

# Evaluation of Illinois Energy Now Public Sector Natural Gas Boiler Tune-Up Incentives Program

June 2013 through May 2014

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## Executive Summary

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This report presents the results of the impact and process evaluations of the custom and standard incentive components of the Public Sector Natural Gas Boiler Tune-Up (Boiler Tune-ups) Program that DCEO offers to its non-residential customers. This report presents results for activity during natural gas program year 3 (GPY3), defined as the period from June 2013 through May 2014.

Data for the study were collected through review of program materials and interviews with DCEO staff members, program implementation contractor staff members, program participants, and contractors. The main features of the approach used for the evaluation are as follows:

- An analytical review of program measures was performed to verify gross savings estimates.
- The estimation of free ridership and net program savings was based on participant decision maker survey responses.
- Relevant University of Illinois at Chicago Energy Resources Center (ERC) program implementation staff members were interviewed to obtain information for the process evaluation.

The gross ex post energy savings of the Boiler Tune-ups Program during GPY3 are summarized in Table ES-1. During this period, gross ex post energy savings totaled 800,185 therms and the realization rate is 126%. The net-to-gross ratio for the program is 76%, and net realized natural gas energy savings totaled 604,687 therms.

*Table ES-1 Summary of Gross and Net Therm Savings for Boiler Tune-ups Program*

Utility	Ex Ante Therm Savings	TRM-Calculated		TRM-Calculated (Errata-Corrected)			
		Gross Ex Post Therm Savings	Net Ex Post Therm Savings	Gross Ex Post Therm Savings	Gross Realization Rate	Net Ex Post Therm Savings	Net-to-Gross Ratio
Ameren	100,338	201,263	155,192	198,117	197%	149,714	76%
Nicor	219,246	248,677	191,752	232,885	106%	175,987	76%
North Shore	37,732	43,644	33,654	39,651	105%	29,964	76%
Peoples	277,792	333,279	256,988	329,533	119%	249,023	76%
Total	635,108	826,862	637,587	800,185	126%	604,687	76%

The following presents a selection of key findings from the program evaluation:

- **Consistent Program Savings:** The gross ex post therm savings for the program year was 826,862 therms, a slight decrease in savings from the prior year. However, the program saw a larger share of therms saved from sites located in the Nicor, Peoples, and North Shore service territories than was the case in the prior year. As was the case in the in the prior year, K-12 schools and universities accounted for a large share of the total program savings.

- **Program Participants Remain Satisfied:** Similar to prior years, most program participants indicated that they were satisfied with the program. Additionally, few participants noted problems with the application process or with receiving the incentive check.
- **Program Changes:** Several design changes were made to the program during the current program year. The incentive levels for steam traps and pipe insulation were kept at the “Double-Up Bonus” levels from the prior program year because the larger incentives increased interest in these measures. Incentives for boiler tune-ups were decreased from \$0.75 per kBtuh saved to \$0.50 per kBtuh saved. Tune-up incentives were decreased to obtain savings at a lower cost, and because the decrease had not impacted interest in the measure.

The program began allowing contractors to receive rebates directly. The objective of this change was to help encourage additional projects by allowing contractors to lower the initial project cost for the participant. The change may also encourage participation among public sector entities that are not able to return the incentive dollars to the budgets used to fund the project.

The Midwest Energy Efficiency Alliance (MEEA), a partner of DCEO, has begun processing incentive payments for the program. This change was made in order to improve the payment time for incentives.

# 1. Introduction

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This report presents the results of the impact and process evaluation of the Public Sector Natural Gas Boiler Tune-Up Program (Tune-Up Program) offered by the Illinois Department of Commerce and Economic Opportunity (DCEO) during the period June 2013 through May 2014.

## 1.1 Description of Program

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The Tune-Up Program generates natural gas savings through efficiency improvements to boilers (i.e., boiler tune-ups), installation of insulating pipe wrap, steam trap repair or replacement, boiler reset controls, and parallel positioning systems. The program is available to local governments, municipal corporations, public school districts, community college districts, public universities, and state and federal facilities. Incentives are only available for sites receiving natural gas service from Ameren Illinois, Nicor, Peoples, or North Shore.

DCEO partnered with the Energy Resources Center (ERC) at the University of Illinois at Chicago to administer the Boiler Tune-Up Program. The Tune-Up Program was piloted during GPY1 and has since been included in DCEO's energy efficiency program portfolio. Incentives are available to encourage owners of natural gas boilers to invest in efficiency improvements made by a qualified contractor. The incentives that were available during GPY3 are described below:

- Incentives for boiler tune-ups based on boiler capacity were set at \$0.50 per kBtu/h. Tune-up incentives are available every 36 months. Boiler output must be greater than 200,000 Btuh
- Incentives for boiler reset controls based on boiler capacity were set at \$0.75 per kBtu/h, up to a maximum of \$1,200 per boiler. Boiler output must be greater than 200,000 Btuh.
- Incentives for steam trap repair or replacement for traps that are leaking. Leak detection can be performed using a pyrometer, ultrasound, or a visual inspection. Steam trap replacements included under a scheduled maintenance program are not eligible for the incentives. The incentive levels range between \$200 and \$600 per steam trap and are dependent on the line pressure measured at the trap.
- Incentives for pipe insulation are available for missing or defective pipe insulation but new pipes are not eligible. The level of the incentives depend on the pipe size, specifically:
  - \$8 per foot for pipes of less than 1 inch in diameter;
  - \$10 per foot for pipes of 1 ¼ to 2 inches in diameter;
  - \$16 per foot for pipes of 2 ½ to 5 inches in diameter; and
  - \$20 per foot for pipes larger than 5 inches in diameter.
- Incentives of \$3.00 per therm saved for parallel positioning systems. Boiler output must be greater than 1,500,000 Btuh.

Applicants for large projects are required to receive preapproval prior to beginning the project. Preapproval is required if any of the following conditions are met:



- Total requested incentives exceed \$10,000;
- Total estimated number of failed steam traps exceeds 30; and/or
- Total estimated pipe insulation exceeds 300 linear feet.

Participants may also seek preapproval if they wish to confirm that they are eligible for the program or reserve incentive funds.

## 1.2 Expected Therm Savings

Expected therm savings by utility are shown in Table 1-1. There were 64 incentive projects for the period June 2013 through May 2014, which were expected to provide savings of 635,107.7 therms.

*Table 1-1 Expected Therm Savings for Boiler Tune-Up Program*

<i>Utility</i>	<i>Expected Therm Savings</i>
Ameren	100,337.8
Nicor	219,246.0
Peoples	37,731.7
North Shore	277,792.2
Total	635,107.7

## 1.3 Overview of Evaluation Approach

The overall objective for the impact evaluation of the Boiler Tune-Up Program was to determine the gross and net energy savings resulting from the program's custom and standard projects during the period June 2013 through May 2014.

The approach for the impact evaluation was based on the following features:

- Available documentation (e.g., audit reports, invoices, savings calculation work papers, etc.) was reviewed for projects, with particular attention given to the calculation procedures and documentation for savings estimates.
- Gross savings were verified through analytical desk review.
- A sample of participants was surveyed to gather information on their decision making, opinions of the program, and factors determining net-to-gross savings ratios for the program.

## 1.4 Organization of Report

This report on the impact and process evaluation of the Boiler Tune-up Program for the period June 2013 through May 2014 is organized as follows:

- Chapter 2 presents and discusses the analytical methods and results of estimating gross savings for measures implemented under the program.

- Chapter 3 presents and discusses the analytical methods and results of estimating program net savings.
- Chapter 4 presents and discusses the analytical methods and results of the process evaluation of the program.
- Appendix A provides a copy of the questionnaire used for the survey of participant decision makers.
- Appendix B presents the results of the survey of participant decision makers for participants that received incentives under the program.

## 2. Estimation of Gross Savings

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This chapter addresses the estimation of gross ex post therm savings resulting from measures installed in facilities of customers that obtained incentives under the Public Sector Natural Gas Boiler Tune-Up Program (Tune-Up Program) during the period June 2013 through May 2014. Section 2.1 describes the methodology used for estimating gross savings. Section 2.2 presents the program's gross realized natural gas energy savings.

### 2.1 Methodology for Estimating Gross Savings

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The methodology used for estimating gross ex post savings is described in this section.

#### 2.1.1 Review of Documentation

DCEO's program implementation contractor, University of Illinois at Chicago Energy Resources Center (ERC), provided documentation for the projects completed during the program year. The first step in the evaluation effort was to review this documentation and other relevant program materials.

For each project, the available documentation (e.g., audit reports, savings calculation work papers, etc.) for each rebated measure was reviewed, with particular attention given to the calculation procedures and savings estimates. Documentation reviewed for all projects included program forms, databases, reports, billing system data, weather data, and any other potentially useful data.

#### 2.1.2 Analytical Desk Review

ADM evaluation staff reviewed the natural gas energy savings algorithms to verify that the assumptions were reasonable, the algorithm was correct for assigning gross ex ante therm savings per measure, and the procedures used aligned with the methodologies outlined in the Illinois Statewide Technical Reference Manual (TRM) Version 2.0. In cases where project documentation was incomplete or unclear, evaluation staff contacted ERC to seek further information. This ensured the development of accurate realized natural gas energy savings estimates.

ADM calculated annual energy savings for each boiler tune-up per the following formula that is given in the Illinois Statewide TRM:

$$\Delta therm\ s = N_{gi} * SF * EFLH / (Eff_{pre} * 100)$$

Where,

$$N_{gi} = \text{Boiler gas input size (kBTU/hr)}$$

<i>SF</i>	=	<i>Savings factor. Savings factor is the percentage reduction in gas consumption as a result of the tune-up. ADM applies <math>1 - (Eff_{Pre} / Eff_{Post})</math> as the SF.</i>
<i>EFLH</i>	=	<i>Equivalent full load hours for heating from TRM<sup>1</sup></i>
<i>Eff<sub>pre</sub></i>	=	<i>Boiler Combustion Efficiency Before Tune-Up</i>

ADM calculated annual energy savings for each steam trap replacement or retrofit per the following formula that is given in the Illinois Statewide TRM:

$$\Delta \text{therms} = S * (Hv/B) * \text{Hours} * A * L / 100,000$$

Where,

<i>S</i>	=	<i>Maximum theoretical steam loss per trap<sup>2</sup></i>
<i>HV</i>	=	<i>Heat of vaporization of steam<sup>3</sup></i>
<i>B</i>	=	<i>Boiler efficiency, 0.8 or custom</i>
<i>Hours</i>	=	<i>Custom hours or TRM hours<sup>4</sup></i>
<i>A</i>	=	<i>Adjustment factor, 50%</i>
<i>L</i>	=	<i>Leakage and blow through (1 if one trap, or TRM value)</i>

ADM calculated annual energy savings for pipe insulation per linear foot installed with the following formula that is given in the Illinois Statewide TRM:

$$\Delta \text{therms} = t * (Qp - Qi) / 100,000 * Eb$$

Where,

<i>t</i>	=	<i>annual operating time, in hours</i>
<i>Qp</i>	=	<i>Heat loss from bare pipe (Btu/hr/ft)<sup>5</sup></i>
<i>Qi</i>	=	<i>Heat loss from insulated pipe (Btu/hr/ft)<sup>6</sup></i>
<i>Eb</i>	=	<i>Efficiency, fraction from 0 to 1.0 (equivalent to 0% to 100% efficiency) of the boiler being used to generate the hot water or steam in the pipe, 0.8 or custom</i>
<i>100,000</i>	=	<i>Conversion factor (1 therm = 100,000 Btu)</i>

<sup>1</sup> From the Illinois Statewide TRM, pg. 155. Equivalent full load hours for heating were developed using eQuest models for various building types averaged across each climate zone in Illinois for the following building types: office, healthcare/clinic, manufacturing, lodging, high school, hospital, elementary school, religious/assembly, restaurant, retail, college and warehouse.

<sup>2</sup> From the Illinois Statewide TRM, pg. 207

<sup>3</sup> Ibid., pg. 208.

<sup>4</sup> Ibid., pg. 209.

<sup>5</sup> From the Illinois Statewide TRM revision #2, pg. 15.

<sup>6</sup> Ibid.

ADM calculated savings from parallel positioning controls on boilers per the following formula:

$$\Delta \text{therms} = \frac{(FL_{pre} * SF)}{100,000} * EFLH$$

Where,

$FL_{pre}$	=	Full load of boiler at standard operation before parallel positioning controls installed
$SF$	=	Savings factor. Savings factor is the percentage reduction in gas consumption as a result of the PPC. ADM applies a factor of 3% <sup>7</sup>
$EFLH$	=	Equivalent full load hours for heating from TRM <sup>8</sup>
100,000	=	Conversion factor (1 therm = 100,000 Btu)

Gross savings are reported using the calculations given above. In Version 3.0 of the TRM, an errata change was made to the savings algorithm for boiler tune-ups. The corrected algorithm is:

$$\Delta \text{therms} = Ngi * SF * EFLH / 100$$

Where,

$Ngi$	=	Boiler gas input size (kBTU/hr)
$SF$	=	Savings factor. Savings factor is the percentage reduction in gas consumption as a result of the tune-up. ADM applies $1 - (Eff_{Pre} / Eff_{Post})$ as the SF.
$EFLH$	=	Equivalent full load hours for heating from TRM <sup>9</sup>

## 2.2 Gross Ex Post Savings Estimation

To estimate program gross ex post therm savings, data were collected and analyzed for 29 projects. The data were analyzed using the methods described in Section 2.1 to determine

<sup>7</sup> ADM and the ERC determined that based on data from a collection of previous studies by the Department of Energy and other work papers that a savings factor of up to 3% would be appropriate for this measure.

<sup>8</sup> From the Illinois Statewide TRM, pg. 155. Equivalent full load hours for heating were developed using eQuest models for various building types averaged across each climate zone in Illinois for the following building types: office, healthcare/clinic, manufacturing, lodging, high school, hospital, elementary school, religious/assembly, restaurant, retail, college and warehouse.

<sup>9</sup> From the Illinois Statewide TRM, pg. 155. Equivalent full load hours for heating were developed using eQuest models for various building types averaged across each climate zone in Illinois for the following building types: office, healthcare/clinic, manufacturing, lodging, high school, hospital, elementary school, religious/assembly, restaurant, retail, college and warehouse.

project energy savings and to determine realization rates for the program. The results of that analysis are reported in this section.

### 2.2.1 Gross Ex Post Therm Savings

Gross ex post therm savings are displayed in Table 2-1. Gross ex post savings totaled 800,185 therms.

*Table 2-1 Ex Ante and Gross Ex Post Therm Savings*

Utility	Ex Ante Therm Savings	TRM-Calculated		TRM-Calculated (Errata-Corrected)	
		Gross Ex Post Therm Savings	Gross Ex Post Therm Savings	Gross Ex Post Therm Savings	Gross Realization Rate
Ameren	100,338	201,263	198,117	197%	
Nicor	219,246	248,677	232,885	106%	
North Shore	37,732	43,644	39,651	105%	
Peoples	277,792	333,279	329,533	119%	
Total	635,108	826,862	800,185	126%	

Gross ex post natural gas energy savings are provided in Table 2-2. Savings are reported by utility and measure type.

*Table 2-2 Ex Post Savings by Utility and Measure Type*

Utility	Boiler Tune-ups	Steam Traps	Pipe Insulation	Parallel Positioning Systems	Total
Ameren	16,474	25,508	156,136	n/a	198,117
Nicor	82,701	38,347	110,009	1,827	232,885
North Shore	20,912	10,575	8,164	n/a	39,651
Peoples	19,617	201,676	108,240	n/a	329,533
Total	139,704	276,106	382,548	1,827	800,185

Table 2-3 displays the ex ante and gross ex post therm savings for the Boiler Tune-Up Program by measure type. Realization rates for boiler tune-ups were significantly greater than for steam traps and pipe insulation.

*Table 2-3 Expected and Realized Gross Savings by Measure Type*

<i>Measure Type</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Realization Rate</i>
Boiler Tune-Ups	117,225	139,704	119%
Pipe Insulation	237,359	382,548	161%
Steam Traps	277,478	276,106	100%
Parallel Positioning Systems	3,045	1,827	60%
Total	635,108	800,185	126%

### 2.2.2 Discussion of Gross Savings Analysis

ADM reviewed all project documentation in order to assess the reasonableness of ex ante therm savings. Ex ante savings figures for each measure were checked against the values and equations outlined in the Illinois Statewide TRM.

### 3. Estimation of Net Savings

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This chapter presents the results of estimating the net impacts of the Public Sector Natural Gas Boiler Tune-Up Program (Boiler Tune-Up Program) during the period June 2013 through May 2014, where net savings represents the portion of gross savings achieved by program participants that can be attributed to the effects of the program.

Net savings were developed from self-reported survey responses from a sample of program participants. In total, 27 decision makers associated with 74% of the gross ex post program savings responded to the survey.

#### 3.1 Procedures Used To Estimate Net Savings

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Net savings are defined as the portion of gross savings that can be attributed to the effects of the program. Net savings may be less than gross savings as a result of free ridership. Free riders of a program are defined as those participants that would have implemented the same energy efficiency measures and achieved the observed energy changes, even in the absence of the program.

In general, net savings can be considered to be gross savings less the impact of free ridership. That is, because the energy savings realized by free riders are not induced by the program, these savings should not be included in the estimates of the program's actual (net) impacts. Without an adjustment for free ridership, some savings that would have occurred naturally would be incorrectly attributed to the program.

ADM performed a net savings analysis to estimate the impacts of the energy efficiency measures attributable to the Boiler Tune-Up Program that were net of free ridership. Information collected from a sample of program participants through a participant survey was used for the net savings analysis. Appendix A provides a copy of the survey instrument, and Appendix B presents tabulated responses for each survey question.

Based on a review of this information, the preponderance of evidence regarding free ridership inclinations was used to assess the likelihood of participant free ridership and, in turn, estimate net savings.

Three factors were analyzed to determine what percentage of savings may be attributed to free ridership. The three factors are:

- Plans and intentions of a participant to implement a measure even without support from the program;
- Influence that the program had on the decision to implement a measure; and
- A participant's previous experience with a measure implemented under the program.

For each of these factors, rules were applied to develop binary variables indicating whether or not a participant's behavior showed free ridership. These rules made use of answers to questions



on the decision maker survey questionnaire. A copy of the questionnaire is provided in Appendix A.

The first factor required determining if a participant stated that his or her intention was to implement an energy efficiency measure even without the program. The answers to a combination of several questions were used with a set of rules to determine whether a participant's behavior is indicative of free ridership. Two binary variables were constructed to account for participant plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

The first, more restrictive criteria indicating participant plans and intentions that likely signify free ridership are as follows:

- The respondent answered “yes” to the following two questions: “Did you have plans to [implement the project] before finding out about the Public Sector Natural Gas Boiler Tune-up Program?” and “Would you have gone ahead with the [project implementation] even if you had not participated in the program?”
- The respondent answered “definitely would have” to the following question: “If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have [implemented the project] anyway?”
- The respondent answered “no” in response to the following question: “Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the [project implementation]?”

The second, less restrictive criteria indicating participant plans and intentions that likely signify free ridership are as follows:

- The respondent answered “yes” to the following two questions: “Did you have plans to [implement the project] before finding out about the Public Sector Natural Gas Boiler Tune-up Program?” and “Would you have gone ahead with the [project implementation] even if you had not participated in the program?”
- Either the respondent answered “definitely would have” or “probably would have” to the following question: “If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have [implemented the project] anyway?”
- Either the respondent answered “no” in response to the following question: “Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the [project implementation]?” or the respondent indicated that that while program information and financial incentives did affect the timing of equipment purchase and installation, in the absence of the program they would have purchased and installed the equipment within the next two years.

The second factor required determining if a participant reported that a recommendation from a Boiler Tune-up Program representative was influential in the decision to implement a project.

The criterion indicating that program influence may signify a lower likelihood of free ridership is that the following condition is true:

- The respondent answered “yes” to the following question: “Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you [implement the project]?” and “probably would not have” or “definitely would not have” to the question: “If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you [implement the project], how likely is it that you would have done it anyway?”

The third factor required determining if a participant in the program indicated that he or she had previously implemented an energy efficiency measure similar to one that they implemented under the program without an energy efficiency program incentive during the last three years. A participant indicating that he or she had implemented a similar measure is considered to have a likelihood of free ridership.

The criteria indicating that previous experience may signify a higher likelihood of free ridership are as follows:

- The respondent answered “yes” to the following question: “Before participating in the Public Sector Natural Gas Boiler Tune-up Program, did you [implement the same measure as was implemented under the program]?”
- The respondent answered “yes” to the following question: “Has your organization completed any energy efficiency projects in the last three years for which you did not apply for a financial incentive through an energy efficiency program?”

The four sets of rules just described were used to construct four different indicator variables that address free ridership behavior. For each participant, a free ridership value was assigned based on the combination these variables. With the four indicator variables, there were 12 applicable combinations for assigning free ridership scores for each respondent, depending on the combination of answers to the questions creating the indicator variables. Table 3-1 shows these values.

*Table 3-1 Free Ridership Scores for Combinations of Indicator Variable Responses*

<i>Indicator Variables</i>				<i>Free Ridership Score</i>
<i>Had Plans and Intentions to Install Measure without Tune-up Program? (Definition 1)</i>	<i>Had Plans and Intentions to Install Measure without Tune-up Program? (Definition 2)</i>	<i>Tune-up Program had influence on Decision to Install Measure?</i>	<i>Had Previous Experience with Measure?</i>	
Y	N/A	Y	Y	100%
Y	N/A	N	N	100%
Y	N/A	N	Y	100%
Y	N/A	Y	N	67%
N	Y	N	Y	67%
N	N	N	Y	33%
N	Y	N	N	33%
N	Y	Y	Y	33%
N	Y	Y	N	0%
N	N	N	N	0%
N	N	Y	N	0%
N	N	Y	Y	0%

### 3.2 Results of Net Savings Estimation

The procedures described in the preceding section were used to estimate free ridership rates and net-to-gross ratios for the Tune-Up Program for the period June 2013 through May 2014.

#### 3.2.1 Realized Net Therm Savings

The data used to assign free ridership scores were collected through a participant survey of 26 participant decision makers for projects completed during the period June 2013 through May 2014. Individual free ridership rates were estimated for the program.

Table 3-2 shows the percentages of total realized gross natural gas energy savings that are associated with different combinations of free ridership indicator variable values.

Table 3-2 Estimated Program Free Ridership

<i>Had Plans and Intentions to Implement Measure without Tune-up Program? (Definition 1)</i>	<i>Had Plans and Intentions to Implement Measure without Tune-up Program? (Definition 2)</i>	<i>Tune-up Program had influence on Decision to Implement Measure?</i>	<i>Had Previous Experience with Measure?</i>	<i>Percentage of Total Realized Gross Therm Savings</i>	<i>Free Ridership Score</i>
N	N	N	N	54.4%	0%
N	Y	N	Y	20.4%	67%
N	N	N	Y	18.1%	33%
Y	N/A	N	Y	2.5%	100%
Y	N/A	N	N	2.1%	100%
N	N	Y	Y	1.5%	0%
N	N	Y	N	0.6%	0%
N	Y	N	N	0.4%	33%
Total				100.0%	24.4%

The realized natural gas energy savings of the Boiler Tune-Up Program during the period June 2013 through May 2014 are summarized in Table 3-3. During this period, net ex post natural gas energy savings totaled 604,687 therms. The net to gross ratio is 76%.

Table 3-3 Summary of Net Therm Savings

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>TRM-Calculated</i>		<i>TRM-Calculated (Errata-Corrected)</i>			
		<i>Gross Ex Post Therm Savings</i>	<i>Net Ex Post Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Gross Realization Rate</i>	<i>Net Ex Post Therm Savings</i>	<i>Net-to-Gross Ratio</i>
Ameren	100,338	201,263	155,192	198,117	197%	149,714	76%
Nicor	219,246	248,677	191,752	232,885	106%	175,987	76%
North Shore	37,732	43,644	33,654	39,651	105%	29,964	76%
Peoples	277,792	333,279	256,988	329,533	119%	249,023	76%
Total	635,108	826,862	637,587	800,185	126%	604,687	76%

## 4. Process Evaluation

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This chapter presents the results of the process evaluation for the Public Sector Boiler Tune-Up Program (Boiler Tune-Up Program) during natural gas program year three (GPY3). Because no significant changes have occurred in program operations, this chapter is limited to a discussion current and planned program operations and select responses to the participant survey.

### 4.1 Evaluation Objectives

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The purpose of the process evaluation is to characterize the current program operations and to monitor key participant outcomes. This process evaluation was designed to document the operations and delivery of the Boiler Tune-Up Program during the natural gas program year three (GPY3).

Key research questions to be addressed by this evaluation of GPY3 activity include:

- What changes have occurred in the design, administration, or implementation of the Boiler Tune-Up Program?
- Are participants remaining satisfied with the program and that participation process?

During the evaluation, data and information from numerous sources were analyzed to achieve the stated research objectives. An internet survey was developed to gain insight into participant experience with the Boiler Tune-Up Program. Additionally, staff at the Energy Resources Center (ERC) – DCEO’s implementation partner – was interviewed to assess the current status of program operations perspective.

### 4.2 Public Sector Boiler Tune-Up Program Participant Profile

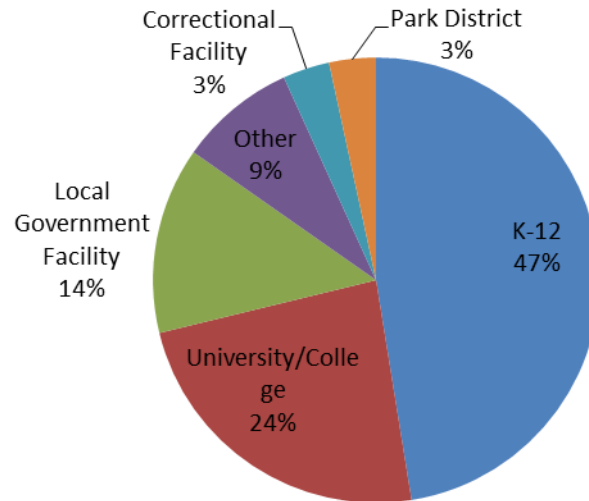
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Table 4-1 presents the number of projects by type completed during GPY3. The largest number of projects, 40, involved boiler tune-ups. Smaller numbers of projects involved steam traps (10), pipe insulation (14), and parallel positioning controls (1).

*Table 4-1 Summary of Program Activity by Measure Type*

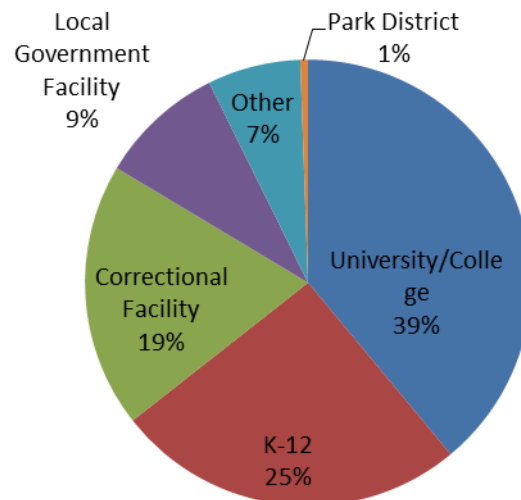
<i>Measure</i>	<i>Number of Projects</i>
Boiler Tune-Up	40
Steam Traps	10
Pipe Insulation	14
Parallel Positioning Controls	1

The share of projects completed by different types of public sector organizations is shown in Figure 4-1. K-12 schools accounted for nearly half of the projects (47%) completed, while universities accounted for another 24% of projects. In comparison to last year, a smaller share of projects came from K-12 schools and a larger share came from universities.



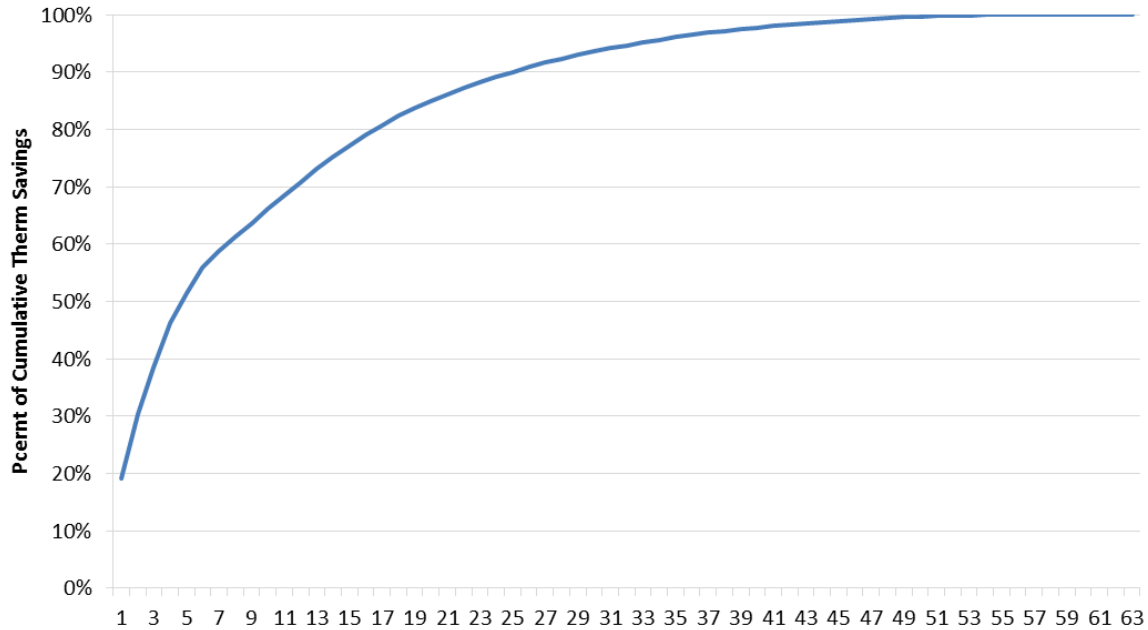
*Figure 4-1 Number of Projects by Participant Type*

Figure 4-2 displays the share of gross ex post therm savings by participant type. Universities accounted for a disproportionately large share of the savings relative to the number of projects completed. Although universities accounted for 24% of the projects completed, they accounted for 39% of the gross ex post savings. K-12 schools accounted for 25% of the gross ex post savings. Correctional facilities accounted for 19% of savings.



*Figure 4-2 Distribution of Gross ex post Therm Savings by Participant Type*

Figure 4-3 displays the cumulative gross ex post therm savings for the projects completed during GPY3. As shown, seventeen projects accounted for 80% of the program natural gas savings. In comparison to last year, when one project accounted for 40% of program savings, program savings were more evenly distributed. The largest project accounted for 19% of program savings.



*Figure 4-3 Cumulative Project Gross ex post Therm Savings*

### 4.3 Participant Outcomes

An online survey was conducted to collect data about participant decision-making, preferences, and opinions of the Public Sector Boiler Tune-Up Program (Boiler Tune-Up Program). During GPY2, the program offered incentives for boiler tune-ups, steam trap replacement or repair, pipe insulation, boiler reset controls, and parallel positioning control systems. In total, 27 participants who implemented a project through the program completed the survey.

#### 4.3.1 How Participants Learn About the Program

Table 4-2 displays the ways in which survey respondents reported learning about the Public Sector Boiler Tune-Up Program. Similar to last year, vendors, contractors, and other external energy specialists such as energy consultants were the source of awareness about the program for approximately one-half of the participants.

*Table 4-2 How Participant Decision Makers Learned about the Program*

	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents*</i>
What are the main sources your organization relies on for information about energy efficient equipment, materials, practices, and design features	Equipment vendors or building contractors	15	56%
	An architect, engineer, or energy consultant	13	48%
	The DCEO website	11	41%
	The Smart Energy Design Assistance Center (SEDAC)	8	30%
	Trade journals or magazines	8	30%
	Friends and colleagues	6	22%
	Trade associations or business groups you belong to	5	19%
	A DCEO representative	4	15%
	A utility representative	4	15%
	Brochures or advertisements	4	15%
	The Energy Resource Center (ERC)	3	11%
	Other	0	0%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

#### 4.3.2 Participant Satisfaction with the Program

Survey respondents were asked to rate their level of satisfaction with the program. Table 4-3 displays responses to questions regarding satisfaction with aspects of the program. The responses indicate that respondents were satisfied with all aspects of the program. Satisfaction levels were highest for the performance of the energy efficiency improvements made through the program, the work performed by their contractor, and information provided by DCEO.

Approximately half of the participants stated that they were satisfied with the incentive amount and the effort required for the application process. However, participants were relatively less satisfied with the length of time required to receive incentive payments, the effort required for the application process, and the incentive amount.



*Table 4-3 Decision Maker Satisfaction with Selected Aspects of Program Experience*

<i>Element of Program Experience</i>	<i>Very Satisfied</i>	<i>Satisfied</i>	<i>Neither Satisfied nor Dissatisfied</i>	<i>Dissatisfied</i>	<i>Very Dissatisfied</i>	<i>Don't know/Not Applicable</i>
Performance of the [ boiler tune-up(s)/ install pipe insulation / repair or replacement of steam traps] since the project was completed (n=24)	38%	54%	-	-	-	8%
Savings on your monthly bill? (n=24)	25%	42%	4%	-	-	29%
Incentive amount? (n=24)	21%	71%	-	4%	-	4%
The effort required for the application process? (n=23)	35%	52%	4%	-	-	9%
Quality of the contractor's work? (n=23)	39%	57%	4%	-	-	-
Information provided by DCEO? (n=23)	35%	57%	9%	-	-	-
Information provided by the Smart Energy Design Assistance Center (SEDAC)? (n=23)	17%	48%	9%	-	-	26%
Information provided by the Energy Resource Center? (n=22)	14%	45%	9%	-	-	32%
The elapsed time until you received the incentive? (n=23)	17%	57%	9%	4%	9%	4%
Overall program experience? (n=23)	30%	70%	-	-	-	-

Respondents were also asked whether or not the boiler tune-up project met their expectations. As shown in Table 4-4, all of the participants stated that the project either met or exceeded their expectations.

*Table 4-4 Respondent Expectations of Program*

	<i>Response</i>	<i>Percentage of Respondents (n=25)</i>
Did the [boiler tune-up/ pipe insulation/ steam trap repair or replacement] meet your expectations?	My expectations were exceeded	12%
	My expectations were met	80%
	My expectations were mostly met	-
	My expectations were not met	-
	Don't know	-

### 4.3.3 Incentives and Project Implementation

Survey respondents were asked questions regarding the receipt of incentive payments and the application process for the program. Table 4-5 below shows the percentage of respondents that responded “Yes” to each question. Eighty-eight percent of respondents reported that the incentive amount they received was what they had expected. Twelve percent of respondents, a decrease from 25% in the prior program year, cited issues with receiving the program incentive. These respondents primarily stated that they had not received the incentive in a timely manner, and several reported waiting as long as six months to receive the incentive. None of the respondents reported any problems with the application process.

*Table 4-5 Experience with Application and Incentive Processes*

<i>Question</i>	<i>Percentage of Respondents Saying Yes</i>	<i>n</i>
Was the incentive amount what you expected?	88%	25
Any issues receiving the program incentive?	12%	25
Any problems with the application process?	-	25

Respondent experience with project implementation is summarized in Table 4-6. Eighty percent of survey respondents state that the project went smoothly, and 16% said that the project went smoothly for the most part. Those that said it went well for the most part cited several different issues. One respondent stated that a mix up in the paperwork delayed the payment of the incentive. Another stated that the contractor was “a little sloppy” and that their “billing was way off,” but that ultimately issues were resolved. The final respondent only noted that they had encountered additional problems in the end.

Ninety-six percent respondents indicated that the contractor did a good job and one respondent reported not knowing if the contractor did a good job. Similarly, all but one respondent indicated that the incentive met their expectations.

Overall, respondent feedback about project implementation was very positive.

Table 4-6 Experience with Project Implementation

<i>Question</i>	<i>Yes</i>	<i>For the most part</i>	<i>No</i>	<i>Don't know</i>	<i>n</i>
Did the [boiler tune-up/ pipe insulation/ steam trap repair or replacement] go smoothly?	80%	16%	-	4%	25
Do you feel that the contractor did a good job?	96%	4%	-	-	25
Did the incentive that you received meet your expectations?	96%	-	4%	-	25

#### 4.4 Program Operations Perspective

This section summarizes the core findings of an interview conducted with the Energy Resources Center (ERC) Boiler Tune-Up Program staff, DCEO's implementation partner. ERC is primarily responsible for the administration and development of the Boiler Tune-Up Program. During the interview, staff provided perspective on program operations during the year, program successes and opportunities, and planned changes for the current program cycle.

The key findings from this discussion are summarized below:

- **Program Participation Similar to Prior Years:** During GPY3, the program saw a similar level of program activity as it did in prior years in terms of the number of completed projects, natural gas savings, and the mix of participant types. As in prior years, schools accounted for a large portion of program activity. The consistency of program activity suggests that the program is maturing and able to sustain the current level of activity. Program staff believes that there is sufficient additional market potential to sustain the program activity in the coming cycle, and are interested in increasing program activity.

Nearly all program activity resulted from the three primary program measures: boiler tune-ups, steam traps, and pipe insulation. Only one project involving the installation of boiler controls was completed.

Program staff identified public hospitals and nursing homes as an area for future program growth. During the program year staff began laying groundwork to more aggressively target these sectors by developing a list of contacts and attending conferences to promote the program.

Meeting program goals for natural gas savings in the Nicor service territory continues to be a challenge. The reasons for the lack of activity is not clear to staff.

- **Program Design Changes:** Program staff initiated several design changes in GPY3. One change made allowed rebates to be payable directly to contractors completing the work. This change allowed contractors to discount their services to the participant and thereby reduce the need for participants to fund the full cost prior to receiving the rebate. Additionally, some public sector organizations are unable to return the rebate dollars to the budget used to fund the project. The strategy of allowing contractors to directly receive rebates, who in turn discount the project cost, mitigates a possible disincentive to participation. Program staff

noted that this option has yet to lead to an increase in program activity, although some contractors have taken advantage of it and like it.

Program staff also changed the incentive levels during the year. Incentives for pipe insulation and steam traps were effectively doubled to the level of the “Double-Up Bonus” incentive that was offered during GPY5. Additionally, incentives for boiler tune-ups were decreased from \$0.75 per kBtuh to \$0.50 per kBtuh. Program staff stated that the higher incentives for pipe insulation and steam traps have increased program savings from these measures whereas the decreased incentives for tune-ups did not negatively impact savings for this measure.

- **Program Administration:** During the program year, program staff shifted responsibility of processing the program rebates from Utilivate to the Midwest Energy Efficiency Alliance (MEEA). The decision to change rebate administrators was made because in some cases rebate payment processing was excessively delayed. Program staff reported that the change has shortened the time period that rebate checks are sent.
- **Plans for Program Cycle Four:** Program staff did not anticipate any significant program changes for the coming cycle. Program goals set forth in DCEO’s cycle three filing are lower than the realized activity during the preceding two years. Staff reported that the lower goals reflected cautious planning but that they did not anticipate challenges to sustaining current program activity.

Along with other DCEO public sector programs, the Boiler Tune-Up Program will offer a “bonus coupon” for an additional 15% rebate to participants who attend an Energy Now event or trade ally rally. The coupon cannot be combined with other bonus incentives, such as the “Sweet Deal” bonus.

Paralleling the utility boiler tune-up programs, program staff began offering incentives for steam trap surveys to identified failed steam traps during GPY4. An incentive of \$30 per steam trap is available and the participant is not required to replace failed steam traps. However, to date, program staff report that all steam trap surveys have led to steam trap repair or replacement projects.

## Appendix A: Questionnaire for Decision Maker Survey

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1. Name of public entity
2. Your name (please correct if necessary)
3. What was your role in the decision to (Project Description) through the program?
  - Main decision maker
  - Assisted with the decision
  - Was not part of the decision making process (If checked, ask 3A, 3B, and 3C)
- 3A. Who was the main decision maker? If multiple people were responsible for the decision, please provide the name of the person you think is most knowledgeable about the decision making process regarding the (Project Description).
- 3B. What is this person's telephone number?
- 3C. What is this person's email address?
4. What are the main sources your organization relies on for information about energy efficient equipment, materials, practices, and design features? (check all that apply)
  - A DCEO representative
  - The DCEO website
  - The Smart Energy Design Assistance Center (SEDAC)
  - The Energy Resource Center (ERC)
  - A utility representative
  - Brochures or advertisements
  - Trade associations or business groups you belong to
  - Trade journals or magazines
  - Friends and colleagues
  - An architect, engineer, or energy consultant
  - Equipment vendors or building contractors
  - Other (please specify)
5. Which of the following policies or resources does your organization have in place regarding energy efficiency improvements at this facility? (check all that apply)
  - An energy management plan (If checked, go to 5A)
  - A staff member responsible for energy and energy efficiency
  - Policies that incorporate energy efficiency in operations and procurement
  - Active training of staff
  - Other (please specify)
  - Do not have policies or procedures for energy efficiency improvements
- 5A. Does your energy management plan include goals for energy savings?
  - Yes (If checked, go to 5B)
  - No

- Don't know
- 5B. Can you describe the goals specified in your energy management plan?
6. How does your organization decide to make energy efficiency improvements for this facility?  
Is the decision:
- Made by one or two key people
  - Made by a group or committee
  - Based on staff recommendations to a decision maker
  - Made in some other way
  - Don't know
7. How does your organization fund energy efficiency improvements? (select all that apply)
- Through a capital request (If checked, go to 7A and 7B)
  - Funds are taken from operation and maintenance budget
  - Dedicated funding for energy efficient projects
  - Other (please specify)
  - Don't know
- 7A. Is there a dollar threshold for when a project requires a capital request? If so, what is it?
- 7B. How long does it take to receive approval for the capital request?
8. In your organization, how long does it typically take to get approval for maintenance expenditures or equipment purchases?
9. What is the approval process for maintenance expenditures or equipment purchases in your organization? (select all that apply)
- An open bid is required
  - Required to select lowest bidder
  - Use a specific vendor
  - Depends on the amount of purchase
  - Follow state or federal procurement guidelines
  - Follow procurement rules specific to our organization
  - Other (please specify)
  - Don't know
10. What barriers does your organization face in making energy efficiency improvements?  
(select all that apply)
- Insufficient funding for improvements
  - Lack of information on energy efficient equipment and practices
  - Approval processes that are slow or make purchasing difficult
  - Schedules that dictate when equipment is to be replaced or maintained regardless of efficiency levels
  - Incentive program time requirements
  - Current equipment is too new to be replaced with more efficient equipment
  - Other (please specify)

- Don't know
11. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements, or are the payments placed in a general fund?
- We are able to use the incentive payments for additional facility improvements including additional energy efficiency improvements
  - Incentive payments return to the facility general operating fund
  - Incentive payments go into the state general revenue fund
  - Other (please specify)
  - Don't know
12. How important are financial incentive payments from DCEO for your decision making regarding energy efficiency improvements?
- Very important
  - Somewhat important
  - Only slightly important
  - Not important at all
  - Don't know
13. How important is past experience with energy efficient equipment or practices for your decision making regarding energy efficiency improvements?
- Very important
  - Somewhat important
  - Only slightly important
  - Not important at all
  - Don't know
14. How important is advice and/or recommendations received from DCEO for your decision making regarding energy efficiency improvements?
- Very important
  - Somewhat important
  - Only slightly important
  - Not important at all
  - Don't know
15. Which financial methods does your organization typically use to evaluate energy efficiency improvements for this facility? (Select all that apply)
- Initial Cost
  - Simple payback (If checked, go to 15A)
  - Internal rate of return (If checked, go to 15B)
  - Life cycle cost (If checked, go to 15C)
  - None of these
  - Don't know

- 15A. What payback length of time do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.
- 15B. What rate of return do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.
- 15C. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value or an estimated range.
16. Has your organization completed any energy efficiency projects in the last three years for which you did not apply for a financial incentive through an energy efficiency program?
- Yes, completed energy efficiency projects but did not apply for incentive. (If checked, go to 16A)
  - No projects were completed by the organization.
  - No, an incentive was applied for. (If checked, go to 16B)
  - Don't know
- 16A. Why didn't you apply for a financial incentive for that project?
- Didn't know whether project qualified for financial incentives
  - Financial incentive was insufficient
  - Didn't have time to complete paperwork for financial incentive application
  - Too much paperwork for the financial incentive application
  - Didn't know about financial incentives until after project was paid for
  - Other (please specify)
  - Don't know
- 16B. Did you receive all of your incentives for these past energy efficiency projects?
- Yes
  - No
  - Don't know
17. How did you learn of the Public Sector Natural Gas Boiler Tune-up Program? (select all that apply)
- Approached directly by a representative of the Public Sector Natural Gas Boiler Tune-up Program
  - Received an information brochure on the Public Sector Natural Gas Boiler Tune-up Program
  - A DCEO representative mentioned it
  - The DCEO website
  - From a Smart Energy Design Assistance Center (SEDAC) representative
  - From an Energy Resource Center (ERC) representative
  - A utility representative
  - Friends or colleagues
  - An architect, engineer, or energy consultant
  - Attended a conference, workshop or seminar
  - An energy service company
  - Past experience with the program



- Equipment vendors or building contractors
- Other (please specify)
- Don't know

18. When did you learn of the Public Sector Natural Gas Boiler Tune-up Program?

- Before planning the (Project Description)
- During your planning for the (Project Description)
- Once a plan to (Project Description) was established, but before it was completed
- After completing the (Project Description)
- Don't know
- Some other time (please explain)

19. Did you have a regular schedule for performing boiler maintenance prior to participating in the program?

- Yes (If checked, go to 19A)
- No (If checked, go to 19B)
- Don't know

19A. What was the maintenance schedule?

19B. Since participating in the program, have you developed plans to perform regular boiler maintenance?

- Yes (If checked, go to 19B1 and 19B2)
- No
- Don't know

19B1. How frequently do you plan on performing boiler tune ups in the future?

19B2. How much did your experience with the Boiler Tune-Up program influence your decision to develop plans to have the boilers tuned up on a regular basis?

- A lot
- Somewhat
- Not very much
- Not at all
- Don't know

(Ask if implemented boiler tune-ups)

20. Before participating in the Public Sector Natural Gas Boiler Tune-up Program, did you tune up any boilers?

- Yes
- No
- Don't know

21. Did you have plans to perform the boiler tune-up(s) before finding out about the Public Sector Natural Gas Boiler Tune-up Program?

- Yes (If checked, go to 21A and 21B)

- No
  - Don't know
- 21A. How long before finding out about the Public Sector Natural Gas Boiler Tune-up Program did you have plans to tune up the boiler(s)? Did you have plans for...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
- 21B. Would you have gone ahead with the boiler tune-ups even if you had not participated in the program?
- Yes
  - No
  - Don't know
22. How important was your previous experience with the DCEO programs in making your decision to tune up the boilers?
- Did not have previous experience with DCEO programs
  - Very important
  - Somewhat important
  - Only slightly important
  - Not at all important
  - Don't know
23. Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you perform the boiler tune up(s)?
- Yes (If checked, go to 23A)
  - No
  - Don't know
- 23A. If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you perform the boiler tune-up(s), how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
24. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you perform the boiler tune-up(s)?
- Yes (If checked, go to 24A)
  - No
  - Don't know

- 24A. If the SEDAC representative had not recommended that you perform the boiler tune-up(s), how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
25. Would your organization have been financially able to perform the boiler tune-up(s) without the assistance from the Public Sector Natural Gas Boiler Tune-up Program?
- Yes
  - No
  - Don't know
26. If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have performed the boiler tune-ups anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
27. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the quantity of boiler tune-up(s) that you performed? Did you tune-up more boilers than you otherwise would have without the program?
- Yes (If checked, go to 27A)
  - No
  - Don't know
- 27A. How many more tune-ups were performed because of the program?
28. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the boiler tune-ups? Did you tune up the boilers sooner than you would have without the program?
- Yes (If checked, go to 28A)
  - No
  - Don't know
- 28A. When would you otherwise have tuned up the boiler(s)? Would you have done it in...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know

(Ask if installed pipe insulation)

29. Before participating in the Public Sector Natural Gas Boiler Tune-up Program, did you install any pipe insulation?
- Yes
  - No
  - Don't know
30. Did you have plans to install the pipe insulation before finding out about the Public Sector Natural Gas Boiler Tune-up Program?
- Yes (If checked, go to 30A and 30B)
  - No
  - Don't know
- 30A. How long before finding out about the Public Sector Natural Gas Boiler Tune-up Program did you have plans to install the pipe insulation? Did you have plans for...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
- 30B. Would you have gone ahead with the installation of pipe insulation even if you had not participated in the program?
- Yes
  - No
  - Don't know
31. How important was your previous experience with the DCEO programs in making your decision to install the pipe insulation?
- Did not have previous experience with the DCEO programs
  - Very important
  - Somewhat important
  - Only slightly important
  - Not at all important
  - Don't know
32. Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you install the pipe insulation?
- Yes (If checked, go to 32A)
  - No
  - Don't know

- 32A. If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you install pipe insulation, how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
33. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the pipe insulation?
- Yes (If checked, go to 33A)
  - No
  - Don't know
- 33A. If the SEDAC representative had not recommended that you install the pipe insulation, how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
34. Would your organization have been financially able to install the pipe insulation without the assistance from the Public Sector Natural Gas Boiler Tune-up Program?
- Yes
  - No
  - Don't know
35. If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have installed the pipe insulation anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
36. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the quantity of pipe insulation that you installed? Did you install more pipe insulation than you otherwise would have without the program?
- Yes (If checked, go to 36A)
  - No
  - Don't know

- 36A. How much more pipe insulation was installed because of the program?
37. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the installation of pipe insulation? Did you install the pipe insulation sooner than you would have without the program?
- Yes (If checked, go to 37A)
  - No
  - Don't know
- 37A. When would you otherwise have installed the pipe insulation? Would you have done it in...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
- (If installed steam traps)
38. Before participating in the Public Sector Natural Gas Boiler Tune-up Program, did you repair or replace any malfunctioning steam traps?
- Yes
  - No
  - Don't know
39. Did you have plans to repair or replace the steam trap(s) before finding out about the Public Sector Natural Gas Boiler Tune-up Program?
- Yes (If checked, go to 39A and 39B)
  - No
  - Don't know
- 39A. How long before finding out about the Public Sector Natural Gas Boiler Tune-up Program did you have plans to repair or replace the steam trap(s)? Did you have plans for...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
- 39B. Would you have gone ahead with the steam trap repair or replacement(s) even if you had not participated in the program?
- Yes
  - No
  - Don't know

40. How important was your previous experience with the DCEO programs in making your decision to repair or replace the steam trap(s)?
- Did not have previous experience with DCEO programs
  - Very important
  - Somewhat important
  - Only slightly important
  - Not at all important
  - Don't know
41. Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you repair or replace the steam trap(s)?
- Yes (If checked, go to 41A)
  - No
  - Don't know
- 41A. If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you repair or replace the steam trap(s), how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
42. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you repair or replace the steam trap(s)?
- Yes (If checked, go to 42A)
  - No
  - Don't know
- 42A. If the SEDAC representative had not recommended that you repair or replace the steam trap(s), how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
43. Would your organization have been financially able to repair or replace the steam trap(s) without the assistance from the Public Sector Natural Gas Boiler Tune-up Program?
- Yes
  - No
  - Don't know
44. If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have repaired or replaced the steam trap(s) anyway?

- Definitely would have
- Probably would have
- Probably would not have
- Definitely would not have
- Don't know

45. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the quantity of steam traps that you repaired or replaced? Did you repair or replace more steam traps than you otherwise would have without the program?

- Yes (If checked, go to 45A)
- No
- Don't know

45A. How many more steam traps were repaired or replaced because of the program?

46. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the repair or replacement of the steam trap(s)? Did you repair or replace the steam trap(s) sooner than you would have without the program?

- Yes (If checked, go to 46A)
- No
- Don't know

46A. When would you otherwise have repaired or replaced the steam trap(s)? Would you have done it in...

- Less than 6 months
- 6 months to less than 1 year
- 1 year to less than 2 years
- 2 years to less than 5 years
- 5 or more years
- Don't know

(If installed ppc)

47. Before participating in the Public Sector Natural Gas Boiler Tune-up Program, had you installed a parallel positioning control system?

- Yes
- No
- Don't know

48. Did you have plans to install the parallel positioning control system before finding out about the Public Sector Natural Gas Boiler Tune-up Program?

- Yes (If checked, go to 48A and 48B)
- No
- Don't know



- 48A. How long before finding out about the Public Sector Natural Gas Boiler Tune-up Program did you have plans to install the parallel positioning control system? Did you have plans for...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
- 48B. Would you have gone ahead with the installation of parallel positioning control system even if you had not participated in the program?
- Yes
  - No
  - Don't know
49. How important was your previous experience with the DCEO programs in making your decision to install the pipe parallel positioning control system?
- Did not have previous experience with the DCEO programs
  - Very important
  - Somewhat important
  - Only slightly important
  - Not at all important
  - Don't know
50. Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you install the parallel positioning control system?
- Yes (If checked, go to 50A)
  - No
  - Don't know
- 50A. If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you install parallel positioning control system, how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
51. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the parallel positioning control system?
- Yes (If checked, go to 51A)
  - No
  - Don't know

- 51A. If the SEDAC representative had not recommended that you install the parallel positioning control system, how likely is it that you would have done it anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
52. Would your organization have been financially able to install the parallel positioning control system without the assistance from the Public Sector Natural Gas Boiler Tune-up Program?
- Yes
  - No
  - Don't know
53. If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have installed the parallel positioning control system anyway?
- Definitely would have
  - Probably would have
  - Probably would not have
  - Definitely would not have
  - Don't know
54. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the installation of parallel positioning control system? Did you install the parallel positioning control system sooner than you would have without the program?
- Yes (If checked, go to 54A)
  - No
  - Don't know
- 54A. When would you otherwise have installed the parallel positioning control system? Would you have done it in...
- Less than 6 months
  - 6 months to less than 1 year
  - 1 year to less than 2 years
  - 2 years to less than 5 years
  - 5 or more years
  - Don't know
55. Did you have any problems with the application process?
- Yes (If checked, go to 55A)
  - No
  - Don't know

55A. What problems did you have?

56. Did the (Project Description) go smoothly?

- Yes
- For the most part (If checked, go to 56A)
- No (If checked, go to 56A)
- Don't know

56A. Please explain in what ways the project did not go smoothly.

57. Did the (Project Description) meet your expectations?

- My expectations were exceeded
- My expectations were met
- My expectations were mostly met (If checked, go to 57A)
- My expectations were not met (If checked, go to 57A)
- Don't know

57A. Please explain in what ways the (Project Description) did not meet your expectations.

58. Do you feel that the contractor did a good job?

- Yes
- For the most part (If checked, go to 58A)
- No (If checked, go to 58A)
- Did not use a contractor
- Don't know

58A. Please explain in what ways you do not feel that the contractor did a good job.

59. Did the incentive that you received meet your expectations?

- Yes
- No (If checked, go to 59A)
- Don't know

59A. Please explain in what ways the incentive you received did not meet your expectations.

60. Were there any issues receiving the Public Sector Natural Gas Boiler Tune-up Program incentive?

- Yes (If checked, go to 60A)
- No
- Don't know

60A. Please describe the issues you had with receiving the Public Sector Natural Gas Boiler Tune-up Program incentive.

61. Was the incentive amount what you expected?

- Yes
- No (If checked, go to 61A)

Don't know

60A. Please explain how the incentive amount differed from what you expected.

62. Since participating in the program, have you implemented any additional energy efficiency projects for which you did not apply or receive an incentive?

Yes (If checked, go to 62A-62F)

No

Don't know

62A. Please describe this energy efficiency project?

62B. Was this project implemented at the same facility (or facilities) as the (Project Description)?

Yes

No

Don't know

62C. Did a recommendation from Public Sector Natural Gas Boiler Tune-up Program or DCEO staff member, or from a contractor influence your decision to implement the additional project?

Yes (If checked, go to 62C1)

No

Don't know

62C1. How important was this recommendation to your decision to implement the additional energy efficiency project?

Very important

Somewhat important

Neither important or unimportant

Somewhat unimportant

Unimportant

Don't know

62D. How important was your experience with the Public Sector Natural Gas Boiler Tune-up Program to your decision to implement the additional energy efficiency project?

Very important

Somewhat important

Neither important or unimportant

Somewhat unimportant

Unimportant

Don't know

62E. How important was any past experience with energy efficiency programs to your decision to implement the additional energy efficiency project?

Did not participate in any other programs in the past

Very important

- Somewhat important
- Neither important or unimportant
- Somewhat unimportant
- Unimportant
- Don't know

62F. Why didn't you apply for or receive financial assistance or incentives for this project?

(Check all that apply)

- Didn't know about financial incentives
- Didn't know whether the project qualified for financial incentives
- Financial incentive was insufficient
- No financial incentive was offered
- Too much paperwork for the financial incentive application
- Other reason (please describe)
- Don't know

63. Given your experience with the Public Sector Natural Gas Boiler Tune-up Program, would you have (Project Description) in the future even if financial incentives for such projects were not being offered through a DCEO program?

- Yes
- No
- Don't know

64. How would you rate your satisfaction with the following - Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

- Performance of the (project description) since the project was completed
- Savings on your monthly bill
- Incentive amount
- The effort required for the application process
- Quality of the contractor's work
- Information provided by the DCEO
- Information provided by the Smart Energy Design Assistance Center (SEDAC)
- Information provided by the Energy Resource Center (ERC)
- The elapsed time until you received the incentive
- Overall program experience

64A. (If dissatisfied or very dissatisfied for any) Please explain in what ways you were not satisfied with the program.

65. Do you have any other comments that you would like to relay to DCEO about energy efficiency in public entities or about its programs?

## Appendix B: Decision Maker Survey Responses

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As part of the evaluation, ADM administered a survey to a sample of decision makers representing facilities that received incentives under the Tune-up Program. This survey provided the information used in Chapter 3 to estimate free ridership for projects in the Tune-up Program. Additionally, the survey also provided more general information pertaining to the making of decisions to improve energy efficiency by program participants.

Each participant completed an online version of the survey instrument provided in Appendix A. Each participant was asked questions about (1) his or her general decision making regarding purchasing and installing energy efficient equipment, (2) his or her knowledge of and satisfaction with the Tune-Up Program, and (3) the influence that the Tune-Up Program had on his or her decision to make the energy efficiency improvements. The following tabulations summarize DCEO customer survey responses. Three columns of data are presented. The first column presents the number of survey respondents ( $n$ ). The second column presents the percentage of survey respondents.

3. What was your role in the decision to perform boiler tune-ups / install pipe insulation / repair or replace steam traps through the program?	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents</i>
	Main decision maker	14	52%
	Assisted with the decision	13	48%
	Was not part of the decision making process	0	0%

4. What are the main sources your organization relies on for information about energy efficient equipment, materials, practices, and design features? (check all that apply)	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents*</i>
	A DCEO representative	4	15%
	The DCEO website	11	41%
	The Smart Energy Design Assistance Center (SEDAC)	8	30%
	The Energy Resource Center (ERC)	3	11%
	A utility representative	4	15%
	Brochures or advertisements	4	15%
	Trade associations or business groups you belong to	5	19%
	Trade journals or magazines	8	30%
	Friends and colleagues	6	22%
	An architect, engineer, or energy consultant	13	48%
	Equipment vendors or building contractors	15	56%
	Other (please describe)	0	0%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

5. Which of the following policies or resources does your organization have in place regarding energy efficiency improvements at this facility? (check all that apply)	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents*</i>
	An energy management plan	5	19%
	A staff member responsible for energy and energy efficiency	12	44%
	Policies that incorporate energy efficiency in operations and procurement	9	33%
	Active training of staff	6	22%
	Other (please specify)	0	0%
Do not have policies or procedures for energy efficiency improvements	9	33%	

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

5a. Does your energy management plan include goals for energy savings?	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
	Yes	4	80%
	No	1	20%
	Don't Know	0	0%

6. How does your organization decide to make energy efficiency improvements for this facility? Is the decision:	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents</i>
	Made by one or two key people	13	48%
	Made in some other way	0	0%
	Based on staff recommendations to a decision maker	4	15%
	Made by a group or committee	9	33%
	Don't know	1	4%

7. How does your organization fund energy efficiency improvements? (select all that apply)	<i>Response</i>	<i>(n=27)</i>	<i>Percent of Respondents*</i>
	Through a capital request	7	26%
	Funds are taken from operation and maintenance budget	23	85%
	Dedicated funding for energy efficient projects	6	22%
	Other (please specify)	1	4%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

7a. Is there a dollar threshold for when a project requires a capital request? If so, what is it?	<i>Response</i>	<i>(n=6)</i>	<i>Percent of Respondents</i>
	Yes	5	83%
	Average Threshold if "Yes" (in Dollars)	\$57,500	

7b. How long does it take to receive approval for the capital request?	<i>Average Number of Months, (n=5)</i>	
	Average	3.5

8. In your organization, how long does it typically take to get approval for maintenance expenditures or equipment purchases?	<i>Average Number of Months, (n=22)</i>	
	Average	1.9

9. What is the approval process for maintenance expenditures or equipment purchases in your organization? (select all that apply)	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	An open bid is required	13	50%
	Required to select lowest bidder	10	38%
	Use a specific vendor	6	23%
	Depends on the amount of purchase	17	65%
	Follow state or federal procurement guidelines	12	46%
	Follow procurement rules specific to our organization	11	42%
	Other (please specify)	2	8%
Don't know	0	0%	

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.



10. What barriers does your organization face in making energy efficiency improvements? (select all that apply)	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	Insufficient funding for improvements	20	77%
	Lack of information on energy efficient equipment and practices	7	27%
	Approval processes that are slow or make purchasing difficult	3	12%
	Schedules that dictate when equipment is to be replaced or maintained regardless of efficiency levels	2	8%
	Incentive program time requirements	3	12%
	Current equipment is too new to be replaced with more efficient equipment	3	12%
	Other (please specify)	2	8%
	Don't know	1	4%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

11. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements, or are the payments placed in a general fund?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
	We are able to use the incentive payments for additional facility improvements including additional energy efficiency improvements	13	50%
	Incentive payments return to the facility general operating fund	5	19%
	Incentive payments go into the state general revenue fund	2	8%
	Don't know	3	12%
	Other (please specify)	3	12%

12. How important are financial incentive payments from DCEO for your decision making regarding energy efficiency improvements?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
	Very important	22	85%
	Somewhat important	4	15%
	Only slightly important	0	0%
	Not important at all	0	0%
	Don't know	0	0%

13. How important is past experience with energy efficient equipment or practices for your decision making regarding energy efficiency improvements?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
	Very important	16	62%
	Somewhat important	9	35%
	Only slightly important	0	0%
	Not important at all	0	0%
	Don't know	1	4%

	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
14. How important is advice and/or recommendations received from DCEO for your decision making regarding energy efficiency improvements?	Very important	12	46%
	Somewhat important	12	46%
	Only slightly important	2	8%
	Not important at all	0	0%
	Don't know	0	0%

	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
15. Which financial methods does your organization typically use to evaluate energy efficiency improvements for this facility? (Select all that apply)	Initial Cost	15	58%
	Simple payback	19	73%
	Internal rate of return	4	15%
	Life cycle cost	7	27%
	None of these	1	4%
	Don't know	1	4%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

	<i>Average Number of Years, (n=18)</i>	
15a. What payback length of time do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.	Average	4.4

	<i>Average Rate of Return, (n=1)</i>	
15b. What rate of return do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.	Average	30%

	<i>Average Discount Rate, (n=3)</i>	
15c. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value or an estimated range.	Average	33%

	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
16. Has your organization completed any energy efficiency projects in the last three years for which you did not apply for a financial incentive through an energy efficiency program?	Yes, completed energy efficiency projects but did not apply for incentive.	10	38%
	No projects were completed the by organization.	3	12%
	No, an incentive was applied for.	11	42%
	Don't know	2	8%

16a. Why didn't you apply for a financial incentive for that project?	<i>Response</i>	<i>(n=10)</i>	<i>Percent of Respondents*</i>
	Didn't know whether project qualified for financial incentives	1	10%
	Financial incentive was insufficient	1	10%
	Didn't have time to complete paperwork for financial incentive application	2	20%
	Too much paperwork for the financial incentive application	1	10%
	Didn't know about financial incentives until after project was paid for	1	10%
	Other (please specify)	4	40%
	Don't know	0	0%

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

16b. Did you receive all of your incentives for these past energy efficiency projects?	<i>Response</i>	<i>(n=11)</i>	<i>Percent of Respondents</i>
	Yes	10	91%
	No	1	9%
	Don't Know	0	0%

17. How did you learn of the Public Sector Natural Gas Boiler Tune-up Program? (select all that apply)	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	Approached directly by a representative of the Public Sector Natural Gas Boiler Tune-up Program	0	0%
	Received an information brochure on the Public Sector Natural Gas Boiler Tune-up Program	2	8%
	A DCEO representative mentioned it	3	12%
	The DCEO website	8	31%
	From a Smart Energy Design Assistance Center (SEDAC) representative	4	15%
	From an Energy Resource Center (ERC) representative	3	12%
	A utility representative	1	4%
	Friends or colleagues	0	0%
	An architect, engineer, or energy consultant	2	8%
	Attended a conference, workshop or seminar	5	19%
	An energy service company	1	4%
	Past experience with the program	3	12%
	Equipment vendors or building contractors	11	42%
	Other (please specify)	2	8%
Don't know	0	0%	

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
18. When did you learn of the Public Sector Natural Gas Boiler Tune-up Program?	Before planning the boiler project	17	65%
	During your planning for the boiler project	7	27%
	Once a plan to implement was established, but before it was completed	1	4%
	After completing the boiler project	1	4%
	Some other time (please explain)	0	0%
	Don't know	0	0%

	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents</i>
19. Did you have a schedule for performing boiler maintenance prior to participating in the program?	Yes	14	54%
	No	9	35%
	Don't Know	3	12%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
19B. Since participating in the program, have you developed plans to perform regular boiler maintenance?	Yes	5	56%
	No	4	44%
	Don't Know	0	0%

	<i>Future Frequency of Tune-ups, (n=4)</i>	
19B1. How frequently do you plan on performing boiler tune ups in the future?	Average	1.5

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
19B2. How much did your experience with the Boiler Tune-Up program influence your decision to develop plans to have the boilers tuned up on a regular basis?	A lot	3	60%
	Somewhat	0	0%
	Not very much	1	20%
	Not at all	1	20%
	Don't know	0	0%

	<i>Response</i>	<i>(n=31)</i>	<i>Percent of Respondents*</i>
20, 29, 38, & 47. Before participating in the Public Sector Natural Gas Boiler Tune-up Program, did you tune up any boilers / install pipe insulation / repair or replace steam traps?	Yes	17	55%
	No	10	32%
	Don't Know	4	13%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

21, 30, 30, & 48. Did you have plans to perform the boiler tune-up(s)/ install pipe insulation / repair or replace steam traps before finding out about the Public Sector Natural Gas Boiler Tune-up Program?	<i>Response</i>	<i>(n=31)</i>	<i>Percent of Respondents*</i>
	Yes	14	45%
	No	15	48%
	Don't Know	2	6%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

21a, 30a, 39a, & 48a. How long before finding out about the Public Sector Natural Gas Boiler Tune-up Program did you have plans to tune up the boiler(s) / install pipe insulation / repair or replace steam traps? Did you have plans for...	<i>Response</i>	<i>(n=14)</i>	<i>Percent of Respondents*</i>
	Less than 6 months	5	36%
	6 months to less than 1 year	5	36%
	1 year to less than 2 years	4	29%
	2 years to less than 5 years	0	0%
	5 or more years	0	0%
	Don't know	0	0%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

21b, 30b, 39b, & 48b. Would you have gone ahead with the boiler tune-ups / installation or pipe insulation / repair or replace steam traps even if you had not participated in the program?	<i>Response</i>	<i>(n=14)</i>	<i>Percent of Respondents*</i>
	Yes	10	71%
	No	1	7%
	Don't Know	3	21%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

22, 31, 40, & 49. How important was your previous experience with the DCEO programs in making your decision to tune up the boilers / install pipe insulation / repair or replace steam traps?	<i>Response</i>	<i>(n=32)</i>	<i>Percent of Respondents*</i>
	Very important	20	63%
	Somewhat important	3	9%
	Only slightly important	3	9%
	Did not have previous experience with DCEO programs	3	9%
	Not important at all	2	6%
Don't know	1	3%	

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

23, 32, 41, & 50. Did a Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative recommend that you perform the boiler tune up(s) / install pipe insulation / repair or replace steam traps?	<i>Response</i>	<i>(n=32)</i>	<i>Percent of Respondents*</i>
	Yes	9	28%
	No	20	63%
	Don't Know	3	9%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

23a, 32a, 41a, & 50a. If the Public Sector Natural Gas Boiler Tune-up Program or other DCEO representative had not recommended that you perform the boiler tune-up(s) / install pipe insulation / repair or replace steam traps, how likely is it that you would have done it anyway?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents*</i>
	Definitely would have	1	13%
	Probably would have	3	38%
	Probably would not have	4	50%
	Definitely would not have	0	0%
	Don't know	0	0%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

24, 33, 42, & 51. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you perform the boiler tune-up(s) / install pipe insulation / repair or replace steam traps?	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents*</i>
	Yes	4	16%
	No	20	80%
	Don't Know	1	4%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

24a, 33a, 42a, & 51a. If the SEDAC representative had not recommended that you perform the boiler tune-up(s) / install pipe insulation / repair or replace steam traps, how likely is it that you would have done it anyway?	<i>Response</i>	<i>(n=4)</i>	<i>Percent of Respondents*</i>
	Definitely would have	0	0%
	Probably would have	0	0%
	Probably would not have	4	100%
	Definitely would not have	0	0%
	Don't know	0	0%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

25, 34, 43, 52. Would your organization have been financially able to perform the boiler tune-up (s) / install pipe insulation / repair or replace steam traps without the assistance from the Public Sector Natural Gas Boiler Tune-up Program?	<i>Response</i>	<i>(n=24)</i>	<i>Percent of Respondents*</i>
	Yes	10	42%
	No	12	50%
	Don't Know	2	8%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

26, 35, 44, & 53. If the financial incentives from the Public Sector Natural Gas Boiler Tune-up Program had not been available, how likely is it that you would have performed the boiler tune-up (s) / install pipe insulation / repair or replace steam traps anyway?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	Definitely would have	4	15%
	Probably would have	8	31%
	Probably would not have	9	35%
	Definitely would not have	3	12%
	Don't know	2	8%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

27, 36, & 45. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the quantity of measures installed? Did you install more than you otherwise would have without the program?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	Yes	14	54%
	No	9	35%
	Don't Know	3	12%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

28, 37, 46, & 54. Did the availability of information and financial incentives through the Public Sector Natural Gas Boiler Tune-up Program affect the timing of the measures installed? Did you complete the project sooner than you would have without the program?	<i>Response</i>	<i>(n=26)</i>	<i>Percent of Respondents*</i>
	Yes	11	42%
	No	13	50%
	Don't Know	2	8%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

28a., 37a, 46a, & 54a. When would you otherwise tune up the boiler(s) / installed pipe insulation / repaired or replaced steam traps?	<i>Response</i>	<i>(n=11)</i>	<i>Percent of Respondents*</i>
	Less than 6 months	0	0%
	6 months to less than 1 year	3	27%
	1 year to less than 2 years	2	18%
	2 years to less than 5 years	2	18%
	5 or more years	3	27%
	Don't know	1	9%

\*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

55. Did you have any problems with the application process?	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
	Yes	0	0%
	No	23	92%
	Don't Know	2	8%

56. Did the project go smoothly?	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
	Yes	20	80%
	No	0	0%
	For the most part	4	16%
	Don't Know	1	4%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
57. Did the project meet your expectations?	My expectations were exceeded	3	12%
	My expectations were met	20	80%
	My expectations were mostly met	0	0%
	My expectations were not met	0	0%
	Don't know	2	8%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
58. Do you feel that the contractor did a good job?	Yes	24	96%
	For the most part	1	4%
	No	0	0%
	Don't know	0	0%
	Did not use a contractor	0	0%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
59. Did the incentive that you received meet your expectations?	Yes	24	96%
	No	1	4%
	Don't Know	0	0%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
60. Were there any issues receiving the Public Sector Natural Gas Boiler Tune-up Program incentive?	Yes	3	12%
	No	20	80%
	Don't Know	2	8%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
61. Was the incentive amount what you expected?	Yes	22	88%
	No	1	4%
	Don't Know	2	8%

	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
62. Since participating in the program, have you implemented any additional energy efficiency projects for which you did not apply or receive an incentive?	Yes	3	12%
	No	18	72%
	Don't Know	4	16%

	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
62b. Was this project implemented at the same facility (or facilities) as the [Project Description]?	Yes	1	33%
	No	2	67%
	Don't Know	0	0%



62c. Did a recommendation from Public Sector Natural Gas Boiler Tune-up Program or DCEO staff member, or from a contractor influence your decision to implement the additional project?	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
	Yes	3	100%
	No	0	0%
	Don't Know	0	0%

62c1. How important was this recommendation to your decision to implement the additional energy efficiency project?	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
	Very important	1	33%
	Somewhat important	2	67%
	Neither important or unimportant	0	0%
	Somewhat unimportant	0	0%
	Unimportant	0	0%
Don't know	0	0%	

62d. How important was your experience with the Public Sector Natural Gas Boiler Tune-up Program to your decision to implement the additional energy efficiency project?	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
	Very important	1	33%
	Somewhat important	1	33%
	Neither important or unimportant	1	33%
	Somewhat unimportant	0	0%
	Unimportant	0	0%
Don't know	0	0%	

62E. How important was any past experience with energy efficiency programs to your decision to implement the additional energy efficiency project?	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
	Very important	3	100%
	Somewhat important	0	0%
	Neither important or unimportant	0	0%
	Somewhat unimportant	0	0%
	Unimportant	0	0%
Don't know	0	0%	

62f. Why didn't you apply for or receive financial assistance or incentives for this project? [Check all that apply]	<i>Response</i>	<i>(n=2)</i>	<i>Percent of Respondents*</i>
	Didn't know about financial incentives	0	0%
	Didn't know whether the project qualified for financial incentives	1	50%
	Financial incentive was insufficient	0	0%
	No financial incentive was offered	0	0%
	Too much paperwork for the financial incentive application	0	0%
	Other reason (please describe)	0	0%
Don't know	1	50%	

\*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

63. Given your experience with the Public Sector Natural Gas Boiler Tune-up Program, would you implement the measures in the future even if financial incentives for such projects were not being offered through a DCEO program?	<i>Response</i>	<i>(n=25)</i>	<i>Percent of Respondents</i>
	Yes	15	60%
	No	4	16%
	Don't Know	6	24%

64a. How would you rate your satisfaction with the following - Performance of the [ boiler tune-up(s)/ install pipe insulation / repair or replacement of steam traps] since the project was completed	<i>Response</i>	<i>(n=24)</i>	<i>Percent of Respondents*</i>
	5	9	38%
	4	13	54%
	3	0	0%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	2	8%
	Average		4.4

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

64b. How would you rate your satisfaction with the following - Savings on your monthly bill?	<i>Response</i>	<i>(n=24)</i>	<i>Percent of Respondents*</i>
	5	6	25%
	4	10	42%
	3	1	4%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	7	29%
	Average		4.3

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

64c. How would you rate your satisfaction with the following - Incentive amount?	<i>Response</i>	<i>(n=24)</i>	<i>Percent of Respondents*</i>
	5	5	21%
	4	17	71%
	3	0	0%
	2	1	4%
	1	0	0%
	Don't know / Not Applicable	1	4%
	Average		4.1

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64d. How would you rate your satisfaction with the following - The effort required for the application process?	5	8	35%
	4	12	52%
	3	1	4%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	2	9%
	Average		4.3

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64e. How would you rate your satisfaction with the following - Quality of the contractor's work?	5	9	39%
	4	13	57%
	3	1	4%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	0	0%
	Average		4.3

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64f. How would you rate your satisfaction with the following - Information provided by DCEO?	5	8	35%
	4	13	57%
	3	2	9%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	0	0%
	Average		4.3

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64g. How would you rate your satisfaction with the following - Information provided by the Smart Energy Design Assistance Center (SEDAC)?	5	4	17%
	4	11	48%
	3	2	9%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	6	26%
	Average		4.1

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=22)</i>	<i>Percent of Respondents*</i>
64h. How would you rate your satisfaction with the following - Information provided by the Energy Resource Center?	5	3	14%
	4	10	45%
	3	2	9%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	7	32%
	Average		4.1

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64i. How would you rate your satisfaction with the following - The elapsed time until you received the incentive?	5	4	17%
	4	13	57%
	3	2	9%
	2	1	4%
	1	2	9%
	Don't know / Not Applicable	1	4%
	Average		3.7

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	<i>Response</i>	<i>(n=23)</i>	<i>Percent of Respondents*</i>
64j. How would you rate your satisfaction with the following - Overall program experience?	5	7	30%
	4	16	70%
	3	0	0%
	2	0	0%
	1	0	0%
	Don't know / Not Applicable	0	0%
	Average		4.3

\*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)