Market Surveys of Upstate New York Supply Houses and Installers

FINAL

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ES Executive Summary

This report summarizes the results of a multi-phase research effort conducted by NMR Group, Inc. (NMR), which investigated the natural gas heating and water heating market in Upstate New York. Our research focused on the purchase decisions and dynamics of the supply chain, and was specifically designed to assess potential opportunities for additional energy savings in this market. To achieve this objective, our research included the following tasks:

- **Task 1:** Survey of supply houses in Upstate New York
- **Task 2:** Survey of contractors in Upstate New York

This report provides a summary of the key findings from the surveys of supply houses and contractors in Upstate New York. Survey instruments and detailed cross-tabulations of the individual survey results can be found in below and Cross-Tabulations.

KEY FINDINGS

NMR's analysis of the supply house and contractor surveys resulted in the following key findings:

There is a substantial opportunity to achieve further High Efficiency Heating Equipment (HEHE) program intervention through sales of residential natural gas water heaters. About three-fifths (61%) of the water heaters purchased in 2016 were standard efficiency. The bulk of the reported weighted average sales for standard efficiency water heaters were residential sales (87%), pointing to an opportunity for achieving further HEHE program intervention through untapped savings in the residential market.

Some opportunities exist for residential furnaces and boilers. Standard efficiency units represented, on average, about one-fifth (21%) of total furnace sales, and about two-fifths (41%) of total boiler sales. However, it is important to note that furnaces comprised 38% of the total 2016 sales of natural gas heating and water heating equipment, while boilers (17%) comprised less than one-half of that share.

Through a targeted midstream intervention, **the HEHE program could cast a broader net over the natural gas heating and water heating market** by influencing supply house stocking practices and leveraging the relationships between supply houses and contractors to better support the installation of high efficiency equipment.

- **National Grid has an opportunity to influence supply house stocking of high efficiency equipment,** which would increase the overall availability of high efficiency options in the market. While the current HEHE program directly targets customers, our research shows that rebates for heating and water heating equipment have an indirect impact on supply house stocking practices.
    - While just under one in four supply houses (22%) were influenced by the downstream HEHE program, the majority of those that were influenced (80%)

reported that the HEHE program is very or extremely influential on their stocking practices.

- Direct engagement with supply houses could increase the influence of the program on stocking practices.

- **Supply houses have strong, influential relationships with installers and contractors.**
  - Over two-thirds (70%) of supply houses reported they were very or extremely influential on the contractor's decision to purchase high efficiency equipment.
  - The large majority (92%) of supply house customers are installers and contractors; almost all (95%) contractors reported that the number of supply houses they purchased equipment from ranged from one to four.[1]
  - Supply houses frequently provide advice to contractors on equipment efficiency (87%).

Since some small supply houses are not stocking high efficiency boilers and water heaters, **opportunities exist for greater stocking of high efficiency natural gas heating and water heating equipment in small supply houses.**

- Three-fifths (60%) of small supply houses reported stocking high efficiency natural gas boilers, and four-fifths (80%) of small supply houses reported stocking high efficiency natural gas water heaters.
- We determined that just over one-fourth (27%) of natural gas furnaces sold by small supply houses in 2016 were standard efficiency units, this is significantly more standard efficiency sales compared to large supply houses (13%).[2] This further demonstrates the opportunity to increase the stocking and sales of high efficiency equipment through targeting small supply houses.

Throughout the research process, we learned **valuable lessons on how to successfully communicate with supply houses and contractors in Upstate New York**.

- The response rate to the supply house survey was excellent (38%), which indicates the supply houses are willing to engage with National Grid, and are likely interested in exploring potential opportunities to work directly with the HEHE program.
- The contractor survey was originally fielded as a web-based survey, but was transitioned to a telephone survey after receiving a 2% response rate over a two-week period. The response rate to the telephone survey was an improvement, receiving a 12% response rate over a two-week period. This implies that future communication with contractors may be more successful over the phone rather than via email.

[1] Information on the supply houses that contractors reported purchasing from most often can be found in Cross-Tabulations.
[2] Small is significantly different from large supply houses at a 90% confidence level.

1 Section 1 Methodology

1.1 Study Objectives

The HEHE program is implemented through a downstream model that offers incentives to customers to offset the purchase and installation cost of high efficiency heating and water heating equipment, with the goal of reducing overall energy consumption. National Grid is seeking to determine if the current downstream program is capturing all available savings opportunities in the Upstate New York market or if some savings are being left on the table. To help make this determination, and to guide the next steps for the HEHE program, National Grid sought to assess the market opportunity and the dynamics of the supply chain. Specifically, they wanted to determine how different market actors influence the purchase decision, which is ultimately made by the end use customer. Accordingly, this research addressed the following key objectives:

- Estimate shares of sales in Upstate New York of standard and high efficiency natural gas boilers, furnaces, and water heaters, and estimate the shares that are residential versus commercial.
- For high efficiency equipment, estimate the shares of sales that are sold either inside or outside the HEHE program (i.e., received incentives or did not receive incentives).
- Understand supply house stocking practices for high efficiency natural gas heating and water heating equipment.
- Assess the role and influence of key market actors on customers' and contractors' decisions to purchase high efficiency equipment.

1.2 Study Methodology

Under the direction of NMR, Research & Marketing Strategies, Inc. (RMS) conducted two surveys: one with representatives of supply houses in Upstate New York, and a second with heating and water heating contractors in Upstate New York.

The supply house telephone survey was fielded over a single week, from August 28 through September 5, 2017. The survey gathered information on sales of residential and commercial natural gas heating and water heating equipment and supply houses' experience with the HEHE program.

The contractor survey was originally fielded as a web-based survey, but was transitioned to a telephone survey after receiving only six completes over a two-week period. The contractor telephone survey was then fielded over approximately two weeks – September 19 through October 5, 2017. The survey gathered information on installations of residential and commercial natural gas heating and water heating equipment, as well as contractors' experience with the HEHE program.

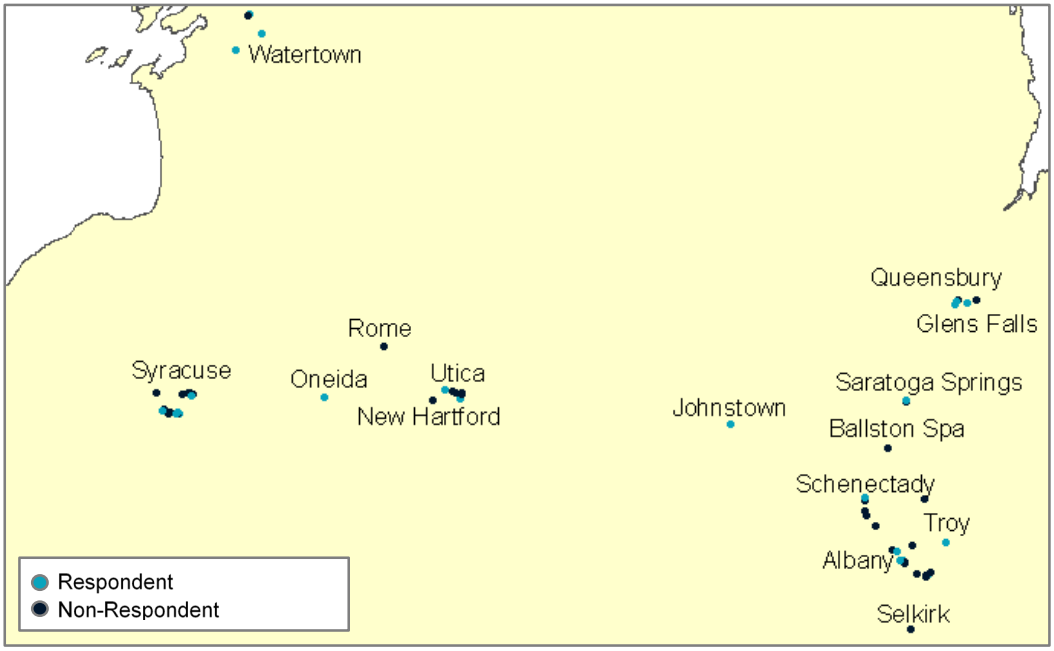
1.2.1 Sample Sizes and Response Rates

1.2.1.1 Supply Houses

National Grid provided the sample frame for the supply house survey, which consisted of 60 supply houses representing the Upstate New York region. This included the cities and surrounding areas of Watertown, Syracuse, Albany, and Glens Falls, New York.[3]

The response rate to the supply house survey was excellent (38%). We completed 23 surveys with supply houses, surpassing our goal of completing 20 surveys. Figure 1 maps the Upstate New York supply house sample and the responses to the survey. To enhance respondent cooperation, RMS sent email alerts to the supply houses a few days in advance of their call. Figure 1 displays the survey houses' geographical locations, revealing good representation across the Upstate service areas.

Figure 1: Supply House Survey Respondents and Non-Respondents



1.2.1.2 Contractors

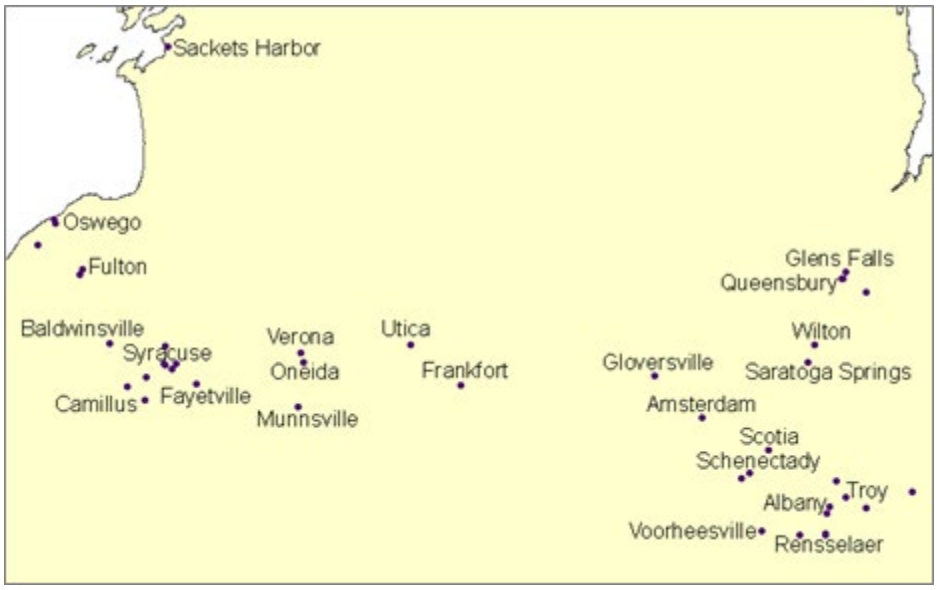
The sample frame for the contractor survey was developed from National Grid's HEHE program data, which contained 363 contractors. This sample frame represented the same Upstate New York regions of Watertown, Syracuse, Albany, Glens Falls, and Hudson.[4]

[3] The sample included contact names, emails, and website links, but no phone numbers. NMR performed phone number lookups to conduct the telephone survey. National Grid's definition of the Upstate New York region had included Hudson, New York; however, the sample NMR received from National Grid did not include any supply houses located in the Hudson region.

[4] The sample data included business names, addresses, and some phone numbers. Only 2% of the Upstate New York contractors were located in the Hudson region; however, no responses were received from these Hudson area contractors.

As previously mentioned, the contractor survey was moved from a web-based survey to a telephone survey, which greatly improved the response rate. The response rate to the web-based survey was approximately 2%, while the response rate to the telephone survey was 12%.[5] We completed 43 surveys with contractors, surpassing our goal of completing 30 surveys. Figure 2 maps the Upstate New York contractor survey respondents.

Figure 2: Contractor Survey Respondents



1.2.2 Analysis

NMR used the survey data to calculate weighted average percentages for sales and installations of boilers, furnaces, and water heaters by the categories listed below. Twenty-one of the twenty-three supply houses provided either a range or specific count of the quantities of boilers, furnaces, and water heaters sold in 2016. The analysis of supply house sales was conducted on these twenty-one supply houses, whose results could be weighted. The analysis of contractor installations was conducted on the responses of contractors who reported quantities of boilers, furnaces, and water heaters installed in 2016. Thirty-eight of the 43 contractors had installed natural gas boilers and/or furnaces, while 32 contractors had installed natural gas water heaters.

Efficiency Level and Sector Categories:

First, we estimated total quanities sold or installed for each measure and in each of the following categories.

- Shares of standard and high efficiency natural gas equipment
- Shares that are residential versus commercial sized equipment

[5] The sample for the telephone survey was reduced to those with phone numbers (286 contractors).

- Shares of high efficiency units sold either inside or outside the HEHE program (i.e., received incentives or did not receive incentives).

We then weighted the average proportions reported by each respondent by the actual reported quantity of each of the equipment types sold or installed in 2016. NMR obtained sales data from both the supply house and contractor surveys. After reviewing the results, we determined the supply house results provided more reliable estimates of natural gas heating and water heating sales in Upstate New York. We reached this conclusion for the following reasons:

- Supply houses have a broader upstream perspective of the market.
- The supply house sample frame more completely represented the market than the contractor sample frame.
- The final sample of supply house respondents accounted for just over one-third (35%) of the sample frame; whereas, the final sample of contractor respondents only accounted for 10% of the sample frame.

Therefore, in reporting the sales data, we focus predominantly on the supply house responses as they better represent the actual market.

1.2.2.1 Cross-tabulations

To further analyze the data collected by the supply house and contractor surveys, NMR performed cross-tabulations of the survey responses by size and location categories. Size categories for the supply houses were based on the reported number of employees. Demographic questions were removed from the contractor survey to reduce the overall survey length and increase respondent likelihood of completing the survey. Therefore, the contractor size categories were determined by the total number of installations of natural gas heating and water heating equipment reported through the survey.

Supply House Size Categories:

1. Fewer than five
2. Five to nine employees
3. Ten+ employees

Contractor Size Categories:

1. Less than 50 units
2. 51 to 500 units
3. 501+ units

The location categories for both supply houses and contractors were based on the following New York cities that comprise the Upstate region.

Supply House and Contractor Location Categories:

1. Watertown
2. Syracuse

3. Albany
4. Glens Falls

NMR analyzed the cross-tabulations and identified significant differences between size or location categories at the 90/10 confidence level. Key results are presented in this report, and more detailed cross-tabulations are presented in Cross-Tabulations.

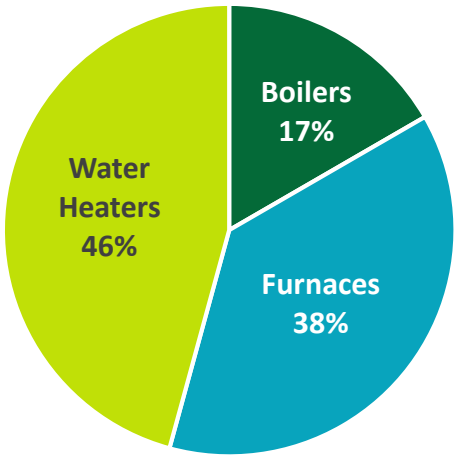
2 Section 2 Natural Gas Heating and Water Heating Equipment Sales

This section details key results from the supply house and contractor surveys. We first present overall reported sales of natural gas heating and water heating equipment in Upstate New York. We then present the detailed, measure-level results, which are used to assess the potential opportunities for additional program intervention.

2.1 Overall Equipment Sales

Figure 3 reveals that supply houses reported that sales of water heaters comprised nearly one-half (46%) of the total 2016 heating and water heating units sold in Upstate New York, followed by furnaces (38%), and boilers (17%).[6]

Figure 3: 2016 Supply House Sales of Natural Gas Heating and Water Heating Equipment in Upstate New York



(n=41,442 units)

Table 1 summarizes the average percentage split between standard and high efficiency quantities of natural gas boilers, furnaces, and water heaters sold by supply houses in Upstate New York in 2016. Standard efficiency units comprised a varying percentage of sales, equaling three-fifths (61%) of water heaters, two-fifths (41%) of boilers, and one-fifth (21%) of furnaces sold in 2016. These sales estimates reveal an opportunity to achieve additional energy savings through the installation of high efficiency heating and water heating equipment.

[6] Contractor reported installations were 37% water heaters, 52% furnaces, and 11% boilers.

Table 1: Efficiency Level & HEHE Program Participation for 2016 Supply House Sales of Heating and Water Heating Equipment in Upstate New York

Natural Gas Equipment Type	Boilers (n=22)	Furnaces (n=23)	Water Heaters (n=20)
Standard	41%	21%	61%
High Efficiency	59%	79%	40%
Through HEHE Program	*31%*	*37%*	*14%*
Outside HEHE Program	*28%*	*42%*	*26%*

It is important to note that although boiler sales appeared to be twice as likely as furnace sales to be standard efficiency, boilers made up the smallest proportion of total sales reported across the three measures, as shown in Figure 3.[7]

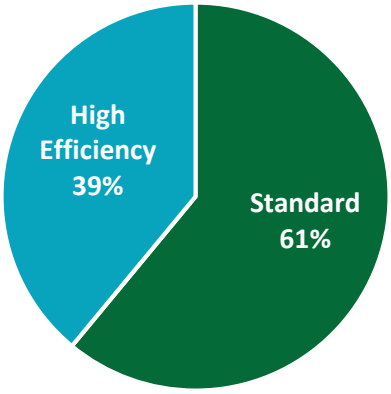
Residential units represented the largest share of supply house sales in 2016. On average, 91% of sales of all three equipment types were sized for residential installations. Therefore, most of the opportunity for additional program intervention is likely in residential sales. Overall, these data indicate that high efficiency residential water heating equipment likely offers the most substantial opportunity for the HEHE program to reach untapped energy savings.

2.2 WATER HEATERS

Twenty-two out of the 23 supply houses reported selling high efficiency natural gas water heaters in 2016 – only nineteen sold standard efficiency units. As mentioned, natural gas water heaters offer the largest potential for additional intervention by the HEHE program: 61% of the reported units sold in 2016 were standard efficiency (Figure 4).[8]

[7] Boilers also made up the smallest proportion of total contractor reported installations (11%).
[8] The results of the contractor survey support the conclusion that a sizable percentage of water heaters installed in 2016 were standard efficiency units (81%).

Figure 4: Supply House Sales of Natural Gas Water Heaters (n=20)



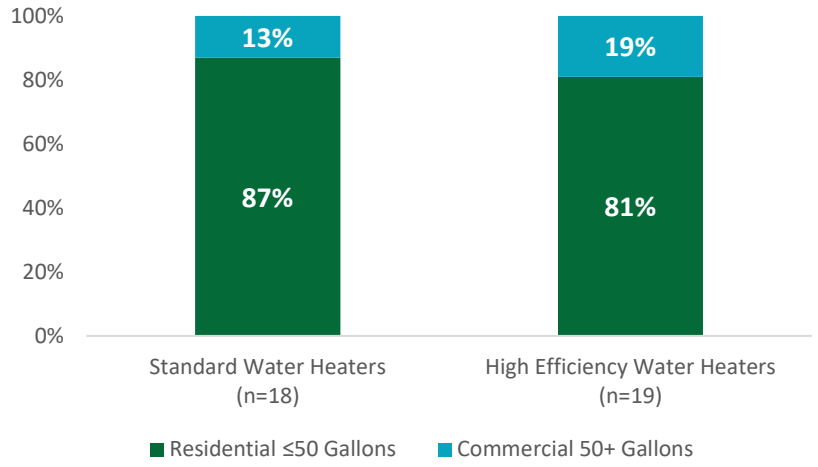
To assess the relative shares of residential versus commercial sales, we asked respondents to report what percentage of their water heater sales (or installations) were above or below 50 gallons. We assumed that units reported as 50 gallon units or less were intended for residential installations, and units that were more than 50 gallons were for commercial installations.[9]

Among both standard and high efficiency supply house sales, residential sales accounted for over four-fifths of units sold (87% and 81%, respectively), which indicates that the opportunity to gain additional program intervention lies predominantly with residential water heaters (Figure 5).[10]

[9] Categories for distinguishing between residential and commercial units were determined based on the equipment sizing as these are the terms supply houses and contractors use to determine the appropriate unit to install.

[10] The contractor results support this conclusion; over three-fourths (77%) of contractor reported installations of standard water heaters were 50 gallon units or less.

Figure 5: Residential and Commercial Supply House Sales of Natural Gas Water Heaters[11]



We cross-tabulated the percentage of residential and commercial water heaters sold by small, medium, and large supply houses. As Table 2 shows, small supply houses sold significantly more high efficiency residential water heaters in 2016 than large supply houses. While the corresponding differences were not significant for standard water heater sales, the results exhibited a similar trend.

Table 2: Sales of High Efficiency Natural Gas Water Heaters by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 50 gallons	97%*	91%	81%
Commercial > 50 gallons	3%*	9%	19%
Sample Size	**3**	**9**	**7**

*Small is significantly different from large supply houses at 90% confidence level.

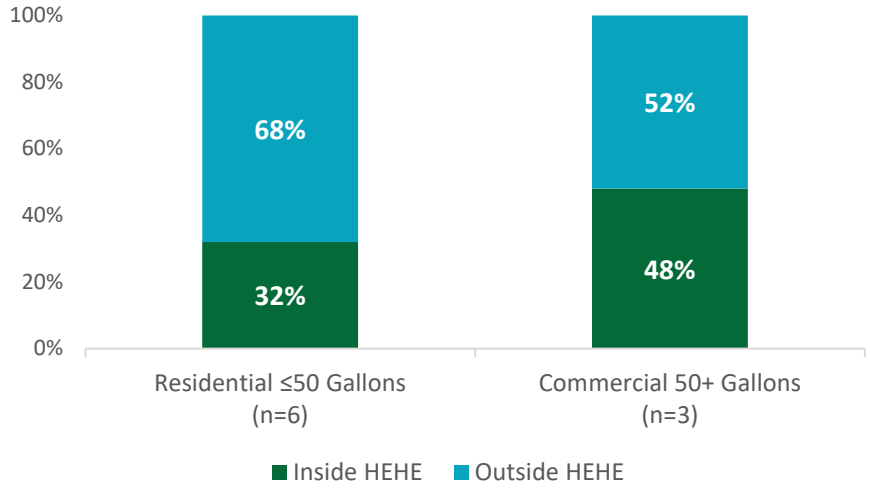
Only a limited number of the supply houses could specify the percentage of high efficiency water heaters that received an incentive. For residential water heaters, only six of the 19 supply houses provided a response when asked if sales received an incentive. While 13 supply houses reported commercial sales of high efficiency equipment, only three of these respondents could indicate if the sales received an incentive.

Very few supply houses provided estimates of the percentage of residential (6 of 22) and commercial (3 of 22) sales that received program incentives. Their responses indicate that about two-thirds (68%) of residential and one-half (52%) of commercial high efficiency units were sold outside the HEHE program (i.e., they did not receive an incentive). However, these

[11] One supply house did not provide a response when asked what percentage of his/her sales where above or below 50 gallons. Therefore, the number of responses we used to calculate the split between residential and commercials sales for standard and high efficiency units was eighteen and nineteen, respectively

sample sizes are too small to extrapolate these results and draw conclusions about opportunities for additional savings.[12]

Figure 6: Supply House Sales of High Efficiency Natural Gas Water Heaters Through the HEHE Program[13]

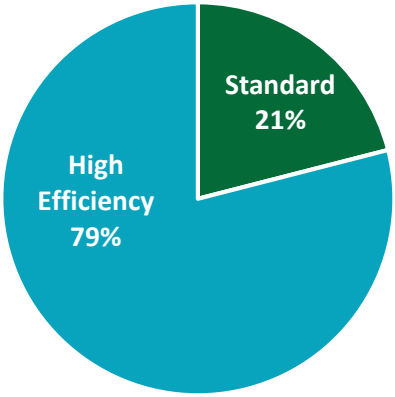


2.3 FURNACES

All 23 supply houses reported selling high efficiency natural gas furnaces in 2016, while 22 of them reported selling standard efficiency units. As Figure 7 illustrates, standard natural gas furnaces represented about one-fifth (21%) of reported sales in 2016. Recall from Figure 3, that natural gas furnaces represented 38% of total reported 2016 sales, while water heaters represented 46% of total sales. Therefore, furnaces may offer a smaller opportunity for additional intervention compared to water heaters.[14]

[12] While contractors may have a better understanding of which units receive a HEHE rebate, the contractor sample sizes were also too small to draw conclusions.
[13] Sample sizes are too low to draw significant conclusions.
[14] Contractors reported that 88% of furnaces installed in 2016 were high efficiency units. This further indicates the opportunity to achieve additional program intervention through residential furnaces may be moderate at best.

Figure 7: Supply House Sales of Natural Gas Furnaces (n=21)



We analyzed the percentage of standard and high efficiency furnaces sold by size of supply house and determined that small supply houses sold significantly more standard efficiency units in 2016 than large supply houses. This indicates a potential opportunity for the HEHE program to target smaller supply houses to increase their stocking and sales of high efficiency units.

Table 3: Furnace Sales by Supply House Size

	Small	Medium	Large
Standard	27%*	20%	13%
High Efficiency	73%*	81%	87%
Sample Size	**5**	**10**	**7**

We also analyzed the percentage of standard and high efficiency furnaces sold by location of supply house and determined that supply houses located in Syracuse and Albany, New York sold significantly more standard efficiency units in 2016 than supply houses in Watertown and Glens Falls, New York. This result is likely due to the relative differences in size of the metropolitan areas of Syracuse and Albany compared to the smaller populations of Watertown and Glens Falls.[15]

[15] 2015 United States Census Bureau reported the following populations; Syracuse 143,378 residents, Albany 98,111 residents, Watertown 25,900 residents, and Glens Falls 14,328 residents.

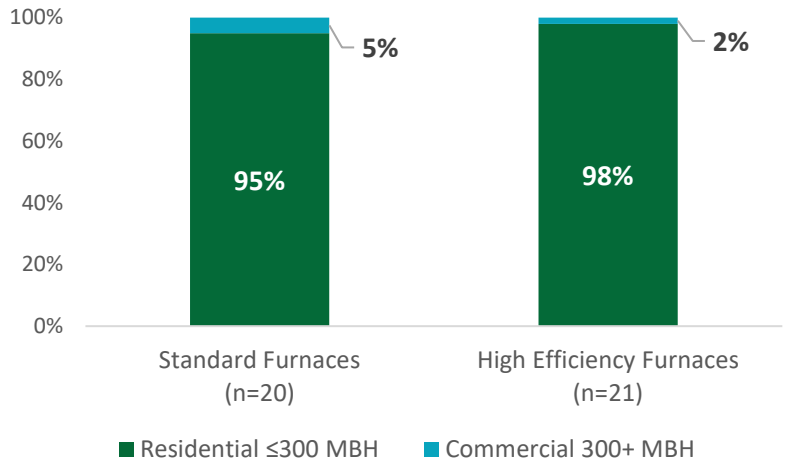
Table 4: Furnace Sales by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	5%	23%*	32%**	8%
High Efficiency	95%	78%*	68%**	92%
Sample Size	**4**	**8**	**6**	**4**

*Syracuse is significantly different from Watertown and Glens Falls supply houses at 90% confidence level.
**Albany is significantly different from Watertown and Glens Falls supply houses at 90% confidence level.

To assess the relative shares of residential versus commercial sales, we asked respondents to report what percentage of their furnace sales were above or below 300 MBH or 300,000 Btus per hour. Our analysis assumed that sales reported as being 300 MBH units or less were intended for residential installations, and sales reported as greater than 300 MBH were assumed to be commercial installations.[16] As shown in Figure 8, residential units represented the overwhelming majority of 2016 sales of both standard (98%) and high efficiency (95%) equipment.[17] This reveals that the opportunity for additional intervention of high efficiency furnaces through supply house sales lies predominantly with residential units.[18] It may be that commercial size furnaces are often purchased from a distributor, which would explain why this survey captured a very small portion of commercial sales.

Figure 8: Residential and Commercial Supply House Sales of Natural Gas Furnaces

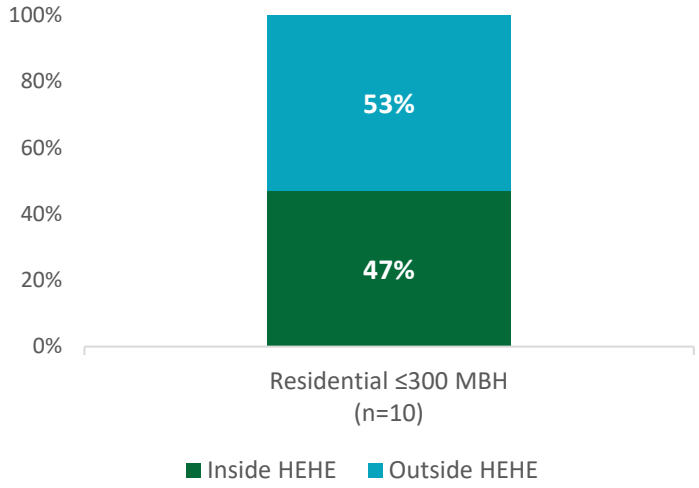


Approximately one-half of the supply houses (10 of 22) provided estimates of the percentage of residential sales that received program incentives. Their responses indicate that 53% of

[16] Categories for distinguishing between residential and commercial units were determined based on the equipment sizing as these are the terms supply houses and contractors use to determine the appropriate unit to install.
[17] One of the supply houses reported that they did not sell standard efficiency furnaces; therefore, the total respondents for standard furnaces is 20.
[18] The contractor results support this conclusion, as 98% of contractor reported installations of standard and high efficiency water heaters were residential units.

high efficiency residential furnaces were sold outside the HEHE program. However, these results should be viewed with caution due to the small sample size.[19]

Figure 9: Supply House Sales of High Efficiency Natural Gas Furnaces Through the HEHE Program[20]

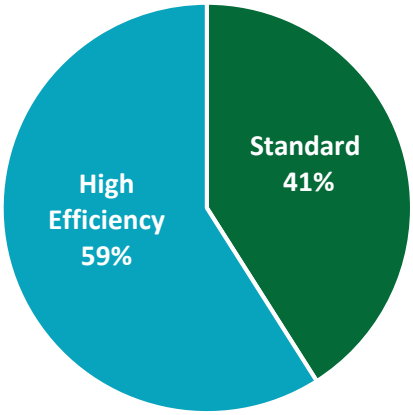


2.4 BOILERS

Twenty-two supply houses reported selling both standard and high efficiency natural gas boilers in 2016. As illustrated in **Error! Reference source not found.**, about three-fifths (59%) of units sold were high efficiency and two-fifths (41%) were standard efficiency. While our estimates for standard efficiency units result in an average of 41% of boiler units sold in 2016, recall that boilers represented the smallest percentage of overall heating and water heating sales, at 17% (Figure 3).[21] As such, natural gas boilers likely hold the smallest potential for additional program intervention across the three measures.

[19] Only two supply houses reported selling commercial-sized furnaces (300+ MBH units); however, neither reported if these sales received an incentive. Therefore, we could not estimate the inside and outside sales proportions for commercial furnaces.
[20] Sample sizes are too small to draw significant conclusions.
[21] Boilers were also the smallest percentage of contractor reported installations (11%).

Figure 10: Supply House Sales of Natural Gas Boilers (n=20)

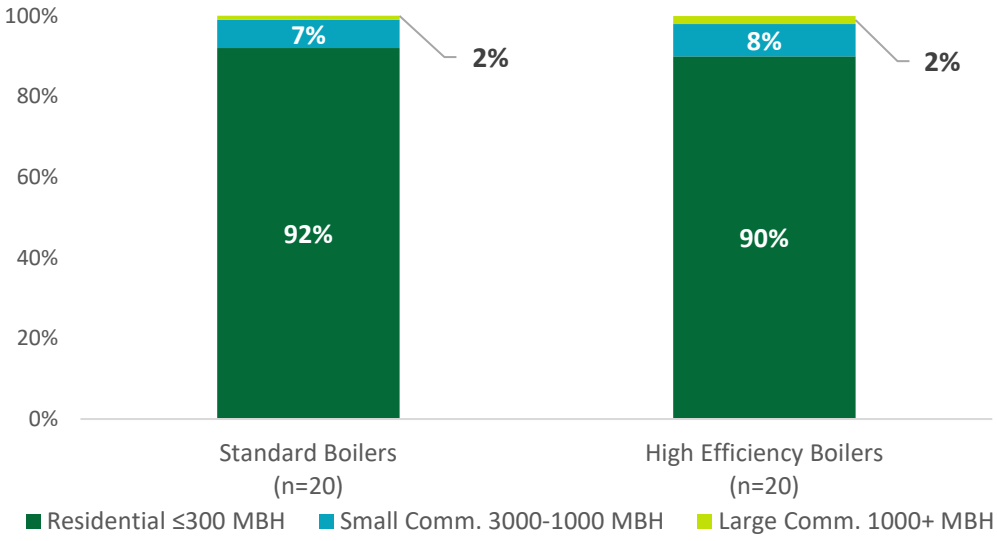


To assess the relative shares of residential versus commercial sales, we asked respondents to report what percentage of their boiler sales or installations were 300 MBH or less, what percentage were between 300 MBH and 1000 MBH, and what percentage were greater than 1,000 MBH (or 1,000 Btus per hour). We assumed that sales or installations reported as 300 MBH units or less were for residential installations. Sales reported between 300 MBH and 1000 MBH were assumed to be small commercial installations, and any sales reported as greater than 1,000 MBH were assumed to be large commercial installations.[22] As shown in Figure 11, residential installations represented the overwhelming majority of supply house sales of both standard (92%) and high efficiency (90%) units.[23]

[22] Categories for distinguishing between residential and commercial units were determined based on the equipment sizing as these are the terms supply houses and contractors use to determine the appropriate unit to install.

[23] The contractor results exhibited a similar pattern, where residential units represented 99% of standard and 98% of high efficiency installations.

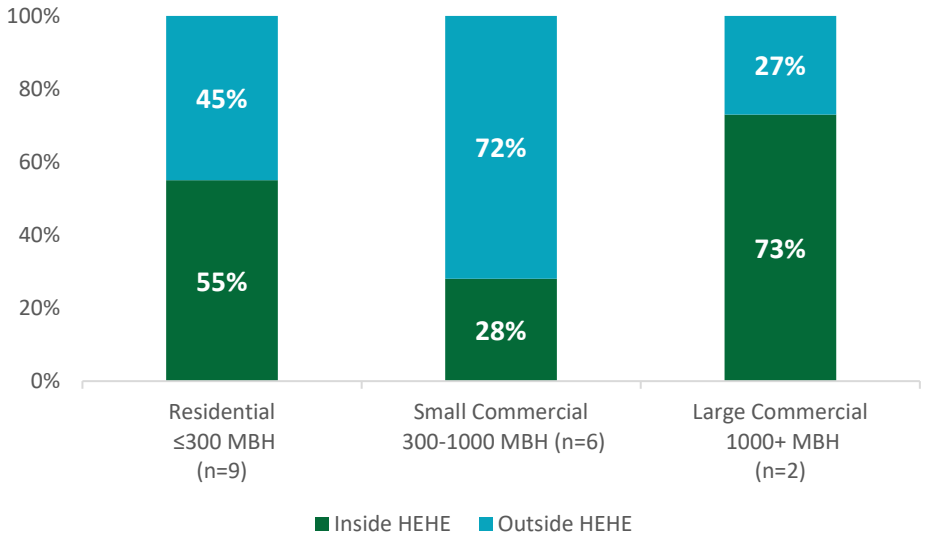
Figure 11: Residential and Commercial Supply House Sales of Natural Gas Boilers



Few supply houses (9 of 22) provided estimates of the percentage of residential sales that received program incentives. Their responses indicate that a substantial percentage (48%) of high efficiency boilers were sold outside the HEHE program. However, these results should be viewed with caution due to the small sample sizes.[24]

[24] Only 13 supply houses reported selling high efficiency boilers between 300 and 1,000 MBH units; only six of these respondents reported if these units received an incentive. Only six supply houses reported selling high efficiency boilers that are greater than 1,000 MBH; only two of these respondents provided an answer when asked if these units received a rebate.

Figure 12: Supply House Sales of High Efficiency Natural Gas Boilers Through the HEHE Program[25]



2.5 Reasons for High Efficiency Equipment Sales Outside HEHE

If a supply house reported sales of any high efficiency equipment outside the National Grid HEHE program, the survey asked why these sales did not go through the program. More than one-half (56%) of supply houses stated that high efficiency equipment sales occurred outside the HEHE program because either the homeowner, or the contractor, was not aware of the rebate, or because the contractor did not participate in the program. This suggests a potential opportunity for National Grid to engage more actively with contractors and customers who are currently unaware of the program.

[25] Sample sizes are too small to draw significant conclusions.

3 Section 3 Interaction with Market Actors

Our analysis also assessed the influence of the HEHE program and investigated the roles of different actors within the supply chain. This component of our research is intended to help National Grid identify the point of intervention in the supply chain where the program might be able to best capture any untapped savings. To address this, we investigated three aspects of where the potential influence may occur:

1. Influence of the HEHE program on stocking of high efficiency equipment
2. Influence of the supply house on the contractor's or customer's decision to purchase high efficiency equipment
3. Influence of the HEHE program on contractor's installation of high efficiency equipment

3.1 HEHE Program Influence on Stocking of High Efficiency Equipment

The supply house survey posed two questions to investigate the influence of the HEHE program on supply house stocking of high efficiency natural gas equipment, as follows:

1. What level of influence has the HEHE program had on the stocking of high efficiency natural gas heating and water heating equipment?
2. Would supply houses stock the same amount of high efficiency natural gas heating and water heating equipment if the HEHE program rebates were not available?

About one-fifth (22% or 5 out of 23) of supply house respondents reported they would stock less high efficiency equipment if the HEHE program incentives were not available. The survey also asked supply houses to rate the level of influence the HEHE program had on their stocking practices. Four out of these five (80%) supply houses thought the HEHE program was either very or extremely influential on their stocking of high efficiency natural gas heating and water heating equipment. This indicates that most of the supply houses that were influenced by the HEHE program believe it strongly influenced their stocking practices. It also suggests that some of the HEHE program influence may be percolating up from the downstream incentives by promoting the stocking of high efficiency equipment. It further suggests that the level of influence on supply house stocking of high efficiency equipment would likely increase if the HEHE program were to implement a midstream intervention. Such direct engagement with supply houses could increase the influence of the program on stocking practices.

Table 5 presents the results of the influence of the HEHE program on stocking practices by the size of the supply house. As expected, the medium and large supply houses were less likely than small supply houses to alter their stocking of high efficiency equipment if the HEHE rebates were not available. In general, small supply houses are likely to stock fewer

equipment options; therefore, program incentives are more likely to influence the total amount of high efficiency units they hold in stock. Three-fifths (60%) of supply houses with fewer than five employees would stock less high efficiency equipment if the HEHE rebates were not available.

Table 5: HEHE Program Influence on Stocking by Supply House Size

	Small	Medium	Large
Stock same amount of high efficiency	40%*	91%	86%
Stock less high efficiency	60%*	9%	14%
Sample Size	**5**	**11**	**7**

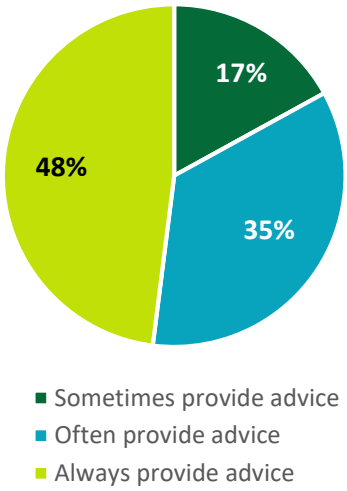
*Small is significantly different from medium and large supply houses at 90% confidence level.

3.2 Supply House Interactions with Contractors and Customers

The supply house survey included questions that explored the interactions between the supply houses, contractors, and end use customers. This section focuses on the responses to questions that examined the influence of the supply house on the equipment purchase decision.

Figure 13 shows that over four-fifths (83%) of supply houses often or always provide advice to installers and contractors on high efficiency natural gas heating and water heating equipment. This demonstrates that supply houses have a strong influence on these market actors' decisions to purchase high efficiency equipment.

Figure 13: Supply House Advice to Contractors and Installers on High Efficiency Equipment Purchase Decision (n=23)



When considering likelihood to provide advice to contractors by size of supply house, interesting results emerged. As shown in Table 6, smaller supply houses only *often* or

sometimes provide advice to contractors on the high efficiency equipment purchase decision compared to medium and larger supply houses who are significantly more likely to *always* provide such advice. Seventy-one percent of larger supply houses always provided advice to contractors, while none of the small supply houses indicated doing so. This result likely reflects the greater resources and more knowledgeable staff that medium and large supply houses are likely to have.

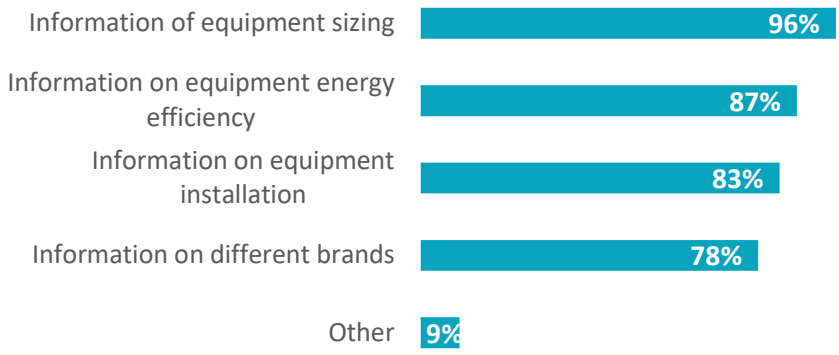
Table 6: Frequency of Supplier Advice on High Efficiency Equipment Purchase Decision by Supply House Size

	Small	Medium	Large
Sometimes provides advice	20%	18%	14%
Often provides advice	80%*	27%	14%
Always provides advice	0%*	55%	71%
Sample Size	**5**	**11**	**7**

*Small is significantly different from medium and large supply houses at 90% confidence level.

Figure 14 summarizes the types of advice supply houses typically give to installers and contractors. On average, 96% of supply houses provided advice on equipment sizing and 87% provided advice about the efficiency of the unit purchased. This supports the earlier finding that supply houses have a strong influence on the decision to purchase high efficiency equipment.

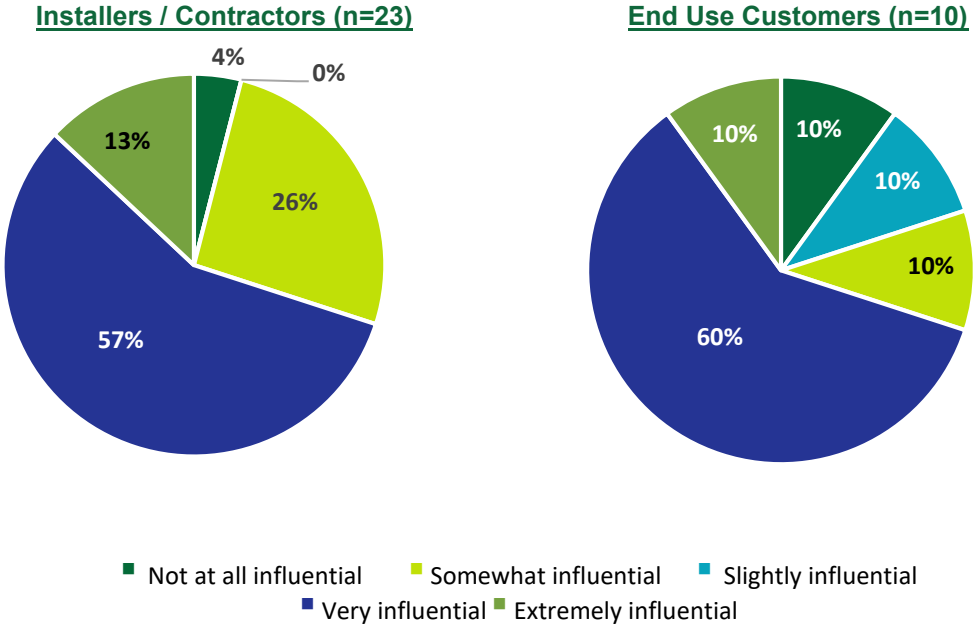
Figure 14: Types of Supply House Advice Given to Installers and Contractors (n=23)



We also asked supply houses to rate their own perceived level of influence on the energy-efficiency of the purchased equipment. Figure 15 shows the influence of supply houses' advice and recommendations on the energy-efficiency level of natural gas equipment that installers/contractors and end use customers decided to purchase.

Seventy percent of the supply houses believed they were very or extremely influential on both the contractors' and end use customers' decisions to purchase high efficiency equipment. As Figure 15 shows, only ten supply houses reported direct sales to end use customers; therefore, the opportunity for supply houses to directly influence the end use customers' decisions is lower compared to the opportunity to influence contractors' decisions. More notably, these results reveal that supply houses strongly influence the efficiency level of the equipment the contractors decide to purchase.

Figure 15: Supply House Influence on Contractor and Customer Decisions to Purchase High Efficiency Equipment



3.3 HEHE Program Influence on Contractor Sales of High Efficiency Equipment

To further understand the interactions between market actors in the supply chain, we asked contractors about their perceived influence on the installation of high efficiency equipment. We also asked contractors how influential the HEHE Program had been on their sales of high efficiency equipment in 2016. The following sections outline noteworthy results from the contractor survey.

3.3.1 Recommending High Efficiency Equipment Installations

About four-fifths (79%) of contractors actively encouraged their customers to both participate in the HEHE program and install high efficiency equipment. Furthermore, as Table 7 reveals, cross-tabulation of promotion of high efficiency equipment by contractor size shows that all of the large contractors actively encouraged their customers to install high efficiency equipment, which was significantly higher than medium (78%) and small contractors (77%).

Table 7: Recommendation of High Efficiency Natural Gas Heating and Water Heating Equipment by Contractor Size

	Small	Medium	Large
Never mentioned	5%	0%	0%
Mentioned to customers who expressed interest in HE	9%	6%	0%
Mentioned to all customers	9%	11%	0%
Actively encouraged	77%	78%	100%*
Don't know	0%	6%	0%
Sample Size	**22**	**18**	**3**

*Large is significantly different from small and medium supply houses at 90% confidence level.

Contractors also indicated the primary reason they recommended high efficiency equipment to their customers. Just under two-fifths (37%) of contractors reported recommending high efficiency equipment because the HEHE program rebates made the high efficiency options more affordable to their customers.

When analyzing the data by contractor size, results indicated that one-half (50%) of the small contractors recommended high efficiency equipment because the HEHE program rebates made the high efficiency option more affordable, while none of the large contractors reported the HEHE rebates influencing their recommendation (Table 8). This suggests that the downstream HEHE rebates are having a greater influence on small contractors' recommendations of high efficiency equipment. Large contractors recommended high efficiency equipment because their customers requested it (33%), it would reduce the use of energy or fossil fuels (33%), or because profit margins were higher for high efficiency equipment (33%).

Table 8: Reason Contractors Recommended High Efficiency Equipment by Contractor Size

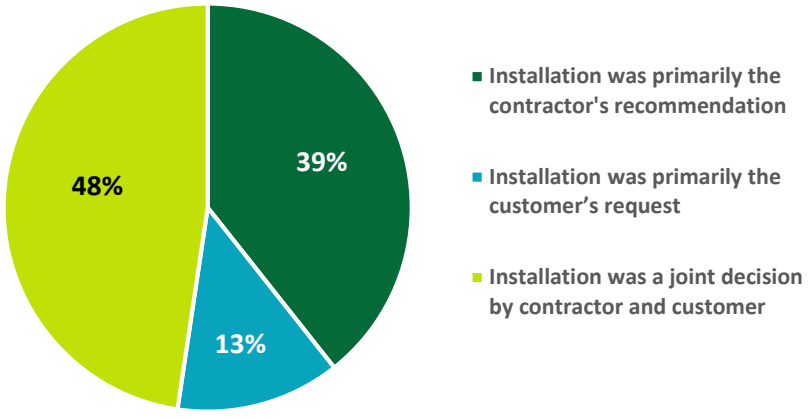
	Small	Medium	Large
Customers request high efficiency equipment	9%	11%	33%
Reduce use of fossil fuels	13%	11%	33%
Profit margins are higher	5%	0%	33%
Customers are more satisfied with high efficiency equipment	0%	33%	0%
Reliability of high efficiency equipment	14%	0%	0%
HEHE rebates make high efficiency equipment affordable	50%*	28%	0%
Other	9%	11%	0%
Don't know	0%	6%	0%
Sample Size	**22**	**18**	**3**

*Small is significantly different from large supply houses at 90% confidence level.

3.3.2 Interactions with Customers

Approximately one-half (48%) of contractors reported that the decision to install high efficiency equipment was made jointly between themselves and their customer (Figure 16). Contractors also reported that for just under one-half (45%) of their jobs, they worked with their customers to complete the rebate form. These results indicate that contractors are frequently closely involved in helping their customers make and implement the decision to install high efficiency equipment.

Figure 16: Contractor Role in Decision to Install High Efficiency Equipment



Contractors also rated the influence of specific factors on their decision to install program-eligible equipment. The two main reasons cited by contractors as very or extremely influential

were customers' interest in installing efficient equipment (77%) and the availability of the HEHE program rebates (67%).

4 Section 4 Supply House Sales, Marketing, and Stocking Practices

This section provides a summary of our investigation into supply houses' sales, marketing, and stocking practices, and assesses the dynamics of the current supply chain in the context of potentially implementing a midstream intervention for the HEHE program.

4.1 Marketing and Promotions

All 23 supply houses provide informational materials on high efficiency natural gas heating and water heating equipment to their customers. All of the supply houses reported providing informational materials from the manufacturer, and nearly three-fifths (57%) provided informational materials from National Grid.

Over four-fifths (83%) of the supply houses offered manufacturer promotions of high efficiency equipment in 2016. On average, supply houses offered eight promotions in 2016. Table 9 outlines the types of promotions offered by supply houses.

Table 9: Types of Supply House High Efficiency Promotions (n=18)

2016 Promotion Types	Frequency	Percent
Gift cards, cash, or incentives	10	56%
Price reductions	5	28%
Bundled specials or quantity discounts	5	28%
Rebates	5	28%
Informational	1	6%

The supply houses were almost evenly split on the impact of manufacturer promotions on sales. Among the four-fifths (83%) of supply houses that offered manufacturer promotions in 2016, just over one-half (53%) thought that the promotions boosted sales of high efficiency equipment, while a slightly smaller, but comparable, proportion (47%) thought that the promotions had no impact on sales.

Our analysis of equipment promotions suggests that, although most supply houses are already offering promotions for high efficiency equipment, National Grid has an opportunity to engage with them more actively. Since nearly three-fifths (57%) of supply houses are providing National Grid informational materials, this reveals an opportunity to engage with the two-fifths of supply houses that are not currently utilizing them. By working with supply houses, National Grid also has an opportunity to leverage manufacturer promotions of high

efficiency equipment by coordinating the timing of the HEHE program promotions to effectively offer a combined incentive package to their customers.

4.2 Sales and Collection of Customer Information

The survey included a series of questions to help understand the level of supply house awareness and knowledge of end use customers. As summarized in Table 10, most of the supply house customers are installers and contractors (92%) and very few sales are made directly to end use customers (7%).

Table 10: Supply House Natural Gas Heating and Water Heating Equipment Customer Types (n=23)

Percent of Customers	End Use Customers	Installers Contractors	Others
Mean Percentage	7%	92%	1%

In addition, an average of 83% of sales in 2016 were repeat sales to the same installers and/or contractors. These results, coupled with the fact that 95% of contractors reported purchasing from one to four supply houses, indicates that supply houses have strong, loyal relationships with contractors.

Most supply houses do not collect end user information from contractors. Only one out of 23 supply houses reported collecting end use customer information.[26] Our analysis shows that supply houses associated the need to collect end user information with filing for a manufacturer warranty – one-half (50%) of respondents indicated that collecting end user information was only necessary for this purpose. If the HEHE program implemented a midstream intervention, National Grid may need to explore adding a requirement that supply houses collect end user information.

4.3 General Stocking Practices

Nearly all the surveyed supply houses (96%) reported stocking the three equipment types of interest year-round. Only one medium-sized supply house reported seasonal stocking of high efficiency boilers, furnaces, and water heaters. This supply house indicated stocking boilers and furnaces during the colder months of September through February, but was unaware of the specific months that water heaters were stocked in 2016.

All supply houses reported stocking specific brands of heating and water heating equipment. Table 11, Table 12, and Table 13 provide a summary of the top brands of high efficiency equipment stocked by supply houses in Upstate New York in 2016. The supply houses stocked a variety of brands of natural gas heating and water heating equipment. These

[26]The one supply house that collected end-use customer information indicated collecting the customer's name, address, and contact information.

included 21 brands of boilers, 17 brands of furnaces, and eight brands of natural gas water heaters.

Table 11: Top Brands of High Efficiency Boilers Stocked by Supply Houses (n=22)

Boiler Brands	Count of Supply Houses	Percent of Supply Houses
Utica	11	52%
Weil Mclain	9	43%
Buderus	5	24%
NY Thermal Inc. (NTI)	5	24%

Table 12: Top Brands of High Efficiency Furnaces Stocked by Supply Houses (n=23)

Furnace Brands	Count of Supply Houses	Percent of Supply Houses
Airtemp	3	13%
Champion	3	13%
Ducane	3	13%
Goodman	3	13%

Table 13: Top Brands of High Efficiency Water Heaters Stocked by Supply Houses (n=20)

Water Heater Brands	Count of Supply Houses	Percent of Supply Houses
AO Smith	6	27%
Rheem	6	27%
Bradford White	5	23%
Navien	5	23%
Rinnai	5	23%

Table 14 summarizes the most frequently sold sizes of each type of equipment that supply houses maintained in stock in 2016.

Table 14: Most Common Equipment Types and Sizes Stocked by Supply Houses

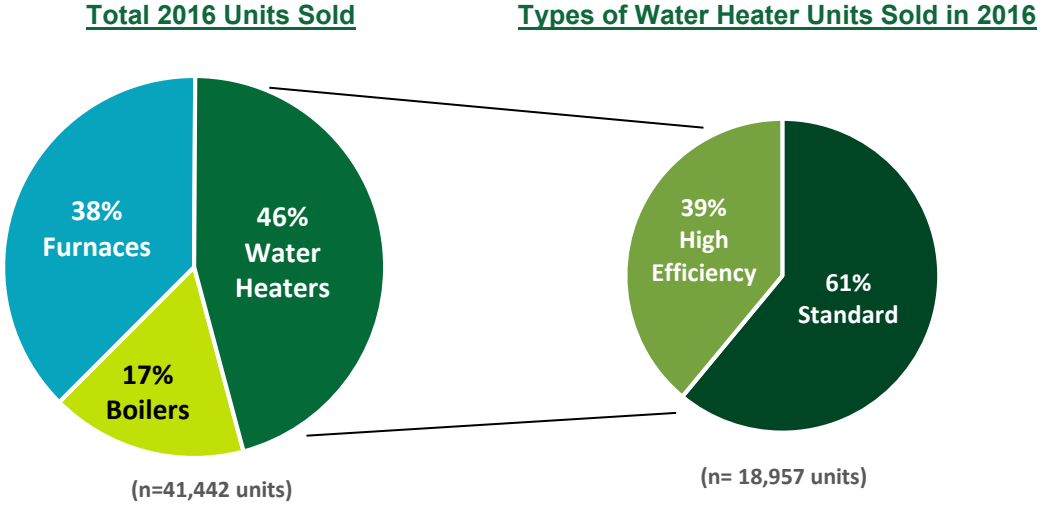
Equipment Type	Boilers (MBH)	Furnaces (MBH)	Water Heaters (Gallons)
Standard	105	84	40
High Efficiency	120	80	Tankless
Total Respondents	**21**	**22**	**22**[1]

[1]Only 19 supply houses reported stocking standard water heaters.

5 Section 5 Opportunities for Additional Intervention

Our study results indicate that residential water heaters provide the most substantial opportunity for further intervention by the HEHE program. As shown in Figure 17, natural gas water heaters comprised 46% (or 18,957 units) of the total 41,442 heating and water heating units sold in 2016 by supply house respondents. About three-fifths (61%) of water heater sales were standard efficiency units. Therefore, natural gas water heaters represent the largest number of standard units that could be converted to high efficiency installations through program intervention.

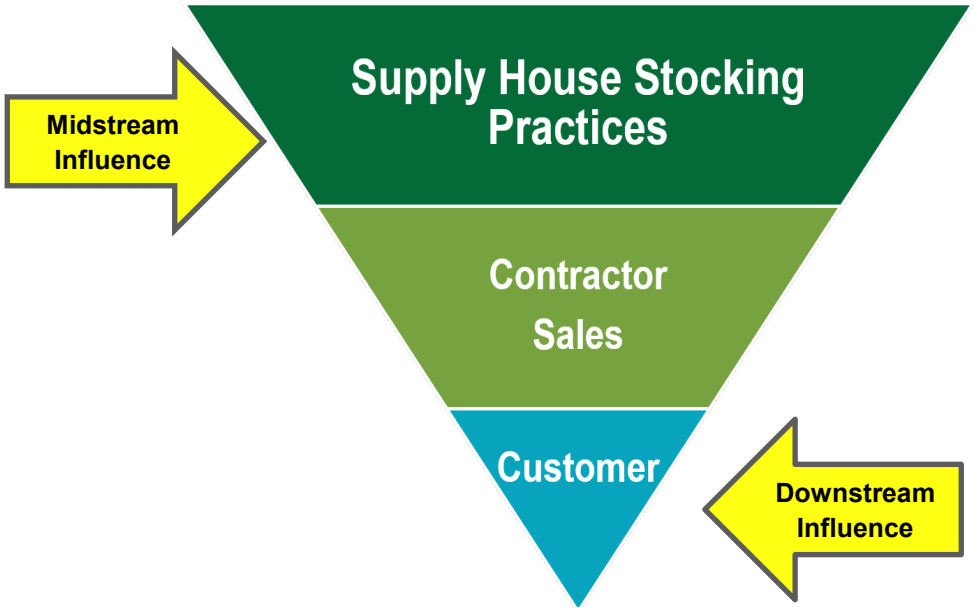
Figure 17: 2016 Supply House Sales of Natural Gas Heating and Water Heating Equipment in Upstate New York



Eighty-seven percent of standard efficiency water heaters sold in 2016 were residential sized units, pointing to the residential water heater market as the greatest opportunity area for achieving increased program intervention. Some opportunities also exist for residential furnaces and boilers; however, there were fewer standard efficiency installations of these measures in 2016.

To help guide the next steps for the HEHE program, we assessed the dynamics of the supply chain. Specifically, we determined how different market actors influence the installation of high efficiency heating and water heating equipment, and at what point program intervention in the supply chain would best be able to capture any untapped savings. Figure 18 outlines the levels of the supply chain for the natural gas heating and water heating market. The chain starts with supply houses that stock natural gas heating and water heating equipment. The next link in the supply chain are the contractors who purchase units from the supply houses. The last link is the customers who demand heating and water heating equipment, and who ultimately make the decision of what type of unit to purchase.

Figure 18: Heating and Water Heating Supply Chain



The current HEHE program is a downstream model, which offers rebates directly to customers for the installation of high efficiency natural gas heating and water heating equipment. This downstream intervention is meant to influence the installation of high efficiency equipment by reducing the high-cost associated with high efficiency units. Our results indicate that four-fifths of contractors believe the availability of the HEHE program rebates are either very or extremely influential in the decision to install program-eligible equipment. While the downstream program is influencing the installation of high efficiency equipment, a midstream intervention in the supply chain might help capture additional savings identified, particularly for residential water heaters.

Our analysis suggests that National Grid may have an opportunity to influence a greater uptake of high efficiency installations by working directly with supply houses. By implementing a midstream intervention, the HEHE program could cast a broader net over the natural gas heating and water heating market by influencing supply house stocking practices and leveraging the relationships between supply houses and contractors to better support the installation of high efficiency equipment.

Appendix A Survey Instruments

A.1 National Grid New York Market Survey of Supply Houses Survey Instrument

A.1.1 Introduction

[Arrange to speak with <contact name> OR head buyer for heating and water heating equipment; for smaller supply houses, arrange to speak with owner or manager.]

Hello, this is <name> with Research & Marketing Strategies calling on behalf of National Grid to conduct a survey of high efficiency natural gas heating and water heating supply houses in Upstate New York. We would like to speak with <contact name OR the person in charge of stocking natural gas heating and water heating equipment>, is he/she available?

[If the contact person answered] Hello, we would like to talk with you about your experience in this market and with the National Grid High Efficiency Heating Equipment program ("HEHE program"). This survey will take no more than 10-15 minutes of your time.

[If you are transferred to contact person] Hello, this is <name> with Research & Marketing Strategies calling on behalf of National Grid to conduct a survey of high efficiency natural gas heating and water heating supply houses in Upstate New York. We would like to speak with you about your experience in this market and with the National Grid High Efficiency Heating Equipment program ("HEHE program"). This survey will take no more than 10-15 minutes of your time.

[If no contact person available] Is there a better time that I should call back?

Record time:

Additional Information

[If needed: Do not read through unless respondent has questions]

Who is RMS?

Answer: RMS has been hired to conduct this survey.

What is this survey about?

Answer: The survey is seeking to understand sales and stocking practices of natural gas heating and water heating equipment in Upstate New York. Your responses will remain completely confidential, and all findings will be aggregated across all respondents.

A.1.2 Screening

Q1. Are you the person at [Company Name] who is most knowledgeable about stocking of natural gas heating and water heating equipment?

1. Yes [CONTINUE]
2. No [ASK TO BE DIRECTED TO THE CORRECT PERSON]

98. Don't know [ASK TO BE DIRECTED TO THE CORRECT PERSON]

[IF Q1=2 OR 98] "We would like to talk to the person who is most knowledgeable about the stocking of natural gas heating and water heating equipment. Can you provide us with a contact name and phone number for a person that can help us?") RESCHEDULE CALL]

Name: _____

Phone #: _____

Q2. What is your current job title?

1. Company owner
2. Store/warehouse manager
3. Sales associate
4. Other, please specify: _____

Your responses will remain completely confidential, and all findings will be aggregated across all respondents. By the way, if I ask you about areas you don't know about, please feel free to tell me and we will move on. Do you have any questions before we start?

A.1.3 Supply House Operation

OP1. How many store locations does your company have in New York State? How many of them are in Upstate New York, that is, the cities of Watertown, Syracuse, Albany, Glens Falls, and Hudson and their surrounding areas?

OF NEW YORK STATE STORES: _____

OF UPSTATE NEW YORK STORES: _____

OP2. How many warehouse locations does your company have in New York State? How many of these warehouses are in Upstate New York, that is, the cities of Watertown, Syracuse, Albany, Glens Falls, and Hudson and their surrounding areas?

OF NEW YORK STATE WAREHOUSES: _____

OF UPSTATE NEW YORK WAREHOUSES: _____

For this survey, we are interested in understanding your experience with the National Grid HEHE program in <u>Upstate</u> New York. Upstate New York is defined as National Grid's gas service territory in the cities of Watertown, Syracuse, Albany, Glens Falls, and Hudson and their surrounding areas.

A.1.4 Stocking Practices of High Efficiency Natural Gas Equipment

For the purpose of this survey, we will define natural gas high efficiency heating equipment as the types of equipment that are eligible for incentives through the National Grid HEHE program. The qualifying equipment are as follows. (READ THROUGH LIST BELOW)

High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency
High Efficiency Natural Gas Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallons or greater and > 0.67 Energy Factor) • Indirect fired water heaters

ST1. Does your company stock…
(1=YES, 2=NO, 97=WOULD RATHER NOT ANSWER, 98=DON'T KNOW)

Equipment Type	Stocked
A. Standard Efficiency Natural Gas Boilers	
B. High Efficiency Natural Gas Boilers	
C. Standard Efficiency Natural Gas Furnaces	
D. High Efficiency Natural Gas Furnaces	
E. Standard Efficiency Natural Gas Water Heaters	
F. High Efficiency Natural Gas Water Heaters	

ST2. Does your company stock *(READ FROM LIST BELOW)* ***year-round or seasonally***?
If seasonally, what months do you stock them?

[ASK FOR HIGH EFFICIENCY NATURAL GAS BOILERS [IF ST1B=1]

[ASK FOR HIGH EFFICIENCY NATURAL GAS FURNACES IF ST1D=1]
[ASK FOR HIGH EFFICIENCY NATURAL GAS WATER HEATERS IF ST1F=1]

Equipment Type	Don't know	Year Round	Seasonally Mark Months →	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	DK
High Efficiency Natural Gas Boilers																
High Efficiency Natural Gas Furnaces																
High Efficiency Natural Gas Water Heaters																

ST3. [IF ST1B=1] Does your company stock specific brands of high efficiency natural gas boilers? If yes, what brands do you stock?

1. Yes [RECORD BRAND NAME(S)]
2. No

97. Would rather not answer

98. Don't know

REPEAT FOR HIGH EFFICIENCY NATURAL GAS FURNACES [IF ST1D=1], AND HIGH EFFICIENCY NATURAL GAS WATER HEATERS [IF ST1F=1]

Equipment Type	Stock Specific Brands	Brand Name(s)
High Efficiency Natural Gas Boilers	1. Yes 2. No	
High Efficiency Natural Gas Furnaces	1. Yes 2. No	
High Efficiency Natural Gas Water Heaters	1. Yes 2. No	

ST5. What are the most frequently sold sizes of each type of natural gas heating and water heating equipment that you maintain in stock?

Equipment Type	Most Common Size
[IF ST1A=1] Standard Efficiency Natural Gas Boilers	MBH
[IF ST1B=1] High Efficiency Natural Gas Boilers	MBH
[IF ST1C=1] Standard Efficiency Natural Gas Furnaces	MBH
[IF ST1D=1] High Efficiency Natural Gas Furnaces	MBH
[IF ST1E=1] Standard Efficiency Natural Gas Water Heaters	Gallons
[IF ST1F=1] High Efficiency Natural Gas Water Heaters	Gallons

ST6. On a scale of 1- 5, where 1= not at all influential and 5=extremely influential, how influential is the HEHE program on your stocking of high efficiency natural gas heating and water heating equipment?

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential
5. Extremely influential

97. Would rather not answer

98. Don't know

ST7. Would your company stock the same amount of high efficiency natural gas heating and water heating equipment if the HEHE program rebates were not available?

1. Yes, we would stock the same amount of high efficiency natural gas heating and water heating equipment
2. No, we would stock less high efficiency natural gas heating and water heating equipment

97. Would rather not answer

98. Don't know

A.1.5 2016 Sales of Heating and Water Heating Equipment

I now would like to understand the relative shares of <equipment types listed in R1> that your company sold in Upstate New York in 2016. **Upstate New York is defined as National Grid's gas service territory in the cities of Watertown, Syracuse, Albany, Glens Falls, and Hudson and their surrounding areas.**

R1. [ASK IF SELECTED MORE THAT ONE MEASURE (BOILERS, FURNACES OR WATER HEATERS IN ST1] About what percentage of the natural gas heating and water heating equipment that your store sold in Upstate New York in 2016 were: **[PERCENTAGES SHOULD ADD TO 100%]**

Equipment Type	Percent of Units Sold
A. [IF ST1 A OR B=1] Natural Gas Boilers	%
B. [IF ST1 C OR D=1] Natural Gas Furnaces	%
C. [IF ST1 E OR F=1] Natural Gas Water Heaters	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]

A.1.5.1 Boilers

IF R1A > 0%, ASK THIS SECTION

R2. Thinking now of just the natural gas boilers that your store sold in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units? **[PERCENTAGES SHOULD ADD TO 100%]**

Natural Gas Boiler Efficiency	Percent of Units Sold
Standard Efficiency Natural Gas Boilers	%
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]
Don't know/Refused [GO TO R2a]	

R2a. [IF R2 = Don't know/Refused OR SUM=0%] Focusing on just the standard efficiency natural gas boilers, as a share of all natural gas boiler sales, would you say that your sales of standard efficiency units are (READ THROUGH LIST)

1. Less than 20% of all natural gas boiler sales [GO TO R5]
2. 20% to 50% [GO TO R5]
3. 51% to 75% [GO TO R5]
4. 76% to 90% [GO TO R5]
5. 91% to 100% of your total sales of natural gas boilers [GO TO R5]
6. Don't know/refused [GO TO R5]

R3. **[ASK FOR EACH BOILER EFFICIENCY TYPE FROM R2 > 0%]** You just indicated that <Standard / High Efficiency> natural gas boilers represented ____% of all the boilers you sold in Upstate New York in 2016. Of that ___%, approximately what percentage were 300 MBH or less, what percentage were between 300 MBH and 1000 MBH, and what percentage were greater than 1000 MBH?

[PERCENTAGES FOR EACH EQUIPMENT TYPE (ROWS) SHOULD ADD TO 100%]

Natural Gas Boiler Size	≤300 MBH	300 MBH to 1000 MBH	>1000 MBH	[CHECK ADD TO 100%]
Standard Efficiency Natural Gas Boilers	%	%	%	[SUM]
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	%	%	%	[SUM]

R4. **[ASK FOR EACH HIGH EFFICIENCY BOILER SIZE CATEGORY FROM R3 > 0%]** You indicated that ____% of your sales of high efficiency boilers were <insert size> units. Of that ___%, approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program?

[FOR EACH SIZE CATEGORY, PERCENTAGE WITHIN & OUTSIDE HEHE SHOULD ADD TO 100%]

Natural Gas Boiler Program and Non-Program Installations	≤300 MBH		300 MBH to 1000 MBH		>1000 MBH	
	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	%	%	%	%	%	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]		[SUM]		[SUM]	

A.1.5.2 Furnaces

IF R1B > 0%, ASK THIS SECTION

R5. Thinking now of just the natural gas furnaces that your store sold in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units? **[PERCENTAGES SHOULD ADD TO 100%]**

Natural Gas Furnace Efficiency	**Percent of Units Sold**
Standard Efficiency Natural Gas Furnaces	%
High Efficiency Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]
Don't know/Refused [GO TO R5a]	

R5a. [IF R5 = Don't know OR SUM=0%] Focusing on just the standard efficiency natural gas furnaces, as a share of all natural gas furnace sales, would you say that your sales of standard efficiency units are (READ THROUGH LIST)

7. Less than 20% of all natural gas furnace sales [GO TO R8]
8. 20% to 50% [GO TO R8]
9. 51% to 75% [GO TO R8]
10. 76% to 90% [GO TO R8]
11. 91% to 100% of your total sales of natural gas furnaces [GO TO R8]

98. Don't know/refused [GO TO R8]

R6. **[ASK FOR EACH FURNACE EFFICIENCY TYPE FROM R5 > 0%]** You just indicated that < Standard / High Efficiency > natural gas furnaces represented ____% of all the furnaces you sold in Upstate New York in 2016. Of that ___%, approximately what percentage were 300 MBH or less and what percentage were greater than 300 MBH?

[PERCENTAGES FOR EACH EQUIPMENT TYPE (ROWS) SHOULD ADD TO 100%]

Natural Gas Furnace Size	**≤300 MBH**	**>300 MBH**	**[CHECK ADD TO 100%]**
Standard Efficiency Natural Gas Furnaces	%	%	[SUM]
High Efficiency Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	%	%	[SUM]

R7. **[ASK FOR EACH HIGH EFFICIENCY FURNACE SIZE CATEGORY FROM R6 > 0%]** You had indicated ____% of your sales of high efficiency furnaces were <insert size> units.

Of that ___%, approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program?

[FOR EACH SIZE CATEGORY, PERCENTAGE WITHIN & OUTSIDE HEHE SHOULD ADD TO 100%]

Natural Gas Furnace Program and Non-Program Installations	≤300 MBH		>300 MBH	
	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE
High Efficiency Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	%	%	%	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]		[SUM]	

A.1.5.3 Water Heaters

IF R1C > 0%, ASK THIS SECTION

R8. Thinking now of just the natural gas water heaters that your store sold in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units? **[PERCENTAGES SHOULD ADD TO 100%]**

Natural Gas Water Heater Efficiency	Percent of Units Sold
Standard Efficiency Natural Gas Water Heaters	%
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallon or greater and > 0.67 Energy Factor) • Indirect fired water heaters	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]

R8a. [IF R8 = Don't know OR SUM=0%] Focusing on just the standard efficiency natural gas water heaters, as a percentage of all natural gas water heater sales, would you say that your sales of standard efficiency units are (READ THROUGH LIST)

1. Less than 20% of all natural gas water heater sales [GO TO R11]
2. 20% to 50% [GO TO R11]
3. 51% to 75% [GO TO R11]
4. 76% to 90% [GO TO R11]
5. 91% to 100% of your total sales of natural gas water heaters [GO TO R11]

99. Don't know/refused [GO TO R11]

R9. **[ASK FOR EACH WATER HEATER EFFICIENCY TYPE FROM R8 > 0%]** You just indicated that <Standard / High Efficiency> natural gas water heaters represented ____% of all the water heaters you sold in Upstate New York in 2016. Of that ___%, approximately what percentage were 50 gallons or less and what percentage were greater than 50 gallons?

[PERCENTAGES FOR EACH EQUIPMENT TYPE (ROWS) SHOULD ADD TO 100%]

Natural Gas Water Heater Size	≤ 50 gallons	> 50 gallons	[CHECK ADD TO 100%]
Standard Efficiency Natural Gas Water Heaters	%	%	[SUM]
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallon or greater and > 0.67 Energy Factor) • Indirect fired water heaters	%	%	[SUM]

R10. **[ASK FOR EACH HIGH EFFICIENCY WATER HEATER SIZE CATEGORY FROM R9 > 0%]** You had indicated that ____% of your sales of high efficiency water heaters were <insert size> units. Of that ___%, approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program?

[FOR EACH SIZE CATEGORY, PERCENTAGE WITHIN & OUTSIDE HEHE SHOULD ADD TO 100%]

Natural Gas Water Heater Program and Non-Program Installations	≤ 50 gallons		> 50 gallons	
	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallon or greater and > 0.67 Energy Factor) • Indirect fired water heaters	%	%	%	%
[CHECK THAT RESPONSES ADD TO 100%]	[SUM]		[SUM]	

R11. [ASK IF IN R4, R7, OR R10, ANY "OUTSIDE HEHE" > 0%] You have indicated that some of your 2016 sales of high efficiency equipment happened outside the National Grid HEHE program. Why do you think these sales did not go through the HEHE program?

_____

R12. Approximately what percentage of your 2016 sales of high efficiency natural gas heating and water heating equipment were directly to the end-use customers, what percentage were to installers and contractors, and what percentage were to someone else? **PERCENTAGES SHOULD ADD TO 100%**

A. End-use customers: ___%

B. Installers/Contractors: ___%

C. Others: ___%

R13. Approximately what percentage of your 2016 sales were repeat sales to the same installers and contractors?

RECORD PERCENTAGE: _____%

A.1.6 High Efficiency Equipment Information & Promotions

P1. Does your store provide, or make available, informational materials on high efficiency natural gas heating and water heating equipment to customers (installers/contractors or end-use customers)?

1. Yes
2. No [GO TO P3]
98. Don't know [GO TO P3]

P2. [IF P1=1] Are the informational materials: developed by your company, provided by manufacturers, provided by National Grid, or obtained from some other source? [CHECK ALL THAT APPLY]

1. Developed by your company
2. Provided by manufacturers
3. Provided by National Grid
4. Obtained from some other source, please specify: _____

98. Don't know

P3. How frequently do you provide advice to installers and contractors on high efficiency natural gas heating and water heating equipment?

1. Never provide advice [GO TO P5]
2. Sometimes provide advice
3. Often provide advice

4. Always provide advice

98. Don't know [GO TO P5]

P4. What type(s) of advice do you provide to installers? [CHECK ALL THAT APPLY]

1. Information on equipment energy efficiency
2. Information on different brands
3. Information of equipment sizing
4. Information on equipment installation
5. Other, please specify: _____

97. Would rather not answer

98. Don't know

P5. [IF R12A> 0] You indicated earlier that some of your sales of high efficiency natural gas heating and water heating equipment were directly to end use customers. On a scale of 1- 5, where 1= not at all influential and 5=extremely influential, how influential are your advice and recommendations on the energy efficiency level of the natural gas heating and water heating equipment that end use customers decide to purchase?

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential
5. Extremely influential

97. Would rather not answer

98. Don't know

P6. [IF R12B> 0] On a scale of 1- 5, where 1= not at all influential and 5=extremely influential, how influential are your advice and recommendations on the energy efficiency level of the natural gas heating and water heating equipment that installers and contractors decide to purchase?

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential
5. Extremely influential

97. Would rather not answer

98. Don't know

P7. Does your company collect or obtain any of the following information about the end-use customer from installers and contractors? (READ THROUGH LIST/CHECK ALL THAT APPLY)

1. End-user name
2. End-user address
3. End-user phone number
4. End-user email
5. Other (please describe) _____
6. We do not collect any end-use customer information

98. Don't know

P8. [IF P7 = 6] Why do you not collect or obtain any end-use customer information from installers and contractors?

_____

P9. In 2016, did your store offer any manufacturer promotions of high efficiency natural gas heating and water heating equipment?

1. No, we did not offer any manufacturer promotions of high efficiency natural gas heating and water heating equipment [GO TO NEXT SECTION]
2. Yes, please specify what type: _____

98. Don't know [GO TO NEXT SECTION]

P10. [IF P9=2] About how many manufacturer promotions of high efficiency natural gas heating and water heating equipment did you have in 2016?

RECORD NUMBER: _____

P11. [IF P9=2] How did these manufacturer promotions of high efficiency natural gas heating and water heating equipment interact with the National Grid HEHE program?

1. Boosted sales over normal program-incentivized sales volumes
2. Had no impact – manufacturer promotions were for HEHE qualifying equipment but sales volumes did not change as compared to normal program-incentivized sales volumes
3. Had no impact – manufacturer promotions were for different equipment than the HEHE qualifying equipment
4. Other (specify): _____

98. Don't know

A.1.7 Firmographics

F1. How many years has your company been in business?

1. 0-2 years
2. 3-5 years
3. 6-10 years
4. 11-15 years
5. 16-24 years
6. 25+ years

97. Would rather not answer
98. Don't know

F2. What is the total number of employees at this location of your company?

1. Fewer than 5
2. 5 to 9
3. 10 to 19
4. 20 to 49
5. 50 to 99
6. 100 to 249
7. 250 or More

97. Would rather not answer
98. Don't know

F3. What is the total square footage of all your warehouse space in Upstate New York?

1. 1,000 square feet or less
2. 1,000-4,999 square feet
3. 5,000-9,999 square feet
4. 10,000-49,999 square feet
5. 50,000-99,999 square feet
6. Over 100,000 square feet

98. Don't know

F4. [IF ST1 A OR B=1] Including both standard and high efficiency equipment, which category best describes the total number of **natural gas boilers** that you sold in Upstate New York in 2016? [**READ CATEGORIES**]

1. Less than 50 units

2. Between 51 and 100 units
3. Between 101 and 200 units
4. Between 201 and 300 units
5. Between 301 and 500 units
6. Between 501 and 1,000 units
7. Between 1,001 and 2,000 units
8. Between 2,001 and 3,000 units
9. More than 3,000 units
98. Don't know

F5. [IF ST1 C OR D=1] Including both standard and high efficiency equipment, which category best describes the total number of **natural gas furnaces** that you sold in Upstate New York in 2016? [**READ CATEGORIES**]

1. Less than 50 units
2. Between 51 and 100 units
3. Between 101 and 200 units
4. Between 201 and 300 units
5. Between 301 and 500 units
6. Between 501 and 1,000 units
7. Between 1,001 and 2,000 units
8. Between 2,001 and 3,000 units
9. More than 3,000 units
98. Don't know

F6. [IF ST1 E OR F=1] Including both standard and high efficiency equipment, which category best describes the total number of **natural gas water heaters** that you sold in Upstate New York in 2016? [**READ CATEGORIES**]

1. Less than 50 units
2. Between 51 and 100 units
3. Between 101 and 200 units
4. Between 201 and 300 units
5. Between 301 and 500 units
6. Between 501 and 1,000 units
7. Between 1,001 and 2,000 units
8. Between 2,001 and 3,000 units

9. More than 3,000 units

98. Don't know

Thank you very much for your time!

A.2 National Grid HEHE Program Contractor NTG Survey Instrument

A.2.1 Introduction

Thank you for your willingness to complete our survey!

[IF USNY =0]

As mentioned in the letter that we sent you, National Grid has partnered with Research & Marketing Strategies, Inc. (RMS), a third-party market research firm, to learn more about your experience in the residential and commercial natural gas heating and water heating market and with National Grid's Residential High Efficiency Heating Equipment Program ("HEHE program"), where you and/or your customer(s) received an incentive for installing energy-efficient heating equipment. Your feedback is important and will help ensure that the program is beneficial to National Grid's customers. This survey will take about 10 minutes.

[IF USNY =1]

As mentioned in the letter that we sent you, National Grid has partnered with Research & Marketing Strategies, Inc. (RMS), a third-party market research firm, to learn more about your experience in the residential and commercial natural gas heating and water heating market and with National Grid's High Efficiency Heating Equipment Program ("HEHE program"), where you and/or your customer(s) received an incentive for installing energy-efficient natural gas heating equipment. **For this survey, we are interested in understanding your experience in the residential and commercial natural gas heating and water heating market, and with the National Grid HEHE program in <u>Upstate</u> New York; that is, the cities of Watertown, Syracuse, Albany, Glens Falls, and Hudson and their surrounding areas.**

Your feedback is important and will help ensure that the program is beneficial to National Grid's customers. This survey will take about 15 minutes.

A.2.2 Screening

S1. Our records show that you installed high efficiency heating equipment in 2016 that was eligible for an incentive through the National Grid HEHE program. This includes measures like furnaces, boilers, waters heaters, and thermostats. Is that correct?

1. Yes
2. No
98. Don't Know

TERM1. [READ IF S1>1] Thank you for your willingness to complete this survey. Unfortunately, we are only conducting this survey with respondents able to confirm installing program-eligible equipment. [TERMINATE]

S2. [ONLY ASK IF USNY=1] Approximately how many of each of the following natural gas heating and water heating equipment types did you install in Upstate New York in 2016:

[RECORD QUANTITY; MUST BE WHOLE NUMBER]

Equipment Type	**2016 Quantity Installed**
A. Natural Gas Boilers	
B. Natural Gas Furnaces	
C. Natural Gas Water Heaters	

[IF S2A < 10 AND S2B < 10 AND S2 < 10, THANK AND TERMINATE]

S3. How did you first hear about the National Grid HEHE program which provides incentives for installing high efficiency natural gas heating and water heating equipment?

[RANDOMIZE]

1. Through marketing or information from National Grid
2. From the recommendation of a customer
3. Through a colleague or competitor
4. Through a distributor, supplier, manufacturer, or retailer
5. Through independent research
6. Other, please explain [ALLOW OPEN END RESPONSE]
7. Have not heard of the HEHE program

S3a. [IF S3=7] The HEHE program offers incentives against the cost of the purchase and installation of energy-efficient heating and water heating equipment. If you installed equipment through the HEHE program, either you or your customer(s) would have received an incentive from National Grid for the installation of the high efficiency unit. Are you familiar with this program?

1. Yes
2. No
98. Don't know

A.2.3 2016 Installations of Heating and Water Heating Equipment

[IF USNY = 1, ASK THIS SECTION]

National Grid would like to understand the relative proportion of your [equipment types listed in S2 > 10] installations that were standard or high efficiency units installed in **Upstate New York in 2016.**

[Next Page] For the purpose of this survey please note the following definitions.

Upstate New York includes the cities and surrounding areas of:

- Watertown
- Syracuse
- Albany
- Glens Falls
- Hudson

High efficiency natural gas heating and water heating equipment are defined as the types of equipment that are eligible for incentives through the National Grid HEHE program. The qualifying equipment are listed in the table below.

High Efficiency Natural Gas Boilers
• Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency
High Efficiency Natural Gas Furnaces
• Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%
High Efficiency Natural Gas Water Heaters
• On-Demand Tankless Water Heater (Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallons or greater and > 0.67 Energy Factor) • Indirect fired water heaters

A.2.3.1 Boilers

[IF S2A ≥ 10 OR IF S2A ≥10% OF BOILERS + FURNACES, ASK THIS SECTION]

R2. Thinking now of just the natural gas **boilers** that your company installed in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units?

High efficiency natural gas boilers are defined as the types of equipment that are eligible for incentives through the National Grid HEHE program. The qualifying boilers are [READ FROM TABLE BELOW].[RECORD PERCENTAGE; MUST ADD TO 100%]

Natural Gas Boiler Efficiency	Percent of Units Installed
Standard Efficiency Natural Gas Boilers	
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	
Total	[SUM]

[IF R2 = Don't know; ASK R2a OTW CONTINUE TO R3]

R2a. [IF R2 = Don't know OR SUM=0%] Focusing on just the **standard** efficiency natural gas boilers, as a share of all natural gas boiler installations, would you say that your installations of **standard** efficiency units are…

12. Less than 20% of all natural gas boiler installations
13. 20% to 50% of all natural gas boiler installations
14. 51% to 75% of all natural gas boiler installations
15. 76% to 90% of all natural gas boiler installations
16. 91% to 100% of your total installations of natural gas boilers
98. Don't know

[IF ASKED R2a SKIP TO R5]

R3. **[REPEAT FOR EACH BOILER EFFICIENCY TYPE FROM R2 > 0%]** You just indicated that [standard / high Efficiency] represented [R2 PERCENT] of your all the boilers you installed in Upstate New York in 2016. Of that [R2 PERCENT], approximately what percentage were 300,000 Btu's or less, what percentage were between 300,000 Btu and 1 million Btu, and what percentage were greater than 1 million Btu? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGES; RESPONSES FOR EACH EQUIPMENT TYPE (FROM R2) SHOULD ADD TO 100%]

Natural Gas Boiler Size	≤300,000 Btu	300,000 Btu to 1 million Btu	>1 million Btu	Totals
Standard Efficiency Natural Gas Boilers	%	%	%	[SUM]
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	%	%	%	[SUM]

R4. **[IF S3 ≠ 7 OR S3a = 1, REPEAT FOR EACH HIGH EFFICIENCY BOILER SIZE CATEGORY FROM R3 > 0%]** You indicated that [R3 PERCENT] of your installations of high efficiency boilers were [R3 SIZE] units. Of that [R3 PERCENT], approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGE; RESPONSES FOR EACH SIZE CATEGORY (R3) SHOULD ADD TO 100%]

Natural Gas Boiler Program and Non-Program Installations	≤300,000 Btu		300,000 Btu to 1 million Btu		>1 million Btu	
	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE
High Efficiency Natural Gas Boilers • Condensing boilers AFUE ≥ 90% • Steam boilers with electronic ignition AFUE ≥ 82% • Hydronic boilers ≥ 85% Thermal Efficiency	%	%	%	%	%	%
Totals	[SUM]		[SUM]		[SUM]	

A.2.3.2 Furnaces

[IF S2B > 10 OR IF S2B >10% OF BOILERS + FURNACES, ASK THIS SECTION]

R5. Thinking now of just the natural gas **furnaces** that your company installed in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units? Percentages need to add to 100% to continue to the next question.

High efficiency natural gas furnaces are defined as the types of equipment that are eligible for incentives through the National Grid HEHE program. The qualifying furnaces are [READ FROM TABLE BELOW].

[RECORD PERCENTAGE; MUST ADD TO 100%]

Natural Gas Furnace Efficiency	**Percent of Units Installed**
Standard Efficiency Natural Gas Furnaces	
High Efficiency Natural Gas Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	
Total	[SUM]
Don't know	

[IF R5 = Don't know; ASK R5a OTW CONTINUE TO R6]

R5a. [IF R5 SUM=0%] Focusing on just the **standard** efficiency natural gas furnaces, as a share of all natural gas furnace installations, would you say that your installations of **standard** efficiency units are…

1. Less than 20% of all natural gas furnace installations
2. 20% to 50% of all natural gas furnace installations
3. 51% to 75% of all natural gas furnace installations
4. 76% to 90% of all natural gas furnace installations
5. 91% to 100% of your total installations of natural gas furnaces

100. Don't know

[IF ASKED R5a SKIP TO R8]

R6. **[REPEAT FOR EACH FURNACE EFFICIENCY TYPE FROM R5 > 0%]** You just indicated [standard / high efficiency] represented [R5 PERCENT] of your all the furnaces you installed in Upstate New York in 2016. Of that [R5 PERCENT], approximately what percentage were 300,000 Btu or less and what percentage were greater than 300,000 Btu? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGES; RESPONSES FOR EACH EQUIPMENT TYPE (FROM R5) SHOULD ADD TO 100%]

Natural Gas Furnace Size	≤300,000 Btu	>300,000 Btu	Totals
Standard Efficiency Natural Gas Furnaces	%	%	[SUM]
High Efficiency Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	%	%	[SUM]

R7. **[IF S3 ≠ 7 OR S3a = 1, REPEAT FOR EACH HIGH EFFICIENCY FURNACE SIZE CATEGORY FROM R6 > 0%]** You had indicated [R6 PERCENT] of your installations of high efficiency furnaces were [R6 SIZE] units. Of that [R6 PERCENT], approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGE; RESPONSES FOR EACH SIZE CATEGORY (R6) SHOULD ADD TO 100%]

Natural Gas Furnace Program and Non-Program Installations	≤300,000 Btu		>300,000 Btu	
	Within HEHE	**Outside HEHE**	**Within HEHE**	**Outside HEHE**
High Efficiency Furnaces • Furnace AFUE ≥ 92% & ECM motor • Furnace AFUE ≥ 90%	%	%	%	%
Totals	[SUM]		[SUM]	

A.2.3.3 Water Heaters

[IF S2C ≥ 10, ASK THIS SECTION]

R8. Thinking now of just the natural gas **water heaters** that your company installed in Upstate New York in 2016, about what percentage were standard efficiency and what percentage were high efficiency units? Percentages need to add to 100% to continue to the next question.

High efficiency natural gas water heaters are defined as the types of equipment that are eligible for incentives through the National Grid HEHE program. The qualifying water heaters are [READ FROM TABLE BELOW].

[RECORD PERCENTAGE; MUST ADD TO 100%]

Natural Gas Water Heater Efficiency	**Percent of Units Installed**
Standard Efficiency Natural Gas Water Heaters	
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater (Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallons or greater and > 0.67 Energy Factor) • Indirect fired water heaters	
Total	[SUM]
Don't know	

[IF R8 = Don't know; ASK R8a OTW CONTINUE TO R9]

R8a. [IF R8SUM=0%] Focusing on just the **standard** efficiency natural gas water heaters, as a percentage of all natural gas water heater installations, would you say that your installations of **standard** efficiency units are…

6. Less than 20% of all natural gas water heater installations
7. 20% to 50% of all natural gas water heater installations
8. 51% to 75% of all natural gas water heater installations
9. 76% to 90% of all natural gas water heater installations
10. 91% to 100% of your total installations of natural gas water heaters

101. Don't know

[IF ASKED 8a SKIP TO NEXT SECTION]

R9. **[REPEAT FOR EACH WATER HEATER EFFICIENCY TYPE FROM R8 > 0%]** You just indicated that [standard / high efficiency] represented [R8 PERCENT] of your total water heater installations. Of that [R8 PERCENT], approximately what percentage were 50 gallons or less and what percentage were greater than 50 gallons? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGES; RESPONSES FOR EACH EQUIPMENT TYPE (FROM R8) SHOULD ADD TO 100%]

Natural Gas Water Heater Size	≤ 50 gallons	> 50 gallons	Totals
Standard Efficiency Natural Gas Water Heaters	%	%	[SUM]
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallons or greater and > 0.67 Energy Factor) • Indirect fired water heaters	%	%	[SUM]

R10. **[IF S3 ≠ 7 OR S3a = 1, REPEAT FOR EACH HIGH EFFICIENCY WATER HEATER SIZE CATEGORY FROM R9 > 0%]** You had indicated that [R9 PERCENT] of your installations of high efficiency water heaters were units that are [R9 SIZE]. Of that [R9 PERCENT], approximately what percentage were installations made through the HEHE program, and what percentage were installations made outside the HEHE program? Percentages need to add to 100% to continue to the next question.

[RECORD PERCENTAGE; RESPONSES FOR EACH SIZE CATEGORY (R9) SHOULD ADD TO 100%]

Natural Gas Water Heater Program and Non-Program Installations	≤ 50 gallons		> 50 gallons	
	Within HEHE	Outside HEHE	Within HEHE	Outside HEHE
High Efficiency Natural Gas Water Heaters • On-Demand Tankless Water Heater(Instantaneous) > 0.82 Energy Factor • Condensing Gas Water Heater (40 gallons or greater and > 90% Thermal Efficiency) • Energy Star® Rated Stand Alone Water Heater/Storage (40 gallon or greater and > 0.67 Energy Factor) • Indirect fired water heaters	%	%	%	%
Totals	[SUM]		[SUM]	

A.2.4 Free-Ridership

[IF S3 ≠ 7 **OR S3a = 1**, ASK THIS SECTION]

FR1. If the HEHE program did not exist, would you recommend high efficiency equipment more often, less often or about the same?

a. More often

b. Less often

c. About the same

FR2. If the HEHE program did not exist, do you think your installations of energy-efficient equipment would have been lower, higher, or about the same?

a. Lower

b. Higher

c. About the same

FR3. Please explain why you think your installations would be [READ IN RESPONSE FROM FR2] in the absence of the HEHE program?

FR4. [IF FR2 = LOWER or HIGHER] Please estimate how much [READ IN RESPONSE FROM FR2 LOWER/HIGHER] your installations would have been if the HEHE program incentives were not available. Enter an approximate percentage below.

[RECORD PERCENTAGE]

FR5. Thinking of the homes in which you installed high efficiency equipment in 2016, on average, how influential were each of the following elements on your decision to install program-eligible equipment? For each one, please indicate how influential it was on your decision to do the upgrades using a scale of 1 to 5 with 1 indicating “Not at all influential” and 5 indicating “Extremely influential.”

[RANDOMIZE]

a. The availability of the incentive or rebate

b. The amount of incentive or rebate

c. Your customer(s) expressing interest in installing efficient equipment

d. Your or your company’s commitment to energy efficiency

e. Information from the manufacturer seen by the customer

f. Trainings or information you received from the manufacturer

g. Recommendations made by a distributor, supplier, manufacturer, or retailer who sold you the new equipment

h. Information or marketing you saw from National Grid

i. Information found through independent searching

[FOR EACH]

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential

5. Extremely influential
6. Not Applicable
7. Don't Know

FR6. Was there anything else that **greatly** influenced your decision to install equipment that met HEHE program standards?

1. Yes
2. No
98. Don't Know

FR7. [ASK IF FR6 = 1] What else greatly influenced your decision?

[OPEN END RESPONSE]

98. Don't know

FR8. Which of the following *best* describes the influence you had on your customers to install high efficiency natural gas heating equipment in 2016.

1. I never mentioned efficiency nor the HEHE program to any of my customers
2. I mentioned the HEHE program or the availability of efficient equipment to customers who expressed interest in energy efficiency, but neither encouraged nor discouraged participation
3. I mentioned the HEHE program or the availability of efficient equipment to all my customers, but neither encouraged nor discouraged participation
4. I actively encouraged my customers to participate in the HEHE program or to install efficient equipment
5. Other, please explain [ALLOW OPEN END RESPONSE]
6. Not Applicable
7. Don't Know

FR9. [ONLY ASK IF USNY=1] Please indicate the percentage of 2016 natural gas heating and water heating installations where high efficiency was installed because the…

[RANDOMIZE; RECORD PERCENTAGE; MUST ADD TO 100%]

Equipment Installations	**Percent**
Installation was primarily your recommendation	
Installation was primarily the customer's request	
Installation was a joint decision by you and the customer	
Total	[SUM]

FR10. Overall, how has the amount of high efficiency equipment that you have installed changed since learning your customers could receive incentives through the HEHE program?

1. I have installed high efficiency heating equipment less frequently than before I learned about the HEHE program
2. I have installed high efficiency heating equipment with the same frequency as I did before I learned about the HEHE program
3. I have installed high efficiency heating equipment more frequently than before I learned about the HEHE program
4. Other, please explain [ALLOW OPEN END RESPONSE]

98. Don't Know

FR11. [ONLY ASK IF USNY=1] What is the primary reason you recommend high efficiency natural gas heating or water heating equipment?

1. My customers request high efficiency units
2. To reduce the use of energy or fossil fuels
3. Profit margins are higher for installing high efficiency
4. My customers are more satisfied with the high efficiency units than standard units
5. The reliability of the high efficiency units is better than standard units
6. Because the HEHE rebate makes a high efficiency unit more affordable
7. Other, please explain [ALLOW OPEN END RESPONSE]

98. Don't Know

A.2.5 Spillover

[IF S3 ≠ 7 **OR S3a = 1**, ASK THIS SECTION]

SO1. Since participating in the HEHE program in 2016, have you installed or worked with customers to install program-qualifying measures that did not receive an incentive through HEHE?

1. Yes
2. No

98. Don't Know

SO2. [ASK IF SO1=1] Please indicate about how many of each program-qualifying measure you installed outside the HEHE program.

Equipment Type	Quantity Installed outside HEHE program
A. High Efficiency Natural Gas Boilers	
B. High Efficiency Natural Gas Furnaces	
C. High Efficiency Natural Gas Water Heaters	
D. Thermostats	

SO3. [ASK FOR EACH MEASURE IN SO2A-D>0] On a scale of 1 to 5, with 1 indicating "not at all influential" and 5 indicating "extremely influential," how influential was your experience or your customers' experience with the HEHE program on the decision to install these program-eligible measures that did NOT receive a HEHE incentive?

[FOR EACH]

1. Not at all influential
2. Slightly influential
3. Somewhat influential
4. Very influential
5. Extremely influential

98. Don't Know

A.2.6 HEHE Program Incentives

[IF USNY = 1, ASK THIS SECTION]

[IF S3 ≠ 7 **OR S3a ≠ 1**, ASK THIS SECTION]

H1. When you do an installation that receives a HEHE program incentive, what percentage of the time:

1. Do you complete the incentive form yourself,
2. Do you work jointly with the customer to complete the incentive form,
3. Does the customer complete the incentive form, and
4. What percentage of the time is the form completed in some other way or by someone else?

[PERCENTAGES SHOULD ADD TO 100%]

97. Would rather not answer

98. Don't Know

H2. Do you ever **not** pass on the full incentive to the customer?

1. Yes

2. No

97. Would rather not answer

98. Don't Know

H3. [IF H2=1] What is the reason you do not pass on the full incentive to the customer?
[OPEN END RESPONSE]

A.2.7 Program Satisfaction

[IF S3 ≠ 7 **OR S3a = 1**, ASK THIS SECTION]

P1. How satisfied are you with the HEHE program overall? Use a scale of 0 to 10 where 0 is *not at all satisfied* and 10 is *completely satisfied.*)

[ALLOW 0 TO 10 WHOLE-NUMBER RESPONSES]

P2. Why did you give this rating?

[OPEN END RESPONSE]

P3. How likely are you to recommend the HEHE t program to someone else? Use a scale of 0 to 10 where 0 is *extremely unlikely* and 10 is *extremely likely.*

Note:If you have already recommended the program, please type the number 10

[ALLOW 0 TO 10 WHOLE-NUMBER RESPONSES]

P4. [ASK IF P3 < 5] Why do you think you would not be very likely to recommend the program?

[OPEN END RESPONSE]

A.2.8 Firmographics

D1. When deciding where to purchase the natural gas heating and water heating equipment you install, do you…

1. Always purchase from the same supplier
2. Purchase from a small selection of suppliers (2-4)
3. Shop around for the best price at multiple suppliers (5 or more)
4. Other, please explain [ALLOW OPEN END RESPONSE]

97. Would rather not answer

98. Don't Know

D2. Which suppliers do you purchase from most frequently?

[OPEN END RESPONSE]

97. Would rather not answer

98. Don't Know

D3. [ONLY ASK IF USNY =0] Including yourself, how many employees work at your company?

[OPEN END NUMERIC]

97. Would rather not answer

98. Don't Know

D4. [ONLY ASK IF USNY =0] Is your company a single location or part of a larger franchise?

1. Independent
2. Part of a larger franchise
3. Other, please explain [ALLOW OPEN END RESPONSE]

98. Don't Know

Thank you very much for your time! Your responses are very important to us.

Appendix B Cross-Tabulations

This appendix summarizes the results from the market surveys of supply houses and contractors cross-tabulated by firm size and location in Upstate New York. NMR analyzed the cross-tabulations and identified significant differences between size or location categories at the 90/10 confidence level.

B.1 Upstate New York Supply House Survey Cross-tabs

The following sections summarize the results from cross-tabulations of the Upstate New York supply house survey results by supply house size and location in Upstate New York. The supply house size and location categories are outlined below.

Size Categories

1. Fewer than five
2. Five to nine employees
3. Ten+ employees

Location Categories

1. Watertown
2. Syracuse
3. Albany
4. Glens Falls

Results are organized to follow the order of questions in the supply house survey, which is provided at the end of this document. NMR analyzed the cross-tabulations and identified significant differences between size or location categories at the 90/10 confidence level.

B.1.1 Supply House Location

Table 15 reports the average and median number of store locations in Upstate New York by supply house size.

Table 15: Number of Store Locations by Supply House Size

Upstate NY Locations	Small	Medium	Large
Average Number of Stores	14	31	12
Median Number of Stores	17	10	16
Total Respondents	**5**	**11**	**7**

Table 16 reports the average and median number of store locations in Upstate New York by supply house location.

Table 16: Number of Store Locations by Supply House Location

Upstate NY Locations	Watertown	Syracuse	Albany	Glens Falls
Average Number of Stores	73	10	8	15
Median Number of Stores	10	12	8	17
Total Respondents	**4**	**8**	**6**	**5**

B.1.2 Stocking of High Efficiency Natural Gas Equipment

B.1.2.1 Stocking by Supply House Size

Table 17: Boilers Stocked by Supply House Size[1]

	Small	Medium	Large
Standard	80%	91%	100%*
High Efficiency	60%**	100%	100%
Total Respondents	**5**	**11**	**7**

*Large is significantly different from medium and small supply houses at 90% confidence level.
**Small is significantly different from medium and large supply houses at 90% confidence level.
[1]Percentages are reported individually for standard and high efficiency equipment by supply house size.

Table 18: Furnaces Stocked by Supply House Size[1]

	Small	Medium	Large
Standard	100%	91%	100%
High Efficiency	100%	100%	100%
Total Respondents	**5**	**11**	**7**

[1]Percentages are reported individually for standard and high efficiency equipment by supply house size.

Table 19: Water Heaters Stocked by Supply House Size[1]

	Small	Medium	Large
Standard	80%	73%	100%*
High Efficiency	80%**	100%	100%
Total Respondents	**5**	**11**	**7**

*Large is significantly different from medium and small supply houses at 90% confidence level.
**Small is significantly different from medium and large supply houses at 90% confidence level.
[1]Percentages are reported individually for standard and high efficiency equipment by supply house size.

Table 20: High Efficiency Boilers Stocked by Supply House Size

	Small	Medium	Large
Year Round	100%	91%	100%*
Seasonally	0%	9%	0%*
Total Respondents	**3**	**11**	**7**

*Large is significantly different from medium supply houses at 90% confidence level.

Table 21: High Efficiency Furnaces Stocked by Supply House Size

	Small	Medium	Large
Year Round	100%	91%	100%*
Seasonally	0%	9%	0%*
Total Respondents	**5**	**11**	**7**

*Large is significantly different from medium supply houses at 90% confidence level.

Table 22: High Efficiency Water Heaters Stocked by Supply House Size

	Small	Medium	Large
Year Round	100%	91%	100%*
Seasonally	0%	9%	0%*
Total Respondents	**4**	**11**	**7**

*Large is significantly different from medium supply houses at 90% confidence level.

Table 23: Most Frequently Stocked Equipment Size by Supply House Size

	Small	Medium	Large
Standard Boilers			
Residential ≤ 300 MBH	100%	100%	100%
Average Size	100 MBH	100 MBH	100 MBH
High Efficiency Boilers			
Residential ≤ 300 MBH	100%	100%	100%
Average Size	125 MBH	125 MBH	100 MBH
Standard Furnaces			
Residential ≤ 300 MBH	100%	100%	100%
Average Size	80 MBH	100 MBH	100 MBH
High Efficiency Furnaces			
Residential ≤ 300 MBH	100%	100%	100%
Average Size	80 MBH	80 MBH	80 MBH
Standard Water Heaters			
Residential ≤ 50 Gallons	100%	100%	100%
Average Size	40 Gallons	40 Gallons	40 Gallons
High Efficiency Water Heaters			
Residential ≤ 50 Gallons	100%	100%	100%
Average Size	40 Gallons	40 Gallons/ Tankless	40 Gallons
Total Respondents	**5**[27]	**11**[28]	**7**

[27] Four supply houses stock standard boilers and standard/high efficiency water heaters. Three supply houses stock high efficiency boilers.
[28] Ten supply houses stock standard boilers and standard/high efficiency furnaces. Eight supply houses stock high efficiency water heaters.

B.1.2.2 Stocking by Supply House Location

Table 24: Boilers Stocked by Supply House Location[1]

	Watertown	Syracuse	Albany	Glens Falls
Standard	100%	75%*	100%	100%
High Efficiency	100%	75%*	100%	100%
Total Respondents	**4**	**8**	**6**	**5**

*Syracuse is significantly different from Watertown, Albany and Glens Falls supply houses at 90% confidence level.
[1]Percentages are reported individually for standard and high efficiency equipment by supply house
size.

Table 25: Furnaces Stocked by Supply House Location[1]

	Watertown	Syracuse	Albany	Glens Falls
Standard	75%*	100%	100%	100%
High Efficiency	100%	100%	100%	100%
Total Respondents	**4**	**8**	**6**	**5**

*Watertown is significantly different from Syracuse, Albany and Glens Falls supply houses at 90% confidence level.
[1]Percentages are reported individually for standard and high efficiency equipment by supply house
size.

Table 26: Water Heaters Stocked by Supply House Location[1]

	Watertown	Syracuse	Albany	Glens Falls
Standard	75%	75%	83%	100%*
High Efficiency	100%	88%**	100%	100%
Total Respondents	**4**	**8**	**6**	**5**

*Glens Falls is significantly different from Watertown, Syracuse and Albany supply houses at 90% confidence level.
**Syracuse is significantly different from Watertown, Albany, and Glens Falls supply houses at 90% confidence level.
[1]Percentages are reported individually for standard and high efficiency equipment by supply house
size.

Table 27: High Efficiency Boilers Stocked by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Year Round	100%	100%	83%*	100%
Seasonally	0%	0%	17%*	0%
Total Respondents	**4**	**6**	**6**	**5**

*Albany is significantly different from Watertown, Syracuse and Glens Falls supply houses at 90% confidence level.

Table 28: High Efficiency Furnaces Stocked by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Year Round	100%	100%	83%*	100%
Seasonally	0%	0%	17%*	0%
Total Respondents	**4**	**8**	**6**	**5**

*Albany is significantly different from Watertown, Syracuse and Glens Falls supply houses at 90% confidence level.

Table 29: High Efficiency Water Heaters Stocked by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Year Round	100%	100%	83%*	100%
Seasonally	0%	0%	17%*	0%
Total Respondents	**4**	**7**	**6**	**5**

*Albany is significantly different from Watertown, Syracuse and Glens Falls supply houses at 90% confidence level.

Table 30: Most Frequently Stocked Equipment Size by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Standard Boilers				
Residential ≤ 300 MBH	100%	100%	100%	100%
Average Size	100 MBH	100 MBH	100 MBH	150 MBH
High Efficiency Boilers				
Residential ≤ 300 MBH	100%	100%	100%	100%
Average Size	100 MBH	125 MBH	100 MBH	100 MBH
Standard Furnaces				
Residential ≤ 300 MBH	100%	100%	100%	100%
Average Size	100 MBH	80/100 MBH	80 MBH	60 MBH
High Efficiency Furnaces				
Residential ≤ 300 MBH	100%	100%	100%	100%
Average Size	75/80 MBH	80 MBH	80 MBH	60/80 MBH
Standard Water Heaters				
Residential ≤ 50 Gallons	100%	100%	100%	100%
Average Size	40 Gallons	40 Gallons	40 Gallons	40 Gallons
High Efficiency Water Heaters				
Residential ≤ 50 Gallons	100%	100%	100%	100%
Average Size	40 Gallons	40 Gallons	40 Gallons/ Tankless	40 Gallons
Total Respondents	**4**[29]	**8**[30]	**6**[31]	**5**

B.1.3 HEHE Program Influence on Stocking of High Efficiency Equipment

The survey asked two questions to investigate the influence of the HEHE program on supply house stocking of high efficiency natural gas equipment. The following sections provide results of the cross-tabulation for these two questions by supply house size and location.

1. Please rate the level of influence the HEHE program has had on the stocking of high efficiency natural gas heating and water heating equipment.

[29] Three supply houses stocked standard furnaces and standard water heaters.
[30] Six supply houses stocked standard boilers and standard water heaters. Seven supply houses stocked high efficiency furnaces and high efficiency water heaters.
[31] Five supply houses stocked standard water heaters.

2. Would supply houses stock the same amount of high efficiency natural gas heating and water heating equipment if the HEHE program rebates were not available.

B.1.3.1 Cross-tabulation by Supply House Size

Table 31: HEHE Program Influence on Stocking by Supply House Size

	Small	Medium	Large
Stock same amount of high efficiency	40%*	91%	86%
Stock less high efficiency	60%*	9%	14%
Total Respondents	**5**	**11**	**7**

*Small is significantly different from medium and large supply houses at 90% confidence level.

Table 32: HEHE Program Influence on Stocking by Supply House Size

	Small	Medium	Large
Not at all influential	20%	9%	43%
Slightly Influential	0%	18%	0%
Somewhat Influential	20%	27%	14%
Very Influential	40%	36%	43%
Extremely Influential	20%	9%	0%**
Total Respondents	**5**	**11**	**7**

**Large is significantly different from small supply houses at 90% confidence level.

B.1.3.2 Cross-tabulation by Supply House Location

Table 33: HEHE Program Influence on Stocking by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Stock same amount of high efficiency	100%*	75%	67%	80%
Stock less high efficiency	0%*	25%	33%	20%
Total Respondents	**4**	**8**	**6**	**5**

*Watertown is significantly different from Syracuse, Albany and Glens Falls supply houses at 90% confidence level.

Table 34: HEHE Program Influence on Stocking by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Not at all Influential	25%	13%	33%	20%
Slight Influential	25%	0%	17%	0%
Somewhat Influential	50%*	13%	33%	0%
Very Influential	0%*	63%	17%	60%
Extremely Influential	0%	13%	0%	20%
Total Respondents	**4**	**8**	**6**	**5**

*Watertown is significantly different from Syracuse and Glens Falls supply houses at 90% confidence level.

B.1.4 2016 Heating and Water Heating Sales in Upstate New York

Supply house sales percentages were formatted as open-ended questions; therefore, cross-tabulation comparisons were based on average percentages across the size and location categories.

B.1.4.1 Boiler Sales by Size

Table 35 summarizes the percentage of standard and high efficiency natural gas boiler sales reported by small, medium, and large supply houses.

Table 35: Boiler Sales by Supply House Size

	Small	Medium	Large
Standard	48%	35%	37%
High Efficiency	53%	65%	63%
Total Respondents	**4**	**11**	**7**

Table 36 and Table 37 summarize the standard and high efficiency boiler sales broken out by residential (≤300 MBH), small commercial (300 MBH -1,000 MBH), and large commercial (>1,000 MBH) sized units and compared across supply house size categories.

Table 36: Standard Boiler Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 300 MBH	80%	86%	5%
Small Commercial 300 MBH – 1,000 MBH	15%	9%	6%
Large Commercial >1,000 MBH	5%	6%	2%
Total Respondents	**4**	**11**	**7**[32]

[32] Sample size for 300 MB – 1000 MBH and >1000 MBH was 6

Table 37: High Efficiency Boiler Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 300 MBH	93%	94%	73%
Small Commercial 300 MBH – 1,000 MBH	6%	5%	17%
Large Commercial >1,000 MBH	1%	0%	10%
Total Respondents	**4**	**11**	**7**

Table 38 summarizes the percentage of residential high efficiency boilers sold through, and outside, the HEHE Program compared across supply house size categories.

Table 38: Residential High Efficiency Boilers Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	75%	37%	73%
Outside HEHE	25%	64%	27%
Total Respondents	**2**	**4**	**3**

Table 39 summarizes the percentage of small commercial high efficiency boilers sold through, and outside, the HEHE Program compared across supply house size categories.

Table 39: Small Commercial High Efficiency Boilers Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	N/A	35%	33%
Outside HEHE	N/A	64%	27%
Total Respondents	**0**	**3**	**3**

Table 40 summarizes the percentage of large commercial high efficiency boilers sold through, and outside, the HEHE Program compared across supply house size categories.

Table 40: Large Commercial High Efficiency Boilers Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	N/A	0%	80%
Outside HEHE	N/A	100%	20%
Total Respondents	**0**	**1**	**1**

B.1.4.2 Boiler Sales by Location

Table 41 summarizes the percentages of standard and high efficiency natural gas boiler sales reported by supply houses in Upstate New York locations.

Table 41: Boiler Sales by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	15%	50%	54%	19%
High Efficiency	85%	50%	46%	81%
Total Respondents	**4**	**7**	**6**	**5**

Table 42 and Table 43 summarize the standard and high efficiency boiler sales broken out by residential (≤300 MBH), small commercial (300 MBH -1,000 MBH), and large commercial (>1,000 MBH) sized units and compared across supply house location categories.

Table 42: Standard Boiler Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 300 MBH	99%	84%	90%	77%
Small Commercial 300 MBH – 1,000 MBH	2%	12%	9%	12%
Large Commercial >1,000 MBH	0%	4%	2%	11%
Total Respondents	**4**[33]	**7**	**6**	**5**

Table 43: High Efficiency Boiler Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 300 MBH	74%	95%	88%	87%
Small Commercial 300 MBH – 1,000 MBH	11%	5%	10%	12%
Large Commercial >1,000 MBH	15%	1%	2%	1%
Total Respondents	**4**	**7**	**6**	**5**

Table 44 summarizes the percentage of residential high efficiency boilers sold through, and outside, the HEHE Program compared across supply house location categories.

[33] Sample size for 300 MBH – 1000 MBH and >1000 MBH was 3

Table 44: Residential High Efficiency Boilers Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	10%	59%	80%	65%
Outside HEHE	90%	41%	20%	35%
Total Respondents	**3**	**5**	**1**	**2**

Table 45 summarizes the percentage of small commercial high efficiency boilers sold through, and outside, the HEHE Program compared across supply house location categories.

Table 45: Small Commercial High Efficiency Boilers Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	10%	32%	80%	20%
Outside HEHE	90%	68%	20%	80%
Total Respondents	**1**	**3**	**1**	**1**

Table 46 summarizes the percentage of large commercial high efficiency boilers sold through, and outside, the HEHE Program compared across supply house location categories.

Table 46: Large Commercial High Efficiency Boilers Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	N/A	0%	80%	N/A
Outside HEHE	N/A	100%	20%	N/A
Total Respondents	**0**	**1**	**1**	**0**

B.1.4.3 Furnace Sales by Size

Table 47 summarizes the percentage of standard and high efficiency natural gas furnace sales reported by small, medium, and large supply houses.

Table 47: Furnace Sales by Supply House Size

	Small	Medium	Large
Standard	27%*	20%	13%
High Efficiency	73%*	81%	87%
Total Respondents	**5**	**10**	**7**

*Small is significantly different from large supply houses at 90% confidence level.

Table 48 and Table 49 summarize the standard and high efficiency furnace sales broken out by residential (≤300 MBH) and commercial (>300 MBH) sized units and compared across supply house size categories.

Table 48: Standard Furnace Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 300 MBH	96%	100%	97%
Commercial > 300 MBH	4%	0%	3%
Total Respondents	**5**	**8**	**7**[34]

Table 49: High Efficiency Furnace Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 300 MBH	95%	100%	97%
Commercial > 300 MBH	5%	0%	3%
Total Respondents	**4**	**10**	**7**[35]

Table 50 summarizes the percentage of residential high efficiency furnaces sold through, and outside, the HEHE Program compared across supply house size categories. We did not receive any responses from eligible supply houses for the within/outside HEHE Program split for the commercial sector.

Table 50: Residential High Efficiency Furnaces Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	67%	34%	70%
Outside HEHE	33%	66%	30%
Total Respondents	**3**	**4**	**3**

B.1.4.4 Furnace Sales by Location

Table 51 summarizes the percentages of standard and high efficiency natural gas furnace sales reported by supply houses in Upstate New York locations.

[34] Sample size for > 300 MBH was 6
[35] Sample size for > 300 MBH was 6

Table 51: Furnace Sales by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	5%	23%*	32%**	8%
High Efficiency	95%	78%*	68%**	92%
Total Respondents	**4**	**8**	**6**	**4**

*Syracuse is significantly different from Watertown and Glens Falls supply houses at 90% confidence level.
**Albany is significantly different from Watertown and Glens Falls supply houses at 90% confidence level.

Table 52 and Table 53 summarize the standard and high efficiency furnace sales broken out by residential (≤300 MBH) and commercial (>300 MBH) sized units compared across supply house location categories.

Table 52: Standard Furnace Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 300 MBH	100%	100%	93%	100%
Commercial > 300 MBH	0%	0%	7%	0%
Total Respondents	**2**[36]	**8**	**6**	**4**

Table 53: High Efficiency Furnace Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 300 MBH	100%	100%	93%	100%
Commercial > 300 MBH	0%	0%	7%	0%
Total Respondents	**4**[37]	**7**	**6**	**4**

Table 54 summarizes residential high efficiency furnaces sold through, and outside, the HEHE Program compared across supply house location categories. We did not receive any responses from eligible supply houses for the within/outside HEHE Program split for the commercial sector.

[36] Sample size for > 300,000+ Btus was 1
[37] Sample size for >300,000+ Btus was 3

Table 54: Residential High Efficiency Furnaces Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	10%	56%	90%	55%
Outside HEHE	90%	44%	10%	45%
Total Respondents	**1**	**6**	**1**	**2**

B.1.4.5 Water Heater Sales by Size

Table 55 summarizes the percentage of standard and high efficiency natural gas water heaters installations reported by small, medium, and large supply house.

Table 55: Water Heater Sales by Supply House Size

	Small	Medium	Large
Standard	60%	48%	58%
High Efficiency	40%	52%	42%
Total Respondents	**4**	**9**	**7**

Table 56 and Table 57 summarize the standard and high efficiency water heater sales broken out by residential (≤50 gallons) and commercial (>50 gallons) sized units compared across supply house size categories.

Table 56: Standard Water Heater Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 50 gallons	95%	88%	84%
Commercial > 50 gallons	6%	12%	16%
Total Respondents	**4**	**7**	**7**

Table 57: High Efficiency Water Heater Sales by Sector and Supply House Size

	Small	Medium	Large
Residential ≤ 50 gallons	97%*	91%	81%
Commercial > 50 gallons	3%*	9%	19%
Total Respondents	**3**	**9**	**7**

*Small is significantly different from large supply houses at 90% confidence level.

Table 58 summarizes the percentage of residential high efficiency water heaters sold through, and outside, the HEHE Program compared across supply house size categories.

Table 58: Residential High Efficiency Water Heaters Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	100%	40%	33%
Outside HEHE	0%	60%	67%
Total Respondents	1	2	3

Table 59 summarizes the percentage of commercial high efficiency water heaters sold through, and outside, the HEHE Program compared across supply house size categories.

Table 59: Commercial High Efficiency Water Heater Sold through the HEHE Program by Supply House Size

	Small	Medium	Large
Within HEHE	N/A	N/A	53%
Outside HEHE	N/A	N/A	47%
Total Respondents	**0**	**0**	**3**

B.1.4.6 Water Heater Sales by Location

Table 60 summarizes the percentages of standard and high efficiency natural gas water heater sales reported by supply houses in Upstate New York locations.

Table 60: Water Heater Sales by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	49%	54%	53%	61%
High Efficiency	51%	46%	48%	39%
Total Respondents	**4**	**6**	**6**	**4**

Table 61 and Table 62 summarize the standard and high efficiency water heater sales broken out by residential (≤50 gallons) and commercial (>50 gallons) sized units compared across supply house location categories.

Table 61: Standard Water Heater Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 50 gallons	90%	91%	79%*	93%
Commercial > 50 gallons	10%	9%	21%*	8%
Total Respondents	**3**	**6**	**5**	**4**

*Albany is significantly different from Glens Falls supply houses at 90% confidence level.

Table 62: High Efficiency Water Heater Sales by Sector and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 50 gallons	90%	94%	86%	80%
Commercial > 50 gallons	10%	6%	14%	20%
Total Respondents	**4**	**6**	**6**	**3**

Table 63 summarizes the percentage of residential high efficiency water heaters sold through, and outside, the HEHE Program compared across supply house location categories.

Table 63: Residential High Efficiency Water Heaters Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	N/A	48%	80%	10%
Outside HEHE	N/A	53%	20%	90%
Total Respondents	0	4	1	1

Table 64 summarizes the percentage of commercial high efficiency water heaters sold through, and outside, the HEHE Program compared across supply house location categories.

Table 64: Commercial High Efficiency Water Heaters Sold through the HEHE Program by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Within HEHE	N/A	0%	100%	60%
Outside HEHE	N/A	100%	0%	40%
Total Respondents	0	1	1	1

B.1.5 Overall Sales

Supply houses were asked, what percentage of 2016 sales of high efficiency natural gas heating and water heating equipment were directly to the end-use customers, what percentage were to installers and contractors, and what percentage were to someone else?

B.1.5.1 Cross-tabulation by Supply House Size

Table 65 displays the average percentage of 2016 sales that were made to end-use customers, contractors, and others broken out by supply house size.

Table 65: Natural Gas Heating and Water Heating Equipment Sales by Consumer Type and Supply House Size

	Small	Medium	Large
End-use customers	2%	7%	10%
Installers/Contractors	98%	92%	88%
Others	0%	1%	2%
Total Respondents	**5**	**11**	**7**

B.1.5.2 Cross-tabulation by Supply House Location

Table 66 displays the average percentage of 2016 sales that were made to end-use customers, contractors, and others broken out by supply house location.

Table 66: Natural Gas Heating and Water Heating Equipment Sales by Consumer Type and Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
End-use customers	15%	3%	6%	7%
Installers/Contractors	85%	96%	92%	93%
Others	0%	1%	3%	0%
Total Respondents	4	8	6	5

Supply houses were also asked what percentage of their 2016 sales were made to repeat installers and contractors.

B.1.5.3 Cross-tabulation by Supply House Size

Table 67 displays the average percentage of 2016 sales that were made to repeat or new contractors broken out by supply house size.

Table 67: Sales to New/Repeat Customers by Supply House Size

	Small	Medium	Large
Repeat	78%	82%	87%
New	22%	18%	13%
Total Respondents	**5**	**11**	**7**

B.1.5.4 Cross-tabulation by Supply House Location

Table 68 displays the average percentage of 2016 sales that were made to repeat or new contractors broken out by supply house location.

Table 68: Sales to New/Repeat Customers by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Repeat	79%	81%	84%	87%
New	21%	19%	16%	13%
Total Respondents	**4**	**8**	**6**	**5**

B.1.6 High Efficiency Equipment Information & Promotions

We investigated supply houses' sales, marketing, and stocking practices in order to assesses the dynamics of the current supply chain. This section summarizes the cross-tabulation of these survey results.

B.1.6.1 Cross-tabs by Supply House Size

Table 69: Provided Information to on High Efficiency by Supply House Size

	Small	Medium	Large
Yes	100%	100%	100%
No	0%	0%	0%
Total Respondents	**5**	**11**	**7**

B.1.6.2 Cross-tabs by Supply House Location

Table 70: Provided Information on High Efficiency by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Yes	100%	100%	100%	100%
No	0%	0%	0%	0%
Total Respondents	**4**	**8**	**6**	**5**

B.1.6.3 Cross-tabs by Supply House Size

Supply houses were asked what sources were utilized to develop high efficiency informational materials. Supply houses were able to select multiple responses.

Table 71: Sources of Information Provided on High Efficiency by Supply House Size[1]

	Small	Medium	Large
Developed by company	0%	9%	14%
Provided by Manufacturers	100%	100%	100%
Provided by National Grid	40%	64%	57%
Other source(s)	0%	0%	0%
Total Respondents	**5**	**11**	**7**

[1] Supply houses were able to select multiple sources, so percentages will not add to 100%.

B.1.6.4 Cross-tabs by Supply House Location

Table 72: Sources of Information Provided on High Efficiency by Supply House Location[1]

	Watertown	Syracuse	Albany	Glens Falls
Developed by company	0%	25%	0%	0%
Provided by Manufacturers	100%	100%	100%	100%
Provided by National Grid	25%*	75%	33%*	80%
Other source(s)	0%	0%	0%	0%
Total Respondents	**4**	**8**	**6**	**5**

*Watertown is significantly different from Syracuse and Glens Falls supply houses at 90% confidence level.
*Albany is significantly different from Syracuse and Glens Falls supply houses at 90% confidence level.
[1] Supply houses were able to select multiple sources, so percentages will not add to 100%.

B.1.6.5 Cross-tabs by Supply House Size

Table 73 summarizes how frequently supply houses provided advice to installers and contractors on high efficiency natural gas heating and water heating equipment by supply house size.

Table 73: Frequency of Supplier Advice by Supply House Size

	Small	Medium	Large
Sometimes provides advice	20%	18%	14%
Often provides advice	80%*	27%	14%
Always provides advice	0%*	55%	71%
Total Respondents	**5**	**11**	**7**

*Small is significantly different from medium and large supply houses at 90% confidence level.

B.1.6.6 Cross-tabs by Supply House Location

Table 74 summarizes how frequently supply houses provided advice to installers and contractors on high efficiency natural gas heating and water heating equipment by supply house location.

Table 74: Frequency of Supplier Advice by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Sometimes provides advice	25%	13%	33%	0%*
Often provides advice	25%	38%	50%	20%
Always provides advice	50%	50%	17%**	80%
Total Respondents	**4**	**8**	**6**	**5**

*Glens Falls is significantly different from Watertown, Syracuse and Albany supply houses at 90% confidence level.
*Albany is significantly different from Watertown, Syracuse and Glens Falls supply houses at 90% confidence level.

We asked supply houses how influential their advice and recommendations were on the energy efficiency level of the natural gas heating and water heating equipment that end-use customers decided to purchase. Not all supply houses reported selling equipment directly to end-use customers.

B.1.6.7 Cross-tabs by Supply House Size

Table 75: Types of Advice to Contractors by Supply House Size[1]

	Small	Medium	Large
Information on equipment energy efficiency	60%*	91%	100%
Information on different brands	60%	82%	86%
Information of equipment sizing	80%	100%	100%
Information on equipment installation	60%**	91%	86%
Other	20%	9%	0%
Total Respondents	**5**	**11**	**7**

*Small is significantly different from medium and large supply houses at 90% confidence level.
**Small is significantly different from medium supply houses at 90% confidence level.
[1] Supply houses were able to select multiple sources, so percentages will not add to 100%.

B.1.6.8 Cross-tabs by Supply House Location

Table 76: Types of Advice to Contractors by Supply House Location[1]

	Watertown	Syracuse	Albany	Glens Falls
Information on equipment energy efficiency	100%	88%	100%	60%*
Information on different brands	100%	75%	83%	60%**
Information of equipment sizing	100%	88%	100%	100%
Information on equipment installation	100%	88%	83%	60%**
Other	0%	25%	0%	0%
Total Respondents	**4**	**8**	**6**	**5**

*Glens Falls is significantly different from Watertown and Albany supply houses at 90% confidence level.
**Glens Falls is significantly different from Watertown supply houses at 90% confidence level.
[1] Supply houses were able to select multiple sources, so percentages will not add to 100%.

B.1.6.9 Cross-tabs by Supply House Size

Table 77 summarizes the influence of the supplier's advice to end-use customers by supply house size.

Table 77: Influence of Advice to End-Use Customers by Supply House Size

	Small	Medium	Large
Not at all influential	0%	25%*	0%
Slightly influential	100%	0%	0%
Somewhat influential	0%	0%	20%
Very influential	0%	50%	80%
Extremely influential	0%	25%*	0%
Total Respondents	**1**	**4**	**5**

*Medium is significantly different from large supply houses at 90% confidence level.

B.1.6.10 Cross-tabs by Supply House Location

Table 78 summarizes the influence of the supplier's advice to end-use customers by supply house location.

Table 78: Influence of Advice to End-Use Customers by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Not at all influential	33%	0%	0%	0%
Slightly influential	0%	0%	0%	25%
Somewhat influential	0%	0%	50%*	0%
Very influential	67%	100%	50%	50%
Extremely influential	0%	0%	0%	25%
Total Respondents	**3**	**1**	**2**	**4**

*Albany is significantly different from Watertown and Glens Falls supply houses at 90% confidence level.

Next, we asked supply houses how influential their advice and recommendations were on the energy efficiency level of the equipment that installers and contractors decided to purchase.

B.1.6.11 By Supply House Size

Table 79 summarizes the influence of the supplier's advice to contractors by supply house size.

Table 79: Influence of Advice to Contractors by Supply House Size

	Small	Medium	Large
Not at all influential	0	9%	0%
Somewhat influential	20%	27%	29%
Very Influential	60%	46%	71%
Extremely influential	20%	18%	0%*
Total Respondents	**5**	**11**	**7**

*Large is significantly different from medium and small supply houses at 90% confidence level.

B.1.6.12 By Supply House Location

Table 80 summarizes the influence of the supplier's advice to contractors by supply house location.

Table 80: Influence of Advice to Contractors by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Not at all influential	25%*	0%	0%	0%
Somewhat influential	50%**	0%	67%**	0%
Very influential	25%	88%***	33%	60%
Extremely influential	0%	13%	0%	40%****
Total Respondents	**4**	**8**	**6**	**5**

*Watertown is significantly different from Syracuse, Albany, and Glens Falls supply houses at 90% confidence level.
**Watertown and Albany are significantly different Syracuse and Glens Falls supply houses at 90% confidence level.
***Syracuse is significantly different from Watertown and Albany supply houses at 90% confidence level.
****Glens Falls is significantly different from Watertown and Albany supply houses at 90% confidence level.

B.1.6.13 By Supply House Size

The one large supply house that reported collecting customer information indicated they collected end-use customer name, address, and contact information.

Table 81: Collection of End-Use Customer Information by Supply House Size

	Small	Medium	Large
No	100%	100%	86%
Yes	0%	0%	14%
Total Respondents	**5**	**11**	**7**

B.1.6.14 By Supply House Location

The one Glens Falls supply house that reported collecting customer information indicated they collected end-use customer name, address, and contact information.

Table 82: Collection of End-Use Customer Information by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
No	100%	100%	100%	80%
Yes	0%	0%	0%	20%
Total Respondents	**4**	**8**	**6**	**5**

B.1.6.15 By Supply House Size

NMR asked if supply houses offered any manufacturer promotions of high efficiency natural gas heating and water heating equipment in 2016. Table 83 summarizes manufacturer promotion offerings by supply house size.

Table 83: Manufacturer Promotion Offerings by Supply House Size

	Small	Medium	Large
No	0%*	27%	14%
Yes	100%*	73%	86%
Total Respondents	**5**	**11**	**7**

*Small is significantly different from medium supply houses at 90% confidence level.

B.1.6.16 By Supply House Location

Table 84 summarizes manufacturer promotion offerings by supply house location.

Table 84: Manufacturer Promotion Offerings by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
No	25%	13%	33%	0%*
Yes	75%	88%	67%	100%
Total Respondents	**4**	**8**	**6**	**5**

*Glens Falls is significantly different from Albany supply houses at 90% confidence level.

B.1.6.17 By Supply House Size

Not all supply houses provided a response to the number of promotions offered in 2016.

Table 85: Average Number of Promotions by Supply House Size

	Small	Medium	Large
2016 Promotions	5	7	10
Total Respondents	**5**	**8**	**6**

*Small is significantly different from medium supply houses at 90% confidence level.

B.1.6.18 By Supply House Location

Table 86: Average Number of Promotions by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
2016 Promotions	7	3	9	11
Total Respondents	**3**	**7**	**4**	**5**

*Glens Falls is significantly different from Albany supply houses at 90% confidence level.

B.1.6.19 By Supply House Size

Supply houses were asked if the manufacturer promotions of high efficiency natural gas heating and water heating equipment had an impact on sales. Table 87 summarizes manufacturer promotion influence on sales by supply house size.

Table 87: Manufacturer Promotion Influence on Sales by Supply House Size

	Small	Medium	Large
Boosted sales	60%	38%	67%
Had no impact	40%	63%	33%
Total Respondents	**5**	**8**	**6**

B.1.6.20 By Supply House Location

Table 88 summarizes manufacturer promotion influence on sales by supply house location.

Table 88: Manufacturer Promotion Influence on Sales by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
Boosted sales	33%	43%	75%	60%
Had no impact	67%	57%	25%	40%
Total Respondents	**3**	**7**	**4**	**5**

B.1.7 Firmographics

B.1.7.1 By Supply House Size

Table 89 summarizes how many years the company has been in business by supply house size.

Table 89: Years of Operation by Supply House Size

	Small	Medium	Large
0-2 Years	20%	0%	0%
3-5 Years	0%	0%	14%
11-15 Years	0%	9%	0%
25+ Years	80%	91%	86%
Total Respondents	**5**	**11**	**7**

B.1.7.2 By Supply House Location

Table 90 summarizes how many years the company has been in business by supply house location.

Table 90: Years of Operation by Supply House Location

	Watertown	Syracuse	Albany	Glens Falls
0-2 Years	0%	13%	0%	0%
3-5 Years	0%	0%	0%	20%
11-15 Years	0%	0%	17%	0%
25+ Years	100%	88%	83%	80%
Total Respondents	**4**	**8**	**6**	**5**

B.2 Upstate New York Contractor Survey Cross-tabs

The following sections summarize the results from cross-tabulations of the Upstate New York contractor survey results by contractor size and location in Upstate New York. The contractor size and location categories are outlined below.

Size Categories

1. less than 50 units
2. 51 to 500 units
3. 501+ units

Location Categories

1. Watertown
2. Syracuse
3. Albany
4. Glens Falls

Results are organized to follow the order of questions in the supply house survey, which is provided at the end of this document. NMR analyzed the cross-tabulations and identified significant differences between size or location categories at the 90/10 confidence level.

B.2.1 Installations in Upstate New York

Contractor installation percentages were formatted as open-ended questions; therefore, cross-tabulation comparisons were based on average percentages across the size and location categories.

B.2.1.1 Boiler Installations by Size

Table 91 summarizes the percentage of standard and high efficiency natural gas boiler installations reported by small, medium, and large contractors.

Table 91: Boiler Installations by Contractor Size

	Small	Medium	Large
Standard	33%	32%	27%
High Efficiency	67%	68%	73%
Total Respondents	**15**	**16**	**3**

Table 92 and Table 93 summarize the standard and high efficiency boiler installations broken out by residential (≤300,000 Btus), small commercial (300,000 -1 million Btus), and large commercial (>1 million Btus) sized units and compared across contractor size categories.

Table 92: Standard Boiler Installations by Sector and Contractor Size

	Small	Medium	Large
Residential ≤300,000 Btus	85%	93%	100%
Small Comm. 300,000-1 million Btus	15%	9%	0%
Large Comm. >1 million Btus	0%	0%	0%
Total Respondents	**8**	**14**[38]	**3**

[38] Fourteen of the medium contractors reported installing, but only 11 medium contractors installed small and large commercial units

Table 93: High Efficiency Boiler Installations by Sector and Contractor Size

	Small	Medium	Large
Residential ≤300,000 Btus	91%	88%	100%
Small Comm. 300,000-1 million Btus	10%	15%	0%
Large Comm. >1 million Btus	0%	0%	0%
Total Respondents	**12**[39]	**16**[40]	**3**

Table 94 summarizes the percentage of residential high efficiency boilers installed through, and outside, the HEHE program compared across contractor size categories.

Table 94: Residential High Efficiency Boilers Installed through HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	80%	82%	92%
Outside HEHE	20%	27%	8%
Total Respondents	**11**	**12**	**3**

Table 95 summarizes the percentage of small commercial high efficiency boilers installed through, and outside, the HEHE program compared across contractor size categories.

Table 95: Small Commercial High Efficiency Boilers Installed through HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	75%	88%	N/A
Outside HEHE	25%	13%	N/A
Total Respondents	**2**	**2**	**N/A**

B.2.1.2 Boiler Installations by Location

Table 96 summarizes the percentages of standard and high efficiency natural gas boiler installations reported by contractors in Upstate New York locations.

[39] Twelve of the small sized contractors reported installing residential boilers, but only 11 small contractors installed small and large commercial units

[40] Sixteen of the medium sized contractors reported installing residential boilers, but only 13 medium contractors installed small and large commercial units

Table 96: Boiler Installations by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	10%	24%	41%	32%
High Efficiency	90%	76%	59%	68%
Total Respondents	**1**	**13**	**15**	**5**

Table 97 and Table 98 summarizes the standard and high efficiency boiler installations broken out by residential (≤300,000 Btus), small commercial (300,000 -1 million Btus), and large commercial (>1 million Btus) sized units and compared across contractor location categories.

Table 97: Standard Boiler Installations by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤300,000 Btus	100%	88%	99%	73%
Small Comm. 300,000-1 million Btus	0%	14%	1%	28%
Large Comm. >1 million Btus	0%	0%	0%	0%
Total Respondents	**1**	**8**	**12**	**4**

Table 98: High Efficiency Boiler Installations by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤300,000 Btus	100%	92%	100%	59%
Small Comm. 300,000-1 million Btus	0%	10%	0%	41%
Large Comm. >1 million Btus	0%	0%	0%	0%
Total Respondents	**1**	**12**[1]	**13**[2]	**5**

Table 99 summarizes the percentage of residential high efficiency boilers installed through, and outside, the HEHE program compared across contractor location categories.

Table 99: Residential High Efficiency Boilers Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	50%	87%	79%	87%
Outside HEHE	50%	21%	23%	13%
Total Respondents	**1**	**11**	**12**	**3**

Table 100 summarizes the percentage of small commercial high efficiency boilers installed through, and outside, the HEHE program compared across contractor location categories.

Table 100: Small Commercial High Efficiency Boilers Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	N/A	50%	N/A	92%
Outside HEHE	N/A	50%	N/A	8%
Total Respondents	**0**	**1**	**0**	**3**

B.2.1.3 Furnace Installations by Size

Table 101 summarizes the percentage of standard and high efficiency natural gas furnace installations reported by small, medium, and large contractors.

Table 101: Furnace Installations by Contractor Size

	Small	Medium	Large
Standard	4%	10%	22%
High Efficiency	91%	90%	78%
Total Respondents	**19**[41]	**17**	**3**

Table 102 and Table 103 summarize the standard and high efficiency furnace installations broken out by residential (≤300,000 Btus) and commercial (>300,000 Btus) sized units and compared across contractor size categories.

Table 102: Standard Furnace Installations by Sector and Contractor Size

	Small	Medium	Large
Residential ≤300,000 Btus	71%	93%	100%
Commercial >300,000 Btus	29%	7%	0%
Total Respondents	**7**	**15**[42]	**3**

[41] Sample size for Standard was 18
[42] Sample size for Commercial was 14

Table 103: High Efficiency Furnace Installations by Sector and Contractor Size

	Small	Medium	Large
Residential ≤300,000 Btus	83%	90%	100%
Commercial >300,000 Btus	18%	9%	0%
Total Respondents	**18**[43]	**17**[44]	**3**

Table 104 summarizes the percentage of residential high efficiency boilers installed through, and outside, the HEHE program compared across contractor size categories.

Table 104: Residential High Efficiency Furnaces Installed through the HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	73%	80%	64%
Outside HEHE	27%	21%	36%
Total Respondents	**15**	**15**[45]	**3**

Table 105 summarizes the percentage of commercial high efficiency boilers installed through, and outside, the HEHE program compared across contractor size categories.

Table 105: Commercial High Efficiency Furnaces Installed through the HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	95%	67%	N/A
Outside HEHE	5%	33%	N/A
Total Respondents	**3**	**3**	**0**

B.2.1.4 Furnace Installations by Location

Table 106 summarizes the percentages of standard and high efficiency natural gas furnace installations reported by contractors in Upstate New York locations.

[43] Sample size for Commercial was 17
[44] Sample size for Commercial was 16
[45] Sample size for Outside HEHE was 14

Table 106: Furnaces Installations by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	5%	7%	5%	16%
High Efficiency	95%	88%	95%	84%
Total Respondents	**1**	**19**[46]	**13**	**6**

Table 107 and Table 108 summarize the standard and high efficiency furnace installations broken out by residential (≤300,000 Btus) and commercial (>300,000 Btus) sized units and compared across contractor location categories.

Table 107: Standard Furnace Installations by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤300,000 Btu	100%	89%	90%	80%
Commercial >300,000 Btu	0%	11%	11%	20%
Total Respondents	**1**	**9**	**10**[47]	**6**

Table 108: High Efficiency Furnace Installations by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤300,000 Btu	100%	89%	92%	75%
Commercial >300,000 Btu	0%	12%	8%	25%
Total Respondents	**1**	**18**[48]	**13**[49]	**6**

Table 109 summarizes the percentage of residential high efficiency furnaces installed through, and outside, the HEHE program compared across contractor location categories.

Table 109: Residential High Efficiency Furnaces Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	90%	67%	86%	75%
Outside HEHE	10%	33%	15%	25%
Total Respondents	**1**	**16**	**11**[50]	**5**

[46] Sample size for Standard Efficiency was 18
[47] Sample size for Commercial was 9
[48] Sample size for Commercial Btu was 17
[49] Sample size for Commercial Btu was 12
[50] Sample size for Outside HEHE was 10

Table 110 summarizes the percentage of commercial high efficiency furnaces installed through, and outside, the HEHE program compared across contractor location categories.

Table 110: Commercial High Efficiency Furnaces Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	N/A	73%	90%	88%
Outside HEHE	N/A	27%	10%	13%
Total Respondents	**0**	**3**	**1**	**2**

B.2.1.5 Water Heater Installations by Size

Table 111 summarizes the percentage of standard and high efficiency natural gas water heaters installations reported by small, medium, and large contractors.

Table 111: Water Heater Installations by Contractor Size

	Small	Medium	Large
Standard	70%	65%	66%
High Efficiency	30%	35%	34%
Total Respondents	**11**	**18**	**3**

Table 112 and Table 113 summarize the standard and high efficiency water heater installations broken out by residential (≤50 gallons) and commercial (>50 gallons) sized units and compared across contractor size categories.

Table 112: Standard Water Heaters by Sector and Contractor Size

	Small	Medium	Large
Residential ≤50 gallons	84%	96%	85%
Commercial >50 gallons	18%	4%	15%
Total Respondents	**11**[51]	**18**	**3**

[51] Sample size for > 50 gallons was 10

Table 113: High Efficiency Water Heaters by Sector and Contractor Size

	Small	Medium	Large
Residential ≤50 gallons	99%	75%*	97%
Commercial >50 gallons	1%	13%**	3%
Total Respondents	**8**[52]	**17**	**3**

*Medium is significantly different from large and small supply houses at 90% confidence level.
*Medium is significantly different from small supply houses at 90% confidence level.

Table 114 summarizes the percentage of residential high efficiency water heaters installed through, and outside, the HEHE program compared across contractor size categories.

Table 114: Residential High Efficiency Water Heaters Installed through the HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	63%	51%	50%
Outside HEHE	42%	53%	50%
Total Respondents	**8**[53]	**13**[54]	**3**

Table 115 summarizes the percentage of commercial high efficiency water heaters installed through, and outside, the HEHE program compared across contractor size categories.

Table 115: Commercial High Efficiency Water Heaters Installed through the HEHE Program by Contractor Size

	Small	Medium	Large
Inside HEHE	0%	45%	20%
Outside HEHE	100%	66%	80%
Total Respondents	**1**	**6**[55]	**1**

B.2.1.6 Water Heater Installations by Location

Table 116 summarizes the percentages of standard and high efficiency natural gas water heater installations reported by contractors in Upstate New York locations.

[52] Sample size for > 50 gallons was 7
[53] Sample size for Outside HEHE was 7
[54] Sample size for Outside HEHE was 12
[55] Sample size for Outside HEHE was 5

Table 116: Standard and High Efficiency Water Heaters Installed by Location

	Watertown	Syracuse	Albany	Glens Falls
Standard	50%	63%	72%	72%
High Efficiency	50%	38%	28%	28%
Total Respondents	**1**	**14**	**11**	**6**

Table 117 and Table 118 summarizes the standard and high efficiency water heater installations broken out by residential (≤50 gallons) and commercial (>50 gallons) sized units compared across contractor location categories.

Table 117: Standard Water Heaters by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 50 gallons	100%	93%	85%	94%
Commercial > 50 gallons	0%	7%	16%	7%
Total Respondents	**1**	**14**[56]	**11**	**6**

Table 118: High Efficiency Water Heaters by Sector and Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Residential ≤ 50 gallons	100%	88%	82%	77%
Commercial > 50 gallons	0%	5%	18%	3%
Total Respondents	**1**	**12**[57]	**10**	**5**

Table 119 summarizes the percentage of residential high efficiency water heaters installed through, and outside, the HEHE program compared across contractor location categories.

Table 119: Residential High Efficiency Water Heaters Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	80%	49%	69%	38%
Outside HEHE	20%	57%	36%	63%
Total Respondents	**1**	**11**[58]	**8**[59]	**4**

[56] Sample size for Commercial was 13
[57] Sample size for Commercial was 11
[58] Sample size for Outside HEHE was 10
[59] Sample size for Outside HEHE was 7

Table 120 summarizes the percentage of commercial high efficiency water heaters installed through, and outside, the HEHE program compared across contractor location categories.

Table 120: Commercial High Efficiency Water Heaters Installed through HEHE Program by Contractor Location

	Watertown	Syracuse	Albany	Glens Falls
Inside HEHE	N/A	20%	44%	25%
Outside HEHE	N/A	80%	70%	75%
Total Respondents	**0**	**1**	**5**[60]	**2**

B.2.2 Influence of Market Actors

Contractors were asked how influential specific elements were on their decision to install program-eligible equipment. As the contractor survey was administered in combination with another research effort, only five of the response options were relevant to the Upstate New York contractor survey. Table 121 and Table 122 report the results for the cross-tabulations of these five response options.

B.2.2.1 Cross-tabulation by Contractor Size

Table 121 summarizes factors influencing the installation of program-eligible equipment by contractor size categories.

[60] Sample size for Outside HEHE was 4

Table 121: Factors Influencing Installation of High Efficiency by Contractor Size

	Average Score on 1-5 Scale		
	Small	Medium	Large
The availability of the incentive or rebate	3.7	4.1	4.0
The amount of incentive or rebate	3.6	4.1	4.0
Your customer(s) expressing interest in installing efficient equipment	4.1	4.4	4.7
Information from the manufacturer seen by the customer	3.2	3.6	3.3
Recommendations made by a distributor, supplier, manufacturer, or retailer who sold you the new equipment	2.8	2.5	3.3
Total Respondents	**21**[61]	**18**[62]	**3**

B.2.2.2 Cross-tabulation by Contractor Location

Table 122 summarizes factors influencing installation of program-eligible equipment by contractor location categories.

[61] Sample size was 20 for Information from the manufacturer seen by the customer and Recommendations made by a distributor, supplier, manufacturer, or retailer who sold you the new equipment

[62] Sample size was 17 for The amount of incentive rebate, Your customer(s) expressing interest in installing efficient equipment, and Trainings or information you received from the manufacturer

Table 122: Factors Influencing Installation of High Efficiency by Contractor Location

	Average Score on 1-5 Scale			
	Watertown	Syracuse	Albany	Glens Falls
The availability of the incentive or rebate	4.0	4.2	3.6	3.5
The amount of incentive or rebate	5.0	3.9	3.5	4.0
Your customer(s) expressing interest in installing efficient equipment	4.0	4.0	4.4	4.5
Information from the manufacturer seen by the customer	5.0	3.2	3.6	3.2
Recommendations made by a distributor, supplier, manufacturer, or retailer who sold you the new equipment	4.0	2.8	2.5	2.5
Total Respondents	**1**	**19**[63]	**16**	**6**

B.2.3 Promoting High Efficiency Installations

B.2.3.1 Cross-tabulation by Contractor Size

Table 123 summarizes the level of intensity at which contractors promoted high efficiency equipment by contractor size categories.

Table 123: Contractor Promotion of High Efficiency by Size

	Small	Medium	Large
Never mentioned	5%	0%	0%
Mentioned to customers who expressed interest in HE	9%	6%	0%
Mentioned to all customers	9%	11%	0%
Actively encouraged	77%	78%	100%*
Don't know	0%	6%	0%
Total Respondents	**22**	**18**	**3**

*Large is significantly different from small and medium supply houses at 90% confidence level.

[63] Sample size is 18 for The amount of incentive or rebate, Your customer(s) expressing interest in installing efficient equipment, Information from the manufacturer seen by the customer, and Recommendations made by a distributor, supplier, manufacturer, or retailer who sold you the new equipment

B.2.3.2 Cross-tabulation by Contractor Location

Table 124 summarizes the level of intensity at which contractors promoted high efficiency equipment by contractor location categories.

Table 124: Contractor Promotion of High Efficiency by Location

	Watertown	Syracuse	Albany	Glens Falls
Never mentioned	0%	5%	0%	0%
Mentioned to customers who expressed interest in HE	0%	15%	0%	0%
Mentioned to all customers	0%	15%	6%	0%
Actively encouraged	100%	65%*	88%	100%
Don't know	0%	0%	6%	0%
Total Respondents	**1**	**20**	**16**	**6**

*Syracuse is significantly different from Albany and Glens Falls supply houses at 90% confidence level.

B.2.4 Reasons to Recommend High Efficiency

B.2.4.1 Cross-tabulation by Contractor Size

Table 125 summarizes the reasons why contractors promoted high efficiency equipment by contractor size categories.

Table 125: Reason Contractors Promote High Efficiency by Size

	Small	Medium	Large
Customers request HE	9%	11%	33%
Reduce use of fossil fuels	13%	11%	33%
Profit margins are higher	5%	0%	33%
Customers are more satisfied with HE	0%	33%	0%
Reliability of HE	14%	0%	0%
HEHE rebates make HE affordable	50%*	28%	0%
Other	9%	11%	0%
Don't know	0%	6%	0%
Total Respondents	**22**	**18**	**3**

*Small is significantly different from large supply houses at 90% confidence level.

B.2.4.2 Cross-tabulation by Contractor Location

Table 126 summarizes the reasons why contractors promoted high efficiency equipment by contractor location categories.

Table 126: Reason Contractors Promote High Efficiency by Location

	Watertown	Syracuse	Albany	Glens Falls
Customers request HE	100%	10%	12%	0%
Reduce use of fossil fuels	0%	10%	12%	33%
Profit margins are higher	0%	0%	12%	0%
Customers are more satisfied with HE	0%	5%	12%	50%*
Reliability of HE	0%	5%	12%	0%
HEHE rebates make HE affordable	0%	55%	31%	0%*
Other	0%	15%	6%	0%
Don't know	0%	0%	0%	16%
Total Respondents	**1**	**20**	**16**	**6**

*Glens Falls is significantly different from Syracuse supply houses at 90% confidence level.
*Glens Falls is significantly different from Syracuse and Albany supply houses at 90% confidence level.

B.2.5 Interactions with Customers

Contractors were asked to report the percentage of 2016 natural gas heating and water heating installations where high efficiency was installed because of the contractor's recommendation, because of the customer's request, or due to a joint decision.

B.2.5.1 Cross-tabulation by Contractor Size

Table 127: Decision to Install High Efficiency Equipment by Contractor Size

Decision Maker	Small	Medium	Large
Contractors recommendation	32%	27%	37%
Customers request	15%	12%	12%
Joint decision	53%	62%	51%
Total Respondents	**22**	**18**	**3**

B.2.5.2 Cross-tabulation by Contractor Location

Table 128: Decision to Install High Efficiency Equipment by Location

Decision Maker	Watertown	Syracuse	Albany	Glens Falls
Contractors recommendation	0%	33%	34%	14%
Customers request	0%	9%	20%	14%
Joint decision	100%	58%	46%	72%
Total Respondents	**1**	**20**	**16**	**6**

B.2.6 HEHE Rebates

B.2.6.1 Cross-tabulation by Contractor Size

Table 129: Who completes the rebate form? (by Contractor Size)

	Small	Medium	Large
Contractors completes incentive form	21%	38%	49%
Contractors work with customers to complete form	37%	43%	30%
Customer completes incentive form	41%	18%	19%
Other	1%	1%	2%
Total Respondents	**22**	**18**	**3**

B.2.6.2 Cross-tabulation by Contractor Location

Table 130: Who completes the rebate form? (by Contractor Location)

	Watertown	Syracuse	Albany	Glens Falls
Contractors completes incentive form	0%	25%	37%	33%
Contractors work with customers to complete form	100%	44%	31%	33%
Customer completes incentive form	0%	31%	29%	33%
Other	0%	0%	3%	33%
Total Respondents	**1**	**20**	**16**	**6**

B.2.6.3 Cross-tabulation by Contractor Size

Table 131: Do Contractors Pass on Full Incentives by Contractor Size

Response	Small	Medium	Large
No	9%	0%	0%
Yes	91%	89%	100%
Don't know	0%	11%	5%
Total Respondents	**22**	**18**	**3**

B.2.6.4 Cross-tabulation by Contractor Location

Table 132: Do Contractors Pass on Full Incentives by Contractor Location

Response	Watertown	Syracuse	Albany	Glen Falls
No	0%	5%	6%	0%
Yes	100%	90%	88%	100%
Don't Know	0%	5%	6%	0%
Total Respondents	**1**	**20**	**16**	**6**

B.2.7 Firmographics

B.2.7.1 Cross-tabulation by Contractor Size

Table 133: Supplier Selection by Contractor Size

	Small	Medium	Large
Always purchase from the same supplier	18%	28%	0%*
Purchase from a small selection of suppliers (2-4)	82%	61%	100%*
Shop around for the best price	0%	6%	0%
Don't know	0%	1%	0%
Total Respondents	**22**	**18**	**3**

*Large is significantly different from small and medium supply houses at 90% confidence level.

B.2.7.2 Cross-tabulation by Contractor Location

Table 134: Supplier Selection by Contractor Location

	Watertown	Syracuse	Albany	Glen Falls
Always purchase from the same supplier	100%	15%	19%	33%
Purchase from a small selection of suppliers (2-4)	0%	85%	75%	50%
Shop around for the best price	0%	0%	0%	17%
Don't know	0%	0%	6%	0%
Total Respondents	**1**	**20**	**16**	**6**

B.2.7.3 Cross-tabulation by Contractor Size

Table 135: Top Five Most Common Suppliers by Contractor Size[1]

	Small	Medium	Large
FW Webb	32%	18%	0%
VP Supply	14%	18%	0%
R.E. Michaels	23%	5%	0%
Carrier Northeast	14%	9%	0%
Lennox	0%	9%	14%
Total Respondents	**22**	**16**	**3**

[1] Some respondents listed multiple suppliers, so column percentages will not add to 100%.

B.2.7.4 Cross-tabulation by Contractor Location

Table 136: Top Six Most Common Suppliers by Contractor Location[1]

	Watertown	Syracuse	Albany	Glen Falls
FW Webb	0%	11%	31%	80%
VP Supply	0%	5%	25%	40%
R.E. Michaels	0%	16%	13%	20%
Carrier Northeast	0%	11%	19%	0%
Lennox	0%	5%	19%	20%
Security Supply	100%	0%	13%	0%
Total Respondents	**1**	**19**	**16**	**5**

[1] Some respondents listed multiple suppliers, so column percentages will not add to 100%.