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BOARD OF PUBLIC UTILITIES TRENTON, NJ



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October 19, 2018

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Via Electronic Mail and Federal Express

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CASE MANAGEMENT

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BOARD OF PUBLIC UTILITIES TRENTON, NJ

Re: In the Matter of the Petition of Elizabethtown Gas Company for Authority to Extend the Term of its Energy Efficiency Programs and Approval of Associated Cost Recovery Mechanism BPU Docket No. GO18070682

Dear Secretary Camacho-Welch:

On behalf of Elizabethtown Gas Company ("Elizabethtown" or "Company"), in accordance with the April 21, 2017 New Jersey Board of Public Utilities Order issued in BPU Docket Nos. GR16070618 and GO15050504, enclosed for filing is an evaluation of the Company's Energy Efficiency Programs prepared by Nexant. Elizabethtown will be prepared to discuss this evaluation at the next discovery conference to be held in this proceeding or another date convenient to the parties.

Please feel free to contact the undersigned if you need additional information or have any questions. Thank you.

Respectfully submitted,

/s/ Deborah M. Franco Deborah M. Franco

Of Counsel to Elizabethtown Gas Company

Case Mano

cc: Service List

#### IN THE MATTER OF THE PETITION OF ELIZABETHTOWN GAS COMPANY FOR AUTHORITY TO EXTEND THE TERM OF ENERGY EFFICIENCY PROGRAMS AND APPROVAL OF ASSOCIATED COST RECOVERY MECHANISM

#### **BPU DOCKET NO. GO18070682**

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#### IN THE MATTER OF THE PETITION OF ELIZABETHTOWN GAS COMPANY FOR AUTHORITY TO EXTEND THE TERM OF ENERGY EFFICIENCY PROGRAMS AND APPROVAL OF ASSOCIATED COST RECOVERY MECHANISM

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#### Evaluation of 2017/2018 Elizabethtown Gas Residential CASE MANAGEMENT OCT 22 2018 BOARD OF PUBLIC UTILITIES

BOARD OF PUBLIC UTILITIES TRENTON, NJ

Submitted to Elizabethtown Gas Company

September 11, 2018 **Principal authors:** Jim Herndon, Lynn Roy, Kristofer Hoyt; Nexant

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## **1** Introduction

Elizabethtown Gas (Elizabethtown) customers have access to incentives provided through the New Jersey's Clean Energy Program (NJCEP) along with additional incentives offered through Elizabethtown's energy efficiency programs. The additional incentives provided for qualifying equipment are presented on Elizabethtown's website and customers can apply on-line through the NJCEP website. In addition, Elizabethtown offers their customers a free Home Energy Assessment that helps determine home energy usage and identifies energy saving opportunities. Elizabethtown also offers free home weatherization for income-qualified customers that includes a free energy assessment and completion of measures to make their home more energy efficient.

Nexant Inc was hired by Elizabethtown Gas to conduct a process evaluation of the Residential HVAC and Water Heating program, the Home Energy Assessment program and the Income-Qualified Home Weatherization program. The remainder of this report presents the objectives, methods, and findings for this evaluation.

## 1.1 Evaluation Objectives

Elizabethtown Gas had four objectives that were qualitatively assessed for the evaluation, organized into the following tasks:

- Task 1: What is the incremental benefit of the EE Program incentives, over and above the NJCEP-provided incentives? Because customers have access to 'additional' incentives, Elizabethtown seeks to quantify the influence of the additional energy efficiency program incentive (through Elizabethtown's program) on the customer's decision to participate.
- Task 2: What modifications to the budgets, marketing approaches, and/or target participation rates would enhance the effectiveness and cost-effectiveness of the programs? Elizabethtown allocates funds to each program for marketing activities. It is important that the marketing funds are appropriately allocated to address target participation rates, perceived market barriers, ease of access to customers, and other program goals and perceptions. Elizabethtown seeks to assess the current marketing strategies and budget allocations to ensure that the focus is in the right place for each of their programs.
- Task 3: Are the programs effective at encouraging customers into whole-house programs? Are there ways the realization rate for this transition could be improved? In order to assess the effectiveness of the Home Energy Assessment Program at encouraging customers to pursue additional opportunities, Elizabethtown would like to assess the 'conversion rate' of customers in implementing these additional savings opportunities. In addition, Elizabethtown would like to understand how many customers are implementing 'whole-home' approaches versus 'single-rebate' installations.

Task 4: What insight can be gained into the true magnitudes of the free ridership and spillover effects? Elizabethtown would like to qualitatively assess both free ridership (energy efficiency actions the customer would have taken in absence of the program) and spillover (additional energy efficiency actions the customer implemented outside of the program but for which the program or utility may have influenced). Based on the assessment, Elizabethtown is hoping to understand if revisions to their programs or program offerings should be made to improve how their customers are impacted by the offerings.

Table 1-1 demonstrates the activities associated with each task as applicable to the residential programs. Nexant conducted in-depth interviews with staff related to these topic areas, and developed surveys to address these topics with applicable contractors and participants.

Process Evaluation Research Topics	Programs Addressed
Task 1: incremental benefit of the Elizabethtown Gas incentives, over and above NJCEP-provided incentives (NTG)	HVAC and Water Heating
Task 2: What modifications to, marketing approaches would enhance the effectiveness and cost-effectiveness of the programs?	HVAC and Water Heating, Home Energy Assessment, Income-Qualified Home Weatherization
Task 3: Are the programs effective at encouraging customers into whole-house programs? Are there ways the realization rate for this transition could be improved?	Home Energy Assessment
Task 4: What insight can be gained into the true magnitudes of the free ridership and spillover effects?	Home Energy Assessment, HVAC and Water Heating

#### **Table 1-1: Evaluation Topics and Data Sources**

## 1.2 Program Summaries

#### 1.2.1 Residential HVAC and Water Heating

The Elizabethtown Gas Residential HVAC and Water Heating program is an enhancement to the WARMAdvantage rebates from New Jersey's Clean Energy Program (NJCEP). Customers can receive an incentive on the purchase and installation of qualifying high-efficiency heating equipment and water heating equipment as listed in Table 1-2. The NJCEP incentive must be filed in order to be eligible for the Elizabethtown Gas incentive.

Category	Measure	Elizabethtown Gas incentive	NJCEP incentive	
	Furnace – Tier 1 (AFUE > 95%)	\$250	\$250	
Heating	Furnace – Tier 2 (AFUE > 97%)	\$250	\$500	
	Boiler – Hydronic (AFUE 90% or greater)	\$300	\$300	
	Gas Water Heater (EF > 0.82)	\$200	\$300	
Water Heating	Gas Water Heater (TE > 90%, sealed combustion)	\$200	\$300	
	Gas Water Heater (EF > 0.67, power vented)	\$100	\$300	
	Furnace and Water Heater Combination	1	Tier 1 \$700	
Combination		\$450	Tier 2 \$950	
	Boiler and Water Heater Combination	\$500	\$700	

#### Table 1-2: Qualifying HVAC and Water Heating Measures

According to data provided by Elizabethtown Gas, 911 unique participants installed 982 measures through the HVAC and Water Heating program from January 2017 to August 2018. As shown in Figure 1-1 below, the majority of measures installed were stand-alone furnaces, followed by water heaters and combi-boilers.



Figure 1-1: Residential HVAC and Water Heating Measures

#### **1.2.2 Residential Home Energy Assessment (HEA)**

Elizabethtown Gas offers customers a free Home Energy Assessment that helps determine home energy usage and identifies energy saving opportunities. An Energy Advisor comes to the residence to conduct the 75-minute assessment at no cost to the resident. Based on the results of the assessment, the residence may qualify to receive free energy saving measures installed during the appointment. These may include: programmable thermostats, faucet aerators, water heater pipe insulation, low-flow showerheads, and a water heater temperature setback. Additional energy saving opportunities may be identified in a personalized report. The Home Energy Assessment can be scheduled directly by the resident by contacting CLEAResult, the program implementer. Along with the assessment, the customer can take one of three "paths": in "path 1" the customer's home receives no upgrades due to a lack of need, in "path 2" the home receives air sealing and/or insulation upgrades through Elizabethtown Gas' energy efficiency program (as of the date of this evaluation, no participants had elected to take this path), and in "path 3" the customer is referred to the Home Performance with ENERGY STAR program, which is run through New Jersey's Clean Energy Program (NJCEP).

According to data provided by Elizabethtown Gas, 923 unique customers participated in the Home Energy Assessment program from September 2017 to July 2018.

#### 1.2.3 Residential Home Weatherization for Income-Qualified Customers (HW4IQ)

In addition to energy conservation tips, Elizabethtown Gas offers free home weatherization for income-qualified customers that includes a free energy assessment and completion of measures to make their home more energy efficient. To qualify applicants must have an individually metered, active Elizabethtown Gas account and heat their home with gas. The eligible home must be their primary residence, be at least 5 years old, and cannot be under building warranty or under construction where there are open walls to the outside and cannot be under foreclosure. Renters are eligible to apply. If approved the landlord must complete a permission form. This offer cannot be combined with the New Jersey Comfort Partners program.

## 1.3 Evaluation Methodology

To examine the research objectives, Nexant surveyed participating customers and contractors as summarized in Table 1-3. Nexant also conducted interviews with two Elizabethtown Gas residential program staff members.

Group	Program	Population	Sample Frame	Completed Surveys	Response Rate
	HVAC & Water Heating	15	15	4	27%
Contractors	Home Energy Assessment	1*	1	1	100%
	HW4IQ	1**	1	1	100%
Residential	HVAC & Water Heating	911	99	41	41%
Participants	Home Energy Assessment	923	111	18	16%

#### Table 1-3: Evaluation Sampling

\*Home Energy Assessment contractor, CLEAResult

\*\*Weatherization contractor, GreenLife

Nexant programmed participant and contractor surveys in Qualtrics software. Fielding was conducted both via weblink emails to participants for self-completion of the survey online, and Elizabethtown Gas also fielded responses over the phone via either outbound or inbound calls. Initially, outbound calls for participants and contractors were conducted by Elizabethtown Gas employees and recorded via Nexant's programmed Qualtrics survey. The initial response rate was not as high as planned, so Nexant sent the surveys again to both participants and contractors via weblink emails. After 10 days, Nexant sent an email reminder to those who had not responded, offering a place in a drawing for a \$100 gift card as an incentive. After these attempts, the sample size was again deemed to be insufficient, and seeking to avoid respondent fatigue, Nexant asked for and received an additional sample of participants from Elizabethtown Gas. The second wave of respondents were emailed the participant survey weblink and were offered a \$5 gift card as an incentive and were also emailed a reminder after four days. Through this method, additional responses were collected. Nexant also completed a final round of outbound calls to contractors in an attempt to increase the response rate for this group.

#### 1.3.1 Participant Firmographics

Table 1-4 outlines the firmographics of the participants who responded to the evaluation survey.

Ownersh	ip Status	
Own 96% (n=57)		
Rent	4%	
Year Resid	lence Built	
Before 1960	44% (n=57)	
1960-1979	23%	
1980-1999	27%	
2000-2016	7%	
Size of Resid	ence (sq. ft.)	
<1,000	6% (n=49)	
1,001-2,000	51%	
2,001-3,000	37%	
3,001-5,000	6%	
Heating Fu	iel Source	
Natural Gas	96% (n=59)	
Fuel Oil	2%	
Wood	2%	
Inco	ome	
\$150,000 or more	33% (n=33)	
\$100,000-\$150,000	15%	
\$75,000-\$100,000	18%	
\$25,000-\$75,000	27%	
Less than \$25,000	6%	

#### Table 1-4: Participant Firmographics\*

\*Don't Know and Refused answers omitted

#### **1.3.2 Contractor Firmographics**

Table 1-5 outlines the firmographics of the HVAC and Water Heating contractors who responded to the evaluation survey.

	All Survey Respondents
Number o	of Locations
Only one location	25% (n=4)
Two locations	50%
90+ locations	25%
Number of Employees	s (at evaluated location)
25-60	50% (n=4)
100	25%
400	25%

#### Table 1-5: HVAC and Water Heating Contractor Firmographics

## 2 Findings

## 2.1 Task 1: What is the incremental benefit of the EE Program incentives, over and above the NJCEPprovided incentives?

Elizabethtown customers have access to incentives provided through the New Jersey's Clean Energy Program (NJCEP), along with additional incentives offered through Elizabethtown's energy efficiency programs. Incentives provided for qualifying equipment are presented on Elizabethtown's website and customers can apply on-line through the NJCEP website.

#### 2.1.1 Methodology

In order to assess the influence of Elizabethtown Gas' energy efficiency programs on customer participation, Nexant developed participant and contractor surveys to understand customer's awareness of the additional incentive provided by Elizabethtown Gas and to assess what customers would have done in absence of the additional incentive. Participants and contractors were asked questions that assessed customers knowledge of having received incentives from both NJCEP and Elizabethtown Gas, and the degree to which the latter program influenced their decision to install recommended energy efficient equipment.

#### 2.1.2 Findings

The Residential HVAC and Water Heating participants were highly aware that they had received rebates from the NJCEP and Elizabethtown Gas programs. Only 1 participant was not aware of the source of the additional Elizabethtown Gas rebate. As reported by Elizabethtown Gas program staff and as validated by survey data, the majority of these participants had heard about the rebate program from their contractor, while a quarter learned about the program via the Elizabethtown Gas website (Figure 2-1). This somewhat aligns with contractor comments that they thought customers were moderately aware of the Elizabethtown Gas rebate. Contractors did note that customers tended to be more aware of NJCEP incentives than the Elizabethtown incentives.



#### Figure 2-1: Sources of Awareness of Elizabethtown Gas rebates for HVAC and Water Heating Equipment

Q4: How did you hear about the Elizabethtown Gas portion of the rebate(s) that you received?" (n=40) \*Only responses resulting in 5% or more of total included

Importantly, more than 60% of Residential HVAC and Water Heating respondents, on a scale from 1 to 5, where 1 means "not at all influential" and 5 means "extremely influential", rated the influence of Elizabethtown Gas rebates a 4 or 5 regarding their decision to purchase energy efficient HVAC and water heating equipment. Further, almost 50% rated the influence of Elizabethtown program materials as a 4 or 5 on this same scale (Figure 2-2).





Q17: "Using a scale from 1 to 5, where1 means "not at all influential" and 5 means "extremely influential" how influential were the following factors on your decision to purchase the [MEASURE]? How influential was..." \*Totals may not equal 100% due to rounding.

The program was effective in influencing participants to make energy efficient purchases, and participants showed high levels of satisfaction with various elements of the program, including the amount of the rebate, as well as the program overall (Figure 2-3).

As contractor survey data also indicated however, the turnaround time for the rebate is a point of dissatisfaction for customers. On the NJCEP website, customers are informed that the rebate from NJCEP can take up to 120 days for customers to receive, and Elizabethtown Gas program staff indicates that theirs may take a maximum of 3 weeks after they receive the names of customers from NJCEP who have been approved for the state program's rebate. Two of four contractors also noted significant dissatisfaction with the rebate turn-around times, specifically noting that in some cases, the NJCEP rebates had taken more than 8 months. Any delays that occur in the application approval process for the NJCEP incentive will then delay delivery of the Elizabethtown rebate. In this way, participant satisfaction levels with Elizabethtown Gas' rebate structure are contingent, in part, on the length of NJCEP's customer approval process. Reminding participants of this relationship could decrease dissatisfaction with this aspect of the program and potentially increase the likelihood that participants enroll in future Elizabethtown Gas' energy efficiency programs.



#### Figure 2-3 : HVAC and Water Heating Program Satisfaction

#### Evaluation of Elizabethtown Gas Energy Efficiency Programs

Q26: "Using a 1 to 5 scale where 1 means "very dissatisfied," and 5 means "very satisfied," how satisfied were you with the following program components you experienced?" \*Totals may not equal 100% due to rounding.

## 2.2 Task 2: What modifications to the budgets, marketing approaches, and/or target participation rates would enhance the effectiveness and costeffectiveness of the programs?

Elizabethtown allocates funds to each program for marketing activities. It is important that the marketing funds are appropriately allocated to address target participation rates, perceived market barriers, ease of access to customers, and other program goals and perceptions.

#### 2.2.1 Methodology

In order to assess the marketing strategies and budget allocations currently in-place at Elizabethtown, Nexant reviewed the strategies and allocations to understand how and why they were determined. We developed surveys to be conducted with contractors to understand their view on the effectiveness of the marketing activities and any recommendations they have based on their interactions with their customers. Finally, we conducted program staff interviews to assess how well they think the current strategies and budget allocations are working and if there are any areas in need of improvement or re-alignment.

#### 2.2.2 Findings

#### 2.2.2.1 Residential HVAC and Water Heating and HEA Program Marketing and Awareness

Elizabethtown Gas energy efficiency programs are marketed across multiple mediums, including radio, television, newspapers, signage on public transportation, social media, as well as in Home Energy Reports produced by Oracle. Though participation estimates had been based on historical participation data, as was true for the Residential Home Energy Assessment program, Elizabethtown Gas program staff noted that the Residential HVAC and Water Heating program's impact had been overestimated. Rebate amounts had been reduced since the previous cycle, and the implementing contractor has had difficulty keeping up with program paperwork. However, as shown above in Figure 2-3, 86% of respondents were satisfied with rebate amounts. Among participants, 47% rated their satisfaction with the marketing of the HVAC and Water Heating program as a 4 or a 5 on a scale on which 5 indicated participants were "very satisfied" and 1 indicated that they were "very dissatisfied" (Figure 2-4). Of these participants, 38% had heard about the program from Elizabethtown Gas in some fashion, and 53% had heard from their contractor (Figure 2-1 above). Additionally, program staff noted that they would like to see higher levels of awareness of rebates available for major equipment upgrades and for smart thermostats.

As reported by the program tracking database, 62% of Home Energy Assessment participants heard about the program via their Home Energy Reports (n=923), while 28% had learned about it via bill inserts, and the remaining 10% had heard from the Elizabethtown Gas website, as well as Elizabethtown Gas call centers, payment centers, and employees combined. It is also notable that only 4 of these participants had heard of the program via television or radio advertisements. As such, including information about the HVAC and Water Heating program in the Home Energy Reports, if not already present, could help boost participation.

Although the Home Energy Assessment contractor reported high levels of satisfaction with the marketing of the program, two HVAC and Water Heating contractors reported dissatisfaction with the marketing of the programs, with one reporting that they felt that marketing to dealers and customers was lacking and that this problem was costing their firm referrals.

#### Figure 2-4: Participant Satisfaction with Marketing of HVAC and Water Heating program





#### 2.2.2.2 Residential HVAC and Water Heating, and HEA Program Participant Motivation and Satisfaction

As is reflected in participant survey data (Figure 2-5), HVAC and Water Heating program contractors reported that customers tended to be motivated to purchase new energy efficient equipment because their existing equipment was aging or was not performing properly. Based on this information, marketing initiatives should address this need.



Figure 2-5: Participant Existing Equipment Condition

Home Energy Assessment program respondents report that the primary reasons they were motivated to get assessments were curiosity about their homes' energy usage and the desire to save money on energy bills (Figure 2-6). Additionally, participants also report that they learn about their potential energy saving opportunities via online product reviews and often will look for the ENERGY STAR® logo when they do so (Figure 2-7). Almost 40% of respondents also noted that they will refer to utility information to learn about these opportunities. These trends may be leveraged in marketing materials and the program website by providing a compendium of information regarding the specifications of qualifying equipment and contractors who could install them and promoting this resource in program materials and bill inserts.

#### Figure 2-6: Participant Motivation for Getting Home Energy Assessments



Survey Q9: "What motivated you to complete the Home Energy Assessment?" (n=18; multiple responses allowed)

Q7: "Which of the following best describes the condition of the previous equipment that you replaced? Was it . . ." (n=41)



#### Figure 2-7: Sources of Information about Saving Energy

Q25: "Where do you typically search for information on how to save energy?" (n=59; multiple responses allowed)

Finally, as shown in Figure 2-8, more than half of respondents have noticed cost savings on their bills after having installed incentivized equipment. Of 23 respondents who answered the question, 22 rated their satisfaction with these savings as a 4 or 5, on a scale where 5 represents "very satisfied" and 1 represents "very dissatisfied". Further, 94% of respondents from the HVAC and Water Heating, and Home Energy Assessment programs rate their satisfaction with incentivized equipment as a 4 or 5 on this same satisfaction scale (Figure 2-9).

Elizabethtown Gas could also leverage this information in marketing materials in order to increase participation in underutilized programs.



#### Figure 2-8: Savings on Gas Bill from Installation of Incentivized Equipment Noticed by Respondents





Figure 2-9: Satisfaction with Installed Measures



#### 2.2.2.3 HW4IQ Program

The HW4IQ program, designed in tandem with a weatherization contractor, was intended to serve 74 customers, but within the first week of program marketing had received over 200 customer inquiries regarding the program. Program staff traced the cause of this high initial interest to a marketing campaign published by Elizabethtown Gas, and the contractor noted that interest had slowed down since then. In that timeframe, this contractor had taken on some marketing duties attempting to increase awareness and utilization of the program. Because the HW4IQ program outperformed expectations within the first few weeks of program launch, program staff began efforts to move funds from the HVAC and Water Heating program into this program, in an attempt to fulfill program requests.

From program launch through August 2018, the program's weatherization contractor stated that they billed 111 jobs to the HW4IQ program and notes no significant problems stemming from budgetary shortcomings, stating that, based on experience implementing similar programs in other jurisdictions, the budget is appropriate for a pilot program of its kind. The only potential problem noted by was a lack of structure to their partnership with Elizabethtown Gas in the form of guidelines or a manual, as well as a lack of documentation to track those who don't proceed through the program in the standard fashion. Though this is the case, the contractor believed Elizabethtown Gas was working on these problems.

# 2.3 Task 3: Are the programs effective at encouraging customers into whole-house programs? Are there ways the realization rate for this transition could be improved?

Elizabethtown offers their customers a free Home Energy Assessment that helps determine home energy usage and identifies energy saving opportunities. Based on the results of a 75minute free home assessment, customers may qualify to receive free energy saving measures installed during the appointment to help get them started right away. As a result of the Home Energy Assessment, additional savings opportunities (either as 'whole-home' approaches or 'single-rebate' installations) may be identified to customers in a personalized report. In addition, customers are recommended to the Home Performance with ENERGY STAR® program, when applicable.

#### 2.3.1 Methodology

In order to assess the effectiveness of the Home Energy Assessment Program at encouraging customers to pursue additional opportunities, Nexant conducted a review of program tracking records to assess how many participants from the Home Energy Assessment program went on to participate in the HVAC and Water Heating program. In addition, we developed surveys to be conducted with customers who participated in the Home Energy Assessment Program to understand which additional measures were or were not implemented and seek to understand why. Contractor surveys were also developed to understand their perceptions on why customers did or did not pursue additional opportunities that were recommended to them.

#### 2.3.2 Findings

As discussed in Task 1, respondents reported high levels of awareness of having received rebates from NJCEP and Elizabethtown Gas. Over half of HVAC and Water Heating respondents had heard about the program through contractors, though it is unclear whether this refers to the contractor who had done the equipment installation, or one who may have conducted a Home Energy Assessment. Of these participants, 24% had installed the energy efficient equipment, as opposed to less energy efficient equipment, at least in part on the recommendation of their contractor. The primary reasons were related to the financial benefits offered by the more efficient equipment, as well as from the incentives offered by NJCEP and Elizabethtown Gas (Figure 2-10).



#### Figure 2-10: Motivation for Installing Energy Efficient Equipment

Q8: "What motivated you to install an energy efficient system rather than a less efficient one that would use more energy? " (n=41; Multiple responses allowed)

For Home Energy Assessment participants surveyed, 5 of 18 had implemented at least one of the measures recommended during the assessment, with 3 of them installing additional insulation, and the remainder installed lower cost measures, such as window caulk and faucet aerators. This runs somewhat contrary to the Home Energy Assessment contractor who estimated that 45% of customers implement at least one measure, however, the evaluation sample is small and may not be truly indicative of the program population. The implementation contractor reported that, in their opinion, the assessment was "extremely influential" in customers' decision to complete energy efficiency upgrades. Of the 5 respondents who implemented a recommended measure, all 5 rated the importance of their contractor's recommendation to implement the measures as a 4 or 5 on a 5-point scale where 5 indicates that it was "extremely influential" and 1 indicates that it was "not at all influential". Collectively, the influence of contractors on both the HVAC and Water Heating participants and Home Energy Assessment participants, highlights the importance of the advice of contractors in customers' energy efficiency decision-making process.

Those respondents who did not implement measures recommended in the assessment noted that the primary reasons were a lack of funds or a lack of time. Unfortunately, these respondents did not offer patterned responses when asked to provide information about what Elizabethtown Gas could do to help them complete installations of equipment recommended during the assessment. However, one respondent noted that the recommended contractor list provided by Elizabethtown Gas was helpful, while two others suggested more funding be provided.

In terms of cross-program awareness, 8 of 41 HVAC and Water Heating respondents had heard of the Home Energy Assessment program. Three of these 8 had participated in the other program, and all 3 had participated in the assessment program prior to the HVAC Water Heating program. Four of 18 of the Home Energy Assessment respondents were aware of the HVAC and Water Heating program, though they had all initiated participation in that program prior to the Home Energy Assessment program launching, and thus, their participation can nt be traced back to awareness created by the Home Energy Assessment program.

Respondents, though there were exceptions, were highly satisfied with the work of their contractor (Figure 2-11, Figure 2-12). Considering the importance of contractors in the process of motivating participants to purchase energy efficiency upgrades, this high satisfaction level should be leveraged by Elizabethtown Gas in marketing and promotion of the programs. Also, by further assessing the contractors' satisfaction with the Elizabethtown Gas programs and soliciting feedback from them regarding desired involvement levels with these programs, Elizabethtown Gas could leverage the success of firms that are productive within the program into successfully meeting program goals.

Though satisfaction levels seem to be a bit lower for assessment contractors, no strong conclusions should be drawn based on the sample size. Further data, however, should be gathered from these contractors to assess the degree to which they recommend energy efficient equipment upgrades and what their business and customer service processes entail. Understanding this could inform adjustments to these processes, to both increase participation and satisfaction with the assessment process, but also understand and facilitate customer transition from assessments to equipment upgrades.



#### Figure 2-11: HVAC and Water Heating Respondent Satisfaction with Contractor

Q32a: "How satisfied are you with the interaction with the contractors who worked on the measure?" (n=41). \*Totals may not equal 100% due to rounding



Figure 2-12: Home Energy Assessment Respondent Satisfaction with Contractor

Q32b: "How satisfied are you with the interaction with the contractors who worked on the Home Energy Assessment?" (n=18).

## 2.4 Task 4: What insight can be gained into the true magnitudes of the free ridership and spillover effects?

Elizabethtown Gas's energy efficiency programs incent customers to implement energy savings measures that they may not have implemented in absence of the program incentive. It is important for Elizabethtown to understand the influence of the programs and offerings (either in the form of an incentive or a free assessment) on the customers decision making process, along with the influence of customer actions taken outside of the program.

#### 2.4.1 Methodology

To assess the influence of Elizabethtown's energy efficiency programs on customer actions, Nexant developed surveys to be conducted with program participants to gain an understanding of how influential Elizabethtown and the programs were on their participation (free ridership) and to also assess if the customer implemented additional energy efficiency measures for which they were not incented (spillover). Contractor surveys were developed to understand their perceptions of program influence on customer actions, to assess if the program incentives had any influence on their business practices, and to assess how often their customers are implementing energy efficiency measures that are not going through the program.

#### 2.4.1.1 Free ridership Methodology

Free ridership is the program savings attributable to free riders (program participants who would have implemented a program measure or practice in the absence of the program). In the energy efficiency industry, there are typically three types of free riders<sup>1</sup>:

<sup>&</sup>lt;sup>1</sup> https://www.energy.gov/sites/prod/files/2015/01/f19/UMPChapter17-Estimating-Net-Savings.pdf

- Total free riders: Participants who would have completely replicated the program measure(s) or practice(s) on their own and at the same time in the absence of the program.
- Partial free riders: Participants who would have partially replicated the program measure(s) or practice(s) by implementing a lesser quantity or lower efficiency level.
- Deferred free riders: Participants who would have completely or partially replicated the program measure(s) or practice(s) at a time after the program timeframe.

Free ridership is often assessed through two components, intention and influence. Program participants (for both the HVAC and Water Heating program and the Home Energy Assessment program) were surveyed in an attempt to understand what actions they would have taken in absence of the additional incentive or the free assessment offered by Elizabethtown (intention component) and how much the Elizabethtown program influenced their decision to participate (influence component). Participants were asked the following questions to assess free ridership:

**INTRO)** The next few questions are in regard to what you most likely would have done had you not received "the rebate from Elizabethtown Gas for the **[MEASURE]**" [OR] "the Home Energy Assessment from Elizabethtown Gas". As a reminder, for the **[MEASURE]** you received \$\_\_\_\_\_ from New Jersey and \$\_\_\_\_ from Elizabethtown Gas. This section is asking specifically about what you would have done in absence of the <u>Elizabethtown Gas portion</u> of the total rebate you received.

**Q\_Equip\_Intention)** Which of the following statements best describes the actions you would have taken if Elizabethtown rebates were not available: [SINGLE RESPONSE]

- 1. Would not have installed the equipment
- 2. Would have postponed the purchase for at least one year
- 3. Would have bought a less expensive or less energy efficient equipment
- 4. Would have bought the exact same equipment, and paid the full cost yourself
- 5. Would have not taken any action because I wouldn't be aware of any issues without having had the home energy assessment
- 96. Other, please specify: [OPEN-ENDED RESPONSE]

**Q\_HEA\_Intention)** Which of the following statements best describes the actions you would have taken if the Home Energy Assessment offered by Elizabethtown Gas was not available: [SINGLE RESPONSE]

- 1. Would not have conducted the Home Energy Assessment
- 2. Would have postponed the Home Energy Assessment for at least one year
- Would have requested energy saving advice, but would not have been the full scope and content of the Home Energy Assessment
- 4. Would have done the Home Energy Assessment anyway, and paid the full cost myself.
- 96. Other, please specify: [OPEN-ENDED RESPONSE]

[ASK IF Q\_Equip\_Intention = 3]

**Q\_Equip\_a)** You said you would have bought equipment that was less expensive or less energy efficient if you had not received the rebate or information from Elizabethtown Gas. Do you think it is more likely that you would have bought equipment that was...? [SINGLE RESPONSE]

- 1. Almost as efficient as the one you bought, or
- 2. Significantly less efficient than the one you bought
- 96. Other, please specify: [OPEN-ENDED RESPONSE]

**Q\_Influence**) Using a scale from 1 to 5, where1 means "not at all influential" and 5 means "extremely influential" how influential were the following factors on your decision to purchase the [**MEASURE**]? *How influential was…* 

- The Elizabethtown gas rebate (the incremental amount in addition to the NJ state rebate)
- Information or advertisements from Elizabethtown Gas, including their website
- Recommendation from your contractor
- Recommendation from the Energy Adviser
- Recommendation from family/friend
- Did anything else influence you? If so, please specify: \_\_\_\_\_

Responses to both the intention and influence component were analyzed in order to qualitatively assess free ridership.

In addition to the participant survey, contractors were asked how influential the Elizabethtown program and incentive was on their business practice to recommend energy efficient measures to their customers.

#### 2.4.1.2 Spillover Methodology

Spillover refers to additional reductions in energy consumption or demand that are due to program influences beyond those directly associated with program participation. As a result, these savings may not be recorded in the program tracking system and credited to the program<sup>2</sup>. Specifically, we qualitatively assessed participant spillover, which represents the additional energy savings that are achieved when a program participant, as a result of the program's influence, installs energy efficiency measures or behaviors outside the efficiency program after having participated. The following question was asked of participants as part of the survey:

<sup>&</sup>lt;sup>2</sup> https://www.energy.gov/sites/prod/files/2015/01/f19/UMPChapter17-Estimating-Net-Savings.pdf

**Q\_SPO)** Since receiving your rebate from Elizabethtown Gas for the" **[MEASURE]**, *OR* "Since receiving your Home Energy Assessment", what other products or services have you purchased to help save energy in your home?

- 1. Installed energy efficient appliances
- 2. Moved into an ENERGY STAR home [VERIFY:"Is Elizabethtown Gas still your gas utility?" Yes/No]
- 3. Installed efficient heating or cooling equipment
- 4. Installed efficient windows
- 5. Added insulation
- 6. Sealed air leaks
- 7. Sealed ducts
- 8. Bought LEDs
- 9. Bought CFLs
- 10. Installed an energy efficient tank-style water heater
- 11. Installed a tankless water heater
- 12. None no other actions taken
- 96. Other, please specify: [OPEN-ENDED RESPONSE]

In addition to the participant survey, contractors were also asked questions regarding how often their customers install energy efficiency measures that are not incented through the program and their perceived influence that Elizabethtown Gas has on these customer decisions.

#### 2.4.2 Findings

#### 2.4.2.1 Free ridership

#### **Residential HVAC and Water Heating Program**

Almost half of HVAC and Water Heating participants (46%) stated they would have purchased the exact same equipment and paid the full cost for the measure, if the Elizabethtown rebates were not available. Thirty-seven percent of respondents would have bought less expensive or efficient equipment and 15% would have postponed the purchase for at least a year and only 2% would have not installed the equipment (Figure 2-13).



#### Figure 2-13: Residential HVAC and Water Heat Participant Intention

Q15: "Which of the following statements best describes the actions you would have taken if Elizabethtown rebates were not available:" (n=41)

Of the 37% (n=15) who stated they would have bought less expensive or efficient equipment, 12 customers stated that they would have purchased equipment almost as efficient and the remaining three stated they would have purchased equipment significantly less efficient.

When asked about the influence of Elizabethtown Gas on participants to install energy efficient equipment, 43% stated that the additional incentive provided by Elizabethtown Gas was 'extremely influential' (Figure 2-14).





Q17: "Using a scale from 1 to 5, where1 means "not at all influential" and 5 means "extremely influential" how influential were the following factors on your decision to purchase the [MEASURE]? How influential was... The

Elizabethtown gas rebate (the incremental amount in addition to the NJ state rebate)" (n= 41) \*Totals may not equal 100% due to rounding

Fifty-one percent of respondents stated that information or ads from Elizabethtown were either 'extremely influential' or 'very influential' on their decision to participate in the program, while 73% stated that a recommendation from their contractor was 'extremely influential' or 'very influential' on their decision to participate. Recommendations from an energy advisor and a friend/family member were noted as not being very influential on respondent's decision to participate.

Responding contractors reported moderate agreement with the idea that the Elizabethtown incentives are influential on their business practice to recommend energy efficiency measures to their customers. Specifically, three of the four respondents stated a '3' on the influence rating of 1 to 5, where 1 is 'not at all influential' and 5 is 'extremely influential'. They also reported that only about 25% of projects they have implemented since January 2017 would have qualified for an Elizabethtown incentive. They also noted that customers infrequently bring up incentives on their own, are moderately aware of the NJCEP and are less aware of Elizabethtown Gas's program.

#### Home Energy Assessment Program

Five (of surveyed 18) Home Energy Assessment participants responded to the intention component of the free ridership question for the program. Of these 5, 2 stated that they would not have conducted the HEA in absence of the program, one stated they would done the assessment anyway and paid the full cost, one would have requested the energy savings advice but would not have been the full scope and content of the assessment, and the last respondent stated that they would have 'looked for another way to do it'.

The Home Energy Assessment implementation contractor reported that, in their opinion, the assessment was "extremely influential" in customers' decision to complete energy efficiency upgrades.

#### 2.4.2.2 Spillover

#### **Residential HVAC and Water Heating Program**

Eight-eight percent (n=36) of HVAC and Water Heating respondents stated that they have purchased energy savings equipment for their home since participating in Elizabethtown's program. The majority (42%) stated that they have purchased lighting (LED or CFL bulbs), with weatherization measures being the second most mentioned purchase (Figure 2-15).



#### Figure 2-15: Percentage of HVAC and Water Heating Respondents Spillover Measures



Responses from HVAC and Water Heating program contractors were inconclusive regarding the level of spillover that they are seeing from their customers.

#### Home Energy Assessment Program

Fifteen (of 18 surveyed) Home Energy Assessment respondents stated they have purchased efficient equipment to save energy in their home since participating in the program. The two most commonly noted purchased measures were lighting (40%) and weatherization (40%) (Figure 2-16).



Figure 2-16: Home Energy Assessment Respondents Spillover Measures

Q18: "Since receiving your Home Energy Assessment", what other products or services have you purchased to help save energy in your home?" (n=20 measures noted by 15 respondents)



## **3 Conclusions and Recommendations**

This section outlines the conclusions and recommendations for the process evaluation of Elizabethtown's residential programs.

## 3.1 Task 1

**Conclusion:** More than 60% of Residential HVAC and Water Heating respondents, rated the influence of Elizabethtown Gas's rebates as either very important or extremely important regarding their decision to purchase energy efficient HVAC and water heating equipment.

**Conclusion:** The Residential HVAC and Water Heating participants were highly aware that they had received rebates from the NJCEP and the Elizabethtown Gas programs. Only 1 participant was not aware of the source of the additional Elizabethtown Gas rebate. According to participants, the dominate source of awareness is through contractors, however, this only somewhat aligns with contractor comments that they thought customers were moderately aware of the Elizabethtown Gas rebate. Contractors did note that customers tended to be more aware of NJCEP incentives than the Elizabethtown incentives.

**Conclusion:** Surveyed participants reported high levels of satisfaction with various elements of Elizabethtown's program, including the amount of the rebate. Among all program components, customers are least satisfied with the time it takes to receive the incentive.

**Recommendation:** Participating customers do report being aware of the Elizabethtown Gas additional incentives and report being satisfied with the amount of the incentive as well. In order to maintain and leverage this awareness and high level of satisfaction with the program and to aid in increasing participation, Elizabethtown Gas should remind customers about the length of time they should expect to wait for rebates from both the state and Elizabethtown Gas in an effort to keep customer satisfaction with the program high.

**<u>Recommendation</u>**: Because contractors reported that their customers are only moderately aware of the Elizabethtown incentives, yet contractors are a main source of program awareness for customers, continue to work with contractors to ensure that they are informing their customers about the additional incentive provided by Elizabethtown.

## 3.2 Task 2

**<u>Conclusion</u>**: As reported by the program tracking database, 62% of Home Energy Assessment participants heard about the program via their Home Energy Reports, while less than 1% of these participants had heard of the program via television or radio advertisements.

**<u>Recommendation</u>**: Evaluate the feasibility of advertising the HVAC and Water Heating programs in the Home Energy Reports. This could increase participation in theHVAC and Water Heating program.

**<u>Conclusion</u>**: As is reflected in participant survey data and HVAC and Water Heating program contractor survey data, customers tend to be motivated to purchase new energy efficient equipment because their existing equipment was aging or was not performing properly.

**<u>Recommendation</u>**: Evaluate marketing material and, if not present, consider adapting these materials to leverage customers' strong interest in replacing aging or underperforming HVAC and Water Heating Equipment.

**Conclusion:** Home Energy Assessment program respondents report that the primary reasons they were motivated to get assessments were curiosity about their homes' energy usage and the desire to save money on energy bills. Participants also report that they learn about their potential energy saving opportunities via online product reviews and often will look for the ENERGY STAR logo when they do so. Almost 40% of respondents also noted that they will refer to utility information to learn about these opportunities.

**Recommendation:** These trends may be leveraged in marketing materials and the Elizabethtown Gas program website by providing a compendium of information regarding the specifications of qualifying equipment and contractors who could install them and promoting this resource in program materials and bill inserts. One example is to provide the location of contractors currently listed on the website to help customers locate a contractor close to them.

**<u>Conclusion</u>**: 94% of respondents from the HVAC and Water Heating, and Home Energy Assessment programs report high satisfaction with incentivized equipment.

**Recommendation**: Elizabethtown Gas could leverage this high satisfaction of qualifying equipment in marketing materials in order to inform customers about not just the energy and cost savings benefits but also the performance of the qualifying equipment.

**Conclusion:** Respondents reported that their contractor's recommendation was highly important in their decision to participate in the HVAC and Water Heating programs. It was also moderately important in their decision to purchase energy efficient equipment, rather than less efficient equipment. Finally, respondents reported that they were highly satisfied with their contractor's work.

**<u>Recommendation</u>**: By assessing the contractors' satisfaction with the Elizabethtown Gas programs and soliciting feedback from them regarding program recommendations, improvements, and desired involvement levels, Elizabethtown Gas could build on the success of contractors that are effective in customer recruitment into the program, thereby increasing program participation.

## 3.3 Task 3

**Conclusion:** Very few Home Energy Assessment participants surveyed had implemented at least one of the measures recommended during the assessment, with the ones who did implement measures did lower cost measures. It should be noted that the evaluation sample is small and may not be truly indicative of the program population.

<u>Conclusion</u>: Only 8 of 41 HVAC and Water Heating respondents had heard of the Home Energy Assessment program and only 4 of 18 of the Home Energy Assessment respondents were aware of the HVAC and Water Heating program. In addition, Nexant cross-referenced the Home Energy Assessment data with the HVAC and Water Heating program database and found very few assessment participants who received an incentive through the HVAC and Water Heating program after the assessment was completed.

**Recommendation:** Based on both survey data (although data from Home Energy Assessment participants is minimal) and the review of program tracking records, it appears that customers are not well informed about other Elizabethtown offerings. In addition, it appears that a very small percentage of Assessment customers are going on to participate in Elizabethtown's HVAC and Water Heating program. This could be for multiple reasons, but it is recommended that Elizabethtown continue to cross-reference these two program participant lists to see if this trend continues.

**<u>Recommendation</u>**: It is recommended that Elizabethtown work closely with their Home Energy Assessment contractor to ensure that Energy Auditors are recommending other energy efficient improvements that can be made in customers' homes and perhaps increase activities to follow-up with assessment customers to encourage efficient equipment upgrades when applicable. These activities could increase participation and satisfaction with the assessment process with customers, and also help facilitate customer transition from assessments to equipment upgrades.

## 3.4 Task 4

**Conclusion:** Almost half of HVAC and Water Heating participants (46%) stated they would have purchased the exact same equipment and paid the full cost for the measure, if the Elizabethtown rebates were not available, indicating a high level of the intention component of free ridership. However, when asked about the influence of Elizabethtown Gas on participants to install energy efficient equipment, 43% stated that the additional incentive provided by Elizabethtown Gas was 'extremely influential'. These responses combined indicate a moderate level of free ridership, which isn't too surprising since the Elizabethtown incentive is 'secondary' in the minds of customers who receive the incentive from NJCEP first. The fact that customers were highly influenced by the Elizabethtown incentive is a positive indicator that Elizabethtown is playing a role in encouraging energy efficiency implementation.

**Recommendation:** Elizabethtown should continue to offer additional incentives to their customers who also participate in NJCEP, assuming it remains to be cost-effective. Participants reported very high satisfaction with Elizabethtown's program overall, which can often be linked to high overall customer satisfaction with their utility provider. Elizabethtown's marketing of and influence on energy efficiency actions will improve customer relations and will help build a positive relationship between Elizabethtown and their customers.

**Conclusion:** Responding contractors reported moderate agreement with the idea that the Elizabethtown incentives are influential on their business practice to recommend energy efficiency measures to their customers. Yet 73% of respondents stated that a recommendation from their contractor was 'extremely influential' or 'very influential' on their decision to participate in the program.

**Recommendation:** Because contractors are the main driver for customer participation in Elizabethtown's program, it is recommended that Elizabethtown continue to inform contractors about the benefits of energy efficiency implementation and how it can benefit both them as a contractor and their relationship with their customers. If contractors recognize these benefits, it could lead to an increase in contractor business practices that recommend more energy efficiency measures.

**<u>Conclusion</u>**: Responses from Home Energy Assessment respondents was too limited to make a conclusion on the level of free ridership for this program.

**Conclusion:** Customer reported spillover was high, with 88% of HVAC and Water Heating respondents and 15 of 18 Home Energy Assessment respondents stating that they have purchased energy savings equipment for their home since participating in Elizabethtown's program. High spillover can indicate a strong market interest in energy efficiency and therefore additional opportunities for Elizabethtown to influence the implementation of energy efficiency measures in their service territory.

**<u>Recommendation</u>**: Elizabethtown should leverage the opportunity to reach out to past program participants to encourage additional energy efficiency implementation and behaviors. These customers could also be a good entry point for new/pilot measures that Elizabethtown may be interested in adding to their program mix.

## **Nexant**

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