

**KeySpan Gas East Corporation d/b/a National Grid**

**Case 08-G-1017**

**High-Efficiency Heating and Water Heating and Controls  
Gas Energy Efficiency Program Implementation Plan**

**June 8, 2009**

**nationalgrid**

## Table of Contents

I.	Introduction.....	1
II.	Implementation Plan.....	3
A.	Overall Program Budget and Goals.....	3
<b>B.</b>	<b>Residential High-Efficiency Heating and Water Heating and Controls Program .....</b>	<b>5</b>
1.	Goals.....	5
2.	Budget.....	6
3.	Eligible measures.....	7
4.	Target Customer Market and Detailed Marketing Plan.....	8
5.	Roles and Responsibilities.....	12
6.	Customer Enrollment.....	15
7.	Training for Retail Partners.....	15
8.	Contractor Training and Program Orientation Plan.....	17
9.	Contact Information.....	17
10.	Quality Assurance Plan.....	18
11.	Coordination.....	19
a.	Transition from Interim Program to Fast Track Program.....	19
b.	Conversion Customers.....	20
12.	Overlap.....	20
13.	Evaluation.....	20
14.	Logic Model.....	24
III.	Benefit/Cost Ratios.....	25
IV.	Savings Assumptions.....	27
A.	Expected Benefits for the Residential High-Efficiency Heating and Water Heating and Controls Program.....	28
1.	Furnaces (forced hot air).....	30
2.	Boilers (hot water or steam).....	32
3.	Setback thermostat.....	34

4.	Boiler reset controls .....	36
5.	Duct insulation and leakage sealing.....	38
6.	Indirect water heater .....	40
<b>Appendix A: Explanation of Budget Categories.....</b>		<b>42</b>
<b>Appendix B: Customer and Trade Ally Outreach.....</b>		<b>44</b>

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## **Case 08-G-1017**

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#### **Gas Energy Efficiency Program Implementation Plan**

**June 8, 2009**

#### **I. Introduction**

On April 9, 2009, the State of New York Public Service Commission (the “Commission”) issued an order approving Energy Efficiency Portfolio Standard (“EEPS”) “fast track” utility-administered gas energy efficiency programs with modifications (the “Order”).<sup>1</sup> The Order required KeySpan Gas East Corporation d/b/a National Grid (formerly d/b/a KeySpan Energy Delivery Long Island (“KEDLI”)) (“National Grid” or the “Company”) to submit a compliance filing to the Commission by June 8, 2009 with the following information about the residential gas HVAC energy efficiency program<sup>2</sup> that will be offered to customers:

1. An implementation plan that describes in detail the overall energy efficiency program and how the program operates, including revised evaluation plans and quality assurance plans, comprised of the following elements:
  - a) Overall program annual and cumulative budgets and energy savings goals;
  - b) For the Residential High-Efficiency Heating and Water Heating and Controls Program, include:
    - i. cumulative and annual budgets, energy savings, and customer participation goals;

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<sup>1</sup> Cases 08-G-1017, *et al.*, *KeySpan Energy of Long Island, et al.*, Order Approving “Fast Track” Utility-Administered Gas Energy Efficiency Programs with Modifications (issued and effective April 9, 2009).

<sup>2</sup> National Grid’s residential gas HVAC program is called the Residential High-Efficiency Heating and Water Heating and Controls Program.

- ii. annual budgets by spending category including descriptions of expenditures within each category utilizing budget category definitions provided by Department of Public Service Staff (“Staff”);
- iii. descriptions of roles and responsibilities of the Company and all program contractors;
- iv. contractor training and program orientation plan;
- v. target customer market and detailed marketing plan;
- vi. training for retail partners;
- vii. eligible measures and associated customer incentives;
- viii. procedures for customer enrollment;
- ix. contact information for customer inquiries and complaints;
- x. Quality Assurance plan;
- xi. a description of how efforts will be coordinated with other New York energy efficiency programs, including plans for how the Company will avoid duplication and confusion resulting from overlapping/neighboring programs, and ensure no double-counting of savings achieved and no more than one incentive payment per energy efficiency measure; and
- xii. an evaluation plan.

2. Within the implementation plan, the inclusion of the following information related to outreach and education (O&E)/marketing programs and new budgets:
- a) specific budget amounts for each individual element of the O&E/marketing budget for each year of the program;
  - b) a list and description of the O&E/marketing vehicles to be used;
  - c) an explanation of the target audiences for each program component;
  - d) a timeline for the development, implementation and evaluation of the O&E/marketing efforts;
  - e) a description of how the Fast Track O&E/Marketing programs relate to the Company’s general O&E/Marketing program as well as the O&E/marketing programs approved in the Electric Fast Track Order; and

- f) the efforts that will be undertaken by the Company to minimize any overlap and/or customer confusion that may result from O&E/marketing activities in the same or adjacent market areas.

The Company's implementation plan for the Residential High-Efficiency Heating and Water Heating and Controls Program addresses planned efforts over the three-year period from 2009 through 2011.

## **II. Implementation Plan**

The Company has developed an implementation plan for the Residential High-Efficiency Heating and Water Heating and Controls Program. The implementation plan follows a discussion of the overall program budget and goals for this program.

### **A. Overall Program Budget and Goals**

Annual and cumulative budgets and savings goals for National Grid's "fast track" gas efficiency program are as follows.

### Projected Annual Budget and Savings Goals 2009 - 2011

Program	2009		2010		2011	
	Annual Utility Cost	Annualized Therms Savings	Annual Utility Cost	Annualized Therms Savings	Annual Utility Cost	Annualized Therms Savings
Residential High-Efficiency Heating and Water Heating and Controls Program	\$ 1,100,993	168,477	\$ 2,201,984	336,951	\$ 2,201,984	336,951
Total	\$ 1,100,993	168,477	\$ 2,201,984	336,951	\$ 2,201,984	336,951

### Projected Cumulative Budget and Savings Goals 2009 - 2011

Program	Cumulative Budget and Savings Goals					
	2009		2010		2011	
	Cumulative Utility Cost	Cumulative Therms Savings	Cumulative Utility Cost	Cumulative Therms Savings	Cumulative Utility Cost	Cumulative Therms Savings
Residential High-Efficiency Heating and Water Heating and Controls Program	\$ 1,100,993	168,477	\$ 3,302,977	505,428	\$ 5,504,961	842,378
Total	\$ 1,100,993	168,477	\$ 3,302,977	505,428	\$ 5,504,961	842,378

Note: For 2009 – 2011 the Residential High-Efficiency Heating and Water Heating and Controls Program includes the supplementary allowance set forth in Appendix 1, Table 3 of the Order in the proposed savings goals and annual utility cost. In addition to projected annual budget, annual utility cost includes the Company’s projected shareholder incentive.

## B. Residential High-Efficiency Heating and Water Heating and Controls Program

The purpose of this program is to provide incentives to residential customers to install high-efficiency residential gas heating and water heating equipment and related controls. It is important to advance the installation of high efficiency equipment because New York has a fairly low market share of high-efficiency furnaces, according to 2005 data from the Gas Appliance Manufacturers Association (“GAMA”). GAMA reports that only 50% of the equipment shipments to New York are high-efficiency.

### 1. Goals

Annual and cumulative customer participation and savings goals for the Residential High-Efficiency Heating and Water Heating and Controls Program follow:

#### Projected Annual Customer Participation and Savings Goals 2009 - 2011

Program	2009		2010		2011	
	Annual Customer Participation	Annualized Therms Savings	Annual Customer Participation	Annualized Therms Savings	Annual Customer Participation	Annualized Therms Savings
Residential High-Efficiency Heating and Water Heating and Controls Program	1,970	168,477	3,940	336,951	3,940	336,951
Total	1,970	168,477	3,940	336,951	3,940	336,951

#### Projected Cumulative Customer Participation and Savings Goals 2009 – 2011

Program	2009		2010		2011	
	Cumulative Customer Participation	Cumulative Therms Savings	Cumulative Customer Participation	Cumulative Therms Savings	Cumulative Customer Participation	Cumulative Therms Savings
Residential High-Efficiency Heating and Water Heating and Controls Program	1,970	168,477	5,910	505,428	9,850	842,378
Total	1,970	168,477	5,910	505,428	9,850	842,378



## 2. Budget

The budget for the Residential High-Efficiency Heating and Water Heating and Controls Program follows:

### Projected Residential High-Efficiency Heating and Water Heating and Controls Program Budget 2009 - 2011

Cost Category	2009	2010	2011	2009 - 2011
General Administration	\$71,029	\$142,058	\$142,058	\$355,146
Program Planning	\$17,757	\$35,515	\$35,515	\$88,786
Program Marketing	\$40,000	\$80,000	\$80,000	\$200,000
Trade Ally Training	\$50,000	\$100,000	\$100,000	\$250,000
Incentives and Services	\$820,313	\$1,640,624	\$1,640,624	\$4,101,561
Direct Program Implementation	\$0	\$0	\$0	\$0
Program Evaluation	\$52,584	\$105,168	\$105,168	\$262,920
Total Utility Cost without Shareholder Incentive	\$1,051,683	\$2,103,365	\$2,103,365	\$5,258,413
Shareholder Incentive	\$49,310	\$98,619	\$98,619	\$246,549
Total Utility Cost with Shareholder Incentive	\$1,100,993	\$2,201,984	\$2,201,984	\$5,504,961
Participant Cost	\$651,264	\$1,302,528	\$1,302,528	\$3,256,320
Total Cost	\$1,752,257	\$3,504,512	\$3,504,512	\$8,761,281

Note: Budget shows activity in program year dollars, not present valued to 2009 dollars.

The budgeted shareholder incentive is equal to \$3.00 per projected annual MCF savings for the program.<sup>3</sup>

An explanation of budget categories is provided as Appendix A, “Budget Categories for Energy Efficiency Programs,” as detailed in the Order.

For 2009 – 2011 the Residential High-Efficiency Heating and Water Heating and Controls Program includes the supplementary allowance set forth in Appendix 1, Table 3 of the Order in the proposed savings goals and annual utility cost. In addition to projected annual budget, annual utility cost includes the Company’s projected shareholder incentive.

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<sup>3</sup> Case 07-M-0548, *Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard*, Order Establishing Targets and Standards for Natural Gas Efficiency Programs (issued and effective May 19, 2009).

### 3. Eligible measures

Eligible measures and associated customer incentives for the Residential High-Efficiency Heating and Water Heating and Controls Program, consistent with the measures and rebates in the Order, follow:

<b>MEASURE</b>	<b>ELIGIBILITY</b>	<b>REBATE</b>
Furnace	AFUE $\geq$ 90	\$200
Furnace	AFUE $\geq$ 92	\$200
Furnace	AFUE $\geq$ 92 w ECM	\$400
Furnace	AFUE $\geq$ 94 w ECM	\$600
Furnace	AFUE $\geq$ 95 w ECM	\$600
Water Boiler	AFUE $\geq$ 85	\$500
Water Boiler	AFUE $\geq$ 90	\$1,000
Steam Boiler	AFUE $\geq$ 82	\$500
Boiler Reset Control		\$100
Indirect Water Heater		\$300
Programmable Thermostats*		\$25
Duct and Air Sealing		\$600

\* Installed by a contractor at the time of furnace or boiler replacement

#### **4. Target Customer Market and Detailed Marketing Plan**

There are several target markets for the Residential High-Efficiency Heating and Water Heating and Controls Program, as follows. All participating customers will be residential customers on residential rates.

- New construction
- New systems in existing homes
- Replacement systems in existing homes
- Improvements in operational systems in existing homes
- Contractors and technicians responsible for installing and servicing heating, water heating and controls equipment
- Manufacturers, suppliers and distributors of equipment
- New home builders and remodeling contractors
- Home improvement retailers

An integrated marketing plan is utilized for outreach and education of this program. Individual vehicles include direct mail, collateral, website, search engine marketing, email newsletters, bill inserts, print advertisements, events and outreach. Efforts are directed to both customers and trade partners, who influence the customer's decision to install high-efficiency equipment.

##### *Target audience*

National Grid serves approximately 357,000 gas residential customers in Long Island. Events will be used to educate consumers and stimulate participation. Bill inserts will be sent to all customers, and the Company's efficiency website helps all customers to easily determine program eligibility using a zip code look-up feature. Collateral will be distributed to residential customers interested in making energy efficiency improvements. Search engine marketing ("SEC") is also utilized to target potential customers, pointing them to programs based on keywords they enter. The Company proposes to utilize a portion of the marketing dollars to conduct research to determine which customer segments are most likely to implement efficiency measures. Direct mail will be targeted to those customers. Finally, a periodic e-mail newsletter for residential customers includes articles communicating about the programs.

Contractors will also be targeted with a combination of distributor signage, a customized email newsletter, events, outreach and education.

*Budget*

National Grid has budgeted the following for the next three years of the Residential High-Efficiency Heating and Water Heating and Controls Program:

<b>Program Marketing</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
<b>Long Island</b>	\$40,000	\$80,000	\$80,000

*Outreach, education and marketing vehicles*

<b>O&amp;E/marketing vehicles to be used - LI</b>	
<b>Method</b>	<b>Description</b>
Direct mail & bill inserts	Direct campaigns to gas heating customers.
Collateral & Distributor Signage	Educational materials to support programs.
Digital presence	Website, Search engine marketing and email newsletter
Events/outreach, Education/training and sponsorships	Trade events, seminars, and consumer outreach

Budget allocations for above vehicles will be broken out with roughly 50% going toward direct mail and bill inserts and 25% going toward digital efforts. The remaining 25% will be used for collateral and outreach depending on need and market climate.

*Timeline*

<b>Residential High-Efficiency Heating and Water Heating and Controls</b>	<b>Q2 2009</b>	<b>Q3 2009</b>	<b>Q4 2009</b>
Direct mail & Bill inserts		X	X
Collateral & Dist. Signage	Ongoing beginning in April		
Website & SEM	Ongoing beginning in April		
Email newsletters	X	X	X
Events/outreach/Training	Ongoing beginning in April		

<b>Residential High-Efficiency Heating and Water Heating and Controls</b>	<b>Q1 2010</b>	<b>Q2 2010</b>	<b>Q3 2010</b>	<b>Q4 2010</b>
Direct mail & Bill inserts	X		X	X
Collateral & Dist. Signage	Ongoing			
Website & SEM	Ongoing			
Email newsletters	X	X	X	X
Events/outreach/Training	Ongoing			

<b>Residential High-Efficiency Heating and Water Heating and Controls</b>	<b>Q1 2011</b>	<b>Q2 2011</b>	<b>Q3 2011</b>	<b>Q4 2011</b>
Direct mail & Bill inserts	X	X	X	
Collateral & Dist. Signage	Ongoing			
Website & SEM	Ongoing			
Email newsletters	X	X	X	X
Events/outreach/Training	Ongoing			

### *Integration with other marketing plans*

The O&E marketing efforts will complement the existing National Grid communications efforts to create a singular voice and one-company experience for customers. Whether it is a safety message, a promotion of a program or service or an energy efficiency marketing piece, the customer will receive a branded communication that is recognizable as coming from National Grid.

Corporate identity guidelines and brand guidelines are used to provide a foundation for a single company experience and tone consistent with our company brand promise: National Grid will be the energy management partner dedicated to taking action that improves customers' lives and communities.

All communications will include the National Grid "Power of Action" tagline and will be designed using the approved National Grid font and color palette. Copy and images will show action or the positive results of taking action and make it easy for customers to recognize National Grid as their energy partner.

The marketing schedule for the High-Efficiency Heating and Water Heating and Controls program coordinates with the general company communications schedules in order to communicate with customers at the appropriate time, with the appropriate message and to avoid large gaps in communications efforts. Direct mail campaigns for Energy Efficiency will follow closely after separately funded Brand and Gas Marketing campaigns. This helps to develop progression in education and make it easier for customers to recognize the steps toward energy efficiency improvements. Communications will leverage other energy efficiency marketing where possible to show a whole house approach to customers and highlight the benefits of implementing energy efficiency measures on a larger scale.

### *Overlap*

Marketing materials and collateral clearly state the region they apply to. Regional mailing lists are obtained from National Grid's market intelligence group and direct mail is customized for each region. Print advertising appears in regional publications and details information that

applies to each specific region. If more than one region is covered in a publication, copy directly states which programs are available in each region. Fulfillment vendors are trained to differentiate programs by region. Marketing materials will invite customers to visit National Grid's energy efficiency website, for specific program information. The information on the website is separated by a zip code look-up so customers are only given details on the programs that they are eligible for.

Samples of National Grid's efficiency website and rebate forms are provided as Appendix B attached hereto.

## **5. Roles and Responsibilities**

### **National Grid Program Management**

As part of its program management, National Grid has local management and program managers who oversee this program from its Brooklyn and Melville, New York offices. These employees are responsible for the Company's energy efficiency programs including delivery, contractor oversight, coordination of marketing efforts, regulatory support, and coordination with NYSERDA and other New York utilities and their respective energy efficiency programs. National Grid closely tracks spending, achieved savings, and participation compared to budget, savings goals and participation goals in order to achieve desired program objectives at or below budgeted costs. Program managers oversee the planning, coordination, resource management, project execution, and project performance and progress of the programs. National Grid's program managers are responsible for working closely with implementation vendors to ensure that all reasonable efforts are being undertaken to achieve desired program goals and to work through any issues that vendors encounter in the field.

National Grid also has program management functions that are performed for the New York program from its Waltham, Massachusetts offices. This includes supervision of the New York-based staff and regulatory support.

### **Program Evaluation Staff**

Employees in the Energy Efficiency Evaluation & Regulatory Affairs Department at National Grid have no program implementation responsibilities. These National Grid employees, located in Waltham, Massachusetts, and Brooklyn, New York, are responsible for defining the scope of program evaluation study efforts, developing Requests for Proposals (“RFPs”) to hire independent evaluation consultants to conduct studies, reviewing bidders’ responses to RFPs, selecting vendors, managing the efforts of vendors under contract, and communicating results with program implementation team members and other key stakeholders. These employees provide copies of completed evaluation studies to program implementation personnel and often include program implementation personnel in the presentation of final evaluation study results. Employees in the Energy Efficiency Evaluation & Regulatory Affairs area also routinely attend program implementation staff meetings to stay current on issues that affect National Grid’s efficiency programs. Program evaluation staff report to the Director of Energy Efficiency Evaluation & Regulatory Affairs who reports to the Vice President of Efficiency Strategy and Planning. Program implementation staff report to the Director of Residential Efficiency Operations who reports to the Vice President of Efficiency Operations.

### **Marketing and Training Staff**

Energy efficiency marketing, training and communications staff are part of the National Grid corporate communications team. This team develops marketing communications plans, advertising, direct mail, collateral materials, bill inserts, and training plans for internal and external audiences supporting workforce development initiatives, including cooperative advertising with trade allies. This group also maintains the Company’s energy efficiency website and coordinates email and search engine marketing campaigns. Events and outreach efforts directed by this group include community, business, trade and industry events aimed at building awareness of energy efficiency programs and stimulating participation.

### **Program and Policy Staff**

National Grid employees who are not part of the Company’s energy efficiency organization independently review energy efficiency charges in the general ledger accounts to verify that only appropriate charges have been directed to these energy efficiency implementation and evaluation

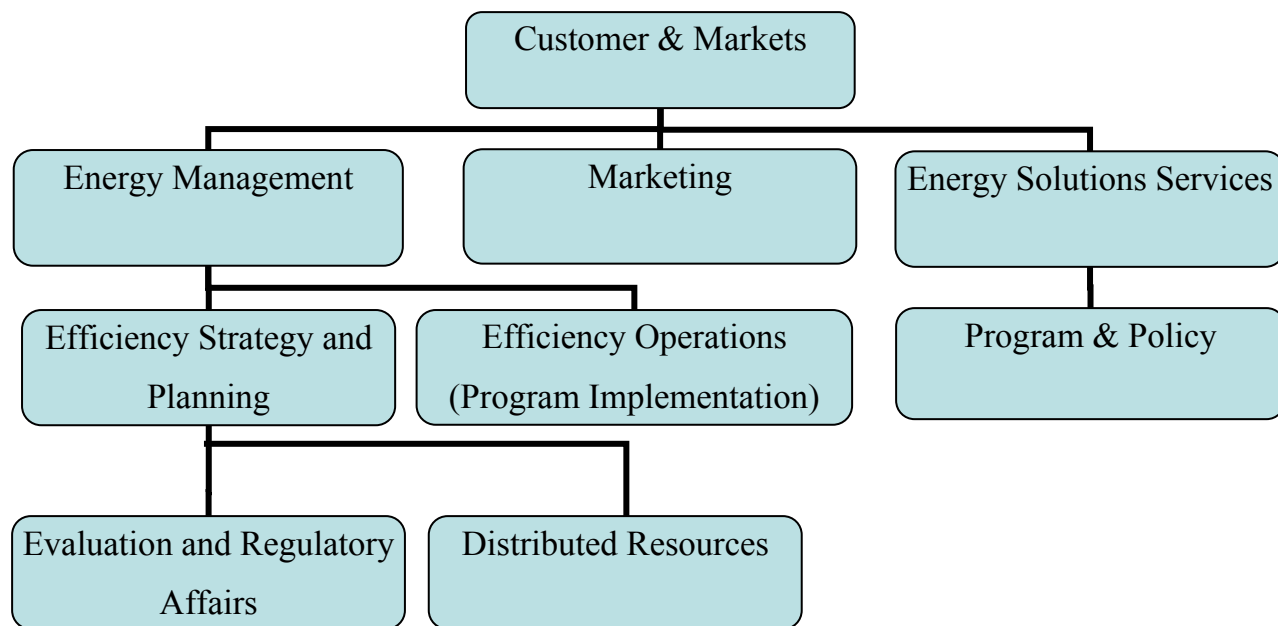


accounts. Employees in this area report to the Director of Program and Policy who reports to the Vice President of Energy Solutions Services and are located in Waltham, Massachusetts.

National Grid uses an activity-based accounting system that supports the tracking of both implementation-related expenses and evaluation-related expenses by program. The Company's general ledger system is used to track expenses by activity, project and expense type. When an employee with the appropriate authority approves an invoice for payment, they must supply the activity, project and expense type that the invoice should be charged to, in addition to authorizing payment of the invoice. Each of the proposed energy efficiency programs has a separate project in the general ledger system. Evaluation and implementation have separate activity types in the general ledger system.

### **Vendor Program Implementation**

National Grid hires vendors who have demonstrated experience and expertise to provide the services that are required in any given energy efficiency program. Currently, the Company has one vendor who provides direct services for efficiency programs operated by both the Company and its affiliate located in downstate New York. The vendor operates and manages a telephone call center to answer customer program inquiries, energy efficiency measures installation issues, provides technical information and assistance, and answers general energy efficiency educational questions. This call center operates from the hours of 8:00 a.m. to 6:00 p.m. EST, Monday through Friday. During other hours, an answering service is available for customers to leave messages requesting return calls. The vendor provides toll-free phone numbers for National Grid customers to contact the call center, operating separate toll-free numbers for each region, as needed. The vendor is responsible for processing and associated administration of all customer rebates. The vendor verifies customer eligibility for participation in programs, maintains customer participation records, and disburses rebates to customers.



### **Organizational Chart**

The organizational chart below shows various entities involved with the energy efficiency programs at National Grid and their relationships to each other.

### **6. Customer Enrollment**

Customers apply for high efficiency heating, water heating and controls rebates by completing and submitting the National Grid New York City & Long Island Residential Gas Efficiency Rebate Application. The form is available at the Company’s efficiency website and also provided in Appendix B attached hereto. National Grid’s vendor is authorized to review all completed forms for correctness, contact customers as needed for further information, and pay eligible incentives.

### **7. Training for Retail Partners**

For the Residential High-Efficiency Heating and Water Heating and Controls Program, National Grid has hired ICF International (“ICF”) to work directly with the mid-market players in the HVAC supply chain, i.e., HVAC equipment distributors and supply houses. National Grid

affiliates operate a gas residential HVAC program in the New England service areas and have found that concentrating on this market segment has helped to transform the marketplace for energy efficient products and services in New England. The mid-market players are often not aware of the differences in energy performance of competing products, and tend not to stock or promote higher-cost equipment. Outreach, education, and training in how to sell premium-performance equipment have resulted in significant increases in the stocking, promotion, and sales of energy-efficient equipment in New England.

The basic approach of National Grid's vendor is to provide training and information for supply house "outside" and "inside" sales employees, including both field staff and in-store salespeople. In addition, they provide National Grid program collateral materials and assist in developing lists of qualifying equipment. The vendor asks supply houses to sign a Participation Agreement. The experience of National Grid affiliates in other regions has shown that having a signed agreement results in more effective and consistent efforts by mid-market partners.

Training of both inside and outside sales staff at supply houses is instrumental in bringing the high-efficiency message to the marketplace. Sales staff training provided by the vendor covers the following:

- Explaining the differences between standard and higher efficiency heating and water heating equipment for the residential market.
- Describing National Grid's rebate programs for the Long Island service territory and the equipment eligible for rebates.
- Showing how supply houses can teach contractors the benefits from promoting the higher efficiency equipment to end-users.
- Showing how contractors can "up-sell" customers from standard equipment, by showing the value proposition to the customer.

National Grid has been working with ICF in conjunction with its interim gas program and plans to continue this work in implementing the "fast track" Residential High-Efficiency Heating and

Water Heating and Controls Program. ICF has assigned an Account Manager to work within National Grid's Long Island service territory to provide support to supply houses to promote the programs, provide program updates, maintain stocking of program materials and supplies, technical training information, and to foster supplier interest in the programs. The vendor may also participate in supply house events, dealer meetings, and manufacturer events. The Long Island Account Manager works closely with the National Grid implementation team, and Trade Ally Managers, to support the Residential High-Efficiency Heating and Water Heating and Controls Program.

### **8. Contractor Training and Program Orientation Plan**

National Grid hires vendors who have demonstrated experience and expertise to provide training and technical expertise for the applicable program. These vendors provide training to contractors and their employees working directly in the field, including quality assurance inspectors, and typically provide detailed orientation and training plans on behalf of National Grid as part of their contracted services to the Company. The National Grid rebate application form and the information found at the Company's efficiency website are the basic training materials used, augmented by a particular vendor's experience and/or required accreditation.

### **9. Contact Information**

Customers with inquiries relating to the Residential High-Efficiency Heating, Water Heating and Controls Program are first directed to the Company's fulfillment house vendor:

National Grid Energy Efficiency  
40 Washington Street, Suite 2000  
Westborough, MA 01581  
Tel: 1-800.292-2032

If there are unresolved issues, the fulfillment house vendor will contact:

Ms. Judy Torres  
National Grid  
Manager, Residential Gas Efficiency Programs  
25 Hub Drive  
Melville, New York 11747  
Tel: 631.755.5304

This individual or her designee will then be responsible for contacting the customer to ensure that all issues are resolved.

### **10. Quality Assurance Plan**

National Grid's fulfillment house vendor randomly selects rebates for inspection using the following percentage guidelines:

- High Efficiency Heating Equipment: 20%
- High Efficiency Water Heating Equipment: 15%
- First five rebates per contractor
- Vendor may also flag rebates for inspection due to questionable invoices or circumstances where customers are unable to supply all required information.

National Grid's inspection vendor performs inspections of these randomly selected installations to ensure that the equipment type for which the customer received the rebate was actually installed and that there are no obvious health and safety violations.

National Grid will inform the customer and installation contractor in writing of installation problems that are discovered. National Grid will contact the customer to ensure that installation issues are resolved. However, as the contract for the equipment installation work is between the customer and the contractor, it will ultimately be the customer's responsibility to pursue resolution through consumer protection laws and/or any other means available to the extent that the customer is not satisfied.

## **11. Coordination**

National Grid will coordinate with NYSERDA to avoid duplication and confusion resulting from overlapping/neighborhood programs; ensure no double-counting of savings achieved; ensure no more than one incentive payment is provided for an energy efficiency measure under any residential gas HVAC program. National Grid's program manager will communicate with NYSERDA periodically to ensure that both parties are aware of any issues or new marketing campaigns.

Customers may also participate in residential gas HVAC programs sequentially, in which case there will not be a problem. For example, a customer might first participate in National Grid's Residential High-Efficiency Heating, Water Heating and Controls Program and then participate in NYSERDA's Home Performance with ENERGY STAR<sup>®</sup> Program. In that situation, there should be no double-counting because National Grid will only count savings related to rebated measures, and NYSERDA's quality control process should ensure that its contractor is accurately reporting other gas HVAC measures.

### **a. Transition from Interim Program to Fast Track Program**

National Grid closed out the interim Residential High-Efficiency Heating, Water Heating and Controls program on May 31, 2009 and transitioned to the "fast track" program of the same name on June 1, 2009. A detailed communications plan was developed to communicate program changes to employees, customers, and trade allies. Communications included:

- A press release outlining the new program;
- E-Action Newsletter (National Grid's electronic communication messaging vehicle): two separate messages were delivered to trade allies and contractors as well as customers who subscribe to this service;
- Efficiency website updated with new rebate information as well as a link to the revised rebate application;
- [www.nationalgrid.com](http://www.nationalgrid.com) has an icon to launch the customer directly to the energy efficiency information; and
- Internal training and communications for Contact Center Employees.

Ongoing outreach and education for National Grid's implementation and training vendors has incorporated program changes to ensure that customers and trade allies receive the latest program and rebate information.

#### **b. Conversion Customers**

Effective June 1, 2009, energy efficiency rebates are available to National Grid customers in the Long Island service territory who install high efficiency natural gas heating and water heating equipment. In an effort to encourage customers who are interested in converting their heating systems to choose high efficiency equipment, all National Grid communications pieces include a statement about this program change. National Grid will work through its Trade Ally program, customer communications, and Company website to encourage oil-to-gas conversion customers to install high-efficiency heating equipment and offer the High-Efficiency Heating and Water Heating and Controls Program rebate to offset the cost of the upgrade.

#### **12. Overlap**

National Grid makes every effort to minimize customer confusion that may result from residential gas HVAC energy efficiency program marketing activities in the same or adjacent utility market areas. The Company's Residential High-Efficiency Heating and Water Heating and Controls Program offers are posted on its efficiency website, which is dedicated solely to National Grid and National Grid New York affiliates' energy efficiency programs. Direct mailings, email notices and bill inserts will clearly identify utility customer eligibility and direct customers to the dedicated energy efficiency website and the dedicated energy efficiency toll-free telephone number(s). National Grid's messaging on energy efficiency always ties back to the Company's website and/or specific telephone numbers to eliminate customer confusion.

#### **13. Evaluation**

National Grid will undertake a comprehensive evaluation of the Residential High-Efficiency Heating and Water Heating and Controls Program during the program period of 2009 – 2011.

National Grid recently issued a Request for Proposals seeking proposals to conduct a process evaluation of all programs approved by the Commission in New York, including the Residential High-Efficiency Heating and Water Heating and Controls Program. In addition, the Evaluation Advisory Group (“EAG”) Statewide Studies subcommittee has been discussing the implementation of a joint Residential/Multifamily Baseline Study, which would include inventory/saturation data for gas heating and hot water heating equipment. National Grid proposes to participate in this joint study, which may be the basis for part of the impact evaluation. If the joint studies prove not to provide enough information to assess the program impacts, the Company proposes to complete a separate impact evaluation, either jointly with all the program administrators (PAs) or individually.

Additional details about proposed process and impact evaluations follow.

#### *Process Evaluation*

In 2009, National Grid will conduct a process evaluation of the Residential High-Efficiency Heating and Water Heating and Controls Program. The study should be completed by mid-2010. The evaluation will focus on identifying how the program is operating during the start-up phase, with the objective of identifying improvements that can be made to the implementation process, emphasizing findings that will lead to improved efforts in the program. National Grid understands the value of getting early feedback so that any needed program modifications can be identified and implemented quickly, resulting in improved results and value to customers. To meet this objective, interim reports from the selected contractor will be requested so that modifications to the implementation effort can be adopted quickly where it appears that a change is likely to lead to improved program results.

This first-year process evaluation will document program processes during the start-up and at a minimum will gather the following information:

- Level of customer satisfaction;
- Vendor selection process;



- Company staff and vendor training;
- Effectiveness of the program delivery mechanism;
- Effectiveness of program promotion;
- Remaining barriers to program participation, including an assessment of why some customers choose to not participate in the program;
- Review of measures offered through the program, i.e., are they acceptable, appealing and valued by the customers;
- Identification of lessons learned and specific actionable recommendations for program improvement; and
- A review of program tracking databases to ensure that data that will likely be required to support future program evaluation efforts, including impact evaluations, are being collected.

Surveys of participating and non-participating customers and vendors will be conducted in support of study objectives. The survey sample will be designed such that results have a precision of +/- 10% at 90% confidence level, as specified by Staff's Evaluation Guidelines.

A final report summarizing results from the process evaluation of the Residential High-Efficiency Heating and Water Heating and Controls Program will likely be completed by mid-2010.

The estimated cost of the process evaluation study is \$50,000 in 2009 and \$50,000 in 2010.

### *Impact Evaluation*

The impact evaluation effort will likely include joint studies with the other New York State Program Administrators ("PAs"). One study under consideration by the Evaluation Advisory Group Studies Subcommittee is a baseline study of all residential measures, including gas heating and water heating equipment. The objectives of the baseline study are to develop better estimates of the baseline efficiencies of gas heating and water heating equipment that is currently

being installed without program influence. The baseline study is expected to begin in late 2009 and to be completed during 2010.

The Company is also planning to conduct a study to develop gas savings impacts based on measures installed by participants in the High Efficiency Heating and Water Heating and Controls Program. The Company anticipates that this might be done using billing data analysis. The Company plans to suggest that this study be completed jointly with other PAs within New York or throughout the Northeast. The Company expects the gas savings impact evaluation will be completed in 2011 for heating equipment

The estimated cost of initiating both the baseline and impact evaluation studies is approximately \$40,000 in both 2010 and 2011.

National Grid anticipates assessing free-ridership and spillover in this program to obtain an estimate of net program savings using an approach that is expected to be developed jointly in consultation with the Evaluation Advisory Group (“EAG”) and Staff. A survey-based approach is anticipated. The Company plans to design the survey sample such that free-ridership and spillover results have a precision of +/- 10% at 90% confidence as specified by Staff’s Evaluation Guidelines.

The estimated cost of the free-ridership and spillover study is approximately \$10,000.

When evaluated net savings for this program become available, the Company plans to use those results to support updated program plans that focus on this market and technologies<sup>4</sup>. This will include assessing program cost-effectiveness using these evaluated results in place of planning assumptions.

#### *Steps to Identify and Mitigate Threats to Data Reliability*

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<sup>4</sup> The Company anticipates sharing its evaluation results with the Evaluation Advisory Group who is expected to recommend updates to the Technical Manual each year.

The Company will review the evaluation plan submitted by the selected evaluation contractors for consistency with the Evaluation Advisory Group guidelines, the requirement to maintain a 90% confidence interval with +/- 10 % precision and the overall need to identify and mitigate threats to reliability of the results. Evaluation contractors will be required to ensure data reliability to the greatest practical extent, including methods for minimizing systematic and random error and techniques for reducing uncertainty introduced by necessary assumptions and adjustments to the data. The selected evaluation contractor will be asked to include a discussion about threats to data reliability in their reports.

#### **14. Logic Model**

As part of its 2009 process evaluation, National Grid's evaluation consultant will be required to develop a logic model for the Residential High-Efficiency Heating and Water Heating and Controls Program.

### **III. Benefit/Cost Ratios**

The Order directed the utilities to use the estimates of Long Run Avoided Costs (“LRACs”) provided in the Order to evaluate all energy efficiency proposals currently pending before the Commission. Accordingly, National Grid has revised its projected benefit/cost analysis using those LRACs and accounting for ordered program changes.

Avoided natural gas values used for the analysis below are from Appendix 2, Table 1 of the Order. Table 1 presents avoided natural gas costs for downstate New York for both winter and summer in 2008 dollars. The avoided natural gas cost values include commodity, pipeline capacity and marginal local distribution values. This table was used in the Company’s analysis because it represents the downstate New York service territory.

To escalate the avoided costs into 2009 constant dollars, the Staff-developed inflation rate of 2.98% was applied.

The following table summarizes the expected benefits, costs, and the benefit/cost ratios for the Residential High-Efficiency Heating and Water Heating and Controls Program in 2009 – 2011.

## Summary of Benefits, Costs and B/C ratios with LRACs

Summary of Benefits, Costs (2009 \$)

Total Resource Cost Test

Program	2009			2010			2011			2009 - 2011		
	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)
Residential High-Efficiency Heating and Water Heating and Controls Program	1.54	\$ 2,693	\$ 1,752	1.66	\$ 5,530	\$ 3,322	1.81	\$ 5,685	\$ 3,149	1.69	\$ 13,909	\$ 8,223
<b>Grand Total</b>	<b>1.54</b>	<b>\$ 2,693</b>	<b>\$ 1,752</b>	<b>1.66</b>	<b>\$ 5,530</b>	<b>\$ 3,322</b>	<b>1.81</b>	<b>\$ 5,685</b>	<b>\$ 3,149</b>	<b>1.69</b>	<b>\$ 13,909</b>	<b>\$ 8,223</b>

Summary of Benefit , Costs (2009 \$)

Total Resource Cost Test with Carbon Adder

Program	2009			2010			2011			2009 - 2011		
	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)	TRC Benefit/ Cost	Total NPV Benefits (\$000)	Total NPV Costs (\$000)
Residential High-Efficiency Heating and Water Heating and Controls Program	1.64	\$ 2,870	\$ 1,752	1.77	\$ 5,894	\$ 3,322	1.92	\$ 6,059	\$ 3,149	1.80	\$ 14,823	\$ 8,223
<b>Grand Total</b>	<b>1.64</b>	<b>\$ 2,870</b>	<b>\$ 1,752</b>	<b>1.77</b>	<b>\$ 5,894</b>	<b>\$ 3,322</b>	<b>1.92</b>	<b>\$ 6,059</b>	<b>\$ 3,149</b>	<b>1.80</b>	<b>\$ 14,823</b>	<b>\$ 8,223</b>

#### **IV. Savings Assumptions**

The Order directed the utilities to estimate savings using the technical reference manual entitled "New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs – Selected Residential & Small Business Measures" dated March 25, 2009 (the "technical manual"). The savings estimates incorporated in National Grid's benefit/cost analysis reflect the savings estimation approaches in the technical manual in its projection of expected benefits.

The following measures are addressed in the technical manual:

<b>Single Family Residential Measures in Technical Manual</b>	<b>Included in National Grid Expedited Gas Program</b>
Clothes Washers	No
High Efficiency Gas Furnaces	Yes
Setback Thermostat	Yes
Duct Insulation and Leakage Sealing	Yes
Boilers	Yes
Boiler Reset Controls	Yes
Instantaneous Water Heaters	No
Solar Hot Water	No
Low Flow Showerheads	No
Faucet Aerators	No
Hot Water Tank Wraps	No

For the above measures, the technical manual presents gross energy savings estimates and approaches for obtaining those estimates. In addition the technical manual presents a 0.90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by 0.90 to arrive at an estimate of net energy savings for each measure. The technical manual also presents measure lives for the above measures. To calculate life-cycle savings, the annual net first-year energy savings must be multiplied by the measure life.

A. Expected Benefits for the Residential High-Efficiency Heating and Water Heating and Controls Program

A calculation of the net annual energy savings for the Residential High-Efficiency Heating and Water Heating and Controls Program follows.

Measure	Projected Measures			Net Annual therms per unit	Annual therms		
	2009	2010	2011		2009	2010	2011
Furnace (forced hot air) w/ ECM >=95%AFUE	36	72	72	205	7,389	14,778	14,778
Furnace (forced hot air) w/ ECM >=94%AFUE	105	210	210	195	20,499	40,998	40,998
Furnace (forced hot air) >=92% AFUE	40	80	80	175	6,982	13,963	13,963
Furnace (forced hot air) w/ ECM >=92%AFUE	60	120	120	175	10,472	20,945	20,945
Furnace (forced hot air) >=90% AFUE	48	96	96	153	7,341	14,681	14,681
Boilers (FHW) 90% AFUE	427	855	855	124	53,101	106,201	106,201
Boilers (FHW) 85% AFUE	270	540	540	66	17,761	35,522	35,522
Boilers (Steam w/ elec. Ignition) >=82% AFUE	10	20	20	102	1,018	2,037	2,037
Indirect Water Heater	350	700	700	36	12,474	24,948	24,948
Programmable thermostats	711	1,421	1,421	41	29,338	58,673	58,673
Boiler reset controls	40	80	80	53	2,102	4,205	4,205
Duct and air sealing	-	-	-	48	-	-	-
<b>Total for Residential High-Efficiency Heating and Water Heating and Controls Program</b>	<b>2,097</b>	<b>4,194</b>	<b>4,194</b>		<b>168,477</b>	<b>336,951</b>	<b>336,951</b>

Projected participation for each measure multiplied by net annual therm savings per measure equal annual therm savings for each measure.

The technical manual presents estimates for gross annual energy savings for the following measures in the Residential High-Efficiency Heating and Water Heating and Controls Program:

- High-Efficiency Gas Furnaces,
- Setback Thermostats,
- Duct Insulation and Leakage Sealing,
- Boilers, and
- Boiler Reset Controls.

Detailed savings calculations and Company-specific variables that are not discussed in the technical manual are provided below for these measures.

The technical manual does not present estimates for gross annual energy savings for indirect water heaters. Energy savings calculations that fully document and illustrate the derivation of proposed savings in National Grid's implementation plan that are not included in the technical manual are at the end of this section.



## 1. Furnaces (forced hot air)

### Measure Description

High-efficiency condensing gas furnaces with AFUE  $\geq$  90%.

### Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for residential furnaces with rated efficiency of 90% AFUE or higher using the following formula:

$$\Delta \text{therms} = \text{units} \times \frac{\text{kBtuh}}{\text{unit}} \times \text{RLF}_{\text{heat}} \times \left( \frac{1}{\bar{\eta}_{\text{base}} \times \bar{\eta}_{\text{duct,base}}} - \frac{1}{\bar{\eta}_{\text{ee}} \times \bar{\eta}_{\text{duct,ee}}} \right) \times \frac{\text{HLH}}{100}$$

where:

$\Delta \text{therms}$	= gross annual gas savings
units	= number of furnaces installed
kBtuh/unit	= the nominal rating of the heating capacity of the furnace in kBtu/hr
$\bar{\eta}$	= average seasonal efficiency of furnace
$\bar{\eta}_{\text{duct}}$	= average seasonal duct system efficiency
HLH	= heating load hours
$\text{RLF}_{\text{heat}}$	= heating mode rated load factor
100	= conversion factor (kBtuh/therm)

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	100	Estimated average unit size
$\eta\text{-bar}_{\text{base}}$	0.78	Technical manual
$\eta\text{-bar}_{\text{ee}}$	90	Lower-bound AFUE qualifying for rebate at 90% AFUE level
	92	Lower-bound AFUE qualifying for rebates at 92% AFUE level
	94	Lower-bound AFUE qualifying for rebate at 94% AFUE level
	95	Lower-bound AFUE qualifying for rebate at 95% AFUE level
$\eta\text{-bar}_{\text{duct,}}$	0.94	Estimated value from technical manual (base and efficient cases assumed equal unless participant also installs duct insulation)
HLH	1168	Technical manual - average building in New York City
$\text{RLF}_{\text{heat}}$	0.8	Technical manual

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 20 years for furnaces. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Furnace (forced hot air) w/ ECM >=95%AFUE	228	90%	205	20	4,105
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Furnace (forced hot air) w/ ECM >=94%AFUE	217	90%	195	20	3,905
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Furnace (forced hot air) >=92% AFUE	194	90%	175	20	3,491
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Furnace (forced hot air) w/ ECM >=92%AFUE	194	90%	175	20	3,491
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Furnace (forced hot air) >=90% AFUE	170	90%	153	20	3,059

## 2. Boilers (hot water or steam)

### Measure Description

High-efficiency condensing and non-condensing hot water and steam boilers.

### Gross Energy and Demand Savings

The technical manual calculates gross annual gas savings for residential boilers using the following formula:

$$\Delta \text{therms} = \text{units} \times \frac{\text{kBtuh}}{\text{unit}} \times \text{RLF}_{\text{heat}} \times \left( \frac{1}{\bar{\eta}_{\text{base}} \times \bar{\eta}_{\text{dist,base}}} - \frac{1}{\bar{\eta}_{\text{ee}} \times \bar{\eta}_{\text{dist,ee}}} \right) \times \frac{\text{HLH}}{100}$$

where:

$\Delta \text{therms}$	= gross annual gas savings
units	= number of furnaces installed
kBtuh/unit	= the nominal rating of the heating capacity of the boiler in kBtu/hr
$\bar{\eta}$	= average heating season efficiency of boiler
$\bar{\eta}_{\text{dist}}$	= average heating season distribution system efficiency
HLH	= heating load hours
$\text{RLF}_{\text{heat}}$	= heating mode rated load factor
100	= conversion factor (kBtuh/therm)

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	100	Estimated average unit size
$\eta\text{-bar}_{\text{base}}$	0.80 (hot water) 0.75 (steam)	Technical manual
$\eta\text{-bar}_{\text{ee}}$	0.85 (hot water) 0.90 (hot water) 0.82 (steam)	Lower-bound AFUE qualifying for rebate at 85% AFUE level Lower-bound AFUE qualifying for rebate at 90% AFUE level Lower-bound AFUE qualifying for rebate at 82% AFUE level
$\eta\text{-bar}_{\text{dist}}$	0.94	Estimated value from technical manual (base and efficient cases assumed equal unless participant also installs duct insulation)
HLH	1168	Technical manual - average building in New York City
$\text{RLF}_{\text{heat}}$	0.8	Technical manual

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 20 years for boilers. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Boilers (FHW) 90% AFUE	138	90%	124	20	2,485
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Boilers (FHW) 85% AFUE	73	90%	66	20	1,316
	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Boilers (Steam w/ elec. Ignition) >=82% AFUE	113	90%	102	20	2,037

### 3. Setback thermostat

#### *Measure Description*

Programmable setback thermostats applied to residential furnaces and boilers.

#### *Gross Energy and Demand Savings*

The technical manual calculates gross annual gas savings for residential setback thermostats using the following formula:

$$\Delta \text{therms} = \text{units} \times \frac{\text{kBtuh}}{\text{unit}} \times \text{RLF}_{\text{heat}} \times \frac{1}{\bar{\eta}_{\text{base}} \times \bar{\eta}_{\text{dist,base}}} \times \frac{\text{HLH}}{100} \times \text{ESF}$$

where:

$\Delta \text{therms}$	= gross annual gas savings
units	= number of homes with setback thermostats
kBtuh/unit	= the nominal rating of the heating capacity of the furnace in kBtu/hr
$\bar{\eta}$	= average seasonal efficiency of furnace or boiler
$\bar{\eta}_{\text{dist}}$	= average seasonal distribution system efficiency
HLH	= heating load hours
$\text{RLF}_{\text{heat}}$	= heating mode rated load factor
100	= conversion factor (kBtuh/therm)
ESF	= energy savings factor

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	100	Estimated average unit size
$\eta\text{-bar}_{\text{base}}$	0.78	Technical manual Estimated value from technical manual (base and efficient cases)
$\eta\text{-bar}_{\text{dist}}$	0.94	assumed equal unless participant also installs duct insulation)
HLH	1168	Technical manual - average building in New York City
$\text{RLF}_{\text{heat}}$	0.8	Technical manual
ESF	3.6%	Technical manual

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 11 years for thermostats. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Programmable thermostats	46	90%	41	11	454

#### 4. Boiler reset controls

##### *Measure Description*

Reset of hot water setpoint in single-family residential buildings with zone thermostat control. The measure is assumed to be applied to existing non-condensing boiler systems.

##### *Gross Energy and Demand Savings*

The technical manual calculates gross annual gas savings for residential boiler reset controls using the following formula:

$$\Delta_{\text{therm}} = \text{units} \times \text{kBtuh/unit} \times \text{RLF} \times (1 / \bar{\eta}) \times \text{HLH}/100 \times \text{ESF}$$

where:

$\Delta_{\text{therm}}$	= gross annual gas savings
units	= number of boiler reset controls installed
kBtuh/unit	= size of boiler served by each reset controller
100	= conversion factor (therm/kBtuh)
$\bar{\eta}$	= average seasonal efficiency of the boiler system without reset controls
RLF	= rated load factor
HLH	= Heating load hours
ESF	= energy savings factor computed with a building energy simulation model

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	100	Estimated average unit size
$\eta$ -bar	0.8	Technical manual
RLF <sub>heat</sub>	0.8	Technical manual
HLH	1168	Technical manual - average building in New York City
ESF	5.0%	Technical manual

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 20 years for boiler reset controls. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Boiler reset controls	58	90%	53	20	1,051



## 5. Duct insulation and leakage sealing

### *Measure Description*

Improvements to duct systems made in conjunction with high-efficiency furnace installation.

### *Gross Energy and Demand Savings*

The technical manual calculates gross annual gas savings for residential duct insulation and leakage sealing using the following formula:

$$\Delta \text{therms} = \text{units} \times \frac{\text{kBtuh}}{\text{unit}} \times \text{RLF}_{\text{heat}} \times \left( \frac{1}{\bar{\eta}_{\text{base}} \times \bar{\eta}_{\text{duct,base}}} - \frac{1}{\bar{\eta}_{\text{ee}} \times \bar{\eta}_{\text{duct,ee}}} \right) \times \frac{\text{HLH}}{100}$$

where:

$\Delta \text{therms}$	= gross annual gas savings
units	= number of furnaces installed
kBtuh/unit	= the nominal rating of the heating capacity of the furnace in kBtu/hr
$\bar{\eta}$	= average heating season efficiency of furnace
$\bar{\eta}_{\text{duct}}$	= duct system average seasonal efficiency
HLH	= heating load hours
$\text{RLF}_{\text{heat}}$	= heating mode rated load factor
100	= conversion factor (kBtuh/therm)

National Grid used the following values to calculate the gross annual gas savings in therms:

Assumption	Value	Source
kBtuh/unit	100	Estimated average unit size
$\eta\text{-bar}_{\text{base}}$	0.78	Technical manual
$\eta\text{-bar}_{\text{duct,ee}}$	0.98	Technical manual
$\eta\text{-bar}_{\text{duct, base}}$	0.94	Technical manual
HLH	1168	Technical manual - average building in New York City
$\text{RLF}_{\text{heat}}$	0.8	Technical manual

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 10 years for duct insulation and leakage sealing. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Duct and air sealing	53	90%	48	10	480

## 6. Indirect water heater

### *Measure Description*

Indirect water heater attached to a residential boiler.

### *Gross Energy Savings*

National Grid used the following formula to calculate gas savings:<sup>5</sup>

$$\Delta \text{Therms} = \text{units} * (1 - (EF_{\text{base}}/EF_{\text{ee}})) * \text{MMBTU/unit}_{\text{base}}$$

National Grid used the following values to calculate the gross annual gas savings in therms:

<b>Assumption</b>	<b>Value</b>	<b>Source</b>
MMBTU/unit <sub>base</sub>	18	Federal Code: FR66/11/Jan 17,2001, p 4497, based on 40 gallon gas storage water heater
EF <sub>base</sub>	0.594	"Natural Gas Energy Efficiency Potential in MA", Appendix A-2 pg 3 (GDS, April 2009)
EF <sub>ee</sub>	0.763	"Natural Gas Energy Efficiency Potential in MA", Appendix A-2 pg 3 (GDS, April 2009)

### *Impact Factors*

The technical manual presents a .90 factor that represents spillover net of free-ridership. The technical manual states that the gross savings estimates presented in the manual must be multiplied by .90 to arrive at an estimated net energy savings for each measure. In general, the following algorithm is used to calculate net energy savings:

$$\text{Net therms} = \text{Gross therms} * (1 - \text{Freeridership} + \text{Spillover}) * \text{Energy Realization Rate}$$

### *Measure Life*

The technical manual presents an effective useful life of 20 years for boilers and instantaneous water heaters; indirect water heaters are assumed to be consistent with this time period. To calculate life-cycle savings, the annual net first year energy savings must be multiplied by the measure life.

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<sup>5</sup> "Natural Gas Energy Efficiency Potential in MA", Appendix A-2 pg 3 (GDS, April 2009)

A summary of gross savings, net and lifetime energy savings follows.

	<b>Gross therms savings</b>	<b>Spillover net of free ridership</b>	<b>Net Annual Savings</b>	<b>Effective Useful Life</b>	<b>Lifetime therms savings</b>
Indirect Water Heater	40	90%	36	20	713

## **Appendix A: Explanation of Budget Categories**

### **General Administration**

Costs to administer energy efficiency programs that include but are not limited to:

- staff salaries (e.g., management personnel, program managers, accounting personnel, regulatory staff, and administrative support staff);
- Company overhead (e.g., office space, supplies, computer and communication equipment, staff training, industry-related sponsorships and memberships); and
- other costs that do not include program planning, marketing, trade ally training, direct program implementation, incentives and services, and program evaluation.

### **Program Planning**

Costs for energy efficiency programs that include but are not limited to: general market research (not related to evaluation), energy efficiency potential studies, benefit/cost analysis, program design and screening.

### **Program Marketing**

Costs for promotion of energy efficiency programs that include but are not limited to: production of all energy efficiency program literature, advertising, displays, events, promotional items, bill inserts, and internal and external communications. Advertising encompasses all forms of media such as direct mail, print, radio, television, and internet.

### **Trade Ally Training**

Costs for all activities associated with energy efficiency training/education of the trade ally community regarding the Company's current energy efficiency programs. These include but are not limited to: equipment vendors, heating contractors, weatherization contractors, equipment installers, residential auditors, residential builders and developers.

### **Incentives and Services**

These include costs for incentives paid to customers. These also include costs associated with payments to contractors for services provided to customers (such as energy audits, technical assessments, engineering studies, plan reviews, blower door tests, infrared scans and free

measures) and costs for incentives paid to contractors for providing energy efficiency services to customers (for example, incentives paid to BPI-certified contractors for proper equipment sizing using Manual J calculations).

### **Direct Program Implementation**

Costs associated with utility personnel or contractors implementing programs on the Company's behalf. Tasks associated with this budget category include but are not limited to: lead intake, customer service, rebate application processing and payment, rebate application problem resolution, quality assurance, and program reporting to the utility.

### **Program Evaluation**

All activities associated with the evaluation of the energy efficiency program. These are costs for activities that include but are not limited to:

- evaluation planning,
- program logic models,
- process evaluation,
- impact evaluation,
- evaluation-related market research,
- measurement and verification activities, and
- evaluation reporting.

Within these broad categories, key tasks associated with the implementation of the major evaluation activities may include but are not limited to: survey design, sample design, survey implementation, modeling, data collection, data analysis (general), billing analysis, site visits, end-use metering, report writing, travel, and software. Expenses associated with evaluation should include a breakout of internal and external costs (e.g., consultant contracts).

## Appendix B: Customer and Trade Ally Outreach

### Residential High-Efficiency Heating and Water Heating and Controls Program Customer Outreach Materials



The screenshot shows the National Grid Energy Efficiency Website. At the top left is the National Grid logo with the tagline "The power of action." To the right are navigation links: "About Us", "News", "Links", and "Contact Us". Below these are four main menu items: "Tips", "Energy Analyzer", "Efficiency Store", and "E-Newsletter". A green banner reads "Welcome to Think Smart Think Green National Grid's Energy Efficiency Website". The main content area features a search prompt: "Put our efficiency programs to work to save energy and money. Simply enter your zip code, select category, and click 'go' to find programs and incentives available in your region." Below this is a search form with a zip code input field, a dropdown menu set to "Residential", and a "Go!" button. A link "here" is provided for users who don't know their zip code. A Q&A section follows, with a question "Q: Is my business considered large or small?" and an answer "A: A small business has a monthly kW demand of 200 kW or less. A large business uses more than 200 kW each month. In Upstate New York only, a small business must have a monthly kW demand of 100 kW or less." To the right is a video player titled "Easy Ways to Save Energy and Money at Home." with a "CLICK HERE TO PLAY" button and a "Click here to view more videos." link. At the bottom, there are three promotional banners: "Visit floe. Take action." with a polar bear, "Easier Billing Online" with a woman at a computer, and "Improve your HOME, and COMMUNITY Convert to Natural Gas" with a house icon. The footer contains "Copyright ©2009 National Grid" and a "Privacy Policy" link.

# Residential High-Efficiency Heating and Water Heating and Controls Program

## Customer Rebate Form

New York City & Long Island

### Save Energy at Home with Natural Gas Efficiency



Save money, improve comfort and ensure a cleaner environment with energy savings offers for residential customers from National Grid.



- Free Home Energy Assessment
- ENERGY STAR® Thermostats
- Outdoor Boiler Reset Controls
- High-Efficiency Heating Equipment
- High-Efficiency Water Heaters
- Home Weatherization — Air Sealing and Insulation

**nationalgrid**  
The power of action.™

Wouldn't it be great if you could save money, improve the efficiency of your home, and help ensure a cleaner environment? You can with efficiency from National Grid.

- Follow these steps to participate:
- 1) Consult your qualified heating contractor or plumber.
  - 2) Complete this application and determine anticipated rebate.
  - 3) Return application with a copy of your dated invoice or receipt. (Remember, your invoice or receipt must include the complete model number and cost of each unit installed.)

**Mail to: National Grid Efficiency**  
40 Washington Street, Suite 2000  
Westborough, MA 01581  
1-800-292-2032

For questions please call 1-800-292-2032, email [ngridinfo@efi.org](mailto:ngridinfo@efi.org) or visit [www.thinksmarthinkgreen.com](http://www.thinksmarthinkgreen.com).

The power of action starts here.

**nationalgrid**  
The power of action.™

#### 2009 Residential Energy Efficiency Rebates

PRODUCT	REBATE
<b>REPLACEMENT THERMOSTATS**</b>	
ENERGY STAR rated programmable thermostats** Maximum 2 per household.	\$25/ea.
<b>OUTDOOR BOILER RESET CONTROLS</b>	
Add on unit attached to forced hot water boiler	\$100
<b>HIGH-EFFICIENCY HEATING EQUIPMENT</b>	
Furnaces (forced hot air) AFUE $\geq$ 90% rating	\$300
Furnaces (forced hot air) AFUE $\geq$ 92% rating & ECM motor	\$400
Furnaces (forced hot air) AFUE $\geq$ 94% rating & ECM motor	\$600
Boilers (steam with electronic ignition) $\geq$ AFUE 82% rating	\$500
Boilers (forced hot water) AFUE $\geq$ 85% rating	\$500
Boilers (forced hot water-condensing) AFUE $\geq$ 90% rating	\$1,000
<b>HIGH-EFFICIENCY WATER HEATERS</b>	
Indirect water heater attached to a natural gas ENERGY STAR forced hot water boiler	\$300

\*\* Programmable thermostats must be installed by a contractor at the time of furnace or boiler replacement.  
\* AFUE = Annual Fuel Utilization Efficiency  
‡ ECM = Electronic Controlled Motor





Residential Natural Gas Energy Efficiency Rebate Application

Please review terms and conditions. Form must be completed entirely.

Customer: \_\_\_\_\_ National Grid Gas Account #: \_\_\_\_\_  
(Name and address where equipment was installed)  
Street: \_\_\_\_\_  Existing Dwelling  New Construction  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
E-mail: \_\_\_\_\_ National Grid Representative: \_\_\_\_\_

Please check one,  I'm an existing natural gas heat customer,  I'm converting from an oil to natural gas heating system.

CONTRACTOR INFORMATION Remember, all equipment MUST be installed by a qualified contractor.

Heating Contractor Name: \_\_\_\_\_ Gas Fitter/Plumber License #: \_\_\_\_\_  
(No High-Efficiency Heating Equipment Allowed)  
Street: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Business Phone: \_\_\_\_\_ Tax ID# \_\_\_\_\_

CONTROLS, HIGH-EFFICIENCY HEATING AND WATER HEATING EQUIPMENT REBATE

TYPE/NO. OF CONTROLS/HEATING EQUIPMENT INSTALLED	INSTALLED COST	MANUFACTURER	MODEL NUMBER	INSTALL DATE	REBATE AMOUNT/INSTALLED	QUANTITY INSTALLED	ANTICIPATED TOTAL REBATE
ENERGY STAR Thermostats	\$135.56	Rite-Temp	802AC (SKU#07-430)		\$25.00 ea.	2	\$50.00

TYPE/NO. OF HEATING AND WATER HEATING EQUIPMENT INSTALLED	INSTALLED COST	MANUFACTURER	MODEL NUMBER	AFTER RATING (DATE/TIME)	TOTAL KWh/DI/HP/HP/HP	INSTALL DATE	REBATE AMOUNT/INSTALLED	QUANTITY INSTALLED	ANTICIPATED TOTAL REBATE

Please call me to schedule an In Home Energy Audit.  
 Please contact me about weatherization measures.

Where did you hear about this program?  Sales Rep/Account Executive  Heating Contractor  Energy Auditor  Equipment Supplier  Trade Show  Print Advertising  Internet  Radio/TV  Other

Work Completion and Rebate Validation.

I hereby affirm the following Prescriptive Energy Efficiency Equipment has been installed. I acknowledge that all work is subject to on-site work verification and inspection as may be required by state and local laws and by National Grid. I am aware of and agree to the Terms & Conditions stated on the reverse side of this application and an abiding respect of any time period or purchase agreement for the installation performed.

Customer Signature: \_\_\_\_\_ Date: \_\_\_\_\_

New York, City & Long Island

Equipment installed from 01/09 to 12/31/09 is eligible. Rebate form and required documentation must be post marked by 12/31/09. One account number per form. State restrictions may apply. Rebate offers are subject to change without notice.



20% Rebate on Weatherization - up to \$750



Weatherization can make your home more energy efficient year round. With some simple, easily installed measures, your heating and cooling systems will be more effective. You'll reduce energy consumption and save money. Plus you'll be doing your part to help the environment.

Optimize your home's efficiency and help cut energy bills with weatherization. When you install any or all of the following qualifying measures, you'll receive a 20% rebate, up to \$750 per residential heating account.

- Attic Insulation • Attic stairs insulator • Wall Insulation • Basement or crawl space insulation • Rim joist insulation • Heating system duct/pipe insulation • Attic ventilation • Ductwork leakage testing and sealing • Infrared Inspection • Air Infiltration testing and sealing

Sealing and insulating is a cost effective way to improve efficiency and comfort in your home. Weatherizing is easy. Select a pre-approved contractor to insulate and air seal and you can receive a rebate for 20% of the cost up to \$750. The contractor will even complete and submit the weatherization rebate form. Do-it-yourself installations do not qualify.

Call 1-800-202-2032 or email [ngridinfo@efi.org](mailto:ngridinfo@efi.org) for a list of qualifying contractors.

\*Done in conjunction with attic insulation only.

Have You Analyzed Your Home Energy Use?

A home energy assessment is the first step in making your home more efficient. An assessment will check your home energy use and provide recommended measures you can make to improve efficiency and save money. National Grid offers two assessments.

- Try our **Online Energy Analyzer** for a quick and easy way to evaluate your energy use and receive customized tips. Visit [www.thinksmartthinkgreen.com](http://www.thinksmartthinkgreen.com)
- Our **FREE In Home Energy Assessment** is the next step to receive recommendations for improving efficiency based on a thorough evaluation of your home. Request an in home audit on this application or call 1-800-860-0815 today.

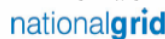


[www.thinksmartthinkgreen.com](http://www.thinksmartthinkgreen.com)

National Grid Residential Energy Efficiency Programs Terms & Conditions

1. **Incentive** - Subject to these Terms and Conditions, this program is offered by KeySpan Gas d/b/a National Grid ("the Company" or "National Grid"). The Company, through its contractual vendor, Energy Federation Incorporated (the "Vendor"), will pay incentives to eligible customers in the Company's Service Territory for the purchase and installation of the equipment/products described in this literature and within this application.
2. **Customer Eligibility** - Equipment installed from 01/09 to 12/31/09 is eligible. It must have been installed at the installation address listed on this application and the required documentation listed must be post marked by the Vendor, no later than 12/31/09. Rebate programs are available to existing National Grid gas heating customers and customers that convert from oil to gas heat. Check [www.thinksmartthinkgreen.com](http://www.thinksmartthinkgreen.com) frequently for program updates or installation extensions.
3. **Post-Installation Work Verification** - The Company reserves the right to perform a verification of the specified installation. If the Company and/or Vendor determine that the equipment was not installed in a manner that is consistent with program guidelines, the Company and/or Vendor may require that the installation be modified before making any incentive payments. The cost of such modifications is the responsibility of the customer.
4. **Incentives** - All installations must be completed in conformance with state and local code requirements and by qualified contractors. Self-installs of programmable thermostats will not qualify for rebates. Programmable thermostats must be installed by a contractor while replacing a furnace or boiler.
5. **Proof of Proper Installation** - As part of its incentive application, the Customer is required to submit dated copies of all paid invoices documenting the installation (including all materials, labor and equipment invoice) which reflect the actual cost of purchasing and installing the equipment. If label is unavailable, manufacturer specification sheet with model number matching invoice may be substituted.
6. **Indemnification** - Customer shall defend, indemnify and hold harmless the Company and its officers, directors, employees, agents, servants and assigns from and against any and all losses, claims, demands and/or liability for damage to property, injury or death of any person, or any other liability incurred by the Company, including all expenses, legal or otherwise, arising out of or related to the equipment or installation, except to the extent attributable to the negligence of the Company. In no event shall Company's liability to Customer exceed the incentive amount.
7. **Limited Scope Review** - The scope of review by the Company and the Vendor and their Inspector of the installation of the equipment is limited solely to determine whether incentives are payable. It does not include any kind of safety or code review and should not be relied upon as one.
8. **Incentive Amounts** - The Company will provide incentives for approved heating, water heating, thermostat, or boiler reset control equipment, up to incentive amount indicated in the program literature and within this application.
9. **Payment** - The Company, through the vendor, expects to make incentive payments to eligible customers within 45 days of a satisfactory work verification. The customer must refund any incentive made to the credit of the contractor or equipment does not satisfy program requirements.
10. **No Warranties** - The Company and the Vendor do not endorse, guarantee or warrant any particular contractor, manufacturer or product installation. The Company and the Vendor do not make any representation of any kind regarding the results to be achieved by the equipment or the adequacy or safety of such equipment.
11. **Changes in the High-Efficiency Heating, Indirect Water Heating, Thermostat(s), or Boiler Reset Control Program - Equipment Incentive Program** - Tax liability, conditions and details of the High-Efficiency Heating and Indirect Water Heating Incentive Program are subject to change without prior notice and incentive offers may increase or decrease over time. The Company reserves the right to modify or terminate the Incentive Program without notice. Participants of the program may be subject to tax liability for the value of goods and services received through the program pursuant to state or Federal income tax codes. The Company is not responsible for any tax liability which may be imposed as a result of receipt of the rebate by the Customer.
12. **Contractor Insurance** - The Company is not responsible for any damage that may be caused by or arise out of an installation of any equipment. The customer is responsible for selecting contractors who are qualified and carry adequate insurance coverage.

National Grid is one of the largest investor-owned energy companies in the world. In the US, we serve nearly 5 million electric and 2.4 million gas customers in Massachusetts, New Hampshire, New York and Rhode Island. Save energy and money with our award-winning efficiency programs. Visit [www.thinksmartthinkgreen.com](http://www.thinksmartthinkgreen.com).



R803NY 6409



40 Washington Street,  
Suite 2000  
Westborough, MA 01581



Reduce your annual fuel consumption, decrease air pollution and save on your energy bill when you install a natural gas high-efficiency heater or water heater.

The power of action starts here.

