



NYSERDA

Energy Efficiency Portfolio Standard (EEPS-2) Program

Quarterly Report to the Public Service Commission

Quarter Ending December 31, 2015

Final Report

NYSERDA's Promise to New Yorkers:

NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Mission Statement:

Advance innovative energy solutions in ways that improve New York's economy and environment.

Vision Statement:

Serve as a catalyst – advancing energy innovation, technology, and investment; transforming New York's economy; and empowering people to choose clean and efficient energy as part of their everyday lives.

Energy Efficiency Portfolio Standard (EEPS-2) Program

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Quarter Ending December 31, 2015

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1 Introduction

This quarterly report reflects progress on Energy Efficiency Portfolio Standard (EEPS-2) Program evaluation activities administered by the New York State Energy Research and Development Authority (NYSERDA). This report contains the anticipated schedule and status of current and upcoming evaluation studies, summaries of recently completed evaluations, and the status of evaluation recommendations through December 31, 2015. Information contained within this report comports with the guidance received from the New York State Department of Public Service (DPS) and discussed with the Evaluation Advisory Group in July 2012 and the E2 Working Group in March 2014.

2 Evaluation Reports Completed

NYSERDA finalized the Existing Facilities Program and National Fuel Gas Distribution Corporation's (NFGDC) Non-Residential Rebate Program Impact Evaluation Report in the fourth quarter of 2015.

3 Evaluation Status Update

Table 3-1 and Table 3-2 provide the anticipated schedule and status of current and upcoming impact, process, and market evaluation activities by program. As applicable, table notes provide further clarification and information about study timing. Planned evaluation projects and timing may change based on input from internal and external stakeholders, the EEPS evaluation review that is underway, and program progress. Likewise, evaluation project schedules are subject to change based on progress in administering the evaluation studies themselves. Future quarterly reports will highlight any timeline revisions. Timeline revisions made this quarter are designated by cell shading. PY denotes program year and Q denotes quarter.

Table 3-1. Impact Evaluation Schedule and Status

EEPS Program	Impact Evaluation Schedule					
	Detailed Evaluation Plan Submittal	Project Kick-off	Data Collection Complete	Draft Report	Final Report	Notes
Industrial & Process Efficiency (Phase 2)	Completed	Completed	Completed	Completed	Completed	Report finalized
Existing Facilities	Completed	Completed	Completed	Completed	Completed	Report finalized
Agriculture	TBD	TBD	TBD	TBD	TBD	Cancelled Prior impact evaluations showed consistent findings for this program over time. As the program evolves, NYSERDA will revisit the evaluation plans.
New Construction	Completed	Completed	Completed	TBD	TBD	Data analysis in progress.
Agriculture Disaster	Completed	Completed	Completed	Completed	Completed	Final report completed July 2014. Program closed. No further evaluations planned.
FlexTech	Completed	Completed	TBD	TBD	TBD	Cancelled Prior impact evaluations showed consistent findings for this program over time. As the program evolves, NYSERDA will revisit the evaluation plans.
Commercial Existing Buildings Non-Participant Spillover Study	Completed	Completed	Completed	Completed	Completed	Report finalized.
Multifamily Performance Program	Completed	Completed	Completed	Completed	Completed	Report finalized

Table 3-1 continued

EEPS Program	Impact Evaluation Schedule					
	Detailed Evaluation Plan Submittal	Project Kick-off	Data Collection Complete	Draft Report	Final Report	
Point of Sale (POS) Lighting	Completed	Completed	Completed	Completed	Completed	Reports for 2012-2013 finalized in May 2014
EmPower New York	Completed	Completed	Completed	Completed	Completed	Report finalized including Phase 1 and Phase 2 results.
Home Performance with ENERGY STAR®	Completed	Completed	Phase 2 Completed	Phase 2 Q1 - 2016	Phase 2 Q2- 2016	Draft report in process.
New York ENERGY STAR® Certified Homes	TBD	TBD	TBD	TBD	TBD	Analysis is underway to determine optimal timing and scope of evaluation results that will be of greatest value. Previous impact evaluation of PY 2007 - 2008 completed in September 2012.

Table 3-2. Process and Market Evaluation Schedule and Status

EEPS Program	Process and Market Evaluation Schedule					
	Detailed Evaluation Plan Submittal	Project Kick-off	Data Collection Complete	Draft Report	Final Report	Notes
Existing Facilities	Completed	TBD	TBD	TBD	TBD	Last process evaluation completed in February 2012. Last market evaluation completed in September 2012.
Agriculture	TBD	TBD	TBD	TBD	TBD	Cancelled. New evaluation and market research plans will be aligned with NYSERDAs evolving strategy.
New Construction	Completed	Completed	Completed	Completed	Completed	Final report completed October 2014.
Agriculture Disaster	Completed	Completed	Completed	Completed	Completed	Final report completed September 2012. Program closed. No further evaluations planned.
FlexTech	Completed	Completed	Completed	Completed	Completed	Final report completed July 2014.
Multifamily Performance Program	Completed	Completed	Completed	Completed	Completed	Final report completed August 2014.
Point of Sale Lighting	Completed	Completed	Completed	Completed	Completed	Reports for 2012-2013 finalized in May 2014.
EmPower New York	Completed	TBD	TBD	TBD	TBD	Last process evaluation completed in July 2010. Planning for next process evaluation on hold pending Clean Energy Fund development.
Home Performance with ENERGY STAR®	Completed	Completed	Completed	Completed	Q1 - 2016	Final report under review.
New York ENERGY STAR® Certified Homes	TBD	TBD	TBD	TBD	TBD	NYSERDA to identify research and evaluation needs for this market.
C&I Natural Gas Market Characterization	Completed	Completed	Completed	Completed	Completed	Report finalized.

3.1 Recommendation Tracking

Recommendations generated from NYSERDA evaluation studies are tallied in Table 3-3.

These recommendations are categorized as follows:

- Total Number of Recommendations Made to Date: Cumulative number of recommendations contained in final NYSERDA evaluation reports.
- Total Number of Recommendations Implemented to Date: Cumulative number of recommendations contained in final NYSERDA evaluation reports that have been implemented by NYSERDA and incorporated into NYSERDA programs.
- Total Number of Recommendations Rejected to Date: Cumulative number of recommendations contained in final NYSERDA evaluation reports that have been rejected by NYSERDA.
- Total Number of Recommendations Currently in Progress: Cumulative number of recommendations contained in final NYSERDA evaluation reports that NYSERDA is still considering for implementation or rejection.

Table 3-3. Recommendation Tracking

Total Number of Recommendations:	Through December 31, 2015
Made to Date ¹	222
Implemented to Date	160
Rejected to Date	22
Currently in Progress	40

¹ The Total Number of Recommendations Made to Date only includes recommendations made in Final (not Interim) evaluation reports.

4 Other

Per the DPS reporting guidance, this section provides an opportunity to report significant activities or events not already reflected in the report. This section is not for reporting routine activities.

There are no other significant activities requiring explanation for the fourth quarter of 2015.

Appendix A: Completed Evaluation Summaries

This appendix contains a high-level summary of each recently completed evaluation study. The full report on each evaluation study is available on the NYSERDA website. NYSERDA finalized the following report in the fourth quarter of 2015:

- Existing Facilities Program and National Fuel Gas Distribution Corporation's (NFGDC) Non-Residential Rebate Program Impact Evaluation Report

NYSERDA Existing Facilities Program and NFGDC Non-Residential Rebate Program (NRCIP): Impact Evaluation Summary

Evaluation Conducted by: Energy Resource Solutions (ERS) Impact Evaluation Team
ERS, Lead Investigators, December 2015

PROGRAM SUMMARY

The New York State Energy Research and Development Authority's (NYSERDA) Existing Facilities Program promotes energy efficiency in existing commercial and industrial facilities by providing either pre-qualified² or performance-based (custom)³, incentives for installation of energy efficiency measures that save electricity and natural gas.

The National Fuel Gas Distribution Corporation's (NFGDC) Non-Residential Rebate Program (NRCIP) is an equipment replacement program (administered by NYSERDA through EFP) that offers equipment replacement, prequalified and customized rebate incentives to customers to promote the installation of high efficiency space heating, water heating, and process heating equipment.

This report describes the joint impact evaluation of the programs' projects that had at least one measure installed between January 1, 2012 and September 30, 2013. For the purposes of this impact evaluation, jointly, these programs are referred to as the Program.

EVALUATION OBJECTIVES AND KEY FINDINGS

The primary objective of this impact evaluation was to estimate the evaluated gross electric and natural gas savings for the Program installed between January 1, 2012 and September 30, 2013. To best align with and provide actionable insights for NYSERDA's developing future program plans at this time this study was scoped, the evaluation did not address gross savings for prequalified electric projects.

² Prequalified indicates the energy projects are small, with measures that have predetermined savings estimates.

³ Performance-based incentives are for customers or third-party applicants such as energy service companies working on large-scale projects.

Table 4. Impact Evaluation Results

Parameter	Program-Reported Savings (1/1/12 – 9/30/13) ¹	Realization Rate (RR)	Evaluated Gross Savings	Relative Precision
NYSERDA				
Electric energy (MWh/yr)	221,473	1.01 ¹	222,656	N/A
Electric demand (MW)	35.9	0.98 ¹	35.0	N/A
Natural gas energy (MMBtu/yr)	81,448	0.64 ³	51,060	7.9%
NFGDC				
Natural gas (MMBtu/yr)	33,137	0.66 ⁴	21,794	26.2%

¹ The electric RRs are based on the weighted average of the custom electric measure evaluated RRs from this study's primary research and the prequalified electric evaluated RRs from the prior EF impact evaluation.

² The relative precision associated with the custom electric project sample is 6.4%.

³ Due to program changes that occurred in 2014, the evaluators recommend that NYSERDA use an RR of 0.63 as a prospective pro forma value for 2014 and later reporting, until the next evaluation is completed.

⁴ Due to program changes that occurred in 2014, the evaluators recommend that NFGDC use an RR of 0.80 as a prospective pro forma value for 2014 and later reporting, until the next evaluation is completed.

The evaluators also calculated the Program's 2010–2011 electric RR using results of this evaluation and those of the prior impact evaluation. The calculations for the NYSERDA 2010–2011 period produced an electric RR of 1.02.

DETAILED FINDINGS: REALIZATION RATE

The evaluation scope did include evaluating both custom and prequalified natural gas projects, and the custom electric projects. Please note, however, the program electric evaluation RR results include both custom and prequalified projects; i.e., the weighted average of the custom electric measures evaluated RRs from this study's primary research and the prequalified electric evaluated RRs from the prior EFP impact evaluation (see Table 5).

A RR was also developed for years 2010–2011 using prior and current evaluation results. The electric program was evaluated in the prior impact evaluation for the period from 2006–2009. Since the Program remained relatively stable from 2006 through 2014, the primary data collection targeted projects installed in the last two years of the period (specifically, January 1, 2012 – September 30, 2013). This approach keeps the evaluation as relevant as possible by focusing on more recent implementation at the same time that it reduces study costs. In addition, the natural gas programs did not begin until 2012; this approach keeps the time frames consistent for the electric and natural gas sample frames.

Table 5. EFP Source of Primary Data Collection for Realization Rates

EFP Program	Basis of Realization Rate Estimate for Projects Installed during the Period		
	1/12006–12/31/2009	1/1/2010–12/31/2011	1/1/2012–9/30/2013
Electric prequalified	Prior evaluation	Prior evaluation	Prior evaluation
Electric custom	Prior evaluation	Blended RR	Current evaluation
Natural gas prequalified & custom	<i>Program did not exist</i>	<i>Program did not exist</i>	Current evaluation

EVALUATION METHODS AND SAMPLING

The primary data collection activity consisted of rigorous project-specific M&V of a statistically valid sample of natural gas and custom electric projects installed during this time period.

Table 6. Evaluation Scope and Objectives

Objectives	Outputs	Method Used
Evaluated gross electric energy and gas savings	Annualized first-year evaluated gross energy savings based on electric (kWh) and natural gas savings (therms) at the customer meter. Evaluate custom projects only for electric and both prequalified and custom projects for natural gas.	On-site measurement and verification for 114 projects using on-site logging, custom engineering assessments, billing analysis, and building simulation of a representative sample of Program participants.
Realization rate (RR)	Ratio of the sum of the weighted evaluated savings divided by the sum of the weighted program-reported savings	
Statistical validity	The sample design targets 8% precision level for Program energy savings at 90% confidence.	Stratified ratio estimation sample design

The evaluators estimated savings based on project-specific measurement and verification (M&V) performed on a statistically valid sample of 61 custom electric energy savings projects and 53 natural gas savings projects, and used deemed savings from the prior EFP evaluation for electric prequalified projects. The overall level of engineering rigor was high, with engineers visiting 100% of the evaluated (i.e., sampled) projects to inspect and verify installation. Ninety-eight percent of the sample was subjected to site-specific logging of equipment, site-specific billing analysis or both to estimate savings. Reviews of RRs as a function of measure type, building type, geographic location, sponsor, size, and other factors were examined to identify trends and opportunities for improvement.

Table 7. Existing Facilities Program-Reported Savings (2012–2013)

Measure Type/Facility Type	# Projects with Completed Measures	Annual Savings	Percentage of Installed Savings
NYSERDA Electric			
Prequalified	1,888	118,207 MWh	53%
Custom	494	103,266 MWh	47%
Electric savings total	2,382	221,473 MWh	100%
NYSERDA Natural Gas			
All natural gas projects	35	81,448 MMBtu	100%
NFGDC Natural Gas			
All natural gas projects	129	33,137 MMBtu	100%

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The Impact Evaluation Team offers three recommendations and one finding based on the impact evaluation research. These findings, conclusions, and recommendations are based on the sampled projects which included custom electric projects, and both custom and prequalified gas projects.

Findings - No Action Required

Although, the evaluators found that the deemed savings for the prequalified natural gas furnace and boiler measures used an incorrect basis for projects reported complete during the evaluation period and this inflated the savings estimates and reduced the RR, Program staff fixed the deemed savings tool in 2014. The Impact Evaluation Team reviewed the revised tool and found it to be accurate. No further action is recommended of Program staff. To the extent an RR is to be applied prospectively or on a pro forma basis, use 63% for NYSERDA and 80% for NFGDC, since this systematic issue has been addressed. These values considered the adjustments to the RR due to revised tool.

Recommendations

1. The Program estimates custom electric energy savings well.

The results of the past two evaluations have resulted in RRs in close proximity to 1, relative precision values within the range of the sample design, and low error ratios. Program staff and their third-party Outreach and Technical Reviewers have demonstrated that they are capable of estimating project savings with high levels of engineering rigor.

Recommendation 1: This Program need not be subject to a traditional comprehensive retrospective gross impact evaluation of electric custom savings in the next cycle unless the Program undergoes substantial changes.

Response to Recommendation 1:

NYSERDA: The Existing Facilities Program, per se, no longer exists. Under the Clean Energy Fund, commercially-oriented energy efficiency efforts traditionally undertaken by NYSERDA as part of the Existing Facilities Program, as well as audit-centric activities traditionally undertaken under the FlexTech Program, will be combined into a single offering known as the Commercial Incentive Program. As this program offering will be substantially different than what has been offered through EFP or FlexTech, consideration will be given to comprehensive retrospective gross impact evaluation of electric custom savings during the planning of future evaluation efforts for the Commercial Incentive Program.

NFGDC: Not applicable

2. Prequalified gas applications tend to have the most variation in RRs.

Prequalified gas projects were found to have the most variability between the reported and evaluated savings, which resulted in lower relative precision values. By analyzing the RR differences attributable to the prequalified projects, Program staff can isolate differences that can be fixed during the application review process. Pre-project characterization was found to be one of the most common reasons for differences. Program staff could start by focusing on capturing the pre-project information accurately, which would result in fewer differences in savings values.

Recommendation 2: Put procedures in place that will help take a closer look at some of the differences and associated inputs. This will subsequently improve the prequalified project savings estimates. Specifically, the two biggest causes of underestimation of prequalified reported compared to the evaluated savings were differences in equipment load profiles and differences in equipment operating hours.

Response to Recommendation 2:

NYSERDA: Not applicable, NYSERDA no longer does prequalified gas projects.

NFGDC: This recommendation is already implemented. NFGDC is in the process of transitioning the NRCIP program to a new implementation contractor, with an effective date of January 1, 2016. Part of this transition includes a robust RFP and vendor selection process which included: (1) a redesign of the NRCIP application form to categorize projects easily, and (2) new functional procedures to be established for the review of both prequalified and customized projects, including a QA/QC program, random on-site inspections for prequalified projects, and required on-site inspections for custom projects.

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