 14.03 EER <input type="radio"/>		IPLV: _____ EER							
(B) Water Cooled-Rotary Screw and Scroll	< 75 <input type="radio"/>	FL: 0.702 kW/ton <input type="radio"/> IPLV: 0.540 kW/ton <input type="radio"/>	NT(B): _____	FL: _____ kW/ton IPLV: _____ kW/ton	\$13	BT(B): _____	\$3.00/ton	PT(B): \$0	RI(B): \$ _____		
	≥ 75 and < 150 <input type="radio"/>	FL: 0.698 kW/ton <input type="radio"/> IPLV: 0.527 kW/ton <input type="radio"/>								\$11	\$2.50/ton
	≥ 150 and < 300 <input type="radio"/>	FL: 0.612 kW/ton <input type="radio"/> IPLV: 0.486 kW/ton <input type="radio"/>								\$18	\$3.00/ton
	≥ 300 <input type="radio"/>	FL: 0.588 kW/ton <input type="radio"/> IPLV: 0.441 kW/ton <input type="radio"/>								\$18	\$3.00/ton
(C) Water Cooled Centrifugal	< 150 <input type="radio"/>	FL: 0.571 kW/ton <input type="radio"/> IPLV: 0.405 kW/ton <input type="radio"/>	NT(C): _____	FL: _____ kW/ton IPLV: _____ kW/ton	\$20	BT(C): _____	\$3.50/ton	PT(C): \$0	RI(C): \$ _____		
	≥ 150 and < 300 <input type="radio"/>	FL: 0.571 kW/ton <input type="radio"/> IPLV: 0.405 kW/ton <input type="radio"/>								\$17	\$1.25/ton
	≥ 300 and < 600 <input type="radio"/>	FL: 0.513 kW/ton <input type="radio"/> IPLV: 0.360 kW/ton <input type="radio"/>								\$10	\$1.75/ton

(*) Compliance with Full Load Efficiency or IPLV. In either case both Full Load and IPLV efficiency figures must be provided.

(**) Performance Incentive is limited to a maximum of two times the base incentive.

Air cooled oil free compressors classified here as air cooled.

Water cooled oil free compressors classified here as centrifugal.



Energy Management Systems

- Existing Incentives remain unchanged from 2012
 - \$225/ point for all size buildings
- Building Size (5,000–40,000 sqft): 16 electric & 4 gas
- Building Size (40,001–80,000 sqft): 48 electric & 12 gas
- Building Size (80,001–200,000 sqft): 128 electric & 32 gas

Custom Projects





Custom Projects

- More than 80% of our savings are derived from Custom Projects
- Retrofit – Potential for up to 50% of the project cost
- New Construction – Potential for up to 75% of the incremental cost
- Projects are evaluated with a screening model for cost effectiveness
- For custom electric projects, additional incentives may be available for more comprehensive solutions!
- Technical Assistance funds may be available

Natural Gas





Heating Equipment

2013 High-Efficiency Natural Gas Equipment Rebates

HEATING EQUIPMENT		
FURNACE	RATING	REBATE
Up to 150 MBH	95% AFUE* or greater & ECM motor	\$300
Up to 150 MBH	97% AFUE* or greater & ECM motor	\$450

CONDENSING UNIT HEATER	RATING	REBATE
Up to 300 MBH	90% Thermal Efficiency or greater	\$750

INFRARED HEATERS	RATING	REBATE
All Sizes	Low Intensity	\$750

CONDENSING BOILERS	RATING	REBATE
Up to 300 MBH	90% AFUE* or greater	\$1,000
Up to 300 MBH	95% AFUE* or greater	\$1,500
301 to 499 MBH	90% Thermal Efficiency or greater	\$2,000
500 to 999 MBH	90% Thermal Efficiency or greater	\$4,000
1000 to 1700 MBH	90% Thermal Efficiency or greater	\$7,500
1701 to 2000 MBH	90% Thermal Efficiency or greater	\$10,000

CONTROLS EQUIPMENT	
AFTER MARKET BOILER RESET CONTROLS	\$225/ea.
STEAM TRAPS	\$50/ea.
PROGRAMMABLE THERMOSTATS*	up to \$25/ea.

WATER HEATING EQUIPMENT		
ON DEMAND TANKLESS with Electronic Ignition	RATING	REBATE
	Energy Factor of .82 or greater	\$500
	Energy Factor of .94 or greater	\$800

HIGH-EFFICIENCY INDIRECT WATER HEATER	REBATE
	\$400

CONDENSING STAND ALONE	RATING	REBATE
75 to 300 MBH	95% Thermal Efficiency or greater	\$500

ENERGY STAR® Freestanding	RATING	REBATE
	Energy Factor of .67 or greater	\$100

COMBINED HIGH-EFFICIENCY BOILER AND WATER HEATING UNIT	
Condensing Boiler with On-Demand Hot Water	REBATE
Minimum AFUE Rating of 90%	\$1,200
<i>Must be considered one unit by manufacturer.</i>	

NOTES
 * AFUE = Annual Fuel Utilization Efficiency, MBH levels are based on the unit's input. Equipment must meet program guidelines, rebates are given on a per-unit basis not to exceed purchase price.
 Some restrictions may apply. Rebate offers are subject to change without notice.

2012

HEATING EQUIPMENT		
FURNACE	RATING	REBATE
Up to 150 MBH	95% AFUE* or greater & ECM motor	\$500
Up to 150 MBH	96% AFUE* or greater & ECM motor	\$800
CONDENSED UNIT HEATERS	RATING	REBATE
Up to 300 MBH	90% Thermal Efficiency or greater	\$750
INFRARED HEATERS	RATING	REBATE
All Sizes	Low Intensity	\$750
CONDENSING BOILERS	RATING	REBATE
Up to 300 MBH	90% AFUE* or greater	\$1,000
Up to 300 MBH	96% AFUE* or greater	\$1,500
301 to 499 MBH	90% Thermal Efficiency	\$2,000
500 to 999 MBH	90% Thermal Efficiency	\$4,000
1000 to 1700 MBH	90% Thermal Efficiency	\$7,500
1701 to 2000 MBH	90% Thermal Efficiency	\$10,000



Heating Equipment

- Furnace Rebates 2013

- Furnace up to 150 MBH 95% AFUE or greater & ECM \$300
- Furnace up to 150 MBH 97% AFUE or greater & ECM \$450

- Unit Heater Rebates 2013

- Unit Heater up to 300 MBH 90% Thermal Efficiency or greater \$750

- Unit Heater Rebates 2013

- Infrared Heaters all sizes, Low Intensity \$750



Hot Water Boiler

- Condensing Boiler up to 300 MBH 90% AFUE or greater \$1,000
- Condensing Boiler up to 300 MBH 95% AFUE or greater \$1,500
- Condensing Boiler 301 to 499 MBH 90% Thermal Efficiency or greater \$2,000
- Condensing Boiler 500 to 999 MBH 90% Thermal Efficiency or greater \$4,000
- Condensing Boiler 1000 to 1700 MBH 90% Thermal Efficiency or greater \$7,500
- Condensing Boiler 1701 to 2000 MBH 90% Thermal Efficiency or greater \$10,000
- For Boiler greater than 2000 MBH, or for Boiler that have special use, please contact the Gas PA for custom incentive information



Controls

- After Market Boiler Reset Control \$225
- Steam Traps \$50
- 7 day Programmable Thermostats \$25





Water Heating Equipment

- On Demand Tankless
 - With electronic ignition Energy Factor of .82 or greater \$500
 - With electronic ignition Energy Factor of **.94** or greater \$800
- High Efficiency Indirect Water Heater \$400
- Condensing Stand 75 to 300 MBH 95% Thermal Efficiency or greater \$500
- Integrated Water Heater/Condensing Boiler 90% AFUE \$1200
 - Must be a boiler
 - Must be considered one unit by the manufacturer





Kitchen Equipment

- High-Efficiency Combination Oven \$1000
- High-Efficiency Rack Oven \$1000
- High-Efficiency Conveyor Oven \$1000
- ENERGY STAR® Fryer \$1000
- ENERGY STAR® Commercial Convection Oven \$1000
- ENERGY STAR® Commercial Steamer \$1000
- ENERGY STAR® Commercial Griddle \$500
- High-Efficiency Pre-Rinse Spray Valve \$50/ea



CHP





Project Considerations

- Passes Massachusetts' Benefit/Cost Model
 - Installed Cost
 - kWh and heat utilization
 - Incremental fuel usage
 - Run hours with on site use of thermal energy
- Maintenance Costs
- Combined Electric and Thermal Efficiency (HHV basis)
 - Projects with less than 60% combined efficiency unlikely to be cost effective or will not have a good payback for the customer.
- Building energy efficiency measures that have higher B/C ratios should be implemented first or at the same time
 - Lower hanging fruit first
 - CHP design could be affected by EE measures - design CHP based on the assumption that other measures will be implemented.
- Incentives
 - 150 kW or less, incentive is \$750 per kW
 - Over 150 kW, see your account executive
 - Maximum incentive up to 50% of Installed Cost



Third Party Review and TA Studies

- Customers may request a TA Study
- PA pays a portion of the study performed by an agreed upon independent TA vendor.
- Not All feasibility studies performed by CHP Vendors are subsidized by the PAs – will be reviewed by the PAs or their TA Vendor at their own cost.



Factors to Consider

- Interconnection requirements and schedule
- Gas availability
- Right sizing the CHP unit
- Ability to operate and maintain
- Ability to manage the project implementation



New Policy Changes

- Incentives for replacing existing (older than measure life) operating CHP which was not previously incentivized by any PA programs
 - Consider New Construction. Base case will be as if the CHP was not installed.
- Replacement of the existing incentivized units
 - Incremental cost = (cost of new unit - salvage value)
 - Incremental KW, kWh, fuel, etc.
 - Pass BCR test
 - Incentive = (Based on new unit size – incentive paid for old unit)
- M&V Metering
 - Customer to install as required by the MRD. PA may subsidize



Summary

- CHP can be a good energy savings opportunity for certain customers
- Careful analysis is necessary to ensure the facility's thermal and electric needs and profile are consistent with CHP equipment selection
- System needs to be properly controlled to minimize thermal dumping and exporting of power
- Obtain early involvement of Program Administrator!

Financing





Overview

- No changes in 2013
 - Scheduled interest payments on the loan will be pre-paid by the PA in lieu of a portion of the Mass Save incentive or rebate
 - Loans available up to \$100,000 with terms up to 7 years, contingent on the amount of the qualifying incentive
 - Financing subject to approval by the participating lender
 - Improvements require PA pre-approval



How To Apply

- Submit energy efficiency application to PA
- Indicate interest in financing to PA
- Obtain Pre-approval letter along with Interest Subsidy Authorization Form from PA
- Customer submits Pre-approval Letter and Interest Subsidy Authorization form to the Lender for approval to secure loan
- Measures are installed
- Notify PA and Lender when installation is complete
- PA will verify measures through an on-site inspection and notify the Lender once the project passes
- Submit final costs to both the PA and Lender
- Lender will release the loan
- PA will release any incentive



New Technologies

- High Efficiency Filters
- Belimo Chilled Water Valve
- Catalyst Controls for Rooftops
- Window Tilting
- Elevators Modernization
- Chiller Water Optimization
- Transformers
- ECM Motors



Applications

- http://www.nstar.com/business/energy_efficiency/application_forms/application_forms.asp

THANK YOU



For More Information...

www.nstar.com

or

www.masssave.com

Kevin Lubinger, Program Manager
Greg Senosk, Account Executive

