

National Grid

New York Residential High-Efficiency Heating and Water Heating and Controls Program

Process Evaluation Report – Final

December 15, 2010





National Grid

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1. EXECUTIVE SUMMARY

1.1 PROGRAM AND EVALUATION OVERVIEW

The Residential High-Efficiency Heating and Water Heating and Controls Program (the program) provides incentives for the installation of high-efficiency heating and water heating equipment. The program serves National Grid customers across three territories: upstate New York (Niagara Mohawk Power Corporation d/b/a National Grid), Long Island (KeySpan Gas East Corporation d/b/a National Grid), and New York City (The Brooklyn Union Gas Company d/b/a National Grid NY). Residential natural gas heating customers in buildings with one to four dwelling units are eligible to participate in the program, as well those who are converting from oil to gas heating. Measures rebated include high-efficiency furnaces (with and without ECM motors), high-efficiency hot water and steam boilers, boiler reset controls, programmable thermostats, and duct sealing. Customers can receive rebates for installing heating systems in new construction, oil-to-gas conversions, and gas-to-gas replacements.

On June 23, 2008, the New York Public Service Commission (Commission) issued an order establishing an electric and natural gas Energy Efficiency Portfolio Standard (EEPS). The EEPS established targets for energy efficiency, similar to the existing Renewable Portfolio Standard, and other programs intended to reverse the pattern of increasing energy use in New York. The proceeding establishes that electricity usage should decrease by 15 percent by 2015 statewide, and natural gas use should decrease by 4.34 BCF of gas annually through 2011 and 3.45 BCF annually after 2011. The program is included in the portfolio of programs under the EEPS.

Up to June 2010, the Commission required that heating and water heating related incentives and qualifying equipment be consistent across the state. The Commission, through an order posted on June 24, 2010, mandated decreased incentives offered to customers of upstate New York utilities that had exhausted their 2009 – 2011 budgets earlier in 2010.¹ This change was intended to control spending for those programs, which were granted additional funding in the June 2010 Order.

Table 1-1 documents the savings goals presented in the implementation plans.² Both Long Island and New York City's goals are higher than those of upstate New York.

¹ *Consolidated Edison Company of New York, Inc., New York State Energy Research Development Authority (NYSERDA), Central Hudson Gas & Electric Corporation, Order Approving Three New Energy Efficiency Portfolio Standard (EEPS) and Enhanced Funding and Making Other Modification for Other EEPS Programs.* Order posted by the Public Service Commission on 6/24/2010 under Case/Matter 09-G-0363, Filing No. 107. File Name 201_07m0548etal_Order.pdf pages 20-23.

² *High-Efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan* submitted June 8, 2009 by KeySpan Gas East Corporation d/b/a/ National Grid (Case 08-G-1017)

High-Efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan submitted June 8, 2009 by Niagara Mohawk Gas Corporation d/b/a/ National Grid (Case 08-G-1015)

High-Efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan submitted June 8, 2009 by The Brooklyn Union Gas Company d/b/a/ National Grid NY (Case 08-G-1016)



Table 1-1. Annual Therm Savings Goals by Company per Program Filings

Territory	2009	2010	2011
Upstate	151,927	303,851	303,851
Long Island	168,477	336,951	336,951
New York City	185,665	371,329	371,329

Tetra Tech conducted a variety of research activities as part of this program evaluation. These activities are detailed below.

National Grid Staff and Implementation Contractor Interviews. Tetra Tech formally conducted program staff interviews during the kick-off meeting in September, as well as additional follow-up interviews in October. Tetra Tech also spoke with three National Grid trade ally (also referred to as contractor) representatives and seven implementation contractors (four individuals from EFI and three individuals from ICF). Please note that staff from CSG were not interviewed as, at the time, the organization was not yet engaged in conducting quality assurance checks for the program. Quality assurance was CSG's only defined role in this program.

Participating and Nonparticipating Trade Ally Interviews. Tetra Tech conducted qualitative in-depth interviews with 27 participating and 12 nonparticipating trade allies in February and March of 2010. These interviews provided meaningful process insights into the program's operations, program interactions with trade allies, characteristics of program participants, and barriers to program participation.

Participant Surveys. The process evaluation also included quantitative telephone interviews with a random sample of 140 downstate³ and 85 upstate New York⁴ program participants conducted between March 23, 2010, and April 21, 2010. Prior to creating the survey participant sample, all households that were sampled as part of a separate National Grid energy efficiency customer satisfaction survey were removed from the Residential High-Efficiency Heating and Water Heating and Controls Program population. Through the survey process, Tetra Tech identified three cases in the sample that were related to new construction of multifamily buildings. These three cases were removed from the sample and contacted independently using a separate in-depth interview guide to direct the interview. The analysis from these cases is included in this report.

Market Assessment. Tetra Tech completed a market assessment of the upstate and downstate New York territories leveraging the US Census data analysis obtained from American Community Survey (ACS) data. The ACS data was considered the most relevant source of data, as it provided the most recent data at a county level.

Heating and Water Heating Program Review. Through on-line research, Tetra Tech reviewed other heating and water heating programs available nation-wide and documented the qualifying equipment and rebates provided through these programs.

³ 69 completed surveys from New York City and 71 from the Long Island region.

⁴ Niagara Mohawk



1.2 SUMMARY OF KEY FINDINGS

National Grid's Residential High-Efficiency Heating and Water Heating and Controls Program (the program) has experienced a considerable amount of scrutiny from the utility and Commission, as the upstate program exceeded its budget and goals for the three-year cycle by January 2010. After less than a year of operation, the program was suspended as of April 5, 2010, having achieved over 300 percent of its therm savings goal and nearly 400 percent of its program budget for the three-year program cycle. Meanwhile, downstate New York, particularly the New York City territory, has struggled to meet its first year goals. Program staff have attempted to react to the slower uptake found in New York City through various marketing strategies designed to engage trade allies and customers. While the program has progressed steadily through the first year, the New York City region continues to struggle.

On the whole, feedback from program managers, trade allies, and program participants emphasize the need for, and value of, the program. Despite the apparent need for the program in the state, the program faces both process challenges and difficult market conditions. Specifically, the program is confronted by issues associated with the rebate application process, the effectiveness of marketing targeting downstate New York customers and unique challenges facing the New York City territory.

Staff generally interact and communicate effectively with each other. There were some communication and procedural issues with EFI, the rebate processing vendor, identified early in the evaluation. Follow-up interviews with program staff revealed that, while there is regular communication, issues between National Grid and EFI persist.

One issue noted by both program staff and EFI is the number of data points required from program participants and contractors as part of the program. The Commission requires specific fields be captured in order to calculate measure-level energy savings. However, according to process interviews, the data requirements impact the program operations by requiring the tracking of additional data fields, affecting the rebate process through an increased percentage of flawed applications. Subsequently, the wait time for payments has increased.

Responses indicate the program may encounter moderate free-ridership rates, pending a formal study. Additionally, the benchmarking review indicates the efficiency requirements are low compared with other utility jurisdictions; these lower efficiency levels could lead to higher free-ridership rates.

Program staff, supported by ICF in downstate New York, are primarily responsible for marketing efforts. Due to the significant difference in program uptake by territory, the program's marketing activities vary by region. Staff in upstate New York did not need to do any significant direct marketing to either their customers or trade allies, as the program exceeded its goals so quickly. Conversely, downstate New York staff spend considerably more monetary and staff resources to market to their customers. Despite this increased effort, the results were mixed. According to program staff interviews, the funds dedicated to marketing in downstate New York do not go as far as the upstate funds, as marketing channels (e.g., radio advertisements) are more expensive in the downstate regions.

The program in downstate New York also invests in marketing and outreach directed towards trade allies in downstate New York. While the level of outreach efforts is sufficient, the differences in market conditions and in trade ally perceptions of high-efficiency equipment, as identified by interviewees, decreases the program's ability to move customers from standard- to high-efficiency



installations and services. Additionally, a significant portion of the marketing and outreach is through the oil-to-gas conversion program. Program staff discussed the need to continue expanding the marketing initiative to those trade allies operating in the oil-to-gas conversion program who may also have opportunities to market the Residential High-Efficiency Heating and Water Heating and Controls Program.

Upstate New York exceeded the budget and savings goals for its three-year cycle by January 2010. Long Island is on track to meet its goals, and New York City continues to struggle to meet its goals. However, there are significant market barriers in downstate New York and this process evaluation provides evidence that the territory goals were not set appropriately relative to each other.

Program design is, and will continue to be, complicated by regional and national standards, particularly when attempting to estimate impacts attributable to the program. Currently, the federal tax credit offered through the American Reinvestment and Recovery Act (ARRA) provides a credit of up to 30 percent of the energy efficiency investment, although the qualifying equipment specifications are considerably higher than National Grid's specifications (e.g., a minimum of 95 percent AFUE for natural gas furnaces and a minimum of 90 percent AFUE for gas, propane, and hot water boilers).

Disentangling the impact of the tax credit, which will continue through 2010, is not a clear-cut process. However, the limited research on this issue provided some indicators that households that receive the program rebate and tax credit are more likely to say they would have installed the equipment without the program than those that received the rebates without any tax incentives.

By 2013, regional standards are projected to come into effect. These regional standards will require all replacement furnaces sold in the northern region, including New York, to have a minimum efficiency of 90 percent AFUE, compared to the current national standard of 78 percent AFUE.⁵ A baseline efficiency of 90 percent AFUE will require HVAC programs, such as National Grid's, to significantly increase their standards to meet their impact goals.

1.3 RECOMMENDATIONS

Continue to collaborate and maintain open communications with all program partners, especially when the suspension of program benefits is under consideration. Program contractors discussed the desire for National Grid to continue to provide timely information about the program's status, especially when the program is facing the potential of suspension. While implementation contractors recognize that National Grid may not always have control over the decision to suspend a program or when that decision is made, the more advance notice they have, the better they can plan.

Establish and communicate clear protocols and procedures for implementation contractors. Discussions with program staff and implementation contractors revealed a desire and need to establish clear protocols and procedures. These include reporting timeframes, required level of information to be included in the data tracking system, and quality assurance processes. National Grid staff have provided this information to implementation contractors through their communications; however, the ability to reference a protocol document will protect the utility and ensure that all parties are familiar and can adhere to National Grid's requirements.

⁵ Source: Alliance to Save Energy (<http://ase.org/content/article/detail/6187>)



Continue working with implementation contractors to identify new techniques to market to trade allies and complete a trade ally market assessment to identify any existing barriers. The contractor market is a primary outreach channel for program participants; therefore, it is critical that the program continue to identify means to effectively market to this group. Process interviews revealed that program staff often discuss methods to increase the effectiveness of marketing to trade allies. Program staff should continue to collaborate with contractors to develop effective outreach techniques. Additionally, the program significantly leverages contractor relationships through the oil-to-gas conversion program to inform customers about the energy efficiency market. The program should continue to educate these trade allies about the energy efficiency offerings in addition to the oil-to-gas offerings. We also recommend National Grid conduct a more thorough market assessment of the trade ally market to further identify barriers to installation of high-efficiency equipment.

Provide trade allies with additional tools to promote high-efficiency equipment. Trade allies interviewed expressed a desire to receive additional information supporting high-efficiency measure adoption. Trade allies in downstate New York reportedly have more sales tools available to them than those in upstate New York, including an energy calculator. These trade allies found the tools helpful in moving customers from standard to high-efficiency. Examples of sales tools that trade allies shared interest in include a return on investment calculator and energy savings calculator. Trade allies also expressed interest in some guidance on how to effectively move customers from standard to high-efficiency equipment.

Continue to provide outreach, training, and education opportunities to trade allies. Trade allies that attended training or marketing events sponsored by National Grid were generally very complimentary of the offering. We recommend that the program continue to offer these opportunities for trade allies. We also recommend that the education opportunities continue to include information on program requirements and accurate completion of program applications, proper installation of high-efficiency equipment and techniques on installing within more difficult-to-serve buildings (e.g., multi-unit buildings).

Continue to promote the program through trade ally infrastructure, while increasing direct marketing to customers. A majority of customers report that they first heard of the program from a trade ally. The response to the means of program awareness illustrates the significant impact the trade ally infrastructure has on customers' decisions to install high-efficiency equipment. Additionally, while the upstate program did not focus on trade ally marketing as much as downstate New York, these trade allies still have the potential to have significant influence on customers' decisions, even outside of the program.

Although a majority of participant remarked that they heard of the program through trade allies, they also voiced a desire to receive information through direct mailings from National Grid. Experience with other heating and water heating program evaluations indicate that some direct mailings, such as bill stuffers, are not as effective as the contractor or retailer infrastructure to reach out to the public. With that said, it is a relatively low cost marketing tool that may be employed.

Complete market analysis when establishing program goals to manage expectations and avoid suspension of program offerings. Programs, especially those that are relatively new, may experience surprising performance issues. Often, these unexpected results are due to unrealistic program goals. Understanding the market in which a program is offered is essential in establishing realistic program goals. One unfortunate byproduct of unrealistic goals is the need to suspend a program when the program goals are set too low for the market in which the program is offered.



Program suspension has the potential to negatively affect customer and trade ally satisfaction with the utility, as well as decrease their level of trust in the utility and its energy efficiency programs. There are also cost-effectiveness implications associated with discontinuing a program early in the program cycle. Should the program be re-instated in upstate New York, National Grid should conduct a market analysis in order to support setting of more realistic goals in an attempt to avoid any future suspensions. The state-wide baseline study, which is currently in the planning, will help with this assessment. The utility can also do a similar activity using a customer market survey.

Review the heating measures rebated and incentive values provided through the program by region in light of potential net-to-gross issues. The program rebates heating equipment as low as 90 percent AFUE, although the most commonly rebated measure is 92 percent AFUE. The benchmarking review identified that this level of efficiency is the lowest amongst the utilities reviewed and that other programs are more commonly rebating a minimum efficiency level of 92 percent AFUE, with a number of utilities moving to a minimum efficiency level of 94 or 95 percent AFUE. Traditionally, lower efficiency equipment tends to yield lower net-to-gross ratios (through higher free-ridership rates). Increasing the efficiency level could translate into net-to-gross ratios for the program.

Additionally, there is a movement toward increased federal standards. These federal standards will move the baseline to 90 percent AFUE for New York. Reaching savings goals and gaining contractor buy-in should these standards change may prove difficult if the program does not begin pushing the high-efficiency HVAC market earlier.

Similarly, the incentives should be evaluated taking into consideration the unique barriers presented by each region. The utility benchmarking review identified that the incentive values may be set too high for some measures, such as the higher efficiency forced air furnaces with ECM motors. The higher incentive values may be necessary for downstate New York; however, in upstate New York a high incentive may not be necessary. Increasing the required efficiency levels and reducing incentives in upstate New York may help to manage the budget while encouraging market transformation toward higher efficiency levels.

Ensure any net-to-gross estimation techniques take into consideration the federal stimulus funded tax incentives. Net-to-gross evaluations are confounded by the potential impact of the federal tax credits. It is often difficult to disentangle the true impact of the program when a significant tax credit exists for the same equipment. Respondents that received or planned to receive a tax credit for their purchases exhibited a greater tendency toward free-ridership than those that did not receive this credit. Should the impact evaluation require the assessment of net-to-gross estimates while the tax credit is available to customers, it will be important that the approach include a means for identifying the impact of that tax credit.

Review and discuss data required to be tracked for the program. We recognize that the Commission stipulates the type of data that should be collected through the program and that National Grid is adhering to that requirement by ensuring EFI is collecting the information as well. However, there is evidence that the requirements are affecting customer satisfaction as well as program cost-effectiveness. We recommend that National Grid, along with their impact evaluation contractor and EFI, proactively identify the following items: the most essential fields for the impact evaluation, the fields that cause the greatest problems for rebate processing, and potential efforts to reducing the number of flawed applications.



2. INTRODUCTION

This report presents the results of the process evaluation of National Grid's Residential High-Efficiency Heating and Water Heating and Controls Program (Program) through May 2010. This report is one of a series of process evaluation reports for National Grid's energy efficiency programs in New York.

2.1 PROGRAM BACKGROUND

The program provides incentives for the installation of high-efficiency heating and water heating equipment and services to National Grid customers across three territories: upstate Niagara Mohawk, downstate KeySpan Long Island, and downstate KeySpan New York City. Only customers on residential rates are eligible to participate in the program. Measures rebated include high-efficiency furnaces with and without ECM motors, high-efficiency water heaters, boiler reset controls, programmable thermostats, and duct and air sealing. Customers can receive rebates for installing heating systems in new construction, oil-to-gas conversions, and gas-to-gas replacements.

On June 23, 2008, the New York Public Service Commission (Commission) issued an order establishing an electric and natural gas Energy Efficiency Portfolio Standard (EEPS). The EEPS established energy efficiency targets similar to the existing Renewable Portfolio Standard, and other programs, intended to reverse the pattern of increasing energy use in New York. Statewide, the proceeding establishes that electricity and natural gas usage decrease by 15 percent by 2015. The program is included in the portfolio of programs under the EEPS.

National Grid briefly offered the program as part of the interim gas energy efficiency programs prior to the EEPS. The interim programs closed on May 31, 2009, and transitioned to the Fast Track EEPS programs on June 1, 2009. This evaluation is focused on the Fast Track programs and does not include the interim program participants.

There are three program implementation contractors—EFI, ICF, and CSG. The primary role of EFI is to process, pay, and track customer rebates. EFI also maintains a call center and is a point of contact for customer questions and concerns regarding energy efficiency rebates. The second contractor, ICF, provides outreach to heating supply houses in downstate New York. In upstate New York, ICF provides quality control services, as well as outreach to heating supply houses and contractors. CSG provides quality control services for the downstate region.

The incentives offered through the interim program differed by service territory, with upstate New York offering higher incentive levels than downstate territories. For the Fast Track program, the Commission required that all program administrators implement uniform incentive levels statewide. National Grid therefore revised the program design to conform to the statewide program design, resulting in program offerings that were the same for all customers regardless of their location. This change in effect reduced several of the incentives offered to upstate New York customers and increased some of the incentives for downstate New York customers.

The program experienced another program design shift in June 2010. The Commission through an order posted on June 24, 2010, that decreased incentives offered to downstate New York



customers.⁶ This change was in reaction to the significant uptake in upstate New York. Table 2-1 documents the qualifying equipment and incentive levels for the program cycle. This evaluation covers the period prior to June 2010.

Table 2-1. Program Rebate and Equipment Specifications

Measure Type	Qualifying Minimum Efficiency	National Grid (NY) Rebate for Downstate New York and upstate New York to June 24, 2010	National Grid (NY) Rebate for Upstate New York as of June 24, 2010
Natural Gas Furnace	AFUE \geq 90	\$200	\$140
Natural Gas Furnace	AFUE \geq 92	\$200	\$140
Natural Gas Furnace with ECM	AFUE \geq 92	\$400	\$280
Natural Gas Furnace with ECM	AFUE \geq 94	\$600	\$420
Natural Gas/ Water Boiler	AFUE \geq 85	\$500	\$350
Natural Gas/ Water Boiler	AFUE \geq 90	\$1,000	\$700
Steam Boiler	AFUE \geq 82	\$500	\$350
Boiler Reset Control	NA	\$100	\$70
Indirect Water Heater	NA	\$300	\$210
Programmable Thermostat	NA	\$25	\$18
Duct and Air Sealing	NA	\$600	\$420

Table 2-2 documents the savings goals presented in the program implementation plans.⁷ Both Long Island and New York City's goals are higher than those of upstate New York. The estimated savings per participant are higher for upstate New York program participants, however, given the significantly colder climate.

Table 2-2. Annual Therm Savings Goals by Company per Program Filings

Territory	2009	2010	2011
Upstate	151,927	303,851	303,851
Long Island	168,477	336,951	336,951
New York City	185,665	371,329	371,329

⁶ Consolidated Edison Company of New York, Inc., New York State Energy Research Development Authority (NYSERDA), Central Hudson Gas & Electric Corporation, Order Approving Three New Energy Efficiency Portfolio Standard (EEPS) and Enhanced Funding and Making Other Modification for Other EEPS Programs. Order posted by the Public Service Commission on 6/24/2010 under Case/Matter 09-G-0363, Filing No. 107. File Name 201_07m0548etal_Order.pdf pages 20-23.

⁷ High-efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan submitted June 8, 2009 by KeySpan Gas East Corporation d/b/a/ National Grid (Case 08-G-1017)

High-efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan submitted June 8, 2009 by Niagara Mohawk Gas Corporation d/b/a/ National Grid (Case 08-G-1015)

High-efficiency Heating and Water Heating and Controls Gas Efficiency Program Implementation Plan submitted June 8, 2009 by The Brooklyn Union Gas Company d/b/a/ National Grid NY (Case 08-G-1016)



National Grid is required by the Commission to calculate the gross energy savings of each piece of equipment installed. Technical guidance for these calculations is provided in a technical manual developed by the New York Evaluation Advisory Contractor Team, TecMarket Works.⁸ The savings estimates and participation numbers provided in the implementation plans are based on calculations using these same equations, but based upon expected average parameters. The technical manual requires that program impacts for each installation be calculated based on specific information captured in the application forms. Examples of fields that are included in the calculation are equipment specifications (e.g., BTU/hr input, AFUE rating) and housing characteristics (e.g., vintage). Calculations need to be completed for all equipment rebated through the program, including programmable thermostats.

2.2 PROGRAM GOALS AND ACHIEVEMENTS TO-DATE

As shown in Table 2-3, program participation far exceeded expectations in upstate New York; funding was exhausted as of mid-January 2010 and the program was suspended on April 5, 2010. Strong program participation (12,655 applications) helped the program exceed both the annual and three year savings goal, by 1,517 and 303 percent, respectively. When the program was suspended, it had spent 380 percent of the budget originally allocated for upstate New York.

Downstate New York City is experiencing the opposite problem and is struggling to reach target participation numbers. Downstate Long Island, however, has made steady progress and is on target to meet its three year goals. As of May 2010, New York City has achieved 11 percent of its three year goal and Long Island has achieved 47 percent of its three year goal for acquired therms.

The majority of program savings come from heating systems installed across all territories, with 80 to 87 percent of total program savings coming from the installation of natural gas forced air furnaces or boilers. Households within downstate New York are more commonly installing boilers, whereas upstate New York participants are primarily installing forced air furnaces. Although this is a water heating program as well, little savings currently come from the single water heating measure offered (indirect water heaters).

⁸ Hall, Nick, Pete Jacobs, Paul Horowitz, Rick Ridge, Gil Peach, and Ralph Prah, *New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs, Single Family Measures* (December 16, 2009).



Table 2-3. Program Status as of End of May 2010

	Long Island	New York City	Upstate
Summary			
Net first-year annual therms acquired to date	394,046	100,577	2,304,849
Percent of 3-year goal	47%	11%	303%
Participants to date	2,696	605	12,655
Percent of total budget spent to date	64%	39%	380%
Percent of Savings from Measures Installed⁹			
Natural gas furnace >=90% AFUE	0%	2%	5%
Natural gas furnace >=92% AFUE	5%	15%	13%
Natural gas furnace >=92% AFUE with ECM	0%	0%	1%
Natural gas furnace >=94% AFUE with ECM	0%	1%	18%
Natural gas furnace >=95% AFUE with ECM	26%	18%	44%
Water boiler >=85% AFUE	7%	12%	4%
Water boiler >=90% AFUE	14%	28%	0%
Steam boiler >=82% AFUE	35%	4%	0%
Set-back thermostats	10%	18%	13%
Boiler reset controls	1%	1%	0%
Indirect water heater	0%	1%	0%
Duct and air sealing	0%	1%	0%

Source: National Grid EES Monthly Progress Reports (May 2010) and Communications with National Grid Staff

2.3 PROGRAM LOGIC MODEL

Figure 2-1 illustrates the program theory through the logic model. The first activity presented in the logic model is the development of program infrastructure. National Grid established the program team, which includes upstate and downstate New York National Grid residential program staff, ICF, EFI, and CSG. In moving from the interim to the Fast Track program, National Grid established and communicated procedures for program partners ICF, CSG, and EFI.

The second activity for upstate New York consists of National Grid and ICF providing outreach to trade allies. Mid-stream trade allies (e.g., HVAC and water heating contractors, manufacturers, suppliers, and distributors of HVAC and water heating equipment) are a major outreach tool, as they are often the primary influence on a customer's decision in selecting new furnace and/or water heating equipment. In downstate New York, program managers work with internal trade representatives to host meetings and events for trade allies to educate them on program requirements and to provide sales training, information, and marketing support. The program also offers BPI (Building Performance Institute) certification training, paying up to 50 percent of the expense for the training course (downstate New York only). Residential customers are allowed to work with any contractor qualified to install the high-efficiency equipment; contractors are not required to "opt into" the program.

⁹ Percent of savings is calculated using savings values from the initial program filings and measure counts through May 2010 per email communications with Angela Turner and Beth Williams between on June 18, 2010.



The program also collaborates with National Grid staff and contractors working with the oil-to-gas conversion program to refer customers to the program. As of June 2009, customers in downstate New York are eligible to receive rebates when converting from oil to high-efficiency natural gas heating equipment (this is not a change for upstate New York customers who were able to receive the rebate prior to June 2009). Customers cannot participate in both programs, however. The program works through the trade ally infrastructure and its contractors to encourage oil-to-gas conversion customers to install high-efficiency heating and water heating equipment and participate in the program.

As a third activity, the program also promotes its services directly to residential customers. The program markets to customers through National Grid's Power of Action website,¹⁰ which promotes the "3 Percent Less" initiative, bill inserts, print advertisements, and community events. National Grid completes these activities through their internal marketing team, as well as customer service support provided by EFI. The program also markets to oil-to-gas conversion customers through customer communications and the company website.

The last activity outlined in the logic model is to rebate measures. EFI processes the rebates through the program. Additionally, ICF and CSG are to conduct quality assurance checks on approximately ten percent of installations to ensure accurate and quality installation.

¹⁰ <http://www.PowerofAction.com/efficiency>



Figure 2-1. National Grid New York State Residential High-Efficiency Heating and Water Heating and Controls Program Logic Model (all territories)

Inputs/ Resources	Budget of \$13M across 3 territories (\$2.3M upstate NIMO, \$5.5M downstate LI, \$5.9 downstate NY) Residential High-efficiency Heating and Water Heating and Controls Program Team	Contractor marketing materials (e.g., distributor signage, customized email newsletter, events) ICF, CSG (downstate only) and trade ally representatives	Marketing materials and communications to customers EFI and National Grid call center and marketing effort	EFI Rebate forms
Activities	Develop Program Infrastructure	Outreach to Trade Allies	Direct marketing to customers	Rebate Measures
Outputs	Residential High-efficiency Heating and Water Heating and Controls Program Implementation Plan developed and approved Program requirements and any key changes from interim program (e.g., incentives) communicated with EFI Implement program on June 1, 2009. Tracking and reporting system developed.	Provide program and sales training, information and marketing support to HVAC contractors, supply houses, and other providers of approved equipment Hold meetings with HVAC distributors and key trade associations and events with contractors and trade allies Collaborate with Trade Ally program and contractors involved in the oil-to-gas conversion program Enlist up to 120 contractors to receive BPI training (downstate NY only)	Provide program information at community events Communicate information to customers through bill inserts and direct marketing materials (including oil-to-gas conversion) Direct customers to the program through the website	Customers submit rebate form within 60 days of installation EFI validates customer applications and processes rebates ICF (upstate) and CSG (downstate) conduct quality control on 10% of applications EFI uploads raw data and invoices National Grid monthly
Short term outcomes	Momentum from interim to current program is not broken Stakeholders take lessons learned from the interim program to increase customer and contractor participation	HVAC Contractors are knowledgeable about rebates and program guidelines HVAC Contractors regularly communicate the program to customers and leverage rebates in sales efforts	Residential customers are made aware of program offerings Residential customers become aware of benefits of high efficiency HVAC and water heating equipment	Rebates are accurately and fully processed Equipment is installed accurately, and installations flagged in the QC process are corrected
Program cycle outcomes	Energy saving goals of the program are achieved within implementation cost of \$3.00 (upstate) to \$6.00 (downstate) per projected annual MCF saved	Contractors recommend and successfully upsell high-efficiency HVAC and water heating equipment to all residential customers	Enlist households to rebate program-qualifying equipment from 2009-2011: Upstate Niagara Mohawk: 4,558 hhlds Downstate Keyspan Long Island: 9,850 hhlds Downstate Keyspan New York: 9,850 hhlds	Achieve annual therms savings 2009-11: Upstate Niagara Mohawk: 759,629 Downstate Keyspan Long Island: 842,379 Downstate Keyspan New York: 928,323



2.4 EVALUATION METHODOLOGY

The researchable issues identified in Table 2-4, below, are organized around the four primary activities identified in the program logic model. These researchable issues were refined in interviews with program managers.

Table 2-4. Key Researchable Issues

Program Activity	Overarching issue	Specific questions
Develop Program Infrastructure	<i>Is the program design and infrastructure effectively delivering the program to cost-effectively meet energy savings goals?</i>	<ul style="list-style-type: none"> • Are National Grid's requirements being effectively communicated to implementers ICF and EFI, and are those requirements being adhered to? • What resources do implementation contractors need to effectively implement the program? • Is the established tracking system effective for documenting and reporting program progress? • Are there sufficient resources to support the program infrastructure? • Are there any infrastructure or operational differences between territories that could be affecting program uptake?
Outreach to Trade Allies	<i>Is outreach to trade allies sufficient to move customers from standard to high-efficiency installations and services?</i>	<ul style="list-style-type: none"> • How familiar are trade allies with the program and its requirements? Does trade allies' awareness of the program differ by program territory? • Did changes from the interim to the Fast Track program create any confusion amongst participating trade allies? Does any confusion still exist and why? • What barriers exist for trade allies to sell and/or install high-efficiency heating and/or water heating equipment? Are there market barriers (e.g., product availability, housing structure issues), internal operational barriers (e.g., not wanting to change practices), etc.? How do these barriers vary by service territory? • What events are trade allies attending and how useful are those events in their abilities to promote high-efficiency equipment? • What draws participating trade allies to events? Why aren't nonparticipating trade allies attending events? • What additional tools, resources, and technical support do trade allies believe they could use to more effectively promote the sales of high-efficiency equipment and services? • Is the program effectively leveraging trade allies and National Grid staff within the Trade Ally program?
Direct Marketing to Customers	<i>How effective are the marketing efforts to residential customers?</i>	<ul style="list-style-type: none"> • What marketing efforts and/or materials resonate with residential customers? • How did customers first hear about program offerings? What market channels are most effectively reaching residential customers? • As the program is in existence for a longer period of time, will a higher level of effort be required for marketing the program to customers? • Are customers aware that NYSERDA offers heating and water heating rebates through their Home Performance with ENERGY STAR program? If so, why are customers opting to participate in this Residential High Efficiency Heating and Water Heating and Controls program rather than NYSERDA's program? • Has the program offering or experience with the program affected customers' satisfaction with the utility?



Program Activity	Overarching issue	Specific questions
Rebate Measures	<i>Is the program on track to meet or exceed its energy savings goals?</i>	<ul style="list-style-type: none"> • Why does the performance vary between the three National Grid territories? • What barriers exist to installing high-efficiency heating and/or water heating equipment and how can those barriers be overcome? How do these barriers vary by National Grid territory and how does that affect program performance? • What are the primary drivers in customers' decisions to install high-efficiency furnace and water heating equipment? Is the rebate driving customers to install high-efficiency equipment? What other sources of funding are playing in customers' purchasing decisions? • What is customers' satisfaction with various elements of the program, including rebate processing time, rebate levels, experience with program and EFI staff, etc.? • What do customers and contractors see as being lost opportunities for the program?

2.4.1 Data Collection

Tetra Tech conducted a variety of primary and secondary data collection activities as part of this program evaluation. These activities and a brief description of the sample methodology for each are detailed below.

a. National Grid Staff and Implementation Contractor Interviews

Tetra Tech conducted several rounds of interviews with program staff and implementation contractors as detailed below. Please note that no staff from CSG (who perform quality assurance in downstate New York) were interviewed as, at the time the interviews were conducted, the organization was not yet engaged to conduct quality assurance checks through the program.

- **National Grid program staff.** Tetra Tech first spoke with program staff at the kick-off meeting in September 2009. Staff from both downstate and upstate regions attended. The interviews provided program background, a discussion of staffing and other program requirements, and identified key researchable issues. Tetra Tech then followed up on these interviews with additional individual interviews to gather further program information and review the logic models developed for the program.
- **Trade ally representatives.** The program leverages four National Grid trade ally representatives to promote the in upstate and downstate New York. These representatives primarily interface with the trade allies through the oil-to-gas conversion program, but also provide information to contractors about the program. Tetra Tech interviewed two of the four trade ally representatives in January 2010. These interviews focused on gathering information that was useful in developing the trade ally interview guide and understanding the differences in the upstate and downstate markets.
- **EFI staff.** Tetra Tech also spoke with representatives from EFI in January 2010. These interviews focused on communication and coordination with National Grid, as well as quality control issues. The interviews also identified the program's tracking requirements and any issues that may have inhibited the contractor from processing rebates efficiently.
- **ICF staff.** Lastly, Tetra Tech interviewed three representatives from ICF in January 2010. These interviews explored ICF's role in the program, the program process, perceptions of



program progress in downstate New York, areas they believe the program is working well, and opportunities for improvement.

b. Participating and Nonparticipating Trade Ally Interviews

Tetra Tech conducted in-depth qualitative interviews with 27 participating and 12 nonparticipating trade allies in February and March 2010 (refer to Appendix A and B for interview guide). These interviews provided meaningful process insights into the program's operations, program interactions with trade allies, characteristics of program participants, and barriers to program participation.

Participating trade allies were identified through the program tracking database. The nonparticipating trade allies were identified by searching online for HVAC vendors in the upstate and downstate New York regions and confirming their nonparticipant status by comparing the information against the program database (as of December 9, 2009).

Participating trade allies were sampled based on the number of measures installed and rebated through the program. Trade allies were classified as follows:

- Large trade allies: installed at least 50 rebated measures
- Medium trade allies: installed between 10 and 49 rebated measures
- Small trade allies: installed between 3 and 9 rebated measures
- Very small trade allies: installed fewer than 3 rebated measures.

Table 2-5 below lists the number of participating trade allies of each type in the population, sample, and completed interviews. A census of trade allies characterized as large contractors was attempted because the population was relatively small. Approximately 30 trade allies were sampled from the other three groups, such that each group was represented in the analysis. However, we over-sampled small and very small trade allies toward the end of the study in order to supplement the downstate sample, as trade allies in this territory were difficult to reach (thereby reaching a higher number of smaller trade allies). Additionally, it was difficult to reach representatives from the large trade ally group, reflected in the fact that only two large trade allies were interviewed. Because of the small number of completions with large allies, the results are not analyzed by size.

Table 2-5. Participating Trade Ally Interviews

Size	Population	Sample	Completed Interviews
Large	25	25	2
Medium	73	33	8
Small	210	56	12
Very small	367	35	5
Total	675	149	27

In addition to stratifying by number of measures installed and rebated, trade allies were also stratified by region. As shown in Table 2-6, about 75 percent of the program trade allies are located in upstate New York.

**Table 2-6. Participating Trade Ally Interviews– Upstate vs. Downstate**

Territory	Population	Sample	Completed Interviews
Upstate	500	103	16
Downstate	175	46	11
Total	675	149	27

Tetra Tech also interviewed 12 nonparticipating trade allies using a semi-structured in-depth interview guide approved by National Grid (Appendix B). Table 2-7 shows the upstate and downstate New York sample statistics for the nonparticipating trade ally survey. As the survey counts show, we focused more on the downstate New York nonparticipating trade allies. This was in part because of the focus of this activity on identifying barriers to installing high-efficiency equipment or participation in the program, which downstate New York experienced to a greater extent than upstate New York.

Table 2-7. Nonparticipating Trade Ally Interviews by Region

Territory	Sample	Completed Interviews
Upstate	20	3
Downstate	44	9
Total	64	12

c. Participant Surveys

The process evaluation also included quantitative telephone interviews with a random sample of 140 downstate¹¹ and 85 upstate New York¹² program participants conducted between March 23, 2010, and April 21, 2010. This sample size was sufficient to achieve a level of precision of 90 percent \pm 10 percent confidence. Prior to creating the survey participant sample, all households that were sampled as part of a separate National Grid energy efficiency customer satisfaction survey were removed from the program population.

The sample initially consisted of customers who participated between June and December 2009; however, because of the need to remove those contacted through National Grid's customer satisfaction survey, there was an insufficient number of sample points for the downstate territory. Therefore, a census of 2009 participants in Long Island and New York City was taken, and then supplemented with a random sample of 2010 program participants to obtain sufficient sample to achieve the desired level of precision. Given there were no substantive changes in program design across the 2009 and 2010, we do not believe there is any reason to believe responses from 2010 participants differ from 2009 participants. The upstate stratification had sufficient sample from 2009 and supplementary sample from the 2010 participants was unnecessary. Table 2-8 lists the count of sampled program participants by territory.

¹¹ 69 completed surveys from New York City and 71 from the Long Island region.

¹² Niagara Mohawk



**Table 2-8. 2009 and 2010 Unique Participant Population by Territory
(Excludes customers that were contacted for customer satisfaction survey)**

2009 & 2010 Participant Population by Territory			
Territory	2009	2010	Total
Long Island	58	331	389
New York City	25	164	189
Upstate	698	0	698
Total	781	495	1276

Table 2-9 details the 2009 and 2010 program participants by measure, excluding customers that were contacted as part of the customer satisfaction survey. The table also details the number of measures represented in the survey data by territory. Households that received rebates for more than one measure type are represented multiple times in this table, once for each applicable measure. Note that the population sizes are somewhat lower than reported by territory as they exclude customers contacted for the customer satisfaction survey.

**Table 2-9. 2009 and 2010 Participant Population by Measure by Territory
(Excludes customers that were contacted for customer satisfaction survey)**

2009 & 2010 Participant Population by Territory				
Measure	Long Island (2009 & Jan/Feb 2010)	New York City (2009 & Jan/Feb 2010)	Upstate (2009 Only)	Total
Furnace	136	48	602	786
Boiler	160	130	91	381
Boiler Reset Control	18	1	4	23
Indirect Water Heater	118	22	10	150
Programmable Thermostat	171	45	159	375
Duct and Air Sealing	0	0	2	2
Surveyed Measures by Territory				
Measure	Long Island	New York City	Upstate	Total
Furnace	21	17	65	103
Boiler	38	49	16	103
Boiler Reset Control	2	0	3	5
Indirect Water Heater	23	11	6	40
Programmable Thermostat	29	22	23	74
Duct and Air Sealing	0	0	0	2

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Data as of February 2010

Appendix F provides the response rate table for the study. Upstate New York had the highest response rate at 61 percent. Survey results presented in this report are weighted to the population of participants by geography for all general program questions. Responses related to measure-specific questions are weighted to be representative of the measures.

Through the survey process, Tetra Tech identified three cases in the sample that were related to new construction of multi-family buildings. The questions and target respondent for these projects were considerably different from the participant study. As a result, these three cases were removed from the sample and contacted independently using a separate in-depth interview guide



to direct the interview. Tetra Tech spoke with all three of the decision-makers related to these new construction multi-family projects between June 18 and June 21, 2010. A summary of these interviews is included in this report.

d. Other Activities

In addition to the abovementioned primary data collection activities, we completed data analysis through the following tasks.

Market Assessment. Tetra Tech completed a market assessment of the upstate and downstate New York territories leveraging the US Census data analysis obtained from American Community Survey (ACS) data. The ACS data was considered the most relevant source of data, as it provided the most recent data at a county level.

Heating and Water Heating Program Review. Through on-line research, Tetra Tech reviewed other heating and water heating programs and documented the qualifying equipment and rebates provided through these programs.

2.5 REPORT ORGANIZATION

Section 3 of this report provides analysis on the characteristics of the upstate and downstate New York territories and the potential implications of those differences on program progress. Section 4 presents other key process evaluation findings and Section 5 discusses key conclusions and recommendations. The technical appendix contains all evaluation data collection instruments, the participant advanced letter, and the survey response rate.



3. CHARACTERISTICS AND PROGRAM GOALS BY TERRITORY

One of the researchable questions identified at the outset of this evaluation was: What are the drivers between the differences in performance between upstate and downstate New York regions? It was clear early in the evaluation process that the program's performance¹³ within these regions was significantly different. As it became clear that performance differed not only between upstate and downstate, but also between the Company's two downstate territories, this researchable question was further refined to differentiate market characteristics between Long Island and New York City.

To address this researchable question, we leveraged the process interviews with National Grid staff, trade allies, and participant surveys against the American Community Survey (ACS) data. The ACS data was considered the most relevant source of data, as it provided the most recent data at a county level. While reviewing the ACS data, it was important to accurately capture counties within National Grid's service territories. Based on information provided by National Grid, the downstate and upstate New York territories were defined by the following counties:

- **New York City:** Queens, Kings and Richmond counties
- **Long Island:** Nassau and Suffolk counties
- **Upstate New York:** Albany, Cayuga, Columbia, Fulton, Herkimer, Jefferson, Madison, Montgomery, Oneida, Onondaga, Oswego, Rensselaer, Saratoga, Schenectady, Warren, and Washington counties.

This section presents the differences in territories by housing infrastructure, primary heating fuel, and other demographics including household income. This section concludes with a review of the program goals taking into account these territorial differences. Please note that while the program provides rebates for both heating and water heating measures, this section focuses primarily on heating measures. This focus is for two reasons—the majority of savings achieved through the program are through heating equipment and the ACS does not provide data for water heating fuel.

3.1 DIFFERENCES IN HOUSING INFRASTRUCTURE

One of the drivers of the difference in territorial program performance, as identified by program managers during initial process evaluation interviews, was the variation in housing structures between upstate and downstate New York. Program managers theorized that the difference was due, at least in part, to upstate New York having a higher ratio of single family homes than downstate New York, particularly for the New York City territory. Other program staff interviewed mentioned that single family households are the best market for this program, although duplexes can also be feasible targets. Gas heating customers occupying or owning units in buildings with between one and four units are eligible to participate in the program.

Trade allies also mentioned housing infrastructure as a potential barrier for completing energy efficiency projects. Several interviewed contractors commented that upstate New York is mostly single-family housing and any multifamily housing tends to have a small number of units, while downstate New York, particularly New York City, has a higher percentage of multifamily housing in

¹³ Performance is defined as achieved participation and savings as a percentage of goals.



larger complexes. The contractors said that these buildings are more difficult – and more costly – to retrofit than buildings with fewer units.

The participant survey included questions to assess the housing infrastructure of participating customers. A statistically significant higher percentage of program participants from Long Island and upstate New York reside in single family homes compared to those from New York City (Table 3-1). New York City program participants were significantly more likely to reside in duplexes.

Table 3-1. Housing Characteristics of Participants

Housing Characteristics	Long Island (n=71)	New York City (n=68)	Upstate (n=85)	Total (n=224)
Building Type				
Single family	94.8%	65.1%	90.5%	88.0%
Duplex	1.3%	23.3%	3.6%	5.8%
Townhouse	1.3%	5.8%	3.6%	3.2%
Apartment	1.3%	1.6%	1.1%	1.3%
Other	1.3%	4.2%	1.1%	1.7%

Source: High-Efficiency Heating and Water Heating and Controls Program Participant Survey

A review of the ACS data shows a similar trend in housing infrastructure (Table 3-2). The ACS market data reveals that only a quarter of New York City households live in single family units. This finding is consistent with program manager, program staff, and trade allies’ perceptions of the differences in housing characteristics between upstate and downstate. The fact that 75 percent of households in New York City are multifamily buildings, and that over half of residential customers reside within buildings with three or greater units, is a significant barrier to the uptake of high-efficiency equipment in this region.

Table 3-2. Housing Characteristics in the National Grid Service Territories

Housing Characteristics	Long Island	New York City	Upstate	Total
Building Type				
1-unit, detached	79.1%	14.0%	61.1%	42.4%
1-unit, attached	3.6%	10.2%	2.7%	6.6%
2 units	5.4%	20.7%	11.4%	14.5%
3 or 4 units	2.0%	13.2%	6.6%	8.7%
5 to 9 units	1.9%	7.9%	4.6%	5.6%
10 to 19 units	2.5%	4.1%	2.9%	3.4%
20 or more units	4.9%	29.7%	4.6%	17.0%
Mobile home	0.6%	0.1%	6.1%	1.8%

Source: American Community Survey (2006 – 2008)

Process interviews with trade allies and program managers raised another barrier resulting from the housing infrastructure in downstate New York, particularly New York City and other areas where the homes are close to each other—venting codes. The codes impose an increase in the cost of installing water heaters and boiler systems. Moreover, two implementation contractors theorized that because of the higher cost and barriers to installation, downstate supply houses do not stock high-efficiency equipment to the extent that upstate houses do. This process evaluation did not include interviews with supply houses; therefore, this theory could not be confirmed or denied.



New York City is analyzed as one territory; however, there are three counties that are included in the New York City territory—Kings (the borough of Brooklyn), Queens, and Richmond (Staten Island) (Table 3-3). Eighty-three percent of housing units in Richmond county are one or two unit buildings, followed by Queens County with 50 percent. Kings County has the fewest housing units characterized as one or two unit buildings (33 percent), while recording the highest number of units.

Table 3-3. Housing Characteristics by New York City Borough

Homeownership Characteristics	Kings / Brooklyn (N=959,952 Units)	Queens (N=835,160 Units)	Richmond / Staten Island (N=178,358 Units)
Building Type			
1-unit, detached	5.3%	19.9%	33.49%
1-unit, attached	8.8%	8.6%	25.4%
2 units	18.9%	22.1%	23.7%
3 or 4 units	17.1%	10.6%	4.8%
5 to 9 units	11.0%	5.9%	1.6%
10 to 19 units	5.6%	3.0%	1.5%
20 or more units	33.3%	29.9%	9.3%
Mobile home	0.1%	0.1%	0.3%

Source: American Community Survey (2006 – 2008)

3.2 DIFFERENCES IN PRIMARY HEATING FUEL AND SYSTEMS

Another issue that could affect the potential for installing high-efficient furnaces, and potentially water heaters, through the program is the incidence of households that use natural gas as their primary heating fuel. Only 38 percent of Long Island households use natural gas to heat their home, compared with 68 percent of New York City and 56 percent of upstate New York customers (Table 3-4). As a result, Long Island households were significantly more likely to report using fuel oil or kerosene as their primary heating fuel.

Table 3-4. Primary Heating Fuel in the National Grid Service Territories

Heating fuel type	Long Island	New York City	Upstate	Total
Natural (utility) gas	38.4%	67.6%	56.4%	57.5%
Fuel oil, kerosene, etc.	54.4%	24.9%	20.5%	31.2%
Electricity	5.5%	4.7%	11.9%	6.7%
Bottled, tank, or LP gas	1.2%	1.5%	6.0%	2.5%
Wood	0.2%	0.0%	3.9%	1.0%
Other fuel	0.2%	0.6%	0.8%	0.5%
Coal or coke	0.1%	0.1%	0.3%	0.1%
Solar energy	0.0%	0.0%	0.0%	0.0%
No fuel used	0.1%	0.5%	0.2%	0.3%

Source: American Community Survey (2006 – 2008)

As expected, given that natural gas is the main focus for the program, the majority (98 percent for heating and 95 percent for water heating) of participating customers interviewed said that natural gas was their main source of heating and water heating fuel (Table 3-5). National Grid does offer an oil-to-gas conversion program for those customers whose main heating source is fuel oil.



Customers that convert from oil to gas are eligible to participate in this program. Several participants who converted from oil to gas participated in the program, which may account for the portion of participants who report a main source of heating and water heating fuel other than natural gas. Discussions with National Grid indicate that the rate of oil to gas conversions in Long Island are increasing at the time of this reporting and will continue to increase.

Table 3-5. Housing Characteristics of Participants

Housing Characteristics	Long Island (n=71)	New York City (n=68)	Upstate (n=85)	Total (n=224)
Main Fuel used for Heating				
Natural gas	98.7%	100.0%	96.6%	97.7%
Electricity	0.0%	0.0%	2.3%	1.3%
Bottled gas	0.0%	0.0%	1.1%	0.6%
Other	1.3%	0.0%	0.0%	0.4%
Main Fuel used for Water Heater				
Natural gas	97.1%	95.3%	94.0%	95.1%
Electricity	2.9%	4.7%	4.8%	4.2%
Bottled gas	0.0%	0.0%	1.2%	0.7%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

According to trade ally interviews, downstate New York is dominated by boiler systems, whereas the great majority of upstate housing uses forced hot air furnaces. This appears to be true of the participants that installed high-efficiency heating measures; per the participant survey, 78 percent of New York City and 71 percent of Long Island participants received boilers when replacing their heating system compared with 14 percent of upstate New York participants.

When considering the higher incidence of boilers it is also useful to consider any differences in the nominal and incremental costs of boilers compared to forced air furnaces. Trade allies interviewed commented that boilers are generally more expensive to replace than forced air furnaces. The higher incremental costs creates an additional first cost barrier to the purchase of high-efficiency boilers (and trade allies' ability to sell those boilers).

Additionally, the energy savings resulting from a boiler replacement are not as high as the energy savings resulting from a furnace replacement, especially for steam systems. Combined with the relatively mild downstate climate, the payback period for customers to upgrade their heating system is significant for downstate New York customers with boilers.

National Grid's Market Strategy group is working on a statewide study to gather incremental measure costs within New York. This study will provide valuable information that will quantitatively assess the differences in costs by region as well as territory. In absence of a rigorous study, we reviewed the measure cost data captured in the program database. The rebate application asks that contractors record the installed cost of the equipment. EFI captures this information. Table 3-6 illustrates the average installation costs by measure type based on the EFI data. The highest value is highlighted with bold text. According to this data, reported installed measure costs are higher in the downstate New York territories. With the exception of boilers, installed costs are reportedly lowest for all measure categories in upstate New York (New York City has the lowest reported cost for boilers). Additionally, the data shows that boilers are more expensive than forced air furnaces regardless of territory.



The reader should review this data with caution, however, as there is substantial amount of missing data within this analysis. Only one-third of rebated measures are represented as many measures were removed from the data set due to lack of data or for having dummy values entered (indicted by dollar values ending in .91). Additionally, there are measure groups with few cases represented (e.g., furnaces without ECM in New York City), which should be viewed with caution.

Table 3-6. Average Installed Costs by Measure Type and Territories

Measure type	Long Island	New York City	Upstate
Boiler	\$5,701 (n=293)	\$5,340 (n=174)	\$5,517 (n=609)
Furnace without ECM	\$3,745 (n=35)	\$3,933 (n=16)	\$2,615 (n=1,147)
Furnace with ECM	\$5,205 (n=73)	\$4,675 (n=48)	\$4,106 (n=1,646)
Indirect water heater	\$1,902 (n=150)	\$1,951 (n=20)	\$1,512 (n=126)

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Data as of February 2010

3.3 CUSTOMER HOMEOWNERSHIP AND INCOME CHARACTERISTICS

Other customer characteristics reviewed by territory include homeownership status and income levels. These characteristics, while not directly related to the feasibility of installations within a building, could present additional market barrier differences within the New York territories.

3.3.1 Own/rent status

According to survey results, all program participants interviewed were homeowners. The general population, however, includes renters, with New York City having a significantly higher concentration of renters compared to Long Island and upstate New York. According to the ACS data, over half of households within New York City rent their home. Long Island has the highest percentage of homeownership at 83 percent Table 3-7.

Table 3-7. Homeownership Status by Territory

Homeownership Characteristics	Long Island	New York City	Upstate	Total
Own home	82.7%	41.5%	67.5%	58.2%
Rent home	17.3%	58.5%	32.5%	41.8%

Source: American Community Survey (2006 – 2008)

Several trade allies mentioned that they believe residents in New York City are more mobile than in other areas of the state. The perception is that most customers in downstate New York move more frequently and tend to live in a home for less than five years. Therefore, in addition to the split incentive barrier predominant with rented homes, equipment payback may be an issue. As the ACS data shows, this could be a substantial barrier for the New York City region, given the high proportion of renters in the area.



The above analysis shows that New York City is highly comprised of renters; however, it is important to note that within the New York City territory there is variation by county (Table 3-8). Richmond County (Staten Island), specifically, has a significantly lower incidence of renters than the other two territories. This county also has a much smaller population, however.

Table 3-8. Homeownership Status by New York City Borough

Homeownership Characteristics	Kings / Brooklyn (N=880,718)	Queens (N=774,793)	Richmond / Staten Island (N=167,003)
Own home	31.3%	46.6%	71.3%
Rent home	68.7%	53.4%	28.7%

Source: American Community Survey (2006 – 2008)

3.3.2 Income levels

A number of interviewed trade allies believe that upstate New York participants, on average, have lower household incomes than participants in the downstate New York region. These trade allies hypothesize that the differences in income affect program participation, as residents in downstate New York may be more capable of purchasing high-efficiency furnaces on their own without the program (note that this is their perception, which may not be the case).

Additionally, the trade allies believe that the dollar amount of the rebate may be more motivating to customers with lower incomes. The rebate values, which do not vary by region, are thought to cover less of the incremental costs downstate than in upstate New York. Several trade allies indicated that the cost to purchase the equipment in downstate New York was higher than the cost of similar equipment in upstate New York.

Long Island participants reported higher 2009 incomes than New York City and upstate New York (Table 3-9). Over half of participants (57 percent) report incomes of over \$100,000, compared with 28 percent of New York City and 22 percent of upstate participants. New York City had the highest percentage of households below \$30,000.

Table 3-9. Household Income of Participants

Household Income (Pre-tax 2009)	Long Island (n=69)	New York City (n=71)	Upstate (n=85)	Total (n=225)
Less than \$10,000	0.0%	2.4%	0.0%	0.3%
\$10,000 to less than \$20,000	3.9%	8.7%	2.8%	3.9%
\$20,000 to less than \$30,000	0.0%	6.3%	5.8%	4.2%
\$30,000 to less than \$40,000	1.8%	11.1%	9.9%	7.8%
\$40,000 to less than \$50,000	1.8%	6.3%	7.2%	5.5%
\$50,000 to less than \$75,000	15.8%	17.5%	22.9%	20.1%
\$75,000 to less than \$100,000	19.7%	19.8%	30.0%	25.8%
\$100,000 to less than \$150,000	27.6%	8.7%	14.3%	17.4%
\$150,000 to less than \$200,000	15.8%	12.7%	2.8%	7.8%
\$200,000 or more	13.6%	6.3%	4.4%	7.3%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

As Table 3-10 shows, the ACS data shows a similar trend as the participant survey. Long Island households have the highest income (44 percent above \$100,000), followed by New York City and upstate New York residents (21 percent and 18 percent above \$100,000, respectively).

**Table 3-10. Household Income in the National Grid Service Territories**

Household Income	Long Island	New York City	Upstate	Total
Income and Benefits (In 2008 Inflation-adjusted dollars)				
Less than \$10,000	3.3%	9.7%	6.8%	7.4%
\$10,000 to \$14,999	2.5%	5.9%	5.6%	5.0%
\$15,000 to \$24,999	5.6%	10.4%	11.0%	9.3%
\$25,000 to \$34,999	5.5%	10.0%	11.0%	9.1%
\$35,000 to \$49,999	9.0%	13.3%	14.9%	12.6%
\$50,000 to \$74,999	15.9%	18.0%	19.5%	17.8%
\$75,000 to \$99,999	14.5%	12.1%	13.2%	13.0%
\$100,000 to \$149,999	21.7%	12.2%	12.2%	14.6%
\$150,000 to \$199,999	10.8%	4.7%	3.5%	6.0%
\$200,000 or more	11.2%	3.6%	2.4%	5.2%

Source: American Community Survey (2006 – 2008)

Although the income levels are similar between upstate New York and New York City, the cost of living is higher in New York City, especially for single-person households. Table 3-11 below shows the results of a living wage study conducted by Pennsylvania State University. Living wage was defined as “the hourly rate that an individual must earn to support their family, if they are the sole provider and are working full-time (2,080 hours per year)”. The living wage is highest in Long Island, followed by New York City, and then upstate New York. Therefore, we can expect it to be more difficult for New York City households to afford high-efficiency equipment.

Table 3-11. Average Living Wage by National Grid Service Territories

Average Living Wage			
Scenario	Long Island	New York City	Upstate
1 adult	\$13.32	\$11.86	\$8.97
2 adults & 2 children	\$34.71	\$30.30	\$29.18

Source: <http://www.livingwage.geog.psu.edu/states/36/locations>

This section characterized the various differences in household characteristics by territory, and provide some level of support about why downstate New York (particularly New York City and select Burroughs) are not performing as well as upstate New York. The next section discusses other potential reasons for regional differences that are not statistically based.

3.4 OTHER POTENTIAL REASONS FOR REGIONAL DIFFERENCES

The qualitative interviews with program staff and trade allies identified a number of additional reasons why the performance may have varied by region.

Climatic differences. Upstate New York is colder and has longer winters than downstate New York. Therefore, the return on investment for high-efficiency heating equipment is higher for upstate residents.

Customer relationships. Upstate trade allies claim to have a generally closer relationship with their customers than trade allies in downstate New York. In upstate New York, the trade allies get to know their customers in a close knit community and take the time to explain the equipment and



program requirements. Trade allies in downstate New York may get a call from a customer for a bid on a heating or water heating system, but will likely not maintain the customer relationship after doing business with the customer.

Cost and impact of marketing. Program staff emphasize the difficulty of marketing in the urban area of New York City. The cost to market in that region is more expensive than in upstate New York and the message does not resonate as well with customers. Section 4 provides further analysis on marketing and means of initial awareness from the participants' perspective, which validates staff's feelings regarding marketing.

Difficulty in getting buy-in from supply houses and/or trade allies. Trade ally representatives and program staff indicate that it is more difficult to gain buy-in from trade allies and/or supply houses downstate than upstate. As one trade ally representative mentioned, downstate New York is a "tough nut to crack" with regard to influencing the installation of high-efficiency units. The reasons mentioned for this difference include not only the housing infrastructure (discussed above), but also the higher percentage of veteran trade allies that are averse to changing their practices.



4. PROCESS EVALUATION FINDINGS

This section presents the findings of the process evaluation of the program. The findings are detailed in the section documented in Table 4-1. The table also documents the corresponding overarching researchable issue(s) addressed within each section.

Table 4-1. Process Evaluation Section and Associated Researchable Issue(s)

Section	Associated Researchable Issues
4.1 Comparison of National Grid and other utility programs	Is the program design and infrastructure effectively delivering the program to cost-effectively meet energy savings goals?
4.2 Program administration and processes	
4.3 Program satisfaction	
4.4 Marketing and outreach	Is outreach to trade allies sufficient to move customers from standard to high-efficiency installations and services?
4.5 Education and training	How effective are the marketing efforts to residential customers?
4.6 Barriers to selling high-efficiency equipment	Is the program on track to meet or exceed its energy savings goals?
4.7 Program impact on installation of high-efficiency equipment	

We also include a summary of the findings from the three new construction customers that were interviewed in section 4.8 below. These cases are unique from the remainder of the population and, therefore, have a section of their own.

4.1 COMPARISON OF NATIONAL GRID AND OTHER UTILITY PROGRAMS

We reviewed the efficiency eligibility and incentive levels for 16 different programs providing incentives for natural gas furnaces and boilers. These 16 programs were located in 15 states that have moderate to cold winters. Due to space constraints, only eleven of these programs (across ten states) are illustrated in Table 4-2. These programs were selected as they are most comparable to National Grid’s program. In general, the incentives offered by National Grid (which were set by the Commission) are at the high end of those seen amongst the utility programs reviewed. Key findings are noted below.

- Thirteen programs offered incentives for furnaces without ECMs. Six of these programs provided rebates for furnaces with an AFUE of 90 to 91.9 percent. Rebates varied from \$100 to \$300 (National Grid offers \$200). Eleven programs offered rebates for furnaces with an AFUE of 92 to 93.9 percent, with rebates varying from \$80 to \$400 (National Grid offers \$400).
- Seven programs offered incentives for furnaces with ECMs. Eligible AFUE ratings ranged from 92 to 93.9 percent, 94 to 94.9 percent, 95 to 95.9 percent, and 96+ percent. Incentive levels ranged from \$120 to \$600. National Grid’s New York program incentives were significantly higher for furnaces with an AFUE rating of 94 percent or higher (\$600 for National Grid vs. a range of \$120-\$500 for the other six utilities). For the four programs



providing incentives for furnaces with an AFUE rating below 94 percent, the incentives ranged from \$400 to \$500 (National Grid offers \$400).

- Fourteen programs offered incentives for hot water boilers. Of the programs that rebated boilers having an AFUE rating of 85 to 89.9 percent, the incentives ranged from \$150 to \$500 (National Grid offers \$500). For boilers with a rating of 90+ percent AFUE, incentives ranged from \$200 to \$1,000, with the New York utilities offering \$1,000.
- Only two programs offered incentives for steam boilers with an AFUE rating of 82+ percent. Incentives were \$200 and \$500, with the New York utilities offering \$500.

The heating and water heating efficiency levels and associated rebates are prescribed across the state of New York. As discussed in the Introduction, the Commission required that the program design be consistent across the state, including all rebate levels. Therefore, a program provided by Con Edison has the same specifications as a program provided by National Grid, and the rebate levels are the same between upstate and downstate National Grid territories. This mandate changed with the June 24, 2010, order that required incentives be decreased upstate.¹⁴ Table 4-2 also documents the revised incentive values for upstate New York.

The utility-specific program designs did not account for differences in market conditions. The statewide consistency in residential heating and water heating offerings was directed by the Commission; therefore, National Grid has had little latitude in the decision to revise these rebates at this juncture. However, the Commission's June 2010 Order offered program administrators the latitude to propose changes of plus or minus 20% in incentive levels.

¹⁴ *Consolidated Edison Company of New York, Inc., New York State Energy Research Development Authority (NYSERDA), Central Hudson Gas & Electric Corporation, Order Approving Three New Energy Efficiency Portfolio Standard (EEPS) and Enhanced Funding and Making Other Modification for Other EEPS Programs.* Order posted by the Public Service Commission on 6/24/2010 under Case/Matter 09-G-0363, Filing No. 107. File Name 201_07m0548etal_Order.pdf pages 20-23.

4. Process Evaluation Findings



Table 4-2. Representative Heating and Water Heating Programs and Incentives (Excluding Programmable Thermostats)
Note: Blank cells indicate data not available. Only heating equipment is profiled as data was less available for other measures

Equipment Type	Qualifying Minimum Efficiency	National Grid (NY)-Downstate / Upstate to 6/24/10	National Grid (NY) Upstate as of 6/24/10	National Grid (NH)	Consumers Energy (MI)	Xcel Energy (CO)	Black Hills Energy (CO)	NIPSCO (IN)	NJ Clean Energy (NJ)	Mid-American Energy (IL)	PG&E (CA)	Efficiency Maine (ME)	NV Energy (NV)
Natural Gas Furnace	90%-91.9% AFUE	\$200	\$140		NA	NA		NA	NA	NA		\$100	\$200
Natural Gas Furnace	92%-93.9% AFUE	\$200	\$140	\$100		\$80	\$325- \$400	\$200	\$300	\$250-\$350			
Natural Gas Furnace with ECM	92%-93.9% AFUE	\$400	\$280	\$400		NA		\$500	\$400				
Natural Gas Furnace with ECM	94%-94.9% AFUE	\$600	\$420			\$120					\$150		
Natural Gas Furnace with ECM	95%+ AFUE	\$600	\$420			\$120							
Natural Gas Furnace with ECM	≥ 96% AFUE	\$600	\$420		\$200						\$250		
Natural Gas/ Water Boiler	85%-89.9% AFUE	\$500	\$350	\$500	\$300	\$120	\$150	\$500	\$300	\$100+		\$200	
Natural Gas/ Water Boiler	90%+ AFUE	\$1,000	\$700	\$1,000		\$200	\$400	\$750		\$200-\$400			\$175-\$225
Steam Boiler	82%+ AFUE	\$500	\$350	\$200									



4.2 PROGRAM ADMINISTRATION AND PROCESSES

Generally, interviewed program staff and implementation contractors reported that the program functions very well and is an effective method of delivering energy-efficient measures to residential customers. When questioned about their overall satisfaction with the program's administration, processes, and resources, most interviewees said they are happy with the way the program was working.

This section discusses the data tracking and impact estimation processes, communication and coordination issues, and rebate processing issues.

4.2.1 Data Tracking and Impact Estimation

As discussed in the Introduction, National Grid is required by the Commission to calculate the gross energy savings of each piece of equipment installed. Program impacts for each installation are calculated based on specific information which is captured in the application forms.

One area of concern identified by program staff is the amount of time it takes to track and estimate program impacts for individual measures. Currently, EFI captures data provided through the rebate form. This data is exported into an Excel file and sent to National Grid on a monthly basis. The Excel file provides that month's worth of program data, which needs to be manually combined with previous data files in order to calculate energy savings.

National Grid maintains a tracking system, InDemand, which captures program participation information and has the capability of calculating energy impacts based on inputs to specific variables. However, this program is not yet available for certain programs being implemented by National Grid in New York, including the program. The New York City program is expected to be integrated into InDemand by the end of 2010, while the Long Island program (KeySpan East Corporation d/b/a/ National Grid) will take longer to fully integrate into that data system.

Capturing program data in a system such as InDemand would allow National Grid to systematically calculate the energy savings. However, because the program data is not yet converted into InDemand, National Grid program evaluation staff are required to use more cumbersome methods to calculate these savings for all installations via Excel calculations. Additionally, it is unclear to National Grid program staff what happens should the calculation assumptions shift. For example, should the heating load hours be reduced, will that reduction in overall savings be applied retroactively, or will it be applied to savings moving forward? This is an area voiced by National Grid staff as a concern.

The process for calculating energy savings impacts for each measure incurs significant administrative effort. It is also somewhat unique compared to other jurisdictions for which we have completed evaluations, as they use deemed or stipulated savings which can be revised based on impact evaluation results. While it is useful from an evaluation and program documentation perspective to have certain pieces of information, the level of data required for reporting and the process of developing the reported impacts has administrative implications and introduces opportunities for error.



4.2.2 Communication and coordination

For the most part communications and coordination with program stakeholders is effective. Discussions with upstate and downstate New York program managers reveals satisfactory levels of communication with other program managers regarding the program, including any lessons learned upstate that could be applied downstate. The ICF staff, who provide marketing to supply houses for the program as well as the random selection of households to complete quality control of installed measures within upstate New York, also stated that communication and coordination with National Grid staff is sufficient.

One issue raised by EFI regarding program communication and coordination was over the advance notification regarding any possible cancellation of the program. EFI recognizes that National Grid oftentimes is not in control of the timeline within which programs are cancelled, and stated that National Grid staff did attempt to keep them informed of the program progress and when programs may be cancelled. However, EFI requested that National Grid continue to keep them informed of program progress and potential for suspension. This helps EFI manage customers' rebates and customer questions when they call into EFI's call center.

4.2.3 Rebate processing

EFI is the implementation contractor hired to process program rebates. Throughout the evaluation process, National Grid reported concerns and issues with their relationship with EFI. These concerns persist for National Grid as the program continues.

One concern revolves around the number of rebate applications that are identified as having flaws or are incorrectly completed. A second concern is the time lapse between receipt and processing of rebate applications. Finally, EFI's communication regarding the volume of rebates applications and committed incentives associated with the applications also causes concern. This section documents these issues.

a. *Flawed Rebates*

One issue uncovered through the in-depth interviews was the number of flawed rebates received (and potentially processed) through the program. Rebates are flawed for a variety of reasons, but the most prevalent flaws include missing equipment information (e.g., model number); missing invoices, which are required by the program; and the inclusion of equipment not eligible for the program. The application is generally completed by both the participants and HVAC contractors. The rebate form clearly states that all information needs to be completed.

Any incomplete applications are returned to program participants for corrections. Program participants need to correct the issue(s) and return the form before the payment is processed. This may take time if the missing data is related to information only the contractor can provide.

The data being captured in the rebate form is essential in a number of ways. First, it ensures the equipment is eligible for the program. Second, much of the data captured is directly used to calculate the equipment savings. As discussed above, the Commission's rulings requires that energy savings are estimated for each installation, taking into account variables such as housing vintage, assumptions about leakage from ductwork, climate region, and BTU inputs. As such, all these relevant data needed to be captured on the program application forms.



At the time of the interview, EFI stated that between 40 to 50 percent of the submitted rebates were flawed. EFI has processed about 18,000 rebates through the program. Of those, EFI reported that approximately 8,100 were flawed. Just under a third of those applications remained open, about a third were rejected, and just over a third were resolved. EFI commented that this flaw rate is higher than other projects they work on; however, they did not provide data to support this assertion.

The incidence of flawed applications could be, in part, a result of the number of data fields required by the Commission. Program staff reported that EFI added approximately ten data fields to their information tracking system to capture required program information. However, with the exception of several inputs, a review of the application form did not indicate that the program is requesting exceptionally more information than programs in other jurisdictions. According to interviews with EFI, however, this additional requirement adds to the cost of quality assurance through data inspections and increases the number of flawed applications.

Last, EFI raised concern over the fact that customers may need to re-engage trade allies to rectify flawed rebates. It is not always easy to reach trade allies and sometimes the information requested is not something the trade ally is willing to share.

b. Time to Process Rebates

A second concern voiced by program and EFI staff, and confirmed by program participants, is the time to process rebates. According to the rebate application form, National Grid expects to make incentive payments within 45 days of “satisfactory work verification.” This time frame does not include additional time that may be required should the applications be flawed or the program need additional information to calculate the savings estimates.

The program data documents a number of dates. Using the fields “Rebate Date” and “Check Date,” we reviewed the amount of time between the date documented on the application form and the date the check was cut. A mean of 71 days and median of 62 days elapsed between the rebate date and check date. The number of days ranged from a low of five days to a high of 227 days. This analysis shows that the program may be slightly behind the promised 45 day turn-around; however, it should be noted that this analysis is not a perfect measure and is to be used as a proxy for time lapse between the application receipt and when the rebate is sent. Additionally this does not take into account, if the application was flawed, when the flawed application is rectified. Not surprisingly, flawed applications increase the rebate processing time for program participants.

As documented later in this report, customers were fairly satisfied with the program with the exception of the rebate process. Several customers made direct contact with National Grid regarding their dissatisfaction with the rebate process.

c. Communications Regarding Rebates and Committed Amounts

Concerns were raised by program managers early in the evaluation regarding EFI’s process for handling the incoming rebates and outgoing payments. EFI was not accurately providing counts of applications received and/or communicating this information to National Grid in a timely manner. As a result, National Grid could not adjust their program or Commission expectations resulting from the rapid influx of applications in upstate New York in particular. Additionally, National Grid had concerns about the quality of the incoming data and the information associated with the flawed rebates. In reaction to these concerns, National Grid had a meeting with EFI to discuss the



issues and identify why the problems were occurring. This meeting took place in September 2009, several months after the launch of the Fast Track programs. According to program and EFI staff, the groups now have regular communications and, in many cases, speak with each other daily.

National Grid has also developed a document for EFI that provides program-specific guidance. This document is intended to provide clear communications regarding the required program processes including reporting of completed and flawed applications and quality assurance. EFI responded favorably to the idea of a procedural document. At the time of this reporting, however, no document has been provided to EFI and issues still persist.

The June 24 Commission order also requires that the upstate utilities establish a reservation system with their rebate processors. This process requires utilities to pre-authorize a rebate application prior to funds being committed for a given project. According to the order, this reservation process should enable more effective program administration and allow utilities to more closely monitor program progress to avoid overrun of program funds.

4.3 PROGRAM SATISFACTION

This section discusses program satisfaction from both the customer and trade allies' perspectives. The primary concern for program participants is the rebate processing time. Trade allies were for the most part satisfied with the program, although some commented on the type of equipment promoted and the rebate levels.

4.3.1 Customer Satisfaction – Overall

Customers are generally very satisfied with the program. Using a zero to ten satisfaction scale, where zero is not at all satisfied and ten is very satisfied, program participants were asked to rate their overall satisfaction with the program. Surveyed program participants reported an average satisfaction rating of 8.8 with no statistically significant differences between upstate and downstate New York customers.

Reasons for participant satisfaction include lower energy bills, a positive experience working with National Grid and/or its contractors, and the rebate. No respondents specifically stated why they were dissatisfied with the program overall, although when probed on specific programmatic elements respondents, the primary issue raised by respondents related to the rebate (discussed in Section 4.5.2).

As shown in Table 4-3, approximately 42 percent indicate that their satisfaction with National Grid has increased as a result of the program. Downstate New York program participants were slightly more likely than upstate New York program participants to report an increase in satisfaction with National Grid after participation (47 percent compared to 39 percent).

Table 4-3. Participant Satisfaction with National Grid after Program Participation

Satisfaction Level	Downstate (n=126)	Upstate (n=80)	Total (n=206)
More satisfied	46.8%	38.8%	42.3%
Just as satisfied	49.5%	58.8%	54.7%
Less satisfied	3.7%	2.4%	3.0%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey



Primarily, respondents noted the help they received to replace the equipment and the rebate value as positive elements of the program. Example comments are denoted below.

“They helped me pay for a nice new machine to go in, and in the long run it is saving me a fortune.”

“Because the old boiler I had was about to die. The [new] boiler is much better than the old one. I saved a lot more money with the new one.”

Trade allies also perceive an increase in customer satisfaction as a result of the rebate received through program. They said this is particularly true in today’s economy when customers’ funds are tight.

4.3.2 Customer Satisfaction – Specific Program Elements

Surveyed program participants were also asked about their satisfaction with various aspects of the program using the same 11-point scale, where zero is not satisfied and ten is very satisfied. As shown in Table 4-4, the operation of the new equipment received the highest satisfaction rating of 9.2. The amount of time it took to receive the rebate received the lowest satisfaction rating, which was rated 7.7.

Table 4-4. Participant Satisfaction with the Program

Program Aspect	Average Satisfaction Rating (n=221) 0=not at all satisfied, 10=very satisfied
<i>Program Satisfaction - Overall</i>	<i>8.8</i>
Operation of new equipment	9.2
Amount of paperwork required to receive a rebate	8.4
Information explaining the program	8.4
Interactions with program staff	8.4
Rebate amount	8.3
Amount of time it took to receive the rebate	7.7

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

The energy efficiency customer satisfaction survey conducted by National Grid provides similar results to this participant survey.¹⁵ When asked what element of the program needs to change or improve, customers frequently mention the rebate processing as a key area of concern.

If an aspect of the program was rated less than a five, the program participant was asked why they gave it the low rating. Below are some of the reasons given for dissatisfaction for the various program components. Nearly all of the comments relate to the rebates.

Rebate amount

While the majority of comments revolve around either the rebate amount or the amount of time it took to receive the rebate, it is unclear whether their dissatisfaction came from misinformation from the trade allies, communication issues with EFI, or participants’ misunderstanding.

¹⁵ Source: “EE Customer Sat survey overview.ppt” provided to PA Consulting by National Grid June 3rd 2010.



“I was told it was going to be a higher amount with the unit that I picked. When I received my check it was lower. I called National Grid and questioned them. They told me that the unit that I purchased was only qualified for the rebate amount that I received. I then questioned my plumber and the mistake was made with the price of the unit that he told me about.”

“Well, they kept changing the amount, then I got very little rebate.”

“Because I was told \$600 and received \$200.”

Amount of time it took to receive the rebate

Another area of dissatisfaction is the time it takes to receive the rebate check. As discussed in Section 4.2.3b above, according to early program staff interviews, EFI has lagged behind in the processing of rebate applications throughout the program year. Additionally, EFI noted that the large amount of data required as part of the rebate application, which causes a higher percentage of applications to be rejected or required follow-up letters. Both of these issues showed up in the open-ended comments provided by interviewed participants.

“I had to call them after three months.”

“First of all, I sent in all the paperwork and then I received a letter from EFI stating that they need more information. I called them up to make sure what it was. They told me everything and then they sent a letter stating that they needed more information. I got a phone call two weeks stating that they needed to inspect the equipment. So they finally sent in the inspector.”

“I think that the boiler was put in the middle of September and we did not receive the rebate until middle of March and do the math and that's about six months. I think that when people did this they expect the rebate within a reasonable time and six months that's a stretch. If they would have said two to six months then you would not have expected it. It was annoying portion but we got the rebate. “

“The first piece of paper was okay, but they kept sending me another letter and another letter.”

An internal National Grid energy efficiency customer satisfaction study has also identified the timeliness of the rebate process as an issue. A quarter of program participants interviewed for this survey say it takes too long to receive the rebate.

4.3.3 Trade Ally Satisfaction - Overall

Trade allies were asked to rate their satisfaction on the same 11 point scale as the participants, where zero is not at all satisfied and ten is very satisfied. On average, participating trade allies give the program a rating of 7.4. As shown in Table 4-5, upstate New York trade allies were significantly more likely than downstate New York trade allies to give the program a high satisfaction rating.



Table 4-5. Average Trade Ally Program Satisfaction Rating

Territory	Average Satisfaction
Downstate (n=10)	6.7
Upstate (n=12)	8.0
Total (n=22)	7.4

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey
 Note: Due to the small sample sizes, differences are not statistically significant.

Participating trade allies were asked about the reasons for their ratings. Six (three upstate and three downstate New York respondents) gave a rating of “ten.” Below are the responses from two of these contractors.

“(Referring to the National Grid program) Everything that you offer is black and white. Everything you said you'd do, you follow through with everything. You can't ask for much more than that.”

“Things are going very well and they're easy to work with at National Grid.”

One note of dissatisfaction focuses on the removal of tankless water heaters from the program. A participating trade ally from upstate New York mentioned that he would like to see additional types of water heating equipment eligible for the National Grid New York rebates, specifically tankless water heaters. It should be noted that the program managers interviewed also mention disappointment in the fact that the tankless water heaters were removed from the program. However, while tankless water heaters are one of the most efficient types of water heating equipment, they are also one of the most expensive for the customer to purchase and commonly are less cost-effective for a program to offer than other measures.

Another respondent from the downstate New York territory attributed his relatively low satisfaction to the rebate level. This respondent said that the dollar value is not high enough to “push anyone over the edge” and would be more satisfied if the rebate value were higher. As discussed in Section 3, downstate New York customers have a higher need for boilers, which incur higher costs than forced air furnaces. Additionally, there are complexities with the building infrastructure that increase the cost of upgrading to high-efficiency heating equipment in downstate New York. However, the benchmarking of other utility programs against National Grid’s program revealed that National Grid’s rebate value is in actuality higher than other utility programs. It may be the case, however, that there should be a distinction in the rebates provided to upstate and downstate New York customers based on the higher cost of installation in downstate New York.

Overall, trade allies say their satisfaction in National Grid has increased because they know they have helped out their customers. Customers are always looking for ways to save money and the program allows trade allies to provide the information customers need and decrease costs for their customers (both from an energy efficiency and up-front cost perspective).

4.3.4 Opportunity for Improving Trade Ally Satisfaction and Participation

The process interviews assessed opportunities for improving trade ally satisfaction and participation. This section documents a number of the issues that arose through those interviews.

Need for sales tools to help trade allies sell high-efficiency heating equipment to customers.

Upstate New York trade allies report that they have received very few sales tools from National



Grid to help them sell the high-efficiency equipment to their customers. However, as discussed earlier, program managers in upstate New York indicate that there is little need to market to trade allies, due to the significant program uptake from the onset. Although there may not have been a need to provide information to trade allies to promote the program in upstate New York, these trade allies mention a desire to receive this information and have found ways to get it on their own. Several trade allies have completed research on their own to obtain more information on the Program.

One participating trade ally from upstate New York said they received one copy of the program flyer and photocopied it so they would have additional copies to give to their customers. A few other upstate New York participating trade allies commented they went to the National Grid website and printed information on their own. They felt it was important to have the information available for their customers.

Downstate New York trade allies were more likely than upstate New York trade allies to say they have more direct contact with National Grid representatives. As a result, they state that they have several sales tools available to help them sell high-efficiency equipment. Downstate New York trade allies have also commented that they receive marketing materials from National Grid and are provided an energy savings calculator.

Lack of support from National Grid representatives. Several participating trade allies mentioned that they would have liked to have had more interaction with National Grid representatives. They report that they often hear about National Grid programs after they have been running for a while, and ask that they be informed by National Grid representatives at the launch of programs. By hearing about a program from the beginning, it would give the trade ally a chance to become educated about the program before selling it to customers.

In addition to learning about the program from the start, trade allies would also like to have someone at National Grid as a resource for the program. Trade allies, especially upstate New York trade allies, often mention that they are unsure of where or whom to call when there is a question related to the program. Rather than being informed about the program by National Grid staff, it was common for trade allies to do research on their own to become informed about the program. Several participating trade allies heard about the program through word-of-mouth, but then went online and did the majority of their research on their own. If there were more personal contact with National Grid representatives, trade allies would already be educated on the programs and could spend more time educating customers and selling the high-efficiency equipment.

We have consistently found through other evaluation studies of both residential and commercial programs that proactive, personal communication is a more effective means of providing program information than less personal communications (e.g., sending brochures in the mail). Additional opportunities for more personal communications include trade ally seminars and workshops and breakfast meetings.

Below are responses from a few trade allies when asked if there are adequate program communications.

“Last year National Grid had a meeting with the contractors and we never heard about it. One of our sales reps informed us of the meeting after the meeting happened. For some reason we must have gotten taken off the list. We'd really like to be put back on the list so we're aware of the training and meetings.”



“No, I pretty much have to do all my own digging. I prefer email or fax, or something along those lines.”

“I guess I wouldn't have an answer because I've found everything myself. I'd prefer to have someone call me to inform me of the programs”

“No. I'd like to have someone work with us directly. Once the rebate form is submitted there is no way for us to check on the process. We do the forms for the customer then send it in. We walk them through it very carefully, but there is no way of checking on it.”

4.4 MARKETING AND OUTREACH

This program employs a traditional push-pull marketing strategy. National Grid markets the program to customers in order to increase demand while at the same time marketing the program to upstream market actors, such as HVAC contractors and supply houses. Upstream market actors are critical in HVAC and water heating programs as customers traditionally look to these individuals to guide them in their purchasing decisions. Therefore, gaining buy-in from trade allies improves the potential for HVAC and water heating programs to meet their goals.

This section documents the marketing and outreach efforts directed to customers and trade allies. Trade allies are defined as contractors who specify equipment as well as the supply houses targeted by the Trade Ally Representatives.

4.4.1 Customer Marketing and Outreach

National Grid Residential High-Efficiency Heating and Water Heating and Controls program participants were asked how they heard about the equipment rebates. Over half of those surveyed mentioned that they heard about the program through an HVAC contractor or retailer. Upstate participants are significantly more likely to mention contractors or retailers as a source of information (67 percent upstate New York versus 51 percent downstate).

Upstate program participants are also more likely to have heard about the program through the media, compared to program participants from downstate New York (Table 4-6). Specifically, eighteen percent of upstate New York participants heard about the program through the newspaper, compared to four percent of downstate New York participants; sixteen percent of upstate and one percent of downstate participants heard about the program through television; and four percent of upstate participants heard about the program by radio, compared to none of the downstate participants. Other ways of hearing about the program include: internet research, NYSERDA, ENERGY STAR® website, government website, a Green House program, and a tax professional.

It should be noted that interviews with trade allies and program staff indicate that the marketing efforts in upstate New York are minimal, particularly compared with downstate New York efforts. However, program staff voice concerns that even with the significantly larger downstate marketing effort, they are not confident that the marketing efforts are effective in the region. This analysis does provide some evidence that effective messaging in downstate New York is indeed more difficult than in upstate New York.



Table 4-6. How Participants Heard About the Program

Method	Downstate n=(136)	Upstate (n=80)	Total (n=216)
HVAC contractor or retailer*	50.7%	67.4%	59.7%
Friend/family member	15.1%	13.7%	14.4%
Newspaper*	3.9%	17.5%	11.2%
National Grid website	13.7%	7.5%	10.3%
Television*	0.9%	16.3%	9.2%
National Grid call center*	8.4%	1.2%	4.5%
National Grid utility bill insert	5.9%	2.4%	4.0%
Retail store	4.4%	0.0%	2.1%
Radio*	0.0%	3.8%	2.1%
3% initiative	0.5%	2.4%	1.6%
National Grid direct mailing	3.4%	0.0%	1.6%
National Grid email newsletter	0.9%	1.2%	1.1%
Trade show	0.0%	1.2%	0.7%
Other*	19.0%	8.7%	13.5%

* Indicates differences between upstate and downstate are statistically significant at the 95% confidence level

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

If program participants did not first hear about the program through their contractor, they were asked if their contractor or retailer mentioned that they could receive a rebate if they purchased efficient equipment. Seventy-eight percent reported that the contractor did mention the equipment rebates.

Program participants were also asked how they prefer to receive information from National Grid about energy efficiency programs. As shown in Table 4-7, over 50 percent (51 percent downstate and 61 percent upstate) of program participants prefer to receive information about National Grid programs through a utility bill insert. However, bill inserts are traditionally not the most effective means for promoting program awareness.

About seven percent of people provided an alternate response when asked how they prefer to hear about National Grid programs. The most commonly mentioned mediums are television and newspaper.

Table 4-7. Preferred Source of Information for Learning about National Grid Programs

Source	Downstate (n=138)	Upstate (n=85)	Total (n=223)
Utility bill insert	50.5%	61.2%	56.4%
Direct mailing	28.8%	28.2%	28.5%
Email newsletter	25.0%	21.2%	22.9%
Radio	4.7%	9.5%	7.3%
Website	8.2%	2.3%	5.0%
Contractor	2.8%	5.9%	4.5%
Other	3.3%	9.5%	6.7%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey



As shown in Table 4-8, when asked who else, aside from the retailer or the contractor, they interacted with as part of the program, over 70 percent of respondents say they did not interact with anyone else. If program participants interacted with someone else, they most likely interacted directly with the National Grid staff (15 percent of participants).

Table 4-8. Participant Interaction with Program Representatives Other than Retailer or Contractor

Program Representative	Downstate (n=137)	Upstate (n=84)	Total (n=221)
No one else	68.4%	75.0%	72.1%
National Grid staff	19.5%	11.9%	15.3%
EFI	3.4%	3.6%	3.5%
Customer service	0.9%	3.6%	2.4%
Other	10.3%	7.1%	8.5%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

4.4.2 Customer Awareness of Other Programs

Other utilities’ or organizations’ marketing of similar programs was a concern mentioned by program staff and implementers (referred to in this section as cross-marketing). This cross-marketing is a potential source of confusion for customers. In some cases, customers may submit applications through a non-National Grid program even though they are a National Grid customer. EFI confirms that they receive National Grid applications from non-National Grid customers, and vice-versa.

A small percentage of customers are aware of NYSERDA’s programs. The participant survey assessed customers’ awareness of programs provided through NYSERDA. Overall, 13 percent of program participants were aware of the NYSERDA rebates (Table 4-9). Upstate and Long Island customers were the most likely to be aware of the rebates. The survey did not provide data that indicated customers applied for rebates through multiple organizations.

Table 4-9. Participant Awareness of Rebates Offered by NYSERDA

Awareness	New York City (n=69)	Upstate (n=79)	Long Island (n=70)	Total
Aware	5.8%	15.3%	11.5%	12.6%
Not aware	94.2%	84.7%	88.5%	87.4%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

4.4.3 Trade Ally Marketing and Outreach

National Grid also provides marketing and outreach to trade allies. There are two levels of marketing for this program: marketing to the supply houses and marketing directly to the trade allies who sell the equipment to customers.

ICF concentrates their marketing efforts on the supply houses. As part of their outreach efforts, ICF staff visit supply houses to inform them about the program and, in some instances, provide a presentation about the program, high-efficiency equipment, and the benefits to the customer. ICF staff report that marketing to upstate New York supply houses is more effective as they are easier to reach and more receptive to marketing than those in downstate New York. They also say there are fewer supply houses in the upstate territory; therefore, it is easier to reach and meet with a higher percentage those supply houses.



The primary marketing tool for the trade allies themselves is event sponsorship by National Grid. The program also leverages National Grid trade ally representatives who, through their efforts with the oil-to-gas conversion program, also inform trade allies about the program.

When asked about how they heard about the program, participating trade allies said they discovered the program through a variety of sources, including a National Grid representative, supply house and/or wholesaler, news, media (TV), and the Internet. Trade allies also mentioned hearing about the program through customers and word of mouth.

When asked about when they became aware of the program, participating trade allies report hearing about the program one to two years ago, which is consistent with the time frame in which the interim Program began operating. It should be noted that most trade allies were not able to distinguish between the interim and the Fast Track program.

Program staff are more actively providing outreach to trade allies in downstate than upstate New York. Because the upstate New York program was oversubscribed so quickly, marketing to trade allies in that region was unnecessary. Additionally, this program was familiar to some upstate and downstate New York trade allies as the program seamlessly continued after the interim program ended.

Slightly over half of participating trade allies feel that there is adequate program communication (eight out of fifteen trade allies from upstate and six out of eleven trade allies from downstate). In addition, trade allies said they primarily prefer to receive program information from National Grid via email from a representative or the National Grid website.

Participating trade allies operating in downstate New York are more likely than those serving customers in upstate New York to say they had an assigned National Grid representative. The trade allies in downstate New York who had a National Grid representative said they are very happy with the communication with the National Grid representative overall, while upstate New York trade allies note that program communication would be easier if they had a representative assigned to them. In fact, several upstate New York trade allies mention that not only did they not have a representative assigned, but also they are unsure of what phone number to call with program-specific questions.

Program managers note that the upstate New York service territory experienced significant uptake early in its implementation cycle, therefore there was no need to directly market to the trade allies in order to reach program goals. Program managers confirm that no specific trade ally communications or marketing strategies exist in upstate New York.

4.5 EDUCATION AND TRAINING

The program logic model includes training and conference events for trade allies. As an example, in October 2009 and May 2010, National Grid organized trade ally expos in downstate New York that were attended by hundreds of trade allies. In May 2010, National Grid, the Long Island Power Authority (LIPA), and trade organizations sponsored the Educational and Energy Efficiency Trade Expo which was attended by over 700 participants, including a number of trade allies.

Additionally, the program provides customized Building Performance Institute (BPI) trainings focusing on hydronic heating systems in downstate New York. As of this reporting, 79 contractors have completed the training. National Grid also provides two BPI certification classes in hydronic heating systems.



Given the inclusion of training, workshops, and education events in the program design, the survey probed participating trade allies about which trainings they attended and the effectiveness of those trainings. These questions generically asked about training; therefore, it is not possible to discern whether the trainings trade allies recollected were related to energy efficiency, HVAC, or other topics.

Downstate New York trade allies are more likely to have attended program trainings than upstate New York trade allies. Seventy percent of downstate participating trade allies (seven out of ten who responded to the question) say they have attended a National Grid sponsored training, compared to 40 percent (six out of 15) of upstate New York participating trade allies. Trade allies that did not attend trainings say it was because they were unaware of the availability of utility sponsored trainings. These trade allies indicate they may have attended if they were aware of the trainings held by National Grid. A number of trade allies from upstate New York, however, have attended informal breakfast meetings with a National Grid representative. Although not a formal training activity, National Grid representatives hold breakfast meetings for trade allies to inform them of programs and give them program updates. Those who attended a breakfast meeting say they find them useful because they do not have to take time out of their busy day to attend a meeting. It is also an informal setting for the trade allies so they can more freely ask questions and obtain additional material. These breakfast sessions are also offered in downstate New York, but none of the interviewees mention attending those sessions.

Of the trade allies from downstate New York who attended National Grid sponsored trainings, most indicate that the trainings were related to oil-to-gas conversions. According to several trade allies, these oil-to-gas conversion trainings are offered frequently. Other training topics mentioned by trade allies include: sales marketing, 85 percent efficient boilers, venting, commercial high-efficiency boilers, how to pitch to your customers and how to pick your customers, and helping to sell effectively.

Those trade allies who attend National Grid trainings generally find them very useful. One trade ally noted that if you gain just one thing out of the training, it is worth the time. Another participating trade ally mentioned that the training gave him confidence to tell his customers something about the program rather than just reading material and not completely understanding it.

4.6 BARRIERS TO PARTICIPATION

One of the primary objectives of this study was to identify barriers to selling high-efficiency equipment. To do so, we assessed the level of difficulty trade allies said they experienced in attempting to sell high-efficiency equipment.

Participating and nonparticipating trade allies in the program were asked how difficult they find it to sell high-efficiency equipment to their customers (on a zero to ten scale, where zero is very difficult and ten is not at all difficult). Participating and nonparticipating trade ally responses are similar in their ratings (Table 4-10). Overall, participants rate the difficulty of selling high-efficiency equipment a 6.3 compared with 6.0 for nonparticipants. Again, please keep in mind this analysis is based on small sample sizes and should be viewed qualitatively.



Table 4-10. Trade Ally Average Difficulty Rating for Selling High-Efficiency Equipment

Participant	Average Difficulty
Participants Upstate (n=10)	6.0
Participants Downstate (n=9)	6.6
Total - participants (n=19)	6.3
Nonparticipants Upstate (n=2)	7.0
Nonparticipants Downstate (n=7)	5.9
Total - nonparticipants (n=9)	6.1
Total (n=28)	6.2

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

To understand trade allies' responses to the level of difficulty in selling high-efficiency equipment, the survey further asked respondents about their perceived barriers in selling high-efficiency HVAC and water heating equipment. The survey addressed not just the barriers in selling high-efficiency, but also having customers participate in National Grid's program. Below we list the most frequently mentioned barriers.

High equipment costs. Several participating and nonparticipating trade allies say that there is a high cost to purchasing the high-efficiency equipment. And, as discussed above, the depressed economy has made it increasingly difficult for customers to be able to afford the additional cost of purchasing high-efficiency equipment.

Rebate processing time. According to a few trade allies interviewed, the time to receive the rebate is a potential barrier for program participation. Several trade allies said that a portion of their customers need the funds immediately and are not able to wait for a rebate. In addition, several trade allies mentioned that if the National Grid rebate was instantaneous, more customers may be inclined to go with the higher efficiency heating and water heating equipment. The instant rebate would keep money in their pockets rather than waiting for the rebate check to arrive in the mail.

Longer payback period. Participating and nonparticipating trade allies note that there is a long payback period when upgrading from the standard to high-efficiency equipment, which can make the decision to upgrade difficult for customers. One participating trade ally recommended that National Grid provide tools to the trade allies and/or customers to calculate the payback period, or information outlining the payback period for specific equipment. The customer will then see their long-term savings after the equipment is paid off.

Increased competition of marketing messages in Downstate. The slower program uptake in downstate New York cannot be attributed to a smaller marketing effort. In fact, interviews with program staff indicate that they are spending more effort thinking through creative marketing solutions for the downstate contractors and target population in that market. However, the downstate region is significantly more concentrated with other advertisements than upstate New York, making it more difficult to capture the attention of consumers. Additionally, marketing in downstate New York is more expensive due to the higher cost of radio, billboard, and newspaper advertisements as well as other marketing channels.

Contractor attitude toward high-efficiency units. Program staff who regularly interact with contractors believe there is a difference in attitudes toward high-efficiency units between upstate and downstate New York contractors, with a higher percentage of downstate contractors who do



not believe in the benefits of high-efficiency units. Interviews with non-active HVAC contractors reveal that a number of these contractors not only do not believe installing high-efficiency units will save the customer significantly in energy costs, but some also believe the units are less reliable than standard efficiency units. One contractor said he believes the useful life of the high-efficiency units to be as low as nine years. In contrast, upstate New York contractors have reported to program staff that they have used the program as a major marketing tool for selling the high-efficiency equipment during the economic downturn. In fact, some trade allies report they would have lost their businesses or been forced to lay off workers in the absence of the program.

4.7 PROGRAM IMPACT ON INSTALLATION OF HIGH-EFFICIENCY EQUIPMENT

The impact that the program has on the installation of high-efficiency heating and water heating equipment is an important consideration, as it has direct implications on the impacts that the program can claim. More specifically, the program cannot claim impacts for those customers that would have installed the equipment on their own without the program offering. Although this is not an impact evaluation (and a formal net-to-gross evaluation is expected to be forthcoming), from a process evaluation standpoint, it is useful to identify the program's impact on the installation of high-efficiency equipment. This review provides insights into the measures being promoted through the program as well as early indicators of the future net-to-gross estimates that could be expected through this program.

As the program targets participants and trade allies, both groups were asked to assess the program's impact on the installation of high-efficiency equipment. Please note that these findings are not intended to provide formal net-to-gross estimates.

4.7.1 The Federal Tax Credit: a Confounding Factor

One issue that significantly complicates the ability to assess the impact the efficiency program has on the sales and/or installation of high-efficiency equipment is the federal tax credit available through the American Reinvestment and Recovery Act (ARRA). This act provides a 30 percent tax credit, up to \$1,500, for the installation of high-efficiency equipment, including high-efficiency heating and water heating equipment. It is often difficult to disentangle the influence of this tax credit from the influence of the utility rebate on trade allies' recommendation practices and customers' purchasing decisions.

All participating trade allies were aware of the federal tax credit and all indicated that it has made an impact on their sales of high-efficiency equipment. A trade ally stated that he does not know where his company would be without the federal tax credit. Another trade ally commented on the effect of the federal tax credit and the National Grid rebate combined. According to this trade ally, the National Grid rebate coupled with the federal tax credit has been a huge selling point in the industry. When comparing the National Grid rebate to the federal tax credit, it is difficult for the trade allies to differentiate which holds a higher weight for the customer. The trade allies believe that it really depends on the customer. Analysis using demographic variables in the program participant data does not reveal any demographic trends for those who received or plan to receive the tax credit.

The timeframe of receiving the benefit of the tax credit (after the calendar year) is an issue for some customers. Therefore, the National Grid rebate, which has a shorter turnaround time for receiving the incentive, can, according to trade allies, be perceived as more beneficial to the customer. On the other hand, other trade allies believe that the higher dollar amount of the



federal tax credit, compared to the National Grid rebate, may put more weight on the federal tax credit.

Several trade allies also mentioned that all customers are eligible for the National Grid rebate, while not all customers are eligible for the federal tax credit. Customers who do not file an annual tax return, such as the retired or disabled, are not eligible for the federal tax credit for heating and water heating equipment. Therefore, the National Grid rebate is the only incentive available to these customers.

We document differences in decision-making processes taking the federal tax credit into account further within this report.

4.7.2 Program Impact on Timing and Equipment

Program participants were asked if the rebate for the high-efficiency heating and water heating equipment had not been available through National Grid, would they have purchased any equipment at that same time. Just over 75 percent of participants indicate that they would have purchased some equipment at the same time (Table 4-11). There is little difference in response based on measures, although respondents who installed indirect water heaters are more likely to say they would have purchased a measure at the same time than furnace or boiler purchasers.

Table 4-11. Percent of Participants that Would Have Purchased Any Measure at the Same Time Without the Program

Measure	New York City (n=65)	Long Island (n=62)	Upstate (n=83)	Total (n=210)
Overall	75.3%	77.4%	75.9%	76.2%
Energy efficient furnace	75.0%	72.0%	75.0%	75.1%
Boiler	71.1%	73.9%	79.5%	74.3%
Indirect water heater	90.0%	84.5%	80.0%	85.0%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

The survey did not ask participants questions to assess early retirement. However, there are several questions that provide some indicators about whether the equipment was installed as an early replacement. These questions asked about the age range of the equipment and condition of the replaced equipment.

The data does not provide sufficient information to soundly illustrate that the program is promoting early replacement. As Table 4-12 shows, participants who had equipment in good condition are slightly, but not significantly, more likely to say they would have not have replaced at the same time. They are also slightly more likely to have equipment that was under ten years of age.



Table 4-12. Percent of Participants that Would Have Purchased Any Measure at the Same Time by Early Retirement Indicators
(Excludes programmable thermostats)

Indicator	Would have Replaced at Same Time (n=147)	Would Not have Replaced at Same Time (n=42)
Equipment in good condition	40.0%	48.0%
Equipment up to 5 years old	2.8%	5.2%
Equipment 5 to 10 years old	6.6%	10.8%

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

Over 40 percent of participants indicate that their equipment was in good condition at the time it was replaced. This analysis does not reveal a correlation between the condition of the equipment and time of equipment replacement. In fact, 43 percent of respondents who report that their equipment was over 30 years old also say that equipment was in good condition.

Participants who would have purchased equipment at the same time were then asked how likely it is that they would have purchased the same high-efficiency equipment without the National Grid rebate. Participants who said they would have purchased the equipment at the same time reported a high likelihood of purchasing the same measure without the program, providing an average rating of 8.2 on a zero to ten scale with zero being not at all likely and ten being very likely. Participants in downstate New York provided lower ratings than upstate New York participants (Table 4-13). Specifically, Long Island and New York City participants rated their likelihood almost a full point lower than upstate New York program participants, indicating that the program may have a greater level of influence in downstate New York areas. As discussed earlier, it is reportedly more costly and more difficult to install high-efficiency heating and water heating equipment in downstate New York than upstate New York. Additionally, respondents who said they would have purchased furnaces at the same time were less likely to say they would have purchased the same furnace equipment without the program than respondents that purchased boilers or indirect water heaters. This may be because oftentimes the indirect water heaters were purchased along with boilers.

Table 4-13. Average Likelihood of Purchasing the Same Measure Without the Program
(of respondents that said yes to T13 "Would you have purchased at the same time?")

Measure	New York City (n=48)	Long Island (n=46)	Upstate (n=61)	Total (n=155)
Overall	7.9	7.7	8.6	8.2
Energy efficient furnace	6.1	6.5	8.5	8.0
Boiler	8.6	8.2	8.9	8.5
Indirect water heater	8.6	8.3	9.4	8.4

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

The above analysis shows the likelihood of purchasing the same equipment for those that said they would have purchased at the same time. The analysis does not paint the true picture of program influence, however, as it does not capture the likelihood of the customer purchasing the equipment at all. In other words, participants that said they would not have purchased at that time are excluded from this analysis.

Table 4-14 imputes a likelihood score of zero for those cases that said they would not have purchased the equipment at that time (indicating that the incentive was the primary determinant in their decision-making process). The overall story is similar with Long Island receiving the lowest



likelihood and upstate New York receiving the highest likelihood rating overall. The analysis illustrates more clearly, though, the relatively low likelihood of participants' installation of high-efficiency furnaces, even within upstate New York.

These ratings are consistent with trade ally and program staff perceptions that there are more barriers for purchasing high-efficiency heating equipment in downstate than upstate New York. The resulting numbers are indicative of the influence the program has on the installation of high-efficiency heating equipment.

Table 4-14. Average Likelihood of Purchasing the Same Measure Without the Program
(imputing likelihood response based on T13, "Would you have purchased at the same time?")

Mean rating	New York City (n=48)	Long Island (n=46)	Upstate (n=61)	Total (n=155)
Overall	6.3	5.8	6.4	6.2
Energy efficient furnace	4.6	4.9	6.3	6.0
Boiler	6.0	5.9	6.9	6.2
Indirect water heater	7.7	6.9	7.8	7.1

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

One distinction is with the indirect water heating measure. Respondents are more likely to say that they would purchase the same measure without the program. It should be noted, however, that indirect water heaters account for a small portion of the program savings (approximately one percent). We reviewed the above data by select demographic variables including income and housing type. There are no distinct trends in customers' reported level of program influence by these variables.

4.7.3 Reasons for Purchasing High-Efficiency Equipment

The main reason given by participating households for purchasing high-efficiency equipment rather than standard efficiency equipment was to save money on energy bills. Nearly half of respondents (47 percent) mention saving money as a reason for purchasing the equipment. Several program participants also mention the federal tax credit as a reason for purchasing the high-efficiency equipment over the standard equipment.

Program participants from downstate and upstate New York differ in their opinions on whether or not they purchased the equipment because the rebate made the high-efficiency equipment affordable. Significantly fewer respondents from downstate New York said that they purchased the equipment because the rebate made it more affordable to purchase the program-qualifying equipment compared with upstate New York participants (23 percent compared with 42 percent, respectively).

4.7.4 Differences in Decision-making Process Considering Federal Tax Credit

Program participants confirmed the prevalence of the tax credit in their purchasing decisions. About 40 percent of program participants said they will receive the tax credit as part of their heating or water heating purchase. There was no significant difference in upstate versus downstate New York customers.

The federal tax credit was moderately influential in participants' decision to purchase the high-efficiency equipment (Table 4-15). The average likelihood rating (with ten being very likely) for purchasing the same equipment without the federal tax credit was a 6.7. likelihood to purchase



without the tax credit varied by equipment type. Participants that purchased indirect water heaters, on average, rated their likelihood of purchasing without the tax credit higher than the other equipment types (8.3, compared with 6.1 for a boiler and 6.8 for a furnace).

Table 4-15. Likelihood of Purchasing Without Tax Credit

Measure Influenced	Average Likelihood (0=not at all likely and 10=very likely)
Indirect water heater (n=11)	8.3
Boiler (n=16)	6.1
Furnace (n=51)	6.8

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

It is also important to note that those who received the federal tax credit rate the likelihood of purchasing the equipment without the incentive higher than those who did not receive the tax credit. Respondents indicating they will take advantage or took advantage of the tax credit said their likelihood to purchase the same equipment at that time was on average a 6.7, compared with those who did not receive the federal tax credit whose average rating is 5.9. (Table 4-16)

There is a different trend when reviewing the likelihood analysis by region. New York City residents who did not receive a tax credit or plan to receive a tax credit report a higher likelihood rating than those that received a tax credit, which is different than the other groups. Please note though that this analysis is based on only 11 respondents; the data should be reviewed with caution.

Table 4-16. Likelihood of Purchasing Equipment Without Rebate

Statement	New York City	Upstate	Long Island	Overall
Average likelihood for those that did not receive or do not plan to receive rebate	6.5 (n=53)	6.0 (n=41)	5.5 (n=39)	5.9 (n=133)
Average likelihood for those that received or plan to receive rebate	4.9 (n=11)	6.8 (n=40)	6.9 (n=21)	6.7 (n=72)

Source: Residential High-Efficiency Heating and Water Heating and Controls Program Participant Survey

It is possible that those participants receiving the tax credit have greater higher free-ridership tendencies than those who did not. Any formal net-to-gross assessment will need to be thoughtful about identifying a means for assessing net-to-gross, taking the federal tax credit into account. While influential now, in 2011 the tax credit is not slated to be available, which may change the weight the National Grid program would have in the installation of high-efficiency heating and water heating equipment.

4.7.5 Program Impact from the Trade Allies’ Perspectives

Most participating trade allies stated that the rebates are effective in moving customers from purchasing standard to high-efficiency equipment. Participating trade allies also mentioned that (depending on the type of equipment) the rebates may be sufficient to offset the incremental cost of going from standard to high-efficiency furnaces. Therefore, the customer is benefiting from long-term energy savings with no additional cost when purchasing equipment. Below are a few specific responses from a couple of participating trade allies.

“Yeah, it is the only reason they do it. If I tell them they're only spending a few thousand more and they're going to be saving in the long run, they're going to do it.”



“I would hope so. The couple customers who did the rebate moved to the higher efficiency because of the rebate.”

“It is sometimes cheaper [with the rebate] for them to go with the high-efficiency over the standard efficiency.”

The exception to this perception is boilers. Several trade allies interviewed indicate that boilers are not adequately rebated and that the percentage of incremental cost covered through the program rebate is significantly lower than that of furnaces.

Participating trade allies use the program rebate as a selling point when determining bids for customers. The depressed economy has hit some heating and water heating contractors; in fact, several interviewed heating and water heating businesses said they were in jeopardy of closing prior to the National Grid program. The quotes from participating contractors below reflect how these contractors believed the National Grid program rebate increased sales.

“We liked the incentive on our end and we like to give the customer a discount. On our end it was a REALLY, REALLY big selling point in a down economy. Our business wasn't looking too well and then the rebates came out and it seemed like everyone wanted to take part in the rebate. A lot of our sales were questions regarding the rebates. The rebates made a big difference on the sales.”

“Ability to promote sales. Without the program, sales will decrease significantly. We used the rebate information a lot in our advertising, especially when it first came out.”

4.8 A SUMMARY OF NEW CONSTRUCTION PARTICIPANT INTERVIEWS

Participants in the program included three multi-family new construction cases in addition to single-family residences. We spoke with the owner or manager at each of the three properties.

The experiences of these new construction cases were unique from the general program population. Therefore, we summarize the process findings independently from the other findings.

4.8.1 Means of Program Awareness

The property managers heard about the program in different ways and at different points in construction. The first property owner is on the board of directors for the Long Island Builders Institute (LIBI) and National Grid gave a program presentation at one of the board meetings. This property was already under construction when they heard about the program. Because of the program, the property owner decided to switch to a thermostat that was program eligible.

The second company heard about the program through their architect. The architect mentioned to this respondent that he could save \$200 on each unit if they applied for the rebate.

The third property owner heard about the program through their plumbing contractor. Their program qualifying boilers were already installed at the point they were informed about the program by their contractor.



4.8.2 Motivations for Participation

Participants installing equipment through a new construction venture are motivated to participate in the program for a variety of reasons. The first property manager said that although the architect recommended high-efficiency, the company is moving toward high-efficiency equipment as standard practice, including installation of high-efficiency refrigerators, dishwashers and clothes washers. This respondent would have installed the equipment without the rebate.

The second property manager indicated that codes and standards in the city in which they built the property (city of West Babylon) require all multi-family new construction meet a specified level of efficiency. In order to meet those needs, this property manager was required to install the high-efficiency equipment. In this case, the program had no influence on the equipment decision, and the rebate was a bonus for this participant.

The last property manager leaves the selection of equipment type up to the customers. If the customer wants to install high-efficiency equipment, the property manager will install the equipment. This respondent went through the program to minimize costs. This property manager most likely would have gone with less efficient equipment if the program was not available.



5. RECOMMENDATIONS BY RESEARCHABLE ISSUE

Four overarching researchable issues were identified at the onset of this program evaluation. Below we present the recommendations within these four overarching researchable issues.

5.1 IS THE PROGRAM DESIGN AND INFRASTRUCTURE EFFECTIVELY DELIVERING THE PROGRAM TO COST-EFFECTIVELY MEET ENERGY SAVINGS GOALS?

Continue to collaborate and maintain open communications with all program partners, especially when the suspension of program benefits is under consideration. Interviews revealed that communications and coordination are generally sufficient. However, program contractors discussed the desire for National Grid to continue to provide timely information about the program's status, especially when the program is facing the potential of suspension. While implementation contractors recognize that National Grid may not always have control over the decision to suspend a program or when that decision is made, the more advance notice they have, the better they can plan.

Establish and communicate clear protocols and procedures for their contractors. Discussions with program staff and implementation contractors revealed a desire and need to establish clear protocols and procedures. These include reporting timeframes, required level of information to be included in the data tracking system, and quality assurance processes. National Grid staff have provided this information to implementation contractors through their communications; however, the ability to reference a protocol document will protect the utility and ensure that all parties are familiar and can adhere to National Grid's requirements. National Grid should establish and communicate clear protocols and procedures for their contractors. Doing so could minimize any surprises in regard to their performance against National Grid's expectations. Additionally, clear guidelines will provide contractors with the guidance they need to know what is expected of them in terms of protocols such as communications and reporting.

Review and discuss data required to be tracked for the program. We recognize that the Commission stipulates the type of data that should be collected through the program and that National Grid is following through with that requirement by ensuring EFI is collecting the information as well. However, there is evidence that the requirements are affecting customer satisfaction as well as program cost-effectiveness. We recommend that National Grid, along with their impact evaluation contractor and EFI, proactively identify the most essential fields for the impact evaluation and identify the fields that cause the greatest problems for rebate processing and identify potential efforts to reducing the number of flawed applications. Example efforts may be providing specific directions for the trade allies documenting which fields are critical and why they are critical, detailing more specifically and clearly (other than in the terms and conditions) that the form will be rejected if all fields are not completed and to program specifications. It may also be worthwhile to review the fields that are being collected from a requirement and usability standpoint. There may be potential cost savings for reducing the tracking burden which should be documented.

5.2 IS OUTREACH TO TRADE ALLIES SUFFICIENT TO MOVE CUSTOMERS FROM STANDARD TO HIGH-EFFICIENCY INSTALLATIONS AND SERVICES?

Continue to work with implementation contractors to identify new techniques to market to trade allies and complete a quantitative trade ally market assessment to identify barriers. The contractor market is a primary outreach channel for program participants; therefore, it is critical



that the program continue to identify means to effectively market to this group. Process interviews revealed that program staff discuss methods to increase the effectiveness of marketing to trade allies. Additionally, interviews with contractors discussed ideas that contractors had to better reach trade allies. Often, these ideas are a result of their experience with similar programs in other utility jurisdictions. Particularly in downstate New York, program staff should continue to collaborate with contractors to develop effective outreach techniques. Nonparticipating contractors also indicate that they would like more involvement from National Grid in general. Specifically, they suggested that National Grid provide program information and applications through the mail and visit contractors personally to explain the program.

In addition, we recommend National Grid conduct a more thorough market assessment of the trade ally market to further identify barriers to installation of high-efficiency equipment. This process evaluation included qualitative trade ally interviews. However, there may be value in quantitatively assessing the trade ally market and the barriers for promoting high-efficiency to the residential market.

Last, the program significantly leverages contractor relationships through the oil-to-gas conversion program to inform customers about the energy efficiency market. The program should continue to educate these trade allies about the energy efficiency offerings in addition to the oil-to-gas offerings.

Provide trade allies with additional tools to promote high-efficiency equipment. Participating trade allies were asked what sales tools, marketing materials, or technical assistance were available from National Grid to help them sell high-efficiency heating and water heating equipment. Trade allies express a desire to receive this information and have found ways to get it on their own. They feel it is important to have the information available for their customers.

Trade allies in downstate New York reportedly have more sales tools available to them than those in upstate New York, including an energy calculator. These trade allies found the tools helpful in moving customers from standard to high-efficiency.

Examples of sales tools that trade allies shared interest in include a return on investment calculator and energy savings calculator. Upstate trade allies interviewed expressed a desire to receive similar information. Trade allies also expressed interest in some guidance on how to effectively move customers from standard to high-efficiency equipment.

These sales tools should be distributed to trade allies as part of the outreach and education and training process, to provide them with the means to more effectively up-sell high-efficiency. Additionally, there is the potential for these offerings to increase these allies' satisfaction in National Grid.

Continue to provide outreach, training, and education opportunities to trade allies. Trade allies that attended training or marketing events sponsored by National Grid were generally very complimentary of the offerings. They found value in the information that was provided. And in general nonparticipating trade allies were aware of the program.

We recommend that the program continue to offer these opportunities for trade allies. This is particularly important given the trade allies are a significant source of influence to engage customers and encourage the installation of high-efficiency equipment.

We also recommend that the education opportunities continue to include information on program requirements and accurate completion of program applications, proper installation of high-



efficiency equipment and techniques on installing within more difficult-to-serve buildings (e.g., small multi-unit buildings). A poorly installed unit will reduce the operating efficiencies, thereby reducing the program's impact. Trainings on proper installation techniques will help to circumvent this issue.

The program also provides customized BPI training in downstate New York. Only one contractor interviewed said they completed the BPI trainings; however, program staff report that BPI training has been successfully provided to 79 contractors. There is a continual movement to improve the installation practices through either BPI training or quality assurance training. As savings can be significantly diminished based on poor installation practices, we recommend National Grid continue to offer this training to contractors. Additionally, it will provide additional opportunities to promote the program and overcome barriers to installation of this equipment in New York City in particular.

5.3 HOW EFFECTIVE ARE THE MARKETING EFFORTS TO RESIDENTIAL CUSTOMERS?

Continue to leverage the trade ally infrastructure to promote high-efficiency heating and water heating equipment. A majority of customers report that they first heard of the program from a trade ally. This finding illustrates the significant impact the trade ally infrastructure has on customers' decisions to install high-efficiency equipment. Additionally, while the upstate New York program did not focus on trade ally marketing as much as downstate New York, as the program progress moved so quickly, these trade allies still have the potential to have significant influence on customers' decisions, even outside of the program. Therefore, there is the potential for the program to influence market affects beyond the program itself.

Although a majority of participants remarked that they heard of the program through trade allies, they also voiced a desire to receive information through direct mailings from National Grid. Experience with other heating and water heating program evaluations indicate that some direct mailings, such as bill stuffers, are not as effective as the contractor or retailer infrastructure to reach out to the public. With that said, bill inserts are relatively low cost marketing tools that may be valuable for some customers.

5.4 IS THE PROGRAM ON TRACK TO MEET OR EXCEED ITS ENERGY SAVINGS GOALS?

Complete market analysis when establishing program goals to manage expectations and avoid suspension of program offerings. Programs, especially those that are relatively new, may experience surprising performance issues. Often, these unexpected results are due to poorly set program goals. Understanding the market in which a program is offered is essential in establishing the program goals. The level of market understanding needs to go beyond the number of customers and take into consideration region-specific barriers and infrastructure issues.

One unfortunate byproduct of unrealistic goals is the need to suspend a program when the program goals are set too low for the market in which the program is offered. While often necessary for budgetary reasons, this action has the potential to negatively affect customers' and trade allies' satisfaction with the utility, as well as decrease the level of trust in the utility and its energy efficiency programs. As an example, the trade allies interviewed for this process evaluation discussed that they use the program to up-sell high-efficiency equipment. If the contractor includes the rebate as part of the bid process but the program, unbeknownst to the contractor, is suspended, then the contractor is faced with a dissatisfied customer and/or the need to cover the value of the rebate.



There are also cost-effectiveness implications of discontinuing a program early in the program. Much of the up-front costs are incurred at the onset of the program as protocols and procedures are established; therefore the program becomes more cost-effective over time. Discontinuing a program early in its cycle decreases the cost-effectiveness of the program.

The program was suspended in upstate New York as the program oversubscribed quickly. Although even a well designed market study may not have predicted the exact level of uptake in the region, it would have shown that the goals that were established were not realistic relative to those established in downstate New York, especially New York City.

We recommend program staff continue to review the market in light of program goals, especially as the program is reinstated per the June 24, 2010 Order and continues to receive scrutiny from the Commission. One means of conducting a market assessment is through a baseline study. The Commission is currently considering planning a baseline study for the state of New York. For future program planning efforts, this baseline study is one means for providing an assessment of the population by utility and service territory. The utility can also achieve similar results using a customer market survey.

Review the heating measures rebated and incentive values provided through the program by region in light of potential net-to-gross issues. The program rebates heating equipment as low as 90 percent AFUE, although the most commonly rebated measure is 92 percent AFUE furnaces. The benchmarking review identified that this level of efficiency is the lowest amongst the utilities reviewed and that other programs are more commonly rebating a minimum efficiency level of 92 percent AFUE with a number of utilities moving to a minimum efficiency level of 94 percent or 95 percent AFUE. Two utilities are offering as high as 96 percent AFUE forced air furnaces.

Interviews with trade allies revealed that they feel there could be some performance issues as the furnace efficiency increases and that a poorly installed 94 percent AFUE furnace will not outperform a 90 percent AFUE furnace. Additionally, the incremental cost for installing the highest efficiency units may not be economically feasible or cost-effective for participants. This is particularly true in downstate New York where cost barriers are already identified as an issue.

However, we believe providing rebates for the 90 percent AFUE rated furnaces (and perhaps even the 92 percent AFUE rated furnaces) may not be the most effective for reaching net impact goals. First, the lower efficiency units are traditionally more likely to result in higher free-ridership levels. Second, increasing the efficiency requirements would allow the program to manage its budget and progress better in upstate New York as it is probable that fewer customers would participate with the higher efficiency requirements. Third, lower efficiency equipment traditionally yield lower net-to-gross ratios (through higher free-ridership rates). Increasing the efficiency level could mean increased net-to-gross ratios for the program.

Additionally, there is a movement toward increased federal standards. These federal standards will move the baseline to 90 percent AFUE for New York. Reaching savings goals and gaining contractor buy-in should these standards change may prove to be difficult if the program does not begin pushing the high-efficiency HVAC market earlier.

Similarly, the incentives should be evaluated taking into consideration the unique barriers presented by each region. The utility benchmarking review identified that the incentive values may be set too high for some measures, such as the higher efficiency forced air furnaces with ECM motors. The higher incentive values may be necessary for downstate New York where the costs are traditionally higher to retrofit buildings with high-efficiency models; however, in upstate New



York such a high incentive may not be necessary. Decreasing the incentives may help to manage the budget, although free-ridership could also increase with those reduced incentive levels.

Increasing the required efficiency levels and reducing incentives in upstate New York may help to manage the budget while encouraging the transformation of the market toward higher efficiency levels. The June 24, 2010, order, in addition to reinstating the program in upstate New York, also mandated a decrease in incentives in upstate New York. This is a deviation from the previous mandate that the state be consistent in its program design, including incentive levels. The reduced incentives will help the program manage the program budget; however, the program will need to be cognizant of potentially higher free-ridership rates that can accompany reduced incentive levels.

Ensure any net-to-gross estimation techniques take into consideration the federal stimulus funded tax incentives. Net-to-gross evaluations are confounded by the potential impact of the federal tax credits. It is often difficult to separate the true impact of the program when a significant tax credit exists for the same equipment that is covered by the rebate. Respondents that received or planned to receive a tax credit for their purchases exhibited a greater tendency toward free-ridership than those that did not receive this credit. Should the impact evaluation require the net-to-gross estimates be assessed while the tax credit is available to customers, it will be important that the approach include a means for separating the impact of that tax credit from the rebate itself.



APPENDIX A: PARTICIPANT TRADEALLY INTERVIEW GUIDE

National Grid

Residential High-Efficiency Heating and Water Heating and Controls Program (Participating Contractor Interview Guide)

Key researchable areas:

- Develop a basic understanding of contractor's business and customer base.
- Learn about reasons for contractor participation, how they heard about the program, and the types of training and education they received.
- Gauge their customers' knowledge of the program, and the factors driving customer decision-making processes (including barriers to participation).
- Assess rebate levels and program equipment offerings. Are they optimally set to encourage customer participation while maximizing the cost-effectiveness of the program?
- Understand impact of the program on contractor's business practices.
- Collect contractor's perspective of the current and future residential heating market in upstate and downstate New York.

[Sampling] Stratify sample by equipment to capture all types – will concentrate interview on their most rebated equipment type.



Introduction

- **Interviewee Name:**
- **Date:**
- **Location:** upstate NYC LI
- **Company:**
- **Title:**
- **Interviewer:**
- **Interview Length:**

[If possible, research the company website before interview]

My name is _____, with PA Consulting Group. National Grid has hired us as an independent program evaluator for the New York Energy Efficiency programs. According to their records, your firm has sold heating systems or water heaters that were rebated through their Residential High-Efficiency Heating and Water Heating and Controls Program, and I would like to ask you about your experiences in participating with the program.

This interview should take approximately 30 minutes. Can we take some time now to do the interview?

Your responses are completely confidential, and no organization will be able to identify you or your responses from the survey information that is collected.

[IF YES, SKIP TO FIRMOGRAPHICS]

[IF NO] Can you tell me who would be the best person to speak to regarding your company's involvement in the National Grid residential heating program?

_____ [RECORD NAME]

Can you transfer me, or provide their phone number?

_____ [RECORD NUMBER]

[IF DOES NOT KNOW WHO IN THE COMPANY IS THE RIGHT PERSON, THANK THE RESPONDENT AND TERMININATE]



1. Firmographics

- a. Does your company actively promote and sell to residential customers:
 - i. Heating systems
 - ii. Water heaters
 - iii. Controls such as thermostats and boiler reset controls
- b. What percent of your firm's total sales is from (READ EACH TYPE SOLD)
 - i. _____ residential heating systems
 - ii. _____ residential water heaters
 - iii. _____ controls
- c. What is your primary role in the supply, delivery, and installation of heating/water heating equipment to the residential customer market? (e.g., *manufacturer, manufacturer representative, wholesale distributor, Engineer, Contractor, Energy Services, Dealer, Other?*)
- d. Could you please tell me specifically the types of heating/water heating equipment you recommend or sell to residential customers? (*Probe for the manufacturers, the types, sizes, range of efficiency levels*)
- e. What percent of your residential customer installations are planned equipment replacements or failed/emergency equipment replacement? What changes, if any, have you seen in this distribution of customers over time? What do you think might be the reasons for these changes or for the market remaining the same?
- f. In what types of buildings do you work? What percent of the buildings are:
 - i. Single family _____%
 - ii. Two to four unit buildings _____%
 - iii. Five and greater unit low-rises _____%
 - iv. Five and greater unit high-rises _____%
- g. [UPSTATE] Are you a licensed New York contractor?

2. Program Awareness and Involvement

- a. Could you describe your involvement in National Grid's High-Efficiency Residential Heating and Water Heating and Controls program? (*Repeat description if necessary. Probe for reasons participates at the reported level of activity*)
- b. How did you first hear about the program? From what source? When did you first get involved?
- c. What motivated your involvement?



- d. Did you participate in the interim residential heating program that ended in June 2009? Have you experienced any difficulty transitioning to the current program?
- e. Who do you typically interact with from the program? How would you describe your interactions with them? (*Minimal, helpful, very involved, probe to characterize*)
- f. Do you feel there are adequate program communications with you (probe for improvements such as communication regarding changes in program requirements)? How do you like to receive communications about the program (*i.e. email, U.S. mail, program representative, and website*)?
- g. What are the primary benefits you receive from the program?
- h. The program database shows that you served [x] customers through the program since July 2009. About what percent of your total residential heating/water heating customers did this represent for 2009?
- i. Prior to your involvement with the program, what percentage of your customers typically installed high-efficiency [heating systems / water heating equipment]? (*Ask for each efficiency level relevant for the contractor.*)
 - i. Furnace that is rated with a [90%, 92%] AFUE or higher?
 - ii. Furnace that is rated with a [92%, 94%, 95%] AFUE or higher with an ECM motor?
 - iii. Water boilers with a [85%, 90%] AFUE or higher?
 - iv. Indirect water heaters?
- j. What are these percentages now that you're participating in the program? (*Ask of all mentioned above*)
- k. On a scale of 0 to 10 where 0 is very difficult and 10 is not at all difficult, how difficult do you find it to sell high-efficiency heating/water heating equipment to your customers?
 - i. What barriers, if any, did you experience selling the equipment, including barriers from both an equipment and customer perspective?
 - ii. What has made it easier to sell high-efficiency equipment?
 - iii. What could be done to make it easier? What, if any, information do customers need when buying high-efficiency heating systems and water heating equipment?
- l. On a scale of 0 to 10, where 0 is no influence and 10 is a great deal of influence, how much influence would you say the program has had on your sales of high-efficiency [heating systems / water heating equipment]?
- m. Do the customers who participate in the residential heating program differ from your typical customer? (*e.g., income, knowledge of energy efficiency*)
 - i. If yes, how do they differ?



- n. Do you expect your customers' participation in the program to increase, decrease or stay the same next year? (*Probe: Why?*)
 - i. If decrease, what could the program do to increase customer involvement?
- o. Are you aware of other energy efficiency programs offered by other utilities or NYSERDA (e.g., *NYSERDA Home Performance*)?
 - i. If yes, do you participate in any of them?
 - 1. [If yes] Do you think there are lessons for National Grid to learn from your experiences with the other programs?
- p. Are you aware of federal tax incentives for heating systems and water heater equipment?

3. Customer Interaction

- a. When specifying equipment for customers, do you always, sometimes, seldom or never discuss high-efficiency equipment options? (*Probe for what options they typically discuss*).
- b. What percent of your customers do you inform about the Residential High-Efficiency Heating and Water Heating and Controls Program?
- c. Do you include the rebate as a standard component in your bids? [If yes] Do you inform customers that the rebate is included in the bid?
- d. What percent of your customers know about the National Grid program before you tell them about it?
 - i. How did they find out about the program?
- e. On a scale of 0 to 10 where 0 is not important and 10 is very important, how important has the rebate been on getting customers to install high-efficiency heating/water heating equipment?
- f. How much weight does the federal tax credit have on customers' decision to install high-efficiency?
- g. Do you think the federal tax credit holds more, less, or the same amount of weight in customers' decision-making processes as the National Grid Rebate? Why do you say that?
- h. Based on your experiences, what can the program do to make customers more receptive to installing high-efficiency equipment?
- i. What factors influence the type of equipment your customer's purchase? (*Ask about mentioned factors, which are the one or two most important in influencing customer's decisions? Probe for differences among single-family and multi-family, and differences for new construction and retrofits.*)
 - i. Ask about the following factors if not mentioned:



1. Equipment cost
 2. Program rebate availability
 3. National Grid information on the benefits of energy-efficient technologies
 4. Manufacturer, supplier, or contractor recommendation
 5. Desire to reduce gas bills
 6. Help the environment
 7. Other (specify)
- ii. Which factor seems to be the most important to customers? Why do you say that?
- j. What tools are available from National Grid that helps you sell high-efficiency heating/water heating equipment to customers?
- i. Are there additional types of technical assistance, sales tools or marketing materials you would like National Grid to provide to help sell high-efficiency equipment?
- k. Based on your experience, what are the main benefits your customers receive by participating in the program?
- l. What are the main benefits that you receive by selling high-efficiency equipment through the program?
- m. What additional services would you like to see the program provide customers?
- n. [UPSTATE] In 2009 the program has enjoyed strong participation. What do you think are some of the reasons for the success?
- o. [UPSTATE] Do you think the strong program participation will continue in 2010 and 2011?
- p. [DOWNSTATE] In 2009 the program has experienced slow growth in participation.
- i. What do you think are some of the reasons for this? (Discuss issues below if not mentioned)
 1. Program awareness (contractor and/or residential market)
 2. Housing stock (multi-family)
 3. Supply chain
 4. Installation problems (*contractor willing: discuss details of systems and venting codes not allowing high-efficiency*)
 5. Program marketing
 6. EE education
 7. Rebate levels
 8. Resistance to change



9. Other

- ii. In your opinion, what is the primary barrier? *(Identify reasons if not already explained)*
- q. In your opinion, what can the program do in the future to increase contractor involvement?
- r. Are there other opportunities to promote energy-efficient heating and water heater products and services to customers that the program is not currently addressing?
- s. Would you like to see the program do more direct marketing to customers? *(If yes, what kind of marketing would you like to be added?)*

4. Training

- a. Did you attend one of the National Grid sponsored residential heating program trainings?
 - i. [IF YES] What training did you attend?
 - ii. [IF YES] On a scale of 0 to 10, where 0 is not at all helpful and 10 is very helpful...
 1. How helpful was this training to you in understanding the program requirements?
 2. How helpful was this training in helping you effectively sell and market the program to your customers? (specifically discussion of payback times)
 3. In your opinion, did the training provide the right amount and level of information? (If no, what additional information is needed?)
 - iii. [IF NO] Do you plan on attending a National Grid sponsored residential heating program training? (If yes, When?)
- b. [DOWNSTATE] Are you BPI certified? [BPI=Building Performance Institute]
- c. [DOWNSTATE] Are you familiar with National Grid's Value Plus Installers (VPI) system? Are you a VPI contractor?

5. Satisfaction

- a. On a scale of 0 to 10, where 0 is not at all satisfied and 10 is very satisfied, how satisfied would you say you are with the National Grid Residential High-Efficiency Heating and Water Heating and Controls Program? What are the reasons for your answer?
- b. How would you improve the program?

6. Program Procedures



- a. How difficult is the program's administrative and application requirements for contractors? (e.g., contractor agreement, recruitment meetings, and training seminars)
- b. Have you received any feedback from your customers about the rebate form or the rebate submission and payment process? (If yes, what have they mentioned?)
- c. Would you prefer to go online to download applications or receive applications pre-printed through the program? Have the current online downloads had any effect on the number of rebates you submit?
- d. How willing would you be to apply for the rebates online? Would that affect the number of rebates you process? Why or why not?
- e. Do you think the customer rebates are effective for moving customers from standard to higher efficiency?
 - i. How would you like to see the rebate structure revised?

7. Heating/Water Heating Market

- a. One of the purposes of the program is to increase customer demand for energy efficient equipment. Do you feel the program is accomplishing this? Why or why not?
 - i. How could the program be more effective at increasing customer demand?
 - ii. Do you believe that demand would continue to increase, stay the same, or decrease if the program were discontinued?
- b. In the next two years, what direction do you see the heating/water heating market taking in [upstate/downstate] New York?
 - i. What are the specific opportunities?
- c. Do you stock equipment or equip your service vehicles differently since participating in the program?

8. Conclusion

- a. Just to wrap-up, is there anything else that we haven't discussed that you would like to note?

I've appreciated the opportunity to speak with you. Thank you for your time.



APPENDIX B: NONPARTICIPANT TRADE ALLY INTERVIEW GUIDE

National Grid

Residential High-Efficiency Heating and Water Heating and Controls Program (Nonparticipating Contractor Interview Guide)

Key researchable areas:

- Develop a basic understanding of contractor's business and customer base.
- Gauge the customers' and contractors' knowledge of the program
- Understand contractor's business practices.
- Collect contractor's perspective of the current and future residential heating market in upstate and downstate New York.

[Sampling] Sample is selected by identifying contractors in NY State in areas similar to those included in the program database and comparing those contractors to participating contractors to identify non-participants.

Introduction

- **Interviewee Name:**
- **Date:**
- **Location:** upstate NYC LI
- **Company:**
- **Title:**
- **Interviewer:**
- **Interview Length:**

[If possible, research the company website before interview]

My name is _____, with PA Consulting Group. National Grid has hired us as an independent program evaluator for the New York Energy Efficiency programs, one of which is the Residential Heating, Water Heating and Controls Program. We were hoping to speak with you to understand the residential HVAC market and your standard practices related to HVAC and water heating equipment.

This interview should take approximately 15-30 minutes. Can we take some time now to do the interview?

Your responses are completely confidential, and no organization will be able to identify you or your responses from the survey information that is collected.

[IF YES, SKIP TO FIRMOGRAPHICS]



[IF NO] Can you tell me who would be the best person to speak to regarding your company's involvement in the National Grid residential heating program?

_____ [RECORD NAME]

Can you transfer me, or provide their phone number?

_____ [RECORD NUMBER]

[IF DOES NOT KNOW WHO IN THE COMPANY IS THE RIGHT PERSON, THANK THE RESPONDENT AND TERMINATE]

1. Firmographics

- b. Does your company actively promote and sell to residential customers:
 - i. Heating systems
 - ii. Water heaters
 - iii. Controls such as thermostats and boiler reset controls
 - iv. Central air conditioners
- c. What percent of your firm's total sales is from (READ EACH TYPE SOLD)
 - i. _____ residential heating systems
 - ii. _____ residential water heaters
 - iii. _____ controls
 - iv. _____ Central air conditioners
- d. What is your primary role in the supply, delivery, and installation of heating/water heating equipment to the residential customer market? (*e.g., manufacturer, manufacturer representative, wholesale distributor, Engineer, Contractor, Energy Services, Dealer, Other?*)
- e. Could you please tell me specifically the types of heating/water heating equipment you recommend or sell to residential customers? (*Probe for the manufacturers, the types, sizes, range of efficiency levels*)
- f. What percent of your residential customer installations are planned equipment replacements or failed/emergency equipment replacement? What changes, if any, have you seen in this distribution of customers over time? What do you think might be the reasons for these changes or for the market remaining the same?
- g. In what types of buildings do you work? (Single family, multi-family, etc.)
- h. [UPSTATE] Are you a licensed New York contractor?



9. Program Awareness and Involvement

- a. Are you aware of National Grid's Residential High-Efficiency Heating and Water Heating and Controls Program? *(Describe if necessary)*
 - i. How do you like to receive communications about National Grid's programs *(i.e. email, U.S. mail, program representative, and website)*?

[IF NOT AWARE, SKIP TO NEXT SECTION]

- b. Have you worked with any customers that participated in the program?
- c. How did you first hear about the program? From what source? When did you first get involved?
- d. Did you participate in the interim residential heating program that ended in June 2009?
- e. What percentage of your customers typically installed high-efficiency [heating systems / water heating equipment]? *(Ask for each efficiency level relevant for the contractor.)*
- f. On a scale of 0 to 10 where 0 is very difficult and 10 is not at all difficult, how difficult do you find it to sell high-efficiency heating/water heating equipment to your customers?
 - i. What barriers, if any, do you experience selling the equipment, including barriers from both an equipment and customer perspective?
 - ii. What has made it easier to sell high-efficiency equipment?
 - iii. What could be done to make it easier? What, if any, information do customers need when buying high-efficiency heating systems and water heating equipment?
- g. Are you aware of other energy efficiency programs offered by other utilities or NYSERDA *(e.g., NYSERDA Home Performance)*?
 - i. If yes, do you participate in any of them?
 - 1. [If yes] Do you think there are lessons for National Grid to learn from your experiences with the other programs?

10. Customer Interaction

- a. When specifying equipment for customers, do you always, sometimes, seldom or never discuss high-efficiency equipment options? *(Probe for what options they typically discuss).*
- b. What percent of your customers do you inform about National Grid's Residential High-Efficiency Heating and Water Heating and Controls program?
- c. Do you include National Grid's rebate as a standard component in your bids? [If yes] Do you inform customers that the rebate is included in the bid?



- d. On a scale of 0 to 10 where 0 is not important and 10 is very important, how important is a rebate in getting customers to install high-efficiency heating/water heating equipment?
- e. How much weight does the federal tax credit have on customers' decision to install high-efficiency?
- f. Do you think the federal tax credit holds more, less, or the same amount of weight in customers' decision-making processes as a rebate? Why do you say that?
- g. What factors influence the type of equipment your customer's purchase? (*Ask about mentioned factors, which are the one or two most important in influencing customer's decisions? Probe for differences among single-family and multi-family, and differences for new construction and retrofits.*)
 - i. Ask about the following factors if not mentioned:
 1. Equipment cost
 2. Program rebate availability
 3. National Grid information on the benefits of energy-efficient technologies
 4. Manufacturer, supplier, or contractor recommendation
 5. Desire to reduce gas bills
 6. Help the environment
 7. Other (specify)
 - ii. Which factor seems to be the most important to customers? Why do you say that?
- h. What tools do you would you like to have to help sell high-efficiency heating and/or water heating equipment to customers?
- i. [DOWNSTATE] In 2009 the program has experienced slow growth in participation.
 - i. What do you think are some of the reasons for this? (Discuss issues below if not mentioned)
 1. Program awareness (contractor and/or residential market)
 2. Housing stock (multi-family)
 3. Supply chain
 4. Installation problems (*contractor willing: discuss details of systems and venting codes not allowing high-efficiency*)
 5. Program marketing
 6. EE education
 7. Rebate levels
 8. Resistance to change
 9. Other



- ii. In your opinion, what is the primary barrier? *(Identify reasons if not already explained)*
- j. In your opinion, what can the National Grid Residential High-Efficiency Heating and Water Heating and Controls Program do in the future to increase contractor involvement?
- k. Are there other opportunities to promote energy-efficient heating and water heater products and services to customers that the program is not currently addressing?

11. Training

- a. Have you ever attended any trainings offered by National Grid?
 - i. [IF YES] What training did you attend?
 - ii. [IF YES] On a scale of 0 to 10, where 0 is not at all helpful and 10 is very helpful...
 1. How helpful was this training to you in understanding the program requirements?
 2. How helpful was this training in helping you effectively sell and market the program to your customers? (specifically discussion of payback times)
 3. In your opinion, did the training provide the right amount and level of information? (If no, what additional information is needed?)
 - iii. [IF NO] Do you plan on attending a National Grid sponsored residential heating program training? (If yes, When?)
- b. [DOWNSTATE] Are you BPI certified? [BPI=Building Performance Institute]
- c. [DOWNSTATE] Are you familiar with National Grid's Value Plus Installers (VPI) system? Are you a VPI contractor?
- d. In the next two years, what direction do you see the heating/water heating market taking in [upstate/downstate] New York?
 - i. What are the specific opportunities?

12. Conclusion

- a. Just to wrap-up, is there anything else that we haven't discussed that you would like to note?

I've appreciated the opportunity to speak with you. Thank you for your time.



APPENDIX C: PROGRAM PARTICIPANT INTERVIEW GUIDE

<p>NATIONAL GRID</p> <p>RESIDENTIAL HIGH-EFFICIENCY HEATING AND WATER HEATING AND CONTROLS PROGRAM</p> <p>(UPSTATE AND DOWNSTATE)</p> <p>PARTICIPANT SURVEY</p>

[SURVEY INSTRUMENT SECTIONS]

- Introduction
- Source of Program Information
- Experience with the Program
- Equipment Options
- Decision Making Processes
- Other Equipment Purchases
- Energy Awareness
- Housing and Demographics

[SAMPLE INFORMATION – Respondent could have multiple measures]

[Measure type]:

- 1 Furnace
- 2 Boiler
- 3 Water heater
- 4 Duct and Air Sealing
- 5 Control
- 6 Thermostat

[Measure]:

- 1 Energy Efficient Furnace
- 2 Energy Efficient Boiler
- 3 Boiler Reset Control
- 4 Energy Efficient Indirect Water Heater
- 5 Programmable Thermostat
- 6 Duct and Air Sealing

Location of installation: [Address]
Date of installation: [Date]
Amount of rebate: [Incentive amount] for primary measure



Introduction

C1 Hello, my name is [interviewer name], and I'm calling on behalf of National Grid. May I speak with [named respondent]?

- 1 Yes
- 2 No [If named respondent is not available: ask for another adult who is familiar with the household's recent heating or water heating purchases.]

C2 I'm with PA Consulting Group, an independent research firm. We are speaking with households about a program offered by National Grid called the High-Efficiency Heating and Water Heating and Controls Program. Did your household participate in this program?

[IF UNSURE: You may also know National Grid as Niagara Mohawk or KeySpan.]

- 1 Yes [SKIP TO C6]
- 2 No

C3 [IF C2=2] You may have participated around [date]. Through this program, you could have received equipment such as energy efficient furnaces, boilers, and water heaters. Do you recall receiving this equipment through the program?

- 1 Yes [SKIP TO C6]
- 2 No

C4 [IF C3=2] Is it possible that someone else in your household would be familiar with the heating program?

- 1 Yes
- 2 No [THANK AND TERMINATE]
- D DON'T KNOW [THANK AND TERMINATE]
- R REFUSED [THANK AND TERMINATE]

C5 May I please speak with that person?

- 1 Yes [BEGIN THE SURVEY AGAIN (C2) WITH NEW R]
- 2 No [THANK AND TERMINATE]
- D DON'T KNOW [THANK AND TERMINATE]
- R REFUSED [THANK AND TERMINATE]

Great, thank you. First, I'd like to assure you that I'm not selling anything; I'd just like to ask your opinion about this program. Your responses will be kept confidential. For quality and training purposes this call will be recorded.

I'm with PA Consulting Group, an independent research firm. We are talking to National Grid customers to understand their views on energy use, and participation in National Grid's energy



efficiency program. You should have received a letter a couple of days ago explaining the purpose of this call. I'm not selling anything; I'd just like to ask you some questions about your experience with the High-Efficiency Heating and Water Heating and Controls Program offered by National Grid. The information that you provide will help National Grid to improve its programs.

[ONLY SHOW BELOW SCREEN INFORMATION IF NECESSARY]

(Who is National Grid? National Grid is an energy delivery company serving New York City, Long Island, and upstate New York. They administer energy efficiency programs including the residential heating program in which you participated in 2009 or 2010.)

(Timing: This survey should take about 15 minutes. *IF NOT A GOOD TIME, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070.*)

(Sales concern: This is not a sales call; we would simply like to learn about your household's experiences with National Grid's High-Efficiency Heating and Water Heating and Controls Program. Your responses will be kept confidential. If you would like to talk with someone at National Grid regarding this work, please call Beth Williams at 718-403-2021.)

C6 Could you please confirm that you received a rebate for (a/an) [all measure types] through the program?

- 1 Yes
- 2 No [SPECIFY: What is incorrect?]
- D DON'T KNOW

[IF INCORRECT AND DIDN'T RECEIVE REBATE FOR ANY MEASURES, THANK AND TERMINATE]

C7 Were you personally involved in the decision of whether or not to purchase the [all measures] that received a rebate through the High-Efficiency Heating and Water Heating and Controls Program?

- 1 Yes
- 2 No [SPECIFY: May I speak with the person who made this decision?]

Source of Program Information

P1 How did you hear about the rebate for [all measures] available through the High-Efficiency Heating and Water Heating and Controls Program?

[DO NOT READ; SELECT ALL THAT APPLY]

- 1 National Grid (call center)
- 2 National Grid (utility bill insert)
- 3 National Grid (email newsletter)
- 4 National Grid website or Power to Save Website
- 5 3% Initiative/ mailing
- 6 From participation in another National Grid program [SPECIFY PROGRAM]
- 7 Direct mailing from National Grid



- 8 Heating Contractor or retailer
- 9 Builder
- 10 Retail store (e.g., Home Depot, Lowes)
- 11 Home show/conference/trade show
- 12 Realtor
- 13 Newspaper
- 14 Radio
- 15 Television
- 16 Friend/family member
- 17 Other [SPECIFY]
- 18 DON'T KNOW

P2 [IF P1<>8] Did the contractor or retailer that you purchased the [all measure types] from mention that you could receive a rebate if you purchased an [all measures]?

- 1 Yes [SPECIFY: What did they discuss?]
- 2 No
- D DON'T KNOW

P3 [IF P1=8 OR P2=1] Did you know about the rebate before it was mentioned to you by the contractor or retailer?

- 1 Yes
- 2 No
- D DON'T KNOW

P4 How would you prefer to receive information from National Grid about their energy efficiency programs? [READ LIST; SELECT ALL THAT APPLY]

- 1 Utility bill insert
- 2 Email newsletter
- 3 Website or Power of Action website
- 4 Direct mailing
- 5 Contractor
- 6 Radio
- 7 Other [SPECIFY]
- 8 DON'T KNOW



Experience With The Program

- E1** In addition to the retailer or installation contractor, who else did you interact with as part of the program? [DO NOT READ; SELECT ALL THAT APPLY]
- 1 National Grid staff
 - 2 EFI (rebate processor and customer service contractor)
 - 3 Customer service
 - 4 No one else
 - 5 Other [SPECIFY]
 - 6 DON'T KNOW
- E2** As part of the installation process did the contractor...? [READ LIST; RECORD YES, NO, DON'T KNOW]
- A Give you any brochures or literature about ways you can save energy in your home?
 - B Show you how to maintain your new equipment?
 - C [IF RECEIVED A WATER HEATER] Discuss what temperature you should keep your water heater set to?
 - D [IF RECEIVED A WATER HEATER] Show you how to adjust your water heater temperature?
 - E [IF RECEIVED A BOILER OR FURNACE] Discuss adjusting your heating temperature at different times of the day in order to save energy?
 - F [IF RECEIVED A BOILER OR FURNACE] Show you how to adjust your heating temperature?
 - G Discuss with you the potential energy savings you might realize by installing an energy efficient [measure type]
- E3** Did the contractor experience any difficulties in installing the equipment in your home?
- 1 Yes [SPECIFY: Could you explain the difficulties?]
 - 2 No
 - D DON'T KNOW
- E4** I am going to read a list to you. Please rate your level of satisfaction for each item using a scale of 0 to 10 where 0 is not at all satisfied and 10 is very satisfied. I'll follow-up with a question on why you rated it the way you did. How satisfied were you with the . . . ? [READ AND ROTATE LIST]
- A Rebate amount
 - B Amount of time it took to receive the rebate
 - C [IF E1=1,2,3] Interactions with program staff
 - D The operation of the new equipment
 - E The amount of paperwork required to receive a rebate
 - F Information explaining the program



E4b [For each item in E4 rated <=4] You said you were dissatisfied with [insert item]. Why do you say that?

[OPEN ENDED RESPONSES]

E5 Using the same 0 to 10 scale, with 0 being very dissatisfied and 10 being very satisfied, please tell me how satisfied you are overall with National Grid's High-Efficiency Heating and Water Heating and Controls Program?

____ [0-10]

88 DON'T KNOW [SKIP TO E6]

E5a Why do you rate your overall level of satisfaction a [SHOW RESPONSE]?

[OPEN ENDED RESPONSES]

E6 As a result of your involvement with the High-Efficiency Heating and Water Heating and Controls Program, would you say you are more satisfied, just as satisfied, or less satisfied with National Grid as your energy provider?

- 1 More satisfied
- 2 Just as satisfied
- 3 Less satisfied
- D Don't know [SKIP TO E8]
- R Refused [SKIP TO E8]

E7 Why do you say that?

[OPEN ENDED RESPONSES]

E8 What benefits, if any, have you realized in your home as a result of purchasing the [measure] through the National Grid High-Efficiency Heating and Water Heating and Controls Program?

[DO NOT READ; INDICATE ALL THAT APPLY]

- 1 Reduced energy costs
- 2 Increased comfort
- 3 Increased safety
- 4 Better understanding of energy efficient options
- 5 Better understanding of maintenance issues
- 6 Helping the environment
- 7 No benefits
- 8 Other [SPECIFY]
- 9 DON'T KNOW

E9 What changes to the program would you recommend?

[OPENENDED RESPONSES]



E10 Have you recommended the program to others?

- 1 Yes
- 2 No

Equipment Questions

Now I have just a few questions about your old and new [measure].

T1a Did the [measure] you purchased replace an existing [measure type]?

- 1 Yes
- 2 No [SPECIFY: Why did you decide to purchase?]
- D DON'T KNOW

T1b Approximately how old was the equipment you replaced?

- 1. Less than 5 years old
- 2. 5 to 10 years old
- 3. 11 to 20 years old
- 4. 21 to 30 years old
- 5. More than 30 years old
- D DON'T KNOW
- R. REFUSED

T2 [IF T1a=1] How would you describe the working condition of the old equipment? Was it in good, fair, poor, or non-working condition?

- 1 Good
- 2 Fair
- 3 Poor
- 4 Non-working
- D DON'T KNOW

T3 Is the new [measure] still installed and operating?

- 1 Yes [SKIP TO T5]
- 2 No

T4 Why is it no longer installed and operating? [DO NOT READ; SELECT ALL THAT APPLY]

- 1 Equipment didn't work properly
- 2 Equipment failed/broke
- 3 [IF RECEIVED A WATER HEATER] Didn't provide enough hot water
- 4 Never installed [SPECIFY: Why wasn't it installed?]
- 5 Other [SPECIFY]
- 6 DON'T KNOW



Decision-making Processes

- T5** Why did you decide to purchase the high-efficiency rather than the standard efficiency equipment? [SELECT ALL THAT APPLY]
- 1 The rebate made it affordable
 - 2 The information from the contractor really encouraged high-efficiency
 - 3 To save money on energy bill
 - 4 To save energy
 - 5 Environmental reasons
 - 6 Knew wanted to purchase high-efficiency anyway
 - 7 Other [SPECIFY]
 - 8 DON'T KNOW
- T6a** Our records show that you received a rebate of [REBATE VALUE] for [measure]. Is this correct?
- 1 Yes
 - 2 No [SPECIFY: What amount did you receive? (RECORD AMOUNT)]
 - D Don't know
- T6b** At what point in your decision to purchase a [measure type] were you when you found out about the rebate offered through the program? [READ LIST AND INDICATE RESPONSE]
- 1 Had you already been thinking about purchasing some type of [measure type]?
 - 2 Began collecting information about [measure type]?
 - 3 Decided to buy a [measure type]?
 - 4 Already installed the [measure]?
 - 5 [DON'T READ] Other [SPECIFY]
 - D DON'T KNOW
- T7** Did you know that [measure type] came in different levels of efficiency prior to purchasing yours through the program?
- 1 Yes
 - 2 No
 - D DON'T KNOW
- T8** How did you first learn that the equipment came in different efficiency levels?
- 1 Contractor informed me
 - 2 Through National Grid literature or the 3% campaign
 - 3 Through the National Grid or the Power of Action website
 - 4 Interaction with program staff
 - 5 Interaction with equipment suppliers like Lowes, Home Depot, etc.
 - 6 Research on the Internet
 - 7 Other [SPECIFY]
 - D DON'T KNOW



T9 When the contractor provided the bid to you, did they include the value of the rebate?

- 1 Yes
- 2 No [SKIP TO T11]
- D DON'T KNOW [SKIP TO T11]

T10a Did they let you know that the rebate was included in the initial bid up-front?

- 1 Yes
- 2 No
- D DON'T KNOW

T10b Did the contractor discuss with you the estimated savings in energy costs that you would receive from the energy efficient equipment?

- 1 Yes
- 2 No
- D DON'T KNOW

T10c Did the contractor tell you how long it would take to pay for the incremental cost of the energy efficient equipment through your energy savings?

- 1 Yes
- 2 No
- D DON'T KNOW

T11 Did the contractor also provide you a quote for standard efficiency [measure type] options in the initial bid?

- 1 Yes
- 2 No
- D DON'T KNOW

T12a At the time you were making the decision to participate, did you have any concerns about participating in the program?

- 1 Yes
- 2 No
- D Don't know
- R Refused

T12b [T12a = 1] What were those concerns? [DO NOT READ. INDICATE ALL THAT APPLY]

- 1 Equipment purchase cost
- 2 Equipment Installation cost
- 3 Equipment operating cost
- 4 Payback /Taking too long to recover the cost of installing the equipment
- 5 Reputation of contractor or brand of equipment
- 6 Reliability of equipment



- 7 Speed of installation
- 8 Accommodating the equipment / Fitting equipment into available space
- 9 Construction needed in house to install the equipment
- 10 Whether would actually receive rebate as advertised
- 11 Choosing the right equipment
- 12 Other [SPECIFY]
- 13 DON'T KNOW

T12c [IFT12a=1] How did you overcome those concerns? [RECORD VERBATIM]

T13 If the rebate for the [measure] had not been available through the National Grid High-Efficiency Heating and Water Heating and Controls Program, would you have purchased any [measure type] at that same time?

- 1 Yes
- 2 No
- D DON'T KNOW

T13a [IF T13 = YES] On a 0 to 10 scale, with 0 being not at all likely and 10 being very likely, how likely is it that you would have bought the same [measure] if you had not received this rebate from National Grid?

_____ [0-10]
88 DON'T KNOW

T14 Did you receive additional financial assistance, rebate or tax incentive from someone other than the High-Efficiency Heating and Water Heating and Controls Program to purchase the [measure type]?

- 1 Yes
- 2 No [SKIP TO T17]
- D DON'T KNOW [SKIP TO T17]

T15 Who did you receive it from? [READ LIST]

- 1 Dealer
- 2 Manufacturer
- 3 Local government
- 4 State tax credit
- 5 Federal tax credit
- 6 Other [SPECIFY]
- D DON'T KNOW

T16 About how much did you receive from [FOR EACH MENTIONED IN F8]? [RECORD TO THE NEAREST DOLLAR]

\$_____
8888DON'T KNOW
9999REFUSED



T17 [IF T14 = YES] On a 0 to 10 scale, with 0 being not at all likely and 10 being very likely, how likely is that you would have bought the same [measure] if you had not received this other financial incentive?

_____ [0-10]
88 DON'T KNOW

T18 [IF FURNACE, BOILER, WATER HEATER, THERMOSTAT, BOILER CONTROL, INDIRECT WATER HEATER] Were you aware of the [IF FURNACE, BOILER, THERMOSTAT “heating” or IF INDIRECT WATER HEATER “water heating”] rebates offered by NYSERDA?

- 1 Yes
- 2 No [SKIP TO SP1]
- D DON'T KNOW [SKIP TO SP1]

T19 Why did you opt to participate in National Grid’s High-Efficiency Heating and Water Heating and Controls Program instead of NYSERDA’s program?

[OPEN ENDED RESPONSES]

Other Equipment Purchases

SP1 Since participating in National Grid’s High-Efficiency Heating Program, have you purchased any other type of energy efficient or ENERGY STAR rated equipment?

- 1 Yes
- 2 No [SKIP TO A1]
- D DON'T KNOW [SKIP TO A1]

SP2 What high-efficiency equipment have you purchased? [SELECT ALL THAT APPLY]

- 1 Lighting
- 2 Refrigerator/freezer
- 3 Dishwasher
- 4 Clothes washer
- 5 Air conditioner
- 6 Other [SPECIFY]
- 7 DON'T KNOW [SKIP TO S1]

SP3 Did you receive a National Grid or NYSERDA rebate for the [EACH MENTIONED IN SP2]?

- 1 Yes
- 2 No
- D DON'T KNOW



SP4 On a scale of 0 to 10, with 0 being no influence and 10 being total influence, how much influence did your participation in the High-Efficiency Heating and Water Heating and Controls Program have on your decision to purchase [this/these] high-efficiency equipment?

_____ [0-10]
88 DON'T KNOW

Energy Awareness

Now I'd like to ask a series of questions regarding your household's energy use.

A1 At what temperature do you currently have your water heater set?

- _____ [RECORD RESPONSE]
444 Low
500 Medium-Low*
555 Medium
600 Medium-High*
666 High
888 DON'T KNOW

A2 [IF NO THERMOSTAT] Do you have a programmable thermostat for your heating system?

- 1 Yes [SKIP TO A5a]
2 No [SKIP TO A7]
D DON'T KNOW [SKIP TO A7]

A3 [IF THERMOSTAT] Did you have a programmable thermostat prior to receiving your new thermostat?

- 1 Yes
2 No
D DON'T KNOW

A4 [IF A3=1] Was your old thermostat programmed to automatically change the temperature setting at specific times of the day or did you manually change the thermostat setting when you wanted to change the temperature?

- 1 Programmed
2 Manually change
D DON'T KNOW



A5 [IF A3=1] Is your new thermostat programmed to automatically change the temperature setting at specific times of the day or do you manually change the thermostat setting when you want to change it?

- 1 Programmed [SKIP TO A7]
- 2 Manually change
- D DON'T KNOW [SKIP TO A7]

A5a [IF NO THERMOSTAT] Is your thermostat programmed to automatically change the temperature setting at specific times of the day or do you manually change the thermostat setting when you want to change it?

- 1 Programmed [SKIP TO A7]
- 2 Manually change
- D DON'T KNOW [SKIP TO A7]

A6 [IF A5=2 OR A5a=2] Why aren't you using the programmable feature? [SELECT ALL THAT APPLY]

- 1 Too complicated
- 2 Equipment failed/broke
- 3 Don't want to take the time to program it
- 4 Do not know how to program it
- 5 Prefer a constant temperature
- 6 Other [SPECIFY]
- 7 DON'T KNOW

A7 Do you have any ENERGY STAR certified equipment or appliances in your home?

- 1 Yes
- 2 No [SKIP TO A11]
- D DON'T KNOW [SKIP TO A11]



A8 What types of equipment or appliances do you have that are ENERGY STAR certified? [DO NOT READ; INDICATE ALL THAT APPLY]

- 1 Refrigerator
- 2 Dehumidifier
- 3 Dishwasher
- 4 Clothes washer
- 5 Microwave
- 6 Light bulb
- 7 Thermostat
- 8 Furnace
- 9 Central air conditioner
- 10 Television
- 11 VCR or DVD player
- 12 Cable box top
- 13 Power strips
- 14 Other [SPECIFY]
- 15 DON'T KNOW

A11 What is your level of agreement with each of the following statements using a scale of 0 to 10 where 1 equals “strongly disagree” and 10 equals “strongly agree”? [ROTATE LIST]

- Purchasing high-efficiency equipment will save me money on energy bills
- The additional cost for high-efficiency equipment will be recouped through lower energy bills
- I am concerned about there being enough electricity to meet New York’s future needs.
- I can save energy without sacrificing comfort in my home.
- I am planning to do things to improve my home’s energy efficiency over the next year.
- I often think about the impact my home’s energy use has on the environment.
- I am comfortable using the internet to find information.
- We purchase compact fluorescent lights, known as CFLs, instead of incandescent bulbs when our bulbs burn out
- I know what ENERGY STAR labeled products are.
- I look for ENERGY STAR labels/logos when buying products and/or appliances

Finally, I would like to ask you a few questions to better understand your home and household.

Housing and Demographics

D1 What is the main fuel you use for heating? [If gas, probe for natural gas or bottled gas]

- 1 Electricity
- 2 Natural gas
- 3 Bottled gas (propane)
- 4 Fuel oil
- 5 Wood or wood pellets
- 6 Other [PLEASE SPECIFY]
- D DON'T KNOW
- R REFUSED



D2 What is the main fuel used by your water heater? [If gas, probe for natural gas or bottled gas]

- 1 Electricity
- 2 Natural gas
- 3 Bottled gas (propane)
- 4 Fuel oil
- 5 Other [PLEASE SPECIFY]
- D DON'T KNOW
- R REFUSED

D3 Is this home a year-round or seasonal home?

- 1 Year-round
- 2 Seasonal
- D DON'T KNOW
- R REFUSED

D4 Do you own this home or do you rent from a landlord?

- 1 Own/buying
- 2 Rent
- D DON'T KNOW
- R REFUSED

D5 What type of building do you live in? Is it a...

- 1 Single family home
- 2 Duplex (two-family home)
- 3 Apartment
- 4 Resort cottage or cabin
- 5 Town house
- 6 Condominium
- 7 Mobile or manufactured home
- 8 Other [SPECIFY]
- D DON'T KNOW
- R REFUSED

D5a [IF D5=3, 5, or 6] How many units are in your building?

- 1 2 to 4
- 2 5 to 10
- 3 11 to 25
- 4 26 to 50
- 5 More than 50
- 6 1*
- D DON'T KNOW
- R REFUSED



D6 How many years have you lived in this home?

- ____ Years
- 888 DON'T KNOW
- 999 REFUSED

D7 Approximately how old is this building?

- ____ Years
- 888 DON'T KNOW
- 999 REFUSED

D8 Which of the following best describes the square footage of your home? Do not include an unfinished basement, attic, porch or crawlspace. [READ LIST]

- 1 Less than 1,000 square feet
- 2 1,000 to 1,500 square feet
- 3 1,501 to 2,000 square feet
- 4 2,001 to 3,000 square feet
- 5 More than 3,000 square feet
- D DON'T KNOW
- R REFUSED

D9 Including yourself, how many people currently live in your home year-round?

- __ Number of people
- 88 DON'T KNOW
- 99 REFUSED

D10 For classification purposes only, which of the following categories best describes your pre-tax household income for 2009 including wages, salaries, pensions, social security for all members of this household? Just stop me when I get to the right category.

[READ LIST]

- 1 Less than \$10,000
- 2 \$10,000 to less than \$20,000
- 3 \$20,000 to less than \$30,000
- 4 \$30,000 to less than \$40,000
- 5 \$40,000 to less than \$50,000
- 6 \$50,000 to less than \$75,000
- 7 \$75,000 to less than \$100,000
- 8 \$100,000 to less than \$150,000
- 9 \$150,000 to less than \$200,000
- 10 \$200,000 or more
- D DON'T KNOW
- R REFUSED



D11 GENDER [RECORD, DO NOT ASK]

- 1 Male
- 2 Female

[Thank you for your time. Do you have any questions or comments?]



APPENDIX D: NEW CONSTRUCTION PARTICIPANT INTERVIEW GUIDE

National Grid New Construction Participant IDI protocol

Introduction

- C1** Hello, my name is [interviewer name], and I'm calling on behalf of National Grid. May I speak with [named respondent]?
- 1 Yes
 - 2 No *[If named respondent is not available: ask for another adult who is familiar with the household's recent heating or water heating purchases.]*
- C2** I'm with PA Consulting Group, an independent research firm. We are speaking with architects, developers, and multi-family building owners about a program offered by National Grid called the High-Efficiency Heating and Water Heating and Controls Program. Do you recall installing equipment and receiving a rebate through this program for [building name/addresses]?
- 1 Yes [SKIP TO C5]
 - 2 No
- C3** [IF C3=2] Is it possible that someone else in your organization would be familiar with the heating program?
- 1 Yes
 - 2 No [THANK AND TERMINATE]
 - D DON'T KNOW [THANK AND TERMINATE]
 - R REFUSED [THANK AND TERMINATE]
- C4** May I please speak with that person?
- 1 Yes [BEGIN THE SURVEY AGAIN (C2) WITH NEW R]
 - 2 No [THANK AND TERMINATE]
 - D DON'T KNOW [THANK AND TERMINATE]
 - R REFUSED [THANK AND TERMINATE]

[ONLY SHOW BELOW SCREEN INFORMATION IF NECESSARY]

(Who is National Grid? National Grid is an energy delivery company serving New York City, Long Island, and upstate New York. They administer energy efficiency programs including the residential heating program in which you participated in 2009 or 2010.)



(Timing: This survey should take about 15 minutes. *IF NOT A GOOD TIME, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070.*)

(Sales concern: This is not a sales call; we would simply like to learn about your household's experiences with National Grid's High-Efficiency Heating and Water Heating and Controls Program. Your responses will be kept confidential. If you would like to talk with someone at National Grid regarding this work, please call Beth Williams at 718-403-2021.)

Identification of Appropriate Decision-Maker(s)

C5 Great, thank you. First, I'd like to assure you that I'm not selling anything; I'd just like to ask your opinion about this program. Your responses will be kept confidential. [ASK IF IT IS OKAY TO RECORD CALL FOR NOTE TAKING PURPOSES]

Were you personally involved in the decision of whether or not to install the energy efficient [measure types] at [apartment complex name] in [city] through this program?

C6 Was anyone else within or outside your organization involved in the decision of whether to install the [measure types] through this program?

Who else was involved in the decision of whether to install the [measure types] at this location? How are they affiliated with this property and/or your company?

- Name
- Title
- Phone number
- Role

C6b Was the ultimate tenant or homeowner involved in the decision at all?
1) Yes
2) No

C8 What was your role in the project at [apartment complex name]?
1) Building owner
2) Developer
3) Architect
4) General Contractor
5) Other contractor (specify)
6) Other (Specify)



Context and Decision Making

- A1** Does your company have a policy relating to energy efficiency when developing building specifications for new construction projects of multi-family properties? [IF YES] Could you describe that policy?
- A2** What considerations do you take when specifying the types of heating and water heating equipment that should be installed in new construction projects? What else?
- A3** What are some of the major obstacles or barriers that you face when considering energy efficient specifications for your new construction multifamily projects?
- A4** Had you previously participated in the National Grid Heating, Water Heating and Controls program prior to the construction of the project at **[address]**? Had you participated in any other National Grid project?
- A5** How did you hear about the rebate for [all measures] available through the High-Efficiency Heating and Water Heating and Controls Program?
- A6** (IF HEARD ABOUT PROGRAM THROUGH CONTRACTOR, DESIGNER, OR ARCHITECT)
- Was this contractor/designer/architect already doing work for you at this or another property?
- (IF DID NOT HEAR ABOUT PROGRAM THROUGH CONTRACTOR, DESIGNER, OR ARCHITECT)
- Did a contractor, designer or architect involved with this project mention that you could receive a rebate if you purchased energy efficient equipment?
- A7** At exactly what point in the planning, purchasing or installation process were you when you first began to talk with someone about the High-Efficiency Heating, Water Heating and Controls program? Was it before or at the start of planning (no contractor referral), during planning (contractor identifies need) or purchasing process, after planning/purchase but before installation, or after installation?
- A8** According to the program records, this property received **[quantity]** **[measures]** through the Heating, Water Heating and Controls program. Does this sound correct?
- A9** Our records also indicate that you received about **[incentive amount]** from the program to offset the cost of the **[measure type]**. Does this amount sound about right? If not, what was the correct amount?
- A10** Did your organization receive financial assistance or rebate from a source other than National Grid for the energy efficient equipment? From whom did you receive it?
- A11** About how much was that other financial assistance?
- (RECORD TO THE NEAREST DOLLAR)
- A12** Had you researched the cost of purchasing the energy efficient equipment before learning that you could get an incentive for the equipment through the program?



- A13** Do you know what the total cost for this energy efficient equipment would have been if you had not received this rebate through the program?

Decision-making processes

- B1** Before installing this energy efficient equipment, had you installed energy efficient equipment of the same high-efficiency level in another property without receiving an incentive like you received from the Heating, Water Heating and Controls program? In what percent of the projects did you install high-efficiency equipment?
- B2** Did a National Grid program representative talk with you about the range of efficiency levels available for energy efficient equipment? (Describe)
- B3** Would you have still purchased this energy-efficient [measure] equipment if the rebate had been lower?
- B4** If the incentive for the energy efficient equipment had not been offered under this program, would you have **purchased less efficient equipment** at all? (PROBE FOR DIFFERENCES IN EQUIPMENT TYPES)
- B5** (If N29a = Yes) What efficiency level would you have purchased?
- B6** On a 0 to 10 scale, with 0 being not at all likely and 10 being very likely, how likely is that you would have bought the same energy efficient equipment if you had not received this incentive through the National Grid Heating, Water Heating and Controls program?
- B7** What impact, if any, did the program have on your decision to install energy efficient equipment at the time you did?

Satisfaction

- C1** Have you had any complaints or problems regarding the installation or operation of the new equipment/services incentivized through the program?
- C2** (If complaints) What were the complaints or problems?
- C3** Would you participate in this program again in the future?
- C4** Have you recommended the program to other builders, architects, or building owners or managers?
- C5** What changes, if any, to the program would you recommend?
- C6** Has your experience with the National Grid program(s) had any impact on your construction practices? If yes, how so?

Those are all the questions I have. Do you have any questions or comments?



APPENDIX E: PROGRAM PARTICIPANT ADVANCE LETTER

nationalgrid

The power of action.

ID: [ID]

March 22, 2010

Dear [Name]«FirstNameCase»,

We are in the process of evaluating our Residential Heating and Water Heating and Controls energy efficiency program. The purpose of this evaluation effort is to help us adjust our program to better meet the needs of our customers. As part of this evaluation, we will be talking with customers who participated in this program.

Within the next few weeks, you may receive a telephone call to ask about your experiences with our program, and the factors that were important to your household when deciding to install equipment through our programs. We have hired PA Consulting Group, a professional research firm, to help design and conduct the study on our behalf. The survey should take less than 15 minutes of your time. You can be assured that National Grid and PA Consulting Group will keep all of your answers strictly confidential. No information that could be used to identify your household will be published or provided to anyone.

If you have any questions about the purpose of the study or its use, please feel free to contact Beth Williams of National Grid at (718) 403-2021. If you would like to call PA Consulting Group to complete the survey at your convenience, feel free to call their toll-free number at (800) 454-5070 and refer to your ID number at the top right corner of this letter.

Thank you in advance for your help with this important study.

Sincerely,

Beth Williams

NY Regulatory Affairs Analyst



APPENDIX F: PARTICIPANT SURVEY RESPONSE RATE

This Appendix presents the response rate for the National Grid High-Efficiency Heating and Water Heating and Controls Program Participant Survey.

Table F-1. Response Rate to the Participant Survey

Sample Disposition	New York City	Upstate	Long Island	Total
Sample Size	165	140	144	449
Temporarily disconnected ⁴	1	1	1	3
Number not in service ⁴	11	3	5	19
Person not at number	3	1	3	7
Fax/data line ⁴	0	0	1	1
Non-working number	2	2	2	6
Disconnected number ⁴	4	2	4	10
Business number	1	0	8	9
Do not recall	4	5	5	14
Already completed survey	5	0	3	8
Adjusted Sample Size	134	126	112	372
Hard Refusal	15	6	12	33
Soft Refusal ¹	3	0	1	4
Incompletes (partial interviews)	2	1	0	3
Unavailable for duration	1	4	1	6
Incapable/incoherent	2	1	1	4
Language barrier/non-English	1	1	2	4
Active ²	41	28	24	93
Completed Surveys	69	85	71	225
Cooperation Rate³	51.5%	67.5%	63.4%	60.5%
Response Rate	41.8%	60.7%	49.3%	50.1%

¹ Attempts were made to convert all soft refusals.

² An average of 10 contacts per active case were made to attempt to complete the interview.

³ Number of completed surveys divided by Adjusted Sample Size.

⁴ All bad numbers were traced with a telephone append service or directory assistance service.



APPENDIX G: PROCESS FLOW CHART

