New York State Energy Research and Development Authority

NYSERDA's Energy Efficiency Portfolio Standard Program

Quarterly Report to the Public Service Commission

Quarter Ending December 31, 2012

Final Report
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The New NY WORKS for Energy

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1 Introduction

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

2 Evaluation Reports Completed

NYSERDA finalized the following evaluation contractor reports in the fourth quarter of 2012:

1. Existing Facilities Impact Evaluation, Megdal and Associates, September 2012.
2. Home Performance with ENERGY STAR® Impact Evaluation, Megdal and Associates, September 2012.

See Appendix A of this report for a high-level summary of each study listed above. The full evaluation reports can be found on NYSERDA's website.

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, 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.

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)	Q1 - 2013	Q1 - 2013	Q4 - 2013	Q1 - 2014	Q2 - 2014	Detailed Evaluation Plan submittal date changed to Q1 2013 from Q4 2012. Final report date changed from Q3 2013 to Q2 2014 to allow for a longer metering period. Pre-retrofit evaluation advisement is ongoing. Phase 1 impact evaluation report of PY 2009 - 2010 completed in August 2012.
Existing Facilities	Late 2013	TBD	TBD	TBD	Late 2014	Previous impact evaluation report of PY 2007 - 2009 completed in September 2012, approved Q4 2012.
Agriculture	Late 2013	TBD	TBD	TBD	Late 2014	Will be evaluated with Existing Facilities.
New Construction	Q1 - 2013	TBD	TBD	TBD	2015	Detailed Evaluation Plan developed early to allow process/market evaluation team to begin work. Previous impact evaluation report for PY 2007 - 2008 completed in September 2012. Given programmatic changes underway, the next evaluation should not occur for a year or more since the project time line is long and program changes require time to assess. Free ridership surveying may begin earlier.
Agriculture Disaster	Q1 - 2013	Q1 - 2013	Q3/4 - 2013	Q3/4 - 2013	Q3/4 - 2013	Planning review underway.

EEPS Program	Impact Evaluation Schedule					
	Detailed Evaluation Plan Submittal	**Project Kick Off**	**Data Collection Complete**	**Draft Report**	**Final Report**	**Notes**
Flex Tech	Q1 - 2013	TBD	TBD	TBD	2015	Detailed Evaluation Plan developed early to allow process/market evaluation team to begin work. Previous impact evaluation report completed March 2012. Evaluation contractors recommend studying the Program every three years. Near-term results are not expected to vary from the study recently completed. Free ridership surveying may begin earlier.
Benchmarking	Q1 - 2013	TBD	TBD	TBD	TBD	Detailed Evaluation Plan developed early to allow process/market evaluation team to begin work. EEPS Benchmarking Program launched in December 2011. Future evaluations to be included with Flex Tech. Impact evaluation report of the SBC Focus/Vertical Outreach Program benchmarking activities in schools and commercial real estate for PY 2007-2009 was completed in September 2012.
Non-Participant Spillover Study	completed	completed	completed	Q1 - 2013	Q1 - 2013	Covers commercial existing buildings. Draft and final report schedules updated to Q1 2013.
Multifamily Performance Program	Q1 - 2013	Q1 - 2013	Q2/3 - 2013	Q3/4 - 2013	Q4 - 2013	Detailed evaluation plan delayed one quarter because MPP has not been evaluated previously and more time than anticipated has been required for planning.
Point of Sale Lighting	Q3 - 2012	Q3 - 2012	Q3 - 2013	Q3/4 - 2013	Q4 - 2013	A formal memo presenting these results from several primary data collections will be provided at the end of Q2 2013.

EEPS Program	Impact Evaluation Schedule					
	Detailed Evaluation Plan Submittal	**Project Kick Off**	**Data Collection Complete**	**Draft Report**	**Final Report**	**Notes**
EmPower New York	Q1 - 2013	Q1 - 2013	Q1 - 2013	Q2 - 2013	Q2 - 2013	Previous impact evaluation report for PY 2007-2008 completed in April 2012. Will complete update to billing analysis results at end of Q2.
Home Performance with ENERGY STAR	Q1 - 2013	Q1 - 2013	Q1 - 2013	Q2 - 2013	Q2 - 2013	Detailed Evaluation Plan specified as Q1. Kick off changed from TBD. Previous impact evaluation of PY2007-2009 completed in Q4. Will complete update to billing analysis results at end of Q2.
New York ENERGY STAR Homes	Q4 - 2013	TBD	TBD	TBD	Q4 - 2014	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**
Industrial & Process Efficiency	Q1 - 2013	TBD	TBD	TBD	TBD	Last process evaluation completed in November 2011. Last market evaluation completed in May 2012. Detailed evaluation plan submittal is expected in Q1 2013.
Existing Facilities	Q3 - 2013	TBD	TBD	TBD	2015	Current market evaluation completed in September 2012. Last process evaluation completed in February 2012. Detailed evaluation plans and project completion dates were added for upcoming evaluation.
Agriculture	TBD	TBD	TBD	TBD	TBD	
New Construction	Q1 - 2013	Q1 - 2013	Q3 - 2013	Q4 - 2013	Q4 - 2013	Intensive two-phase process evaluation completed in December 2011. Near-term results not expected to vary. Study planned in 2012-2013 is a market evaluation only. Detailed evaluation plan submittal was extended by one quarter.
Agriculture Disaster	Q4 - 2011	Q4 - 2011	Q3 - 2012	Q3 - 2012	Q3 - 2012	Previous evaluation completed in October 2012. No other evaluations planned or required.
FlexTech	Q1 - 2013	Q1 - 2013	Q4 - 2013	Q1 - 2014	Q2 - 2014	Last market evaluation completed in August 2011. Study planned in 2012-2014 is a process evaluation only. Detailed evaluation plan submittal and project kick-off meeting were extended by one quarter.

EEPS Program	Process and Market Evaluation Schedule					
	Detailed Evaluation Plan Submittal	**Project Kick Off**	**Data Collection Complete**	**Draft Report**	**Final Report**	**Notes**
Benchmarking	Q1 - 2013	Q1 - 2013	Q4 - 2013	Q1 - 2014	Q2 - 2014	Included in the FlexTech evaluation. Detailed evaluation plan and project kick-off meeting were submittal was extended by one quarter.
Multifamily Performance Program	Q1 - 2013	Q1 - 2013	Q4 - 2013	Q1 - 2014	Q2 - 2014	Detailed evaluation plan submittal delayed by one quarter because MPP has not been evaluated before and more time than anticipated has been required for planning.
Point of Sale Lighting	Q3 - 2012	Q3 - 2012	Q3 - 2013	Q3/4 - 2013	Q4 - 2013	A formal memo presenting these results from several primary data collections will be provided at the end of Q2 2013.
EmPower New York	Q1 - 2013	TBD	TBD	TBD	TBD	Last process evaluation completed in July 2010. Detailed evaluation plan submittal is expected in Q1 2013.
Home Performance with ENERGY STAR	Q1 - 2013	Q2 -2013	TBD	Q1 - 2014	Q2 - 2014	Evaluation plans under development based on newly available results from the Green Jobs – Green New York Small Homes Evaluation. In addition, evaluation plans will also coordinate with Statewide Residential Baseline. Detailed evaluation plan submittal is expected in Q1 2013.
ENERGY STAR Homes	Q4 - 2013	TBD	TBD	TBD	2015	Evaluation plans are pending based on forthcoming plans for the Statewide Residential Baseline. Detailed evaluation plan and project completion dates were added.
Workforce Development MCA	completed	completed	completed	Q3 - 2012	Q3 - 2012	The Commission's December 17, 2012 Order moved Workforce Development Program activities to the NYSERDA Technology and Market Development Portfolio.

EEPS Program	Process and Market Evaluation Schedule					
	Detailed Evaluation Plan Submittal	**Project Kick Off**	**Data Collection Complete**	**Draft Report**	**Final Report**	**Notes**
C&I Natural Gas Market Characterization	completed	completed	completed	Q2 - 2012	Q3 - 2012	

New Recommendations

Recommendations generated from the recently-completed (Quarter 4, 2012) evaluation studies described in the Evaluation Reports Completed section are listed in Table 3-3 along with their status. The status of each recommendation is characterized as rejected, implemented, or pending based on input from NYSERDA program implementation staff. Rejected recommendations are those that will not be implemented by NYSERDA; implemented recommendations are those that have been incorporated into the NYSERDA program; and pending recommendations are those still awaiting a decision on implementation or rejection. In addition to characterizing new recommendations as rejected, implemented or pending, NYSERDA program staff's response and rationale for those characterizations is also provided.

Table 3-3. New Recommendations as of December 31, 2012

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
Existing Facilities Program	Megdal and Associates Impact Evaluation Team, Energy and Resource Solutions Lead Investigators, September 2012	**Disallow like-replacement incentives –** Multiple projects funded VFD installations that replaced pre-existing drives. Current program rules do not allow such funding but earlier rules, oversight, or charitable interpretation of existing conditions ("the drive had been broken for a while") allowed the incentives. Disallowing like-replacement incentives for VFDs and other equipment will prevent the use of either an incorrect baseline or a regressive baseline likely associated with high FR.	Implemented	Program staff agree with this recommendation.
		Apply a common algorithm for tracking demand savings – The high variance in the peak demand savings realized by the Program stems from inconsistencies in algorithms and requirements regarding peak demand calculations. Evaluators recommend that program staff consider requiring that peak demand be calculated in a consistent fashion across projects. Tracking demand savings using algorithms similar to those applied in the evaluation would ensure more consistent peak demand RRs in future evaluations.	Pending	EFP is currently working to update its methodology for calculating peak demand impacts to be consistent with algorithms used in this impact evaluation and to be in compliance with the Technical Manual. Once a new methodology is developed, EFP Staff and Technical Reviewers will be trained on its consistent use.
		Incorporate heating, ventilation, and air conditioning (HVAC) into lighting analysis – The evaluation results showed that the heating and cooling effects of reduced lighting load and run-time hours can be significant, especially in facilities such as data centers with high cooling loads. Such interactive effects were not consistently incorporated into program savings analysis. Evaluators recommend that the Program consider	Pending, with modifications	The determination of site-specific interactive effects of lighting with HVAC systems is both time and resource intensive relative to its accuracy and resulting effect on program-reported impacts. Program staff proposes working with Evaluation staff to develop a methodology for applying an adjustment for interactive effects between lighting and HVAC as part of future impact analysis.

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
		including these impacts in future project savings estimates. The choice to do so for tracking purposes does not necessarily mean that the same choice must be made for the purposes of demand-based incentive calculations.		
		Set up a data request mechanism from RIPs for future DR evaluations – Acquiring the DR measure data was challenging and required a lot of calendar time and an unexpected level of "volunteer" work by RIPs. It likely would save effort for all if NYSERDA could persuade the RIPs to deliver to NYSERDA the same baseline and performance data they deliver to the NYISO at the time they send it to the NYISO. Alternately, evaluators and program staff could work with RIPs to establish a different data set and template for routine delivery.	Pending, with modifications	Program staff believes that requiring all incentive recipients to submit DR data routinely would be detrimental to program participation, as the data are sensitive. However, EFP will incorporate into the program language an agreement stating that participants will comply with NYSERDA's request for event and test performance data if their project is selected in an evaluation sample. Program staff also propose to work together with Evaluation Staff and contractors earlier in the impact evaluation development to secure the data needed directly from participating DR providers.
		Systematically collect supporting spreadsheets, models, and metered data from technical assistance providers – The evaluation benefited greatly from the receipt of technical assistance provider spreadsheets and metered data on a number of projects. Much of this data was collected by program staff on behalf of the Impact Evaluation Team as needs were noted for specific projects. During this process both program and evaluation staff agreed that having program staff routinely gather and retain this data in its native format would facilitate program staff review of projects as well as future evaluations.	Implemented	The collection of supporting spreadsheets and data from technical reviewers at the time of report submission has been incorporated into EFP's current workflow process. This workflow process will soon be enhanced and include better document management as EFP's workflow is transitioned to SharePoint

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
		Create and track premise IDs – During the evaluator's population frame development process, time was required to manually screen the population for recent marketing department, FlexTech impact evaluation, process evaluation, and market characterization research contacts with Program representatives, to check for multiple staged projects at a single site and to identify multi-site projects. Site names, addresses, and contact names were used in lieu of a common premise identifier. While this was a manageable exercise for the Phase 1 population size of 70 projects, the exercise will be more daunting as the program expands in the future. To help evaluators and likely aid program administrators as well, evaluators recommend that NYSERDA establish unique premise IDs that are constant across programs and that remain constant for a facility in the event of name changes or other turnover. The use of premise IDs is not uncommon in the utility environment, whereby a portion of each customer's account number can be the unique premise ID number, and the suffix of the number is the only thing that changes with alterations in account ownership. It is conceivable that NYSERDA could use the utility companies' premise IDs.	Pending	NYSERDA is developing methods to provide this type of tracking.

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
		Aggressively involve the program staff in site recruitment – Recruitment for participation in evaluation activities was more difficult than for EFP than for other NYSERDA C&I impact evaluations (FlexTech, Industrial and Process Efficiency, New Construction). Including 10% to 20% backups from the non-census strata in the initial recruitment will help eliminate the late scramble to recruit the backup sites and increase the evaluation participation rate.	Pending	Program staff has requested to be involved early in the process of site recruitment and they will be provided a list of the projects that are in the sample as soon as it is available
		Use a 0.50 error ratio in the next sample design – The sample design for this evaluation assumed an error ratio of 0.50 on the electric energy savings RR. The final calculated error ratios were 0.58 Downstate, 0.46 Upstate, and 0.49 overall. The error ratio on the permanent demand savings RRs was 0.58 for the same projects. Presuming energy savings remains the primary focus and basis of sample designs, 0.50 is a valid assumption to use for electric projects.	Pending	When the next evaluation plan is being developed, the 0.50 error ratio will be included.
		Involve the program staff in site-specific plan reviews – There were evaluation M&V approach issues identified during the site-specific report review phase that could have been addressed earlier in the evaluation if the program staff had been involved in the review of the site-specific evaluation plans. Involving the staff in the plans will help resolve conceptual differences that need to be considered early in the analysis process. It also may prompt delivery of additional site data or contact information from program staff.	Implemented	A new impact evaluation protocol has been developed that requires the Impact Evaluation Team to notify NYSERDA immediately when there is a deviation in the M&V plan from the approach used by a project's technical advisor.

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
		Use the ACL method to estimate the kW reduction for the DR component - The APMD-baseline method overstates DR, and the profile-baseline method is expensive and requires a great deal of vendor cooperation to execute. The ACL-baseline approach, while not a direct measurement of response, is almost as easy to execute as the APMD-baseline method and correlates reasonably well with actual DR indicated by the profile-baseline method and thus is a good compromise. The NYISO ICAP/SCR Program also uses the ACL-baseline method.	Pending	The Existing Facilities DR component is now a Technology & Market Development (T&MD) program. The evaluation recommendation will be forwarded to the T&MD impact evaluation team once that team is under contract with NYSERDA.
		Investigate and develop a more reliable method for the estimation of participant ISO and OSO for energy efficiency and OSO for demand response - The SO rates derived in this evaluation use the same method and survey questions as those in past evaluations. The final ISO and OSO estimates end up being based upon a small number of respondents (after dropping those that report no OSO). The NTGR can have a substantial effect on net savings and additional evaluation efforts are needed to reduce the uncertainty in many of its components, particularly in measuring spillover. Surveys used to gather data for SO estimation need to include SO-respondent quotas when possible. Additional validity checks need to be included regarding items that act as multipliers within the calculation formulas.	Pending	As with other programs, an expanded method will be used to investigate and quantify all types of spillover. The spillover investigation will begin with the identification of causal mechanisms in logic models or other program design sources. Enhanced methods will be utilized to verify reported spillover, including a large number of telephone surveys in 2014 with participating and nonparticipating customers and vendors, and follow up on-site verification for the largest spillover projects reported, presuming the on-site follow-up approach succeeds in impact evaluations being conducted in 2013. The SO samples will be designed to be sufficient to support required confidence and precision levels for estimates of net savings.

Program	Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
		Perform SO estimation work within a design that gives full consideration to conducting related market effects studies and follow-up verification studies for SO surveys - This may mean a timeline with staging of different research elements relating to participant ISO, participating vendor SO, and NPSO, all within a context of market change and program-induced market effects. Significantly more resources will be needed to conduct this level of research into SO and market effects.	Pending	The Impact and Process/Market Evaluation teams will closely coordinate efforts to ensure efficient and comprehensive coverage of researchable questions.
		Investigate alternative methods for estimating FR – The Program has recently initiated a more concentrated approach to fostering lasting relationships with large key account customers. Consequently, future evaluations could benefit from research into other potential methods for determining FR that better consider program long-term engagement with key account customers.	Pending	The Impact Evaluation Team will investigate use of methods used in other jurisdictions that provide credit for long-term program influence caused, in part by relationships with large key account customers. Such methods, if warranted, will be used where long-term program influence is relevant.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
Home Performance with ENERGY STAR	Megdal & Associates, LLC, Program Impact, September 2012	Examine methods for estimating claimed lighting and water heater fuels switch for electricity savings and envelope measures and programmable thermostats natural gas claims should be examined.	Partially implemented 2012	During the report period of 2007-2008, the comparision of actual to modeled consumption was optional. Program contractors are currently required to "true-up" energy models to weather normalized consumption.
		Consider database and data collection enhancements to the Program tracking database as described below. This list of potential enhancements is lengthy and may require substantial time and resources to implement. The items below are listed in order of importance:		
		• Continue to improve methods to increase the reliability of the utility identification and account numbers.	Pending	Best practice would be to ensure accuracy of utility information collected by the household and utilize an "ESCO" Electronic Data Interface with utilities or a similar product to assure accurate utility account information.
		• In the measure-tracking file, modify the measure codes and descriptions to clearly define the measures in a way that they can be easily and accurately categorized (lighting fixture, CFLs, dishwasher, refrigerator, freezer, attic insulation, wall insulation, air sealing, foundation insulation, etc.).	Implemented May 2011	The data collected for this study occurred in 2009 and prior to the May 18, 2011 implementation of measure level data collection and reporting in CRIS, the HPwES program implementation data system.
		• Establish a single unit for tracking measure-level energy savings for each fuel type.	Implemented May 2011	Savings are expressed in BTU's for fossil fuels and in kWh and kW for electricity for both the project and measure level detail transmitted to CRIS.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
		• Add a numeric field in the measure-tracking file for the installed quantity for each measure.	Implemented May 2011	The quantity of all measures is available in the measure level detail transmitted to CRIS
		• Add a field to the measure-tracking system to connect multiple records associated with the same measure, particularly for fuel switching.	Implemented May 2011	A fuel-switching indicator is provided with the project level data, which is linkable to the measure level detail using the key "ProjectedId"
		• Add error checking to ensure that both negative and positive savings are correctly recorded for fuel-switching measures.	Implemented May 2011	It is believed the positive and negative savings are being correctly recorded for fuel switches, and is available in the measure level detail transmitted to CRIS.
		• Ensure data integrity by improving quality control and error checking procedures for the Program database.	Partially implemented 2011	QC efforts are in place and refinements are on-going.
		• Consider adding more detailed household information to the primary program database, such as house type, ownership status, number of occupants, adults and adults 65 and older living in the home most of the year, age of house, presence of central air-conditioning, and approximate age of equipment replaced, rather than keeping this data only in the database maintained by the implementation contractor.	Pending	The program implementer's database is capable of collecting any/all of information specified in this recommendation. Currently available in the program implementer's database, but not required in all cases, is the age of home, number of occupants, age of equipment, and presence of CAC. Upon request, the implementation contractor could transmit this data to CRIS. The program will assess the value of collecting additional information.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
		• Continue efforts to collect more information on customer decision-making regarding equipment and the age of the existing equipment replaced through the Program.	Pending	Program will evaluate the value of requiring the collection of additional information from program contractors.
		Continue efforts with the utilities to ensure that billing data is complete, useful and properly interpreted.	Pending	NYSERDA Evaluation and Program staffs are actively engaged with the DPS and each of the utilities to access and collect participant utility billing data on a routine basis. Experience interpreting data from the various utilities in this and other current evaluations will help streamline effort needed to conduct future evaluations.
		Expand the sample size of participants that are sent to each utility to ensure that billing records are not missed due to being assigned to the wrong utility.	Pending	NYSERDA will expand the participant sample sizes in future evaluations, to the extent possible, when requesting utility billing data from each utility.
		Continue efforts to work with the utilities and DPS to develop an efficient process to make a higher proportion of high quality billing and consumption data available for use in evaluations.	Implemented	NYSERDA Evaluation and Program staffs are actively engaged with the DPS and each of the utilities to access high quality billing and consumption data from the utilities on a routine basis.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
		Supporting billing analyses with a telephone survey to assess changes in energy use may not be necessary in the future. If an Energy Change survey is used in the future, efforts to lessen the lag time between project completion and survey fielding will help increase data reliability.	Impelemtned	In future evaluations, NYSERDA will consider the timing and efficacy of supporting a billing analysis with telephone surveys to assess energy changes in the home. The survey used in this evaluation will be reviewed prior to the next evaluation to determine whether any changes in responses or questions are anticipated and, thus, whether additional survey efforts are warranted.
		Paying $100 incentives to non-participating contractors to complete the survey should be included in the initial evaluation design, the work plan and the evaluation budget.	Pending	NYSERDA will consider the need to provide incentives to non-participants when developing future evaluation designs, work plans, and budgets**.** Understanding the level of incentive necessary to complete this evaluation and the response rates attained will help in planning and budgeting future evaluation studies.
		To increase the reliability of the NTG evaluation, new evaluation designs and verification follow-ups should be explored and implemented and may include: • Continue to include non-participant SO studies when measuring net effects for HPwES in future impact evaluations. Surveys used to gather data for SO estimation should be designed to meet quotas for the number of respondents reporting SO.	Pending	NYSERDA will, to the extent possible, strive to increase the reliability of the NTG component of future evaluations by exploring new evaluation designs and methods. These efforts may include surveys to assess non-participant SO, market effects and follow-up verification studies, as well as increasing the number, depth and breadth of validity checks.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
		• Design future SO evaluations with full consideration to conducting related market effects studies and follow-up verification studies. This approach may mean staging different research elements relating to participant ISO, participating vendor SO, and NPSO, within a context of market change and program-induced market effects. Significantly more resources will be needed to conduct this level of research into SO and market effects. • Design additional evaluation research to increase the number, depth and breadth of validity checks for the NPSO analysis, as this SO component reflects efficiency efforts in the larger market and has a multiplier effect in the calculations.		
		Develop and implement an enhanced evaluation design to learn more about the decision-making process for replacing major equipment, in future evaluation designs.	Pending	NYSERDA will consider and include in future evaluation designs, to the extent possible, multi-faceted approaches to assess homeowner or participant decision-making criteria for replacing equipment.

Program	Source of Recommendation **(Contractor, Report Title, Date)**	Recommendation	Status (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
		Future evaluations desiring to gather information on non-energy impacts need to include measure quotas in survey and sampling design and evaluation cost estimates.	Pending	NYSERDA will attempt to include the assessment of more non-energy impacts, to the extent possible, in future evaluation designs. More specific plans will be developed on this research topic, to the extent it is included in future impact evaluations.
		Evaluation Recommendation for the NYS DPS and New York Utilities: Develop a process to store participant billing records for a specified period rather than allowing older data to be placed in archives on the utilities' regular schedule. Work with NYSERDA and the utilities' evaluators to develop a standard way to provide billing data thereby placing NYSERDA and utility evaluations on the same level.	N/A	

4 Pending Recommendations

Recommendations from previous evaluations that have not yet been characterized as implemented or rejected in prior reporting are listed, by program, in Table 4-1 through Table 4-9. These tables also provide NYSERDA program staff's response and rationale for the characterization. Note this section does not cover all EEPS programs NYSERDA administers; only programs with recommendations not previously reported as implemented or rejected are included in these tables.

Table 4-1. Pending Recommendations: Existing Facilities Program

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
Navigant Consulting Existing Facilities Program: Market Characterization and Assessment Summary, June 2012	Seek to increase the number of quality firms engaging end users in performance-based EFP projects. In so doing, the program can drive additional competition among firms working on performance-based projects, potentially leading to higher project volumes, lower costs to end users, or new competitive offerings from service providers (e.g., new approaches to project financing).	Pending	NYSERDA's 2013 marketing plans will include a targeted effort directed to participating and non-participating service providers to increase participation among end use customers. Program staff has developed a prioritized list of ESCOs and an ESCO relations role has been developed. Staff has begun the process of meeting regularly with priority ESCO participants to discuss how to increase performance-based work between EFP and the ESCO, and how EFP's design and procedures can be optimized.
	Convince new firms to learn about and undertake projects supported by performance-based incentives by marketing the program's perceived benefits to service providers. Specifically, program participation is an indicator of a firm's advanced capabilities, commitment to maximizing energy savings, and overall higher-quality services. An anticipated increase in demand for high-quality energy efficiency services will create particular opportunities for firms with past performance-based project experience while attracting new firms to attempt performance-based projects.	Pending	NYSERDA's 2013 marketing effort will reflect a research-based approach to identifying and highlighting relevant value messages that increase levels of engagement and interest in NYSERDA performance-based programs among service providers. Among the prioritized list of ESCOs developed by program staff, some have participated in the program in the past, but are currently not active within EFP and some have never participated. An effort has begun to engage these ESCOs and grow the service provider market.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	Adopt a targeted, two-fold approach to increasing performance-based energy savings. (1) Seek organic growth opportunities by marketing additional performance-based projects to facility owners who have previously completed such projects (most of which involved only a single energy-use system). (2) Capture a portion of small-scale projects being planned by non-participants and convert them to larger, performance-based projects. This will enable EFP staff to capitalize on that portion of the market with at least some awareness of and willingness to pay for efficiency upgrades.	Pending	The C&I integrated marketing program is designed to increase participation in NYSERDA's core Commercial & Industrial (C&I) programs (including EFP) through a multi media, targeted approach among participating and prospect C&I audiences. For EFP specific efforts, promoting the performance-based opportunities are the priority. Project data has been mined to identify past participants who could benefit from a performance-based approach to energy savings. Marketing efforts are also underway to target specific verticals to increase program participation in subsectors that demonstrate great potential in terms of energy savings through performance-based projects. In addition, Program staff has begun implementing a key accounts approach to the market, in order to develop long-term relationships with large customers, which will help identify potential project opportunities. EFP's goal is to integrate with customers' long-term planning for energy efficiency and bundle multi-year capital improvements. As part of the key accounts approach, Program staff works with existing customers to identify additional potential project opportunities, focusing on system improvements. Program staff will continue to work with participants to ensure pre-qualified projects are converted into performance-based projects where possible.
	Raise awareness of EFP's potential role in implementing opportunities identified through PlanNYC benchmarking efforts. Encourage end users to implement larger, performance-based projects that they would not otherwise pursue without NYSERDA's independent review or validation of project designs. In addition, continue to market the performance-based component's contributions to addressing the persistent cost and financial barriers facing end users. Specifically, increase the focus on the value of measurement	Implemented	As a core Program element and a key value message identified through customer and prospect end user research, M&V is reinforced throughout the marketing program and incorporated into the overarching integrated campaign platform . The existing platform positions NYSERDA as the knowledgeable partner who helps customers achieve "measurable results" for their energy efficiency measures. A component of the key accounts approach is the identification of additional project opportunities and expansion of project scope through enhanced interactions with large customers. Program staff and contractors often emphasize the benefits of M&V to customers. EFP has done a significant amount of M&V over the past 10 to 15 years. EFP's experience helps implement M&V cost-effectively, improves program and

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	and verification (M&V) in enhancing the quality and lowering the performance risk of large, whole-system or whole-building efficiency improvement projects.		project results and helps ensure that customer returns on investment are achieved.
	Market the success of past performance-based projects, as well as the improvements downstate facilities are undertaking to comply with PlaNYC requirements, to upstate end-users as evidence of performance-based projects' contribution to deeper energy and cost savings.	Implemented	The integrated marketing plan delivers past and potential customers a variety of messages that not only educate them about NYSERDA's services but reinforce NYSERDA's credibility and expertise through the dissemination of customer-specific project case studies. Case studies are customized and promoted by region and by vertical industry sector to optimize relevance by audience. Executed in video and downloadable written formats, case studies are distributed statewide through events and via the online advertising and targeted email efforts to help accelerate the participation decision-making process.
Research Into Action, Process Evaluation, February 2012	Focus on providing incentive application status updates to service providers most affected by processing delays. Consider providing automated project status updates to free up program staff resources for other purposes. Support service providers by publicizing the typical length of time for each stage of NYSERDA review.	Pending	NYSERDA is currently integrating its database systems and revising its business process. The new system is planned to include enhanced workflow and applicant communications that will allow service providers access to project status and automate communications at key business process tollgates. To better manage the expectations of its customers and service providers, NYSERDA is also developing the following: - A description of the EFP verification process at each toll gate: Energy Analysis Review, which includes the pre-installation inspection, Project Installation Review and Measurement and Verification - A one page pictorial summary of the verification process that includes a description of deliverables and an estimated timeframe for each toll gate review These one-page descriptions will be reviewed by Marketing, attached to each contract, handed out at kick-off meetings and posted on the Existing Facilities website.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	Improve program branding through marketing collateral, descriptive information, and application forms that clearly convey NYSERDA's leadership in energy efficiency and standards for assuring that project savings meet expectations. Continue to offer assistance with project development to end users and service providers.	Implemented	NYSERDA's leadership in energy efficiency, technical expertise and assurances for quality standards, as indicated through statewide quantitative research, are core foundational messages and are incorporated into all marketing communications materials/activities.The EFP is expanding its project development assistance by adding outreach contractor resources through a new RFP and developing a team of Key Account Managers assigned to specific end users and service providers.

Table 4-2. Pending Recommendations: New Construction Program

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
Megdal & Associates – Lead by Cx Associates, New Construction Program, Impact Evaluation Report for Program Years 2007 – 2008, September 2012	For projects and measures with large savings, consider including more rigorous commissioning and validation protocols as well as independent third-party M&V as part of Program delivery.	Pending (Investigate options for expanded M&V and/or retro/Cx incentives) Implemented (Engage the impact evaluation contractor in technical assistance (TA) discussions regarding energy modeling baselines)	Commissioning is currently required for all projects with incentives of $100,000 or greater. Customers may choose the commissioning provider of their choice. Within the context of current budgets and TRC requirements, NCP will investigate options for expanded M&V and/or retro-commissioning incentives as part of program delivery. For larger projects NCP is reviewing the possibility of engaging the impact evaluation contractor in technical assistance discussions regarding energy modeling baselines.
	Institute a mechanism for using the code space-by-space lighting power density (LPD) as the baseline for lighting incentives in new construction. Require documentation of space-by-space installed lighting power density and provide incentives for lighting systems that are more efficient than code rather than providing equipment-based incentives.	Implemented	Existing NCP protocol is to require LPD space-by-space calculations for custom and whole building projects. Existing pre-qualified (PQ) lighting analysis includes NY Technical Manual protocols for determining energy savings.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	Consider enabling program staff to use custom hours of operation for new construction lighting projects, or provide deemed hours of operation for various business types.		TAs currently work with customers to customize hours of operation for each project, based upon predicted building usage. For PQ projects, NY Technical Manual hours of operation are used.
	Develop a clear variable frequency drive (VFD) analysis protocol that includes a conservative estimate of the losses associated with VFDs. Losses of approximately 3% for VFDs are typically used in energy efficiency analysis.	Implemented	The current custom measure tool requires the TA to input data from the VFD specification sheet, including losses. The upcoming revisions to the PQ equipment program and the current PQ calculators are based on the NY Technical Manual, which includes standard unit kWh and kW savings taken from NEEP data forwarded by National Grid (Chan, T. *Formulation of a Prescriptive Incentive for the VFD and Motors and VFD Impact Tables at NSTAR*. June 2010). NCP will confirm that losses are addressed in the NY Technical Manual information, and are being recorded by the TAs from the VFD spec sheets.
	Ensure that prescriptive VFD measures are not allowed for new construction projects due to advances in building code.	Implemented	NCP will modify Program guidelines to delete VFDs from the PQ incentive list.
	Modify the project analysis requirements so that both the customer peak and the New York Independent System Operator (NYISO) peak demand impacts are quantified.	Implemented	NCP will work with OPCs, TAs and Coordinators to include the NYISO peak in the TA calculations, and NCP will establish a field in the Buildings Portal database to capture the NYISO peak for reporting purposes. Customer kW reduction incentives will continue to be based upon customer peak demand.
	Accelerate the NCP evaluation cycle so that the evaluations are occurring within two years of project completion.	Pending	Evaluation staff will consider this recommendation when updating plans for the next evaluation cycle.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	The Impact Evaluation Team requests NYSERDA's support in enabling the evaluators to work with building management to obtain access to residential units and resident utility releases. This support will increase the effectiveness of the outreach effort, control evaluation costs, and reduce the elapsed time for obtaining this information.	Pending	Review of recent program participants indicates that multi-family projects continue to participate in the NCP. As the next round of IE proceeds the team will work to address this issue.
	Complete a short study of program changes in the NCP over the past five years and the potential of those changes to affect the project RRs over time. This study should integrate the findings of this evaluation with the findings regarding program delivery and design in the subsequent years.	Pending	This recommendation assumed that there would be more of a gap between impact evaluations. The 2012-13 evaluation has been scheduled to perform direct evaluation on the program changes that have been implemented since 2008.
	Investigate and develop more reliable methods for the estimation of participant OSO. Surveys used to gather data for SO estimation need to include SO-respondent quotas wherever possible. Additional validity checks and follow-up verification studies are needed, particularly for factors that act as multipliers within the calculation formulas. Significantly more resources will be needed to conduct this level of research into SO.	Pending	The Impact Evaluation Team has included research methods into the causal mechanisms for spillover and plan review based verification of outside and nonparticipant spillover. The resources committed to spillover investigation for the upcoming, 2012-2013, evaluation are significantly higher in comparison to the prior evaluation. The new detailed evaluation plan is currently under development.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	Consider conducting a market effects study for the NCP and NYSERDA's overall impact on the commercial, industrial and institutional new constructions markets in New York. The market effects methods need to attempt to include NCP impacts on market structure and operation that may not be directly identifiable by most market participants but influences the operation of the market since NCP interventions. If SO estimation still occurs or is used, future evaluations must ensure that there is not a double counting or overestimation between market effects and SO. Significantly more resources will be needed to conduct an evaluation that provides reliable and rigorous estimates of market effects.	Pending	The detailed evaluation plan currently under development includes a possible market effects study in 2015. When the 2012-2013 spillover research is complete, the methods and results will be reviewed by DPS, NYSERDA, and the Impact Evaluation Team to determine whether additional research into market effects is needed or whether the market effects have been captured using the new spillover methods.
RIA, New Construction Program (NCP) Process Evaluation, December 2011	The recent New York Energy Code Compliance Study suggests that the state establish a new construction database in which all permit applications would be logged. Such a database would be an excellent resource for future new construction evaluations. Obtaining clean non-participant population data for this evaluation was extremely onerous.	Rejected	The recommendation is beyond the control of the NCP. Further, The State has not established such a database, so there is no recommendation to implement.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	While NCP has made substantial progress developing an advanced analysis tool to foster deeper, cost-effective savings for smaller buildings, further steps are needed to finalize and implement the package. Completing this analysis tool should be a high priority, given the surge in smaller building applicants.	Pending	The program continues to work with NCP contractors to incorporate the New Buildings Institute Core Performance Guide (CPG) into the program. The current activity regarding CPG is finalizing an incremental cost process by an NCP contractor, and testing of TRC protocol with CPG outputs. This has proven to be challenging work and has continued since the previous report.

Table 4-3. Pending Recommendations: FlexTech Program

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
Megdal & Associates, Impact Evaluation, March 2012	Update NYSERDA's FlexTech study database system (buildings portal) to: a. Allow energy savings recommendation entries for more than one fuel type b. Incorporate premise identifiers	a. Implemented b. Implemented	a. Database changes will be made. b. NYSERDA will track utility account numbers for each project.

Table 4-4. Pending Recommendations: Industrial and Process Efficiency Program

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
Megdal & Associates –Lead by ERS Industrial and Process Efficiency Program: Impact Evaluation Report for Program Years 2009 – 2010, August-September 2012	Institute a longer Program M&V period on the Program's larger energy savers.	Implemented	NYSERDA agrees. However, marketplace feedback is that competing utility programs require far less proof of performance. Customers are opting for utility programs which pay higher incentives, use more ratepayer dollars per unit energy savings delivered, and require less proof of performance.
	Systematically collect supporting spreadsheets, models and data from technical assistance providers.	Implemented	Program staff will gather back-up data for the projects selected for Impact Evaluation before the data is sent to the evaluation contractor.
	Apply a common algorithm for tracking demand savings.	Pending	The Program will work with the marketplace to better report demand savings by the currently prescribed DPS methodology.
	Incorporate heating, ventilation, and air conditioning interactive effects into lighting analysis where significant impacts are likely and report these and other secondary fuel impacts.	Pending	NYSERDA agrees with this recommendation.
	Create and Track Premise IDs.	Implemented	The Impact Evaluation Contractor clarified that this recommendation refers to utility account numbers. NYSERDA will track utility account numbers for each project.
	Increase Impact Evaluation Team involvement in pre-installation project review.	Implemented	NYSERDA agrees. However, marketplace feedback is that competing utility programs require far less proof of performance. Customers are opting for utility programs which pay higher incentives, use more ratepayer dollars per unit energy savings delivered, and require less proof of performance.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	Include a mechanism to monitor changes in program reported savings – Once a project's savings are reported, they are eligible for evaluation. Some participants complete large projects in multiple stages that span many years. The evaluation team recommends that each phase of the project that has a unique completion date have a unique tracking record.	Rejected	A goal of IPE is to maximize projects with the largest opportunities. As part of this strategy, the Program works with customers' plans and timing, including single projects with multi-stage installation dates.. Also, for appropriate coordination of financial and impact reporting, projects should not be disaggregated.
	Use 0.95 as the prospective realization rate for electric energy savings and 1.08 for demand savings.	Rejected	Current DPS Scorecard guidance is to use 1.0.
	Use 0.90 as the prospective NTGR – Evaluators expect SO to decline as more of the Program's savings as associated with large unique projects that do not lend themselves to technology transfer.	Implemented	Current DPS Scorecard guidance is to use 0.90. However, Program is concerned about under-reporting. The evaluation reported a NTGR of 1.04.
	Conduct in-depth primary research on participant SO.	Pending	Primary research on spillover is planned for Phase 2 of this evaluation. In the event that responses indicate significant spillover, the evaluation will use enhanced techniques to validate responses.
	Reassess NEIs in the next evaluation.	Pending	NYSERDA plans to continue with the assessment of NEIs, similar to the Phase 1 study.
RIA, Industry & Process Efficiency (IPE) Process Evaluation, November 2011	The program would benefit from database and application processing upgrades needed for staff to improve project management, including implementing electronic signatures and better integration of NEIS and Buildings Portal.	Pending	NYSERDA has created a new Performance Management and Evaluation Systems (PMES) department. Also, the Energy Efficiency Services (EES) Operations Unit continues to address changes needed to the multiple database process currently in place. PMES and EES Operations are integrating staffing and responsibilities to optimize reporting, database, and processing upgrades.

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	The program team should continue to refine the dashboard in coordination with NYSERDA's Operations Group.	Implemented	Dashboard upgrades will be submitted as requested refinements.
	The program would benefit from additional Technical Reviewer support for Western NY and data centers throughout the State.	Pending	NYSERDA will issue a new RFP for Technical Review providers to support EEPSII NYSERDA programs. Contractors will be selected later this year. Feedback from this evaluation will be considered in the TEP process and contract execution.
	The program would benefit from additional Outreach Contractor outreach to data centers, to consulting engineers that serve targeted industrial submarkets, including data centers and compressed air users, and to industrial customers in Western NY (the greater Buffalo area, in particular). Across the State, outreach contractors should increase leveraging of economic development organizations to assist with targeted outreach.	Implemented	NYSERDA issued a new RFP for Outreach providers to support EEPSII NYSERDA programs. Contractors have been selected with feedback from this evaluation during the TEP process and contract execution.
	Program staff could take steps to more strongly brand Industrial and Process Efficiency as a one-stop shop that leverages a cohesive team of people to assist customers from opportunity identification and justification, to verification and investment, in the next cost-saving project.	Implemented	NYSERDA branding is a key part of the ongoing Integrated Marketing campaign. This multi-tiered marketing program delivers general C&I and program specific content through a combination of media including print , online and direct response tactics (email and direct mail) to key participating and prospect C&I audiences.
	To facilitate coordinated outreach between program staff and outreach contractors and reduce duplicative or non-coordinated outreach to individual customers, the process evaluation team recommends that program staff use salesforce.com more consistently.	Implemented	PMES staff is currently implementing a NYSERDA-wide Customer Relation Management (CRM) tool. SalesForce.com has been adopted.

Table 4-5. Pending Recommendations: New York ENERGY STAR Homes Program

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
Megdal and Associates, New York ENERGY STAR Homes Impact Evaluation, September 2012	Establish program threshold requirements to account for changing energy codes; the Impact Evaluation Team understands that NYSERDA has already moved to ENERGY STAR v2.5 and 3.0 and added prescriptive requirements.	Implemented	Program has modified minimum Program thresholds in response to changes that have occurred in the 2010 ECCCNYS.
	Review the method used for estimating savings from heating, water heating, and cooling measures. It appears that the current method does not correctly account for baselines that vary by climate zone and also understates heating savings while dramatically overstating water-heating savings. An alternative approach used in other states is to develop a user-defined reference home (UDRH) reflecting baseline practices and estimate savings from the REM/*Rate* results.	Implemented	Effective January 2012, the Program calculates savings based on the delta between a 2010 ECCCNYS-compliant, climate zone-specific UDRH and a rated home, consistent with the recommendation. The Program implementation contractor has developed a new savings estimation methodology and savings are "trued up" upon receipt of the REM/Rate file for the subject home or unit. The algorithms which led to the overstating are no longer the basis for program reported savings.
	Consider the establishment of a separate development track for projects that are required to meet higher baseline standards. Some developers may be working under mandates to build toward certain level of efficiency (e.g. EPA ENERGY STAR) to comply with federal directives or satisfy funding requirements set by certain lenders and/or government agencies (e.g. HUD, NY state-housing agencies). This separate track may utilize a baseline (UDRH) that is different than the UDRH used for more	Pending	The Program will consider this recommendation and will conduct a review of NYESH projects submitted to the Program that may meet a higher than code minimum threshold requirement.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	traditional projects. This track may also have different program incentive structure that encourages certain end uses or certain savings goals over the baseline for this track.		
	Consider whether changes need to be made to the process for installing screw-in CFLs as a program measure. The responses to the homeowner telephone survey indicated that hardwired ENERGY STAR light fixtures installed during construction remained in place.[1] However, over a third of the homeowners with reported program savings for screw-in CFLs stated that there were no screw-in CFL bulbs in the home when they moved in.[2] All of these respondents were the original owners of the new home. This may imply that the screw-in CFLs were removed prior to the homeowners' residency in the new homes.	Pending	Program will continue to monitor compliance of the installation of CFLs through the program QA proceses. Program staff emphasizes that the telephone survey of homeowners was fielded approximately four years after the move-in date and the ability of the homeowners to self report and accurately recall move-in conditions may impact the results of this study.

[1] Most hardwired ENERGY STAR labeled light fixtures (not plug in lamps) require the use of a pin-based compact fluorescent light bulbs (CFL) so that the fixture cannot be outfitted with an incandescent light bulb which has a screw-base.

[2] Screw-in CFLs can be installed in any light fixture or lamp that accepts standard incandescent bulbs as long as it is compatible with the lighting control (i.e. dimmer switches).

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
	Establish one method of tracking and recording those deemed savings that overlap with energy-modeled savings (e.g. ECM motors, central air conditioning, refrigerators and lighting). This can be addressed from within the developed UDRH.	Implemented	For central air conditioning, the Program captures deemed savings in the CRIS database; any additional savings are derived from the REM/Rate file are clearly indicated. Lighting and other appliance-related savings are captured through measure counts and deemed savings, and tracked in CRIS database.
	Review all program databases to ensure the program data is obtained and maintained in a way that allows for accurate evaluations, including reliable contact information to the extent possible, ways to link builders with projects, former builders and contact information for all projects. The Program should maintain a database of the REM/*Rate* results or develop a systematic procedure for obtaining these datasets easily or develop a procedure to obtain requested REM/*Rate* results and all related program data.	Implemented	Program staff and implementation contractor continuously review, update or improve database capabilities and functionalities. An underlying capability the CRIS database is the ability to include accurate Program participant contact information and linking of participating builders to projects. The Program stores REM/Rate files for projects transmitted for payment after January 1, 2012, but it does not maintain a database of REM/Rate results. The Program maintains some contact information for formerly participating builders but does not actively update this information.

Table 4-6. Pending Recommendations: EmPower New York Program

Source of Recommendation (Contractor, Report Title, Date)	**Recommendation**	**Status** (Implemented, Pending or Rejected)	**Program Implementer Response to Recommendation and Adoption Decision Rationale**
Nexant, EmPower M&V, April 2007	Devise a methodology to automate the electronictransfer of results from the EmPower New York Calculator to the EmPower New York database.	Pending	The Program will explore adoption of integrated management software.
Megdal and Associates, EmPower Impact Evaluation, April 2012	Methods for estimating savings for envelope measures (both natural gas and electric) and replacement refrigerators should be evaluated.	Pending	July 2007 changes to improve the accuracy of EmPower savings estimates will have a greater impact in the post-evaluation period in the areas of: (1) Attic insulation: increased the estimated R-value of pre-existing fiberglass insulation in poor condition; (2) Wall insulation: lowered savings estimates to account for wall studs, window framing, and estimated 4% voids; (3) EmPower initiated a system for flagging and correcting high estimated savings as appropriate. In 2010, the program discontinued the use of fiberglass to insulate rim joists in favor of spray foam for both air leakage reduction and insulation. In 2011, the program initiated a practice of core sampling wall insulation to ensure appropriate density. Moving forward, EmPower plans to initiate: • Introduction of an advanced air sealing protocol and system for calculating savings based on air leakage reduction. Contractor training is in progress. Adjustments to energy use thresholds for refrigerator and freezer replacements.
	Review the fields in the database and data collection processes to assess whether additional information, such as the presence of working air conditioning, could be added to the tracking system. Review the coding of measure descriptions to make it easier to identify fuel switching measures and differentiate attic and wall insulation.	Pending	EmPower will consider adding data fields to assist future evaluations, including: • Secondary heating systems • Separate fields for attic and wall insulation savings • Air conditioning The program has enhanced the process of data checking by the Program Implementer.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	Improve error checking methods and frequency to correct tracking system errors in a timely manner.		
	Consider including indicators of Non-Energy Benefits into future evaluation efforts, a lower cost option than full monetization studies, to aid policy makers' ability to have a more complete viewpoint when decisions are being made regarding low income programs. Monitor ongoing efforts that seek to quantify NEBs so these may be referenced within impact evaluations. This type of referral and indicators of the importance of NEBs to NYSERDA's participants may offer a low cost approach to ensure a socially responsible perspective is not lost in the reporting of savings estimates from sophisticated quantitative impact evaluations.	Pending	NYSERDA will attempt to address more non-energy impacts in future evaluations to the extent possible.
	Work with utilities to ensure that billing data is complete, useful and properly interpreted.	Implemented	Great progress has been made in working with utilities on billing data questions since the time data were requested to conduct this study. NYSERDA is currently working with DPS and the utilities to determine whether an existing system for exchanging data between utilities and energy service companies can be used to more readily provide access to utility data needed by NYSERDA in the future. Continued progress is being made between NYSERDA and the utilities in ensuring that NYSERDA reccieves quality data for evaluations.
	Although the Net-To-Gross component of the evaluation may not need to be conducted with every evaluation cycle, continuing to measure net effects for EmPower in the future is warranted.	Pending	NYSERDA will discuss the merits of continuing to assess NTG in future EmPower evaluations with DPS. Since most low-income evaluations do not address NTG, and this study found the NTG to be nearly a 1.0, NYSERDA will weigh the benefits and costs of collecting such information in future studies.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	Continue to use survey instruments to inform the billing analysis, assess non-energy benefits and NTG factors	Pending	This recommendation will be considered when designing the next evaluation

Table 4-7. Pending Recommendations: Workforce Development Program

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
GDS Associates, Inc. Workforce Development Program: Market Characterization and Assessment Evaluation, September 2012	Consider fostering relationships between employers and training organizations, and encourage training organizations to focus more on offering internships and apprenticeships as part of their training curriculum. According to employers, internships are a valuable source of experience and are frequently used as a mechanism to hire through for filling permanent full time positions. Encouraging internship programs will enhance training opportunities, and increase hiring opportunities. Include developing mentoring opportunities where those employees in the workforce that are skilled and nearing retirement, share their knowledge with trainees and new/younger employees just entering the energy efficiency field.	Pending	NYSERDA is doing this now under Greem Jobs-Green New York (GJGNY) and soon under its Technology & Market Development (T&MD) Program. Workforce Development T&MD activities were approved in the December 2012 PSC Order. As an important component, internships and on-the-job training will be a focus area under the new Operating Plan. The workforce team seeks to serve new or transitioning workers in gaining hands-on, experiential learning, designed to improve job placement rates of trained individuals. Under future T&MD solicitations, preference will be given to proposers who have demonstrated expereince in working with veteran populations and have incorporated a plan to train returning veterans in the clean energy sector in their proposal for funding.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
Research Into Action, Process Evaluation, June 2012	Consider expanding outreach to entry-level and mid-to high-level training organizations throughout the State that are not currently Training Partners within NYSERDA's Workforce Development Program. Use county-specific information on targeted hard-to-reach/underserved populations to help guide and prioritize which organizations and geographic regions of the State to focus outreach efforts on.	Pending	Program staff agree that the Program should target new training partners but need to see where the demand is related to energy efficiency work with the goal of training towards internships with businesses, etc. Future Career Pathways initiatives will seek to build upon infrastructure investments made under EEPSI including hands-on training equipment and lab space, investments in curriculum development and investments in train-the-trainer initiatives. Emphasis will be placed on geographic distribution of programs to ensure access to training.
	NYSERDA should work with Career Pathways (CP) training partners to clearly identify and define the "career path" that each course fits into, to ensure that trainers and trainees understand how the course fits into that career path, and to incorporate consistent and comprehensive job-search skill training and post-training support into their curricula.	Pending	In future solicitations and CP contracts, NYSERDA will ask proposers/partners to better demonstrate to students how the course fits into a career pathway and to provide available information on training and certifications. NYSERDA will work with NYSDOL to provide information to CP students on assistance related to job search skills, employment opportunities and post-training support available through NYSDOL and the One-Stop Centers.
	NYSERDA should work with its training partners to identify Technical Training (TT) courses (e.g., *eQUEST* modeling) that should be taught at beginning and intermediate-advanced levels.	Pending	In future training solicitations, NYSERDA will require its training partners to perform more detailed trainee screening to better assess skills prior to technical training and better identify prerequisites to technical training, (e.g., The eQUEST modeling training exists for beginning, intermediate, advanced-level, and online training, yet the provider can better assess and screen participants prior to enrollment to direct the student to the appropriate level training).
	NYSERDA should work with its training partners to ensure that all trainers be given training in evidence-based adult education techniques	Pending	NYSERDA will look for ways to educate training providers in evidence-based learning techniques as necessary. Instructor experience is evaluated when workforce training proposals are reviewed. Under RFP 2664, Clean Energy Training for High School Stuednts, applicants are reqired to provide proof of evidence-based education techniques.

Table 4-8. Pending Recommendations: Agriculture Disaster Program

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
Research Into Action Process Evaluation Team, Lead Investigators, October 2012	Direct outreach was important in the ADP and will be important in future emergency programs. Providing direct, face-to-face outreach is important to clarify any confusion affected farmers may have and to engage potential participants, especially under disaster circumstances.	Implemented	Direct outreach is part of any NYSERDA program. This recommendation will be filed for reference for any future emergency assistance programs.

Table 4-9. Pending Recommendations: Green Jobs-Green New York Small Homes

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
NMR Group, Inc., Process Evaluation and Market Characterization and Assessment, September 2012	Ensure that the marketing message to homeowners emphasizes the program benefits of saving on energy bills or saving energy. In order to support this effort, NYSERDA could provide sample data on potential net savings, in terms of financing costs and monthly savings on energy costs for different types of homes. Design interactive and educational tools to assist and engage the homeowner in understanding the potential efficiencies is another approach that could be taken.	Pending	Program staff are considering the benefits and costs of developing an interactive online energy audit tool for homeowners to learn about energy efficiency and the Home Performance with ENERGY STAR Program.
	Improve the tracking and presentation of HPwES contractor information to customers. Explore incorporating additional software functionality which would allow the NYSERDA website to list or sort contractors by distance from home and languages spoken. Examples of other search criteria that NYSERDA could consider include the number of HPwES projects completed, types of measures implemented, any quality assurance and	Pending	CBOs developed "vetted" contractor lists that identified contractors willing to work in their region, along with other pertinent information regarding languages proficiencies, BPI certifications held by staff, additional certifications, and specialties of the company. Program staff is developing a customer satisfaction survey that would be combined with contractor profile information to offer customers better guidance on selection of a contractor.

Source of Recommendation (Contractor, Report Title, Date)	Recommendation	Status (Implemented, Pending or Rejected)	Program Implementer Response to Recommendation and Adoption Decision Rationale
	quality control information that is not confidential, and customer satisfaction rating. For customers lacking web access, NYSERDA could provide such information over the phone or by mail.[3]		
	Continue to enhance program data collection, tracking, and cross-contractor integration.	Pending	A software tool is being developed to more efficiently and effectively track projects from customer intake through completion. This tool will also provide enhanced reporting capabilities.
	Consider offering additional seminars and webinars to educate HPwES contractors about the GJGNY low-interest loans. NYSERDA could also provide HPwES contractors with more guidance and better tools to sell the loan and help their customers through the application process. Align these approaches with the CBO effort to educate customers about the loans as well. Although EFS offers customer service and pre-screening, consider using an independent firm, such as EFS, to discuss GJGNY financing information with participants directly.	Pending	Program staff plan to host a webinar dedicated to financing. In addition, training for call center staff is planned. EFS is also available to discuss GJGNY financing information with participants directly. The Building Performance Contractors Association is delivering a series of contractor training sessions across the state to answer contractor questions when it can and to offer feedback to NYSERDA. The CBOs are now represented at the monthly meetings sponsored by Efficiency First to bring NYSERDA and contractors together to seek solutions to barriers to increased adoption of energy efficiency.
	Develop marketing and educational materials that promote the benefits of early replacement of energy consuming equipment. Educate HPwES contractors on how best to offer the consumer guidance about the benefits of early replacement.	Pending	This recommendation requires information to support the benefits of early replacement of equipment.

[3] CBOs are undertaking "aggregation," bringing a collection of eligible homes into the program using the same contractor or contractor team, which should also help to address to address the issue of finding and selecting contractors:

http://www.nyserda.ny.gov/Page-Sections/Green-Jobs-Green-New-York-Planning/Advisory-Council/~/media/Files/EDPPP/Planning/GJGNY/Advisory%20Council%20Meetings/2010-05-26_GJGNY-draft-aggregation-model.ashx

5 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 2012.

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 can be found on the NYSERDA website. Summaries appear within this appendix in the following order:

1. Existing Facilities Impact Evaluation, Megdal and Associates, September 2012.
2. Home Performance with ENERGY STAR® Impact Evaluation, Megdal and Associates, September 2012.

Existing Facilities Program: Impact Evaluation Summary

Evaluation Report Prepared by: Megdal & Associates Impact Evaluation Team

Energy & Resource Solutions, Lead Investigators, September 2012

Program Summary

NYSERDA's Existing Facilities Program ("the Program") promotes energy efficiency and demand management in existing commercial and industrial facilities by providing incentives for installation of energy efficiency measures that save electricity and peak load management measures that temporarily reduce electric demand. The Program offers energy efficiency project applicants either prequalified or performance-based incentives. Performance-based incentives are for customers or third-party applicants such as energy service companies working on large-scale projects.

The Program also offers incentives to customers that install enabling technology and enroll in a New York Independent System Operator (NYISO) demand response program. Incentives can fund installation of either the enabling technology or the interval meters required to participate in the NYISO programs.

NYSERDA formed the Program in 2008 by consolidating two earlier NYSERDA programs: the Enhanced Commercial and Industrial Performance Program (ECIPP) and the Peak Load Management Program (PLMP). ECIPP funded energy efficiency projects and was itself the product of the 2006 merger of the small commercial-oriented Smart Equipment Choices Program and the performance-based, energy services company-oriented Commercial and Industrial Performance Program.

Evaluation Objectives and Key Findings

This evaluation covers all projects completed as part of the Program and its component programs between January 1, 2006 and September 30, 2009.[1] During this time period all projects received incentives through the System Benefits Charge III funding mechanism.

The primary purpose of this impact evaluation is to establish rigorous and defensible estimates of the electric energy and peak demand savings that can be attributed to the Existing Facilities Program. The

[1] Does not include industrial process efficiency projects which were formerly part of the Program until NYSERDA commenced a distinct industrial program in 2009.

Impact Evaluation Team independently evaluated the savings that program participants are realizing for energy efficiency and demand response projects, and assessed the influence of the program on participants' decisions to complete the funded and other projects. In addition, the Impact Evaluation Team assessed the long-term persistence for demand response (DR) projects from 2001 through 2005. Evaluators assessed energy efficiency projects separately from demand response projects.

Table 1. Net Savings Summary -- Projects Completed 2007 - 2009

Parameter	Energy Efficiency Programs		Demand Response Program
	Electric Energy (MWh/yr)	Electric Demand (MW)	Temporary Demand Response (profile baseline basis) (MW)
Program Reported Savings	577,787	116 MW	165
Realization Rate (RR)	1.03	0.81	0.66
Evaluated Gross Savings	595,121	94	109
Net-to-Gross Ratio (NTGR)	1.28	1.28	0.78
Evaluated Net Savings	761,755	120	85

Evaluators assessed energy efficiency projects separately from demand response projects.

Evaluated gross savings are the program reported savings multiplied by the RR results, and the evaluated gross savings multiplied by the NTGR result in the evaluated net savings.

After assessing three possible baselines[2] for demand response projects, the Impact Evaluation Team believes that using the profile-based baseline is the best approach for estimating actual customer response and uses it as the basis for savings calculations.

[2] Each of the three methods compares demand during events and tests with a baseline demand. The three methods define the baseline demand differently as follows: *Average peak monthly demand (APMD)* – Defines baseline as the prior year's average maximum demand during June, July, August, and September. The New York Independent System Operator (NYISO) used this method prior to 2011. *Average coincident load (ACL)* – Defines baseline as the average of the 20 highest load hours from the prior summer that occurred during specified 40 peak-hour periods for the 11 New York load zones. NYISO adopted this method in 2011. *Profile* – Defines baseline by a 24-hour baseline daily profile built using interval data from the five highest days within the preceding ten "eligible" days preceding the test/event. The method also incorporates a morning adjustment factor to account for weather variation and characteristic facility features.

Table 2. Net Savings Summary -- Demand Response Program

Parameter	Curtailed load (APMD baseline)[1] (MW)	Curtailed load (profile baseline)[1] (MW)
Program Reported Savings	165	165
Realization Rate (RR)	0.90	0.66a
Evaluated Gross Savings	149	109
Net-to-Gross Ratio (NTGR)	0.78	0.78
Net Impact, long-term expected	116	85

[1]"APMD" measures performance against internal goals. "Profile" baseline best indicates actual demand response at the meter.

a Customers' actual change in behavior on DR event/test days results in demand reduction of about 66% of NYSERDA's tracked DR kW.

Measure Persistence: The Impact Evaluation Team assessed the long-term persistence for demand response projects from 2001 through 2005. While this research scope was not sufficiently rigorous to be considered a formal measure life study,[3] the telephone survey response data gave a reasonable indication of DR measure persistence. Based on the survey results, evaluators estimate DR measure savings persist between 7.5 and 8.5 years, and that eight years is a reasonable estimate for long-term retention of DR measures.

Detailed findings: Realization Rate and Net-To-Gross

Realization Rate: For Energy Efficiency, the evaluation essentially validated the Program's overall estimates of electric energy savings. The realization rate, the ratio of the evaluated savings to program reported savings, was 1.03. The relative precision is 9.8% at 90% confidence for the energy savings realization rate. The demand savings realization rate associated with efficiency projects was somewhat lower at 0.81. The Demand Response realization rate is 0.66. The primary reason for the low demand response realization rate is that NYSERDA tracked demand savings for the Program DR projects completed between 2006 and 2009 using the average peak monthly demand (APMD) baseline basis instead of a profile basis, which is recommended by evaluators as the best approach for assessing actual customer demand reduction.

Net-to-Gross: A NTG ratio greater than 1.0 indicates that the program spillover outweighs free ridership, and the program achieved more savings than were claimed based on direct activity. Free ridership (FR)

[3] There was neither engineering analysis of performance degradation nor assessment of technology mean time to failure, for example.

measures the likelihood the participant would have implemented the measure without the Program, and spillover (SO) is the degree to which the customers' participation in the Existing Facilities Program influenced them to take additional actions to save energy. "Inside" SO (ISO) occurs when energy saving actions are taken at the same project site, but are not done as part of the Program. "Outside" SO (OSO) occurs when energy-saving actions are taken at other sites that are not part of their program participation. "Non-participant" spillover (NPSO) captures some of the larger market effects beyond those customers or actors directly participating in the program.

Attribution analysis assessed free ridership and spillover rates, which are combined to produce a net-to-gross ratio that is applied to evaluated gross savings to produce evaluated net savings. Evaluators considered efficiency and demand response attribution separately. Demand response gross savings were evaluated based on site-level metered data; therefore any SO occurring on-site is already captured in the evaluated gross savings. ISO was assigned a value of zero to avoid double counting savings. Table 3 summarizes the results.

Table 3. Net-to-Gross: Free Ridership and Spillover Estimates

Attribution Variable	Energy Efficiency	Demand Response
Free ridership (FR)	0.31	0.41
Inside spillover (ISO)	0.12	0.00
Outside spillover (OSO)[1]	0.32	0.04
Non-participant spillover (NPSO)[2]	0.15	0.15
Calculation (NTGR = 1 – FR + ISO + OSO + NPSO)	= 1 – 0.31 + 0.12 + 0.32 + 0.15	= 1 – 0.41 + 0.00 + 0.04 + 0.15
Net-to-gross ratio (NTGR)	1.28	0.78

[1] In response to the SO section of the vendor questionnaire, of 21 vendors claiming spillover, 15 vendors answered that spillover estimates could be derived for them. Of these 15 respondents, seven had OSO savings per project that were less than in the Program project, five had savings about the same, and three had savings in their OSO projects that were greater than their Program project. While acknowledging limitations, the Impact team believes that the relatively high proportion of positive OSO responses combined with analysts' tempered treatment of a vendor OSO outlier savings estimates produce sufficiently reliable results for using an OSO of 32% in this evaluation.

[2] EFP can easily overlap with the influence of NYSERDA's other major C/I retrofit programs. An estimate of 15% C/I NPSO used for this evaluations was produced by a 2007 evaluation: NYSERDA *Commercial and Industrial Market Effects Evaluation, Final Report*, submitted by Summit Blue Consulting LLC and Quantec, LLC., October 2007.

Evaluation Methods and Sampling

The evaluation scope included four research tasks:

(1) Energy efficiency projects -- engineering site-based measurement and verification (M&V) of savings for a sample of 92 efficiency projects to establish realization rates,

(2) Demand response -- review of interval meter data to conduct realization rate analysis for a sample of 88 peak load management participants that responded to demand reduction calls issued by the New York Independent System Operator,

(3) NTG evaluation -- on-site and telephone surveys of 47 participating building owners and a telephone survey of 56 vendors associated with projects at 146 sites to estimate NTG components of free ridership and participant inside and outside spillover effects, and

(4) Retention study of demand response projects -- assessment of the long-term persistence of demand response measures for a sample of 51 customers using telephone survey data to determine who is still enrolled and participating in the NYISO Installed Capacity Special Case Resources (ICAP SCR) () and Con Edison Demand Response Programs.

Efficiency:[4] The evaluation found that for a vast majority of the projects the equipment quantities, type, make, and model were consistent between program documents and evaluation inspection. This finding reflects a high level of rigor on the part of program staff and technical assistance providers during the post-installation review step of the Program.

Demand Response: The DR evaluation assessed the temporary demand reduction in response to recent NYISO calls. DR savings is measured as the difference between the facility's actual demand at the time of an event or test and the demand defined by a baseline. The demand during the events or tests is

[4] Dual baseline considerations were not part of the impact evaluation. At the request of the DPS, the Impact Evaluation Team assessed the potential influence of dual baseline principles on the results for energy efficiency projects. Nine percent of the reported savings would have been subject to dual baseline adjustment of savings in later years, had it been in effect for the evaluation period. [1] It was not possible to conduct a billing analysis for the heating-related measures for homes with an oil or propane primary heating system due to the complexity of obtaining and interpreting the billing and delivery records. Given the similarity in the analysis of heating-related loads, the realization rates for the heat-related measures from the natural gas analysis were being applied to the savings estimates for oil and propane heated homes. This strategy is based on the assumption that the accuracy (level of bias) of the algorithms used by the Program for estimating oil and propane savings is the same as those applied by the Program for natural gas heated homes.

defined as the average metered demand during the one- to six-hour event or test. DR savings can be measured in a number of ways depending on how one calculates what the facility demand would have been if they had not responded to the call for relief; the evaluators considered three such baselines. The relative precision for each of the three demand response baseline methods was 13% to 14% at 90% confidence. The "profile" method compares the demand during events and tests to the likely demand absent the event based on load data from hours and days surrounding the event; this method most directly reflects actual response.

Persistence: As for the DR measure persistence, overall the percentage of demand being delivered in response to the NYISO and Con Edison calls for demand reduction by NYSERDA projects completed between 2001 and 2005 is 44% of the enrolled demand response kW. This estimate has 22% relative precision at 90% confidence.

Sampling: Three separate sample designs were necessary for: (1) energy efficiency measure savings, (2) temporary load reduction measure savings, and (3) load reduction measure long-term persistence. Stratified ratio sampling was selected for each since it allows for efficient sampling design and generally requires a lower sample size for a more targeted level of precision than simple random sampling.

Recommendations

The evaluators conducting this study made the following recommendations. NYSERDA's initial response to these recommendations is also summarized below and will be tracked over time.

Program Recommendations

Program Recommendation 1: Disallow like-replacement incentives – Multiple projects funded VFD installations that replaced pre-existing drives. Current program rules do not allow such funding but earlier rules, oversight, or charitable interpretation of existing conditions ("the drive had been broken for a while") allowed the incentives. Disallowing like-replacement incentives for VFDs and other equipment will prevent the use of either an incorrect baseline or a regressive baseline likely associated with high FR.

> **Response to Program Recommendation 1:** *Implemented* – Program staff agree with this recommendation.

Program Recommendation 2: Apply a common algorithm for tracking demand savings – The high variance in the peak demand savings realized by the Program stems from inconsistencies in algorithms and requirements regarding peak demand calculations. Evaluators recommend that program staff consider requiring that peak demand be calculated in a consistent fashion across projects. Tracking demand savings using algorithms similar to those applied in the evaluation would ensure more consistent peak demand RRs in future evaluations.

Response to Program Recommendation 2: *Pending* **–** EFP is currently working to update its methodology for calculating peak demand impacts to be consistent with algorithms used in this impact evaluation and to be in compliance with the Technical Manual. Once a new methodology is developed, EFP Staff and Technical Reviewers will be trained on its consistent use.

Program Recommendation 3: Incorporate heating, ventilation, and air conditioning (HVAC) into lighting analysis – The evaluation results showed that the heating and cooling effects of reduced lighting load and run-time hours can be significant, especially in facilities such as data centers with high cooling loads. Such interactive effects were not consistently incorporated into program savings analysis. Evaluators recommend that the Program consider including these impacts in future project savings estimates. The choice to do so for tracking purposes does not necessarily mean that the same choice must be made for the purposes of demand-based incentive calculations.

Response to Program Recommendation 3: *Pending, with modifications* – The determination of site-specific interactive effects of lighting with HVAC systems is both time and resource intensive relative to its accuracy and resulting effect on program-reported impacts. Program staff propose working with Evaluation staff to develop a methodology for applying an adjustment for interactive effects between lighting and HVAC as part of future impact analysis.

Program Recommendation 4: Set up a data request mechanism from RIPs for future DR evaluations – Acquiring the DR measure data was challenging and required a lot of calendar time and an unexpected level of "volunteer" work by RIPs. It likely would save effort for all if NYSERDA could persuade the RIPs to deliver to NYSERDA the same baseline and performance data they deliver to the NYISO at the time they send it to the NYISO. Alternately, evaluators and program staff could work with RIPs to establish a different data set and template for routine delivery.

Response to Program Recommendation 4: *Pending, with modifications* – Program staff believes that requiring all incentive recipients to submit DR data routinely would be detrimental to program participation, as the data are sensitive. However, EFP will incorporate into the program language an agreement stating that participants will comply with NYSERDA's request for event and test performance data if their project is selected in an evaluation sample. Program staff also propose to work together with Evaluation Staff and contractors earlier in the impact evaluation development to secure the data needed directly from participating DR providers.

Program Recommendation 5: Systematically collect supporting spreadsheets, models, and metered data from technical assistance providers – The evaluation benefited greatly from the receipt of technical assistance provider spreadsheets and metered data on a number of projects. Much of this data was collected by program staff on behalf of the Impact Evaluation Team as needs were noted for specific projects. During this process both program and evaluation staff agreed that having program staff routinely gather and retain this data in its native format would facilitate program staff review of projects as well as future evaluations.

Response to Program Recommendation 5: *Implemented* **–** The collection of supporting spreadsheets and data from technical reviewers at the time of report submission has been incorporated into EFP's current workflow process. This workflow process will soon be enhanced and include better document management as EFP's workflow is transitioned to SharePoint.

Program Recommendation 6: Create and track premise IDs – During the evaluator's population frame development process, time was required to manually screen the population for recent marketing department, FlexTech impact evaluation, process evaluation, and market characterization research contacts with Program representatives, to check for multiple staged projects at a single site and to identify multi-site projects. Site names, addresses, and contact names were used in lieu of a common premise identifier. While this was a manageable exercise for the Phase 1 population size of 70 projects, the exercise will be more daunting as the program expands in the future. To help evaluators and likely aid program administrators as well, evaluators recommend that NYSERDA establish unique premise IDs that are constant across programs and that remain constant for a facility in the event of name changes or other turnover. The use of premise IDs is not uncommon in the utility environment, whereby a portion of each customer's account number can be the unique premise ID number, and the suffix of the number is the only thing that changes with alterations in account ownership. It is conceivable that NYSERDA could use the utility companies' premise IDs.

> **Response to Program Recommendation 6:** *Pending* – NYSERDA is developing methods to provide this type of tracking.

Evaluation Recommendations

Evaluation Recommendation 1: Aggressively involve the program staff in site recruitment – Recruitment for participation in evaluation activities was more difficult than for EFP than for other NYSERDA C&I impact evaluations (FlexTech, Industrial and Process Efficiency, New Construction). Including 10% to 20% backups from the non-census strata in the initial recruitment will help eliminate the late scramble to recruit the backup sites and increase the evaluation participation rate.

> **Response to Evaluation Recommendation 1:** *Pending.* Program staff has requested to be involved early in the process of site recruitment and they will be provided a list of the projects that are in the sample as soon as it is available.

Evaluation Recommendation 2: Use a 0.50 error ratio in the next sample design – The sample design for this evaluation assumed an error ratio of 0.50 on the electric energy savings RR. The final calculated error ratios were 0.58 Downstate, 0.46 Upstate, and 0.49 overall. The error ratio on the permanent demand savings RRs was 0.58 for the same projects. Presuming energy savings remains the primary focus and basis of sample designs, 0.50 is a valid assumption to use for electric projects.

> **Response to Evaluation Recommendation 2:** *Pending.* When the next evaluation plan is being developed, the 0.50 error ratio will be included.

Evaluation Recommendation 3: Involve the program staff in site-specific plan reviews – There were evaluation M&V approach issues identified during the site-specific report review phase that could have been addressed earlier in the evaluation if the program staff had been involved in the review of the site-specific evaluation plans. Involving the staff in the plans will help resolve conceptual differences that need to be considered early in the analysis process. It also may prompt delivery of additional site data or contact information from program staff.

> **Response to Evaluation Recommendation 3:** *Implemented.* A new impact evaluation protocol has been developed that requires the Impact Evaluation Team to notify NYSERDA immediately when there is a deviation in the M&V plan from the approach used by a project's technical advisor.

Evaluation Recommendation 4: Use the ACL method to estimate the kW reduction for the DR component - The APMD-baseline method overstates DR, and the profile-baseline method is expensive and requires a great deal of vendor cooperation to execute. The ACL-baseline approach, while not a direct measurement of response, is almost as easy to execute as the APMD-baseline method and correlates reasonably well with actual DR indicated by the profile-baseline method and thus is a good compromise. The NYISO ICAP/SCR Program also uses the ACL-baseline method.

> **Response to Evaluation Recommendation 4:** *Pending*. The Existing Facilities DR component is now a Technology & Market Development (T&MD) program. The evaluation recommendation will be forwarded to the T&MD impact evaluation team once that team is under contract with NYSERDA.

Evaluation Recommendation 5: Investigate and develop a more reliable method for the estimation of participant ISO and OSO for energy efficiency and OSO for demand response - The SO rates derived in this evaluation use the same method and survey questions as those in past evaluations. The final ISO and OSO estimates end up being based upon a small number of respondents (after dropping those that report no OSO). The NTGR can have a substantial effect on net savings and additional evaluation efforts are needed to reduce the uncertainty in many of its components, particularly in measuring spillover. Surveys used to gather data for SO estimation need to include SO-respondent quotas when possible. Additional validity checks need to be included regarding items that act as multipliers within the calculation formulas.

> **Response to Evaluation Recommendation 5:** As with other programs, an expanded method will be used to investigate and quantify all types of spillover. The spillover investigation will begin with the identification of causal mechanisms in logic models or other program design sources. Enhanced methods will be utilized to verify reported spillover, including a large number of telephone surveys in 2014 with participating and nonparticipating customers and vendors, and follow up on-site verification for the largest spillover projects reported, presuming the on-site follow-up approach succeeds in impact evaluations being conducted in 2013. The SO samples will be designed to be sufficient to support required confidence and precision levels for estimates of net savings.

Evaluation Recommendation 6: Perform SO estimation work within a design that gives full consideration to conducting related market effects studies and follow-up verification studies for SO surveys - This may mean a timeline with staging of different research elements relating to participant ISO, participating vendor SO, and NPSO, all within a context of market change and program-induced market effects. Significantly more resources will be needed to conduct this level of research into SO and market effects.

> **Response to Evaluation Recommendation 6:** The Impact and Process/Market Evaluation Teams will closely coordinate efforts to ensure efficient and comprehensive coverage of researchable questions.

Evaluation Recommendation 7: Investigate alternative methods for estimating FR – The Program has recently initiated a more concentrated approach to fostering lasting relationships with large key account customers. Consequently, future evaluations could benefit from research into other potential methods for determining FR that better consider program long-term engagement with key account customers.

Response to Evaluation Recommendation 7: The Impact Evaluation Team will investigate use of methods used in other jurisdictions that provide credit for long-term program influence caused in part by relationships with large key account customers. Such methods, if warranted, will be used where long-term program influence is relevant.

NYSERDA New York Home Performance with ENERGY STAR® Program: Impact Evaluation Summary

Evaluation Conducted by: Megdal & Associates, Impact Evaluation Team

Lead Investigator: Lori Megdal, Megdal & Associates, September 2012

Program Summary

The Home Performance with ENERGY STAR Program (HPwES or the Program) encourages home and building owners and tenants of existing one- to four-family homes to implement comprehensive energy efficiency-related improvements and technologies by contractors accredited by the Building Performance Institute and participating in the HPwES program. Eligible measures include building shell upgrades, such as air sealing and insulation; appliances, such as ENERGY STAR refrigerators; heating systems, such as boilers and furnaces; cooling measures, such as ENERGY STAR room or central air conditioners, and certain renewable energy technologies.

Evaluation Objective and Key Findings

The primary purpose of this impact evaluation was to establish first year evaluated gross and evaluated net energy savings for program years (PY) 2007 and 2008.

The evaluated net program savings were estimated using a pre- and post-energy consumption (billing) analysis; the final results are shown in Table 1. The HPwES Program saved 2,753 annual MWh of electricity and 400,250 annual MMBtu of non-electric (fossil) fuels from projects completed during 2007 and 2008 program years. The realization rates are 35% and 65% for the electric and natural gas (including other fossil fuel) savings, respectively.[1] These results are based on all homes with sufficient and reliable utility billing records.

[1] It was not possible to conduct a billing analysis for the heating-related measures for homes with an oil or propane primary heating system due to the complexity of obtaining and interpreting the billing and delivery records. Given the similarity in the analysis of heating-related loads, the realization rates for the heat-related measures from the natural gas analysis were being applied to the savings estimates for oil and propane heated homes. This strategy is based on the assumption that the accuracy (level of bias) of the algorithms used by the Program for estimating oil and propane savings is the same as those applied by the Program for natural gas heated homes.

Table 1. Net Program Savings

	Annual Electric Savings (MWh/Yr)	Summer Peak Demand Savings (MW)	Annual Non-Electric Savings (MMBtu/Yr)
Program Reported Savings	4,545	---	353,890
Evaluation Realization Rate (RR)	35%	---	65%
Evaluation Net-to-Gross Ratio (NTG)	1.74	1.74	1.74
Evaluated Net Savings	2,753	2.07	400,250

Detailed Findings: Realization Rate and Net-to-Gross

Realization Rate (RR): A RR of 1.0 indicates that the realized savings are exactly as estimated by the program. An RR less than 1.0 indicates lower achieved savings than originally estimated. The HPwES realization rates are 35% and 65% for the electric and natural gas and other fossil fuel savings, respectively.[2] These results are based on all homes with sufficient and reliable utility billing records. Consequently, the 90% confidence intervals of plus/minus 22.1% and plus/minus 7.2% for the electricity and natural gas savings, respectively, reflect the variability within the models, not the sampling precision.

Net-to-Gross (NTG): A NTG ratio greater than 1.0 indicates that the Program spillover (SO) outweighs free ridership, and the program achieved more savings than were claimed based on direct activity.

The FR rate and SO rate are combined to produce a NTG ratio that is applied to evaluation-estimated gross savings to produce net savings.

Net-to-Gross Ratio (NTGR) = 1 – Free ridership Factor + Participant Spillover Factor

[2] Ibid

Table 2. Free Ridership and Spillover Estimates

Attribution Variable	Factor
Free ridership	0.20
Participant spillover	0.14
Net-to-gross ratio (equals 1-FR+SO)	1.74

Evaluation Methods and Sampling

The primary vehicle for estimating evaluated gross savings was a billing analysis covering the pre- and post-installation periods. Billing analysis was selected for this evaluation due to the characteristics of the HPwES Program. Billing analysis is appropriate for retrofit programs where energy-intensive equipment is removed and replaced with high efficiency alternatives and also when the program savings are expected to be 10% or more of the total consumption. HPwES meets both of these criteria. Evaluated net savings were obtained by developing a net-to-gross ratio (NTGR) that was applied to the evaluated gross savings. The NTGR was developed from estimates of FR to account for participants who would have installed energy efficiency measures in the absence of the Program, and spillover (SO) to address savings induced by the Program but not included in the program reported savings. The information used to create the NTG component estimates was gathered from telephone surveys with participating homeowners, participating contractors and non-participating contractors.

This impact evaluation expanded on previous evaluations of HPwES by adding questions to the participant surveys on the age and condition of the existing equipment prior to the efficient upgrade made through the Program. The primary finding is that most of the equipment replaced is significantly older than the normal manufacturers' claims on expected useful life. Over half (53%) of the participants reported having replaced equipment that was at least 20 years old. While only a few participants reported that the equipment had failed prior to replacement through HPwES, many participants also reported that the existing equipment had required frequent maintenance and was expected to fail within one to two years. Just over one-third (36%) of those who replaced their heating equipment reported that it was in reasonable condition and they did not expect it to quit in the next few years.

Recommendations and Program Administrator Response

The evaluators conducting this study made the following recommendations. NYSERDA's initial response to these recommendations is also summarized below and will be tracked over time.

Program Recommendations

Program Recommendation 1: Examine methods for estimating claimed lighting and water heater fuels switch for electricity savings and envelope measures and programmable thermostats natural gas claims should be examined.

> **Response to Program Recommendation 1:** Partially implemented. During the report period of 2007-2008, the comparison of actual to modeled consumption was optional. Program contractors are currently required to "true-up" energy models to weather normalized consumption.

Program Recommendation 2: Consider database and data collection enhancements to the Program tracking database as described below. This list of potential enhancements is lengthy and may require substantial time and resources to implement. The items below are listed in order of importance.

1. Continue to improve methods to increase the reliability of the utility identification and account numbers.

   Response: Pending. Best practice would be to ensure the accuracy of utility information collected by the homeowner and utilize an "ESCO" Electronic Data Interface with utilities or a similar product to assure accurate utility account information.

2. In the measure tracking file, modify the measure codes and descriptions to clearly define the measures in a way that they can be easily and accurately categorized (lighting fixture, CFLs, dishwasher, refrigerator, freezer, attic insulation, wall insulation, air sealing, foundation insulation, etc.).

   Response: Implemented May 2011. The data collected for this study occurred in 2009 and prior to the May 18, 2011 implementation of measure level data collection and reporting in CRIS, the HPwES program implementation data system.

3. Establish a single unit for tracking measure-level energy savings for each fuel type.

   Response: Implemented May 2011. Savings are expressed in BTU's for fossil fuels and in kWh and kW for electricity for both the project and measure level detail transmitted to CRIS.

4. Add a numeric field in the measure tracking file for the installed quantity for each measure.

   Response: Implemented May 2011. The quantity of all measures is available in the measure level detail transmitted to CRIS.

5. Add a field to the measure tracking system to connect multiple records associated with the same measure, particularly for fuel switching.

   Response: Implemented May 2011. A fuel switching indicator is provided with the project level data, which is linkable to the measure level detail using the key "ProjectedId".

6. Add error checking to ensure that both negative and positive savings are correctly recorded for fuel switching measures. For example, switching water heating from electric to natural gas should have a record to reflect the electric savings and a second one for the natural gas extra use, or extra fields should be added to the measure tracking file to allow direct entry of both positive savings and extra use in the same record.

   Response: Implemented in May 2011. It is believed the positive and negative savings are being correctly recorded for fuel switches, and is available in the measure level detail transmitted to CRIS.

7. Ensure data integrity by improving quality control and error checking procedures for the Program database.

   Response: Partially implemented in 2011. QC efforts are in place and refinements are on-going.

8. Consider adding more detailed household information to the primary program database, such as house type, ownership status, number of occupants, adults and adults 65 and older living in the home most of the year, age of house, presence of central air-conditioning, and approximate age of equipment replaced, rather than keeping this data only in the database maintained by the implementation contractor.

   Response: Pending. The program implementer's database is capable of collecting any/all of information specified in this recommendation. Currently available in the program implementer's database, but not required in all cases, is the age of home, number of occupants, age of equipment, and presence of CAC. Upon request, the implementation contractor could transmit this data to CRIS. The program will assess the value of collecting additional information.

9. Continue efforts to collect more information on customer decision-making regarding equipment and the age of the existing equipment replaced through the Program.

   Response: Pending. Program will evaluate the value of requiring the collection of additional information from program contractors.

Evaluation Recommendations

Evaluation Recommendation 1: Continue efforts with the utilities to ensure that billing data is complete, useful and properly interpreted.

> **Response to Evaluation Recommendation 1:** NYSERDA Evaluation and Program staffs are actively engaged with the DPS and each of the utilities to access and collect participant utility billing data on a routine basis. Experience interpreting data from the various utilities in this and other current evaluations will help streamline effort needed to conduct future evaluations.

Evaluation Recommendation 2: Expand the sample size of participants that are sent to each utility to ensure that billing records are not missed due to being assigned to the wrong utility.

> **Response to Evaluation Recommendation 2:** NYSERDA will expand the participant sample sizes in future evaluations, to the extent possible, when requesting utility billing data from each utility.

Evaluation Recommendation 3: Continue efforts to work with the utilities and DPS to develop an efficient process to make a higher proportion of high quality billing and consumption data available for use in evaluations.

> **Response to Evaluation Recommendation 3:** NYSERDA Evaluation and Program staffs are actively engaged with the DPS and each of the utilities to access high quality billing and consumption data from the utilities on a routine basis.

Evaluation Recommendation 4: Supporting billing analyses with a telephone survey to assess changes in energy use may not be necessary in the future. If an Energy Change survey is used in the future, efforts to lessen the lag time between project completion and survey fielding will help increase data reliability.

> **Response to Evaluation Recommendation 4:** In future evaluations, NYSERDA will consider the timing and efficacy of supporting a billing analysis with telephone surveys to assess energy changes in the home. The survey used in this evaluation will be reviewed prior to the next evaluation to determine whether any changes in responses or questions are anticipated and, thus, whether additional survey efforts are warranted.

Evaluation Recommendation 5: Paying $100 incentives to non-participating contractors to complete the survey should be included in the initial evaluation design, the work plan and the evaluation budget.

> **Response to Evaluation Recommendation 5:** NYSERDA will consider the need to provide incentives to non-participants when developing future evaluation designs, work plans, and budgets**.** Understanding the level of incentive necessary to complete this evaluation and the response rates attained will help in planning and budgeting future evaluation studies.

Evaluation Recommendation 6: To increase the reliability of the NTG evaluation, new evaluation designs and verification follow-ups should be explored and implemented and may include:

- Continue to include non-participant SO studies when measuring net effects for HPwES in future impact evaluations. Surveys used to gather data for SO estimation should be designed to meet quotas for the number of respondents reporting SO.
- Design future SO evaluations with full consideration to conducting related market effects studies and follow-up verification studies. This approach may mean staging different research elements relating to participant ISO, participating vendor SO, and NPSO, within a context of market change and program-induced market effects. Significantly more resources will be needed to conduct this level of research into SO and market effects.
- Design additional evaluation research to increase the number, depth and breadth of validity checks for the NPSO analysis, as this SO component reflects efficiency efforts in the larger market and has a multiplier effect in the calculations.

Response to Evaluation Recommendation 6: NYSERDA will, to the extent possible, strive to increase the reliability of the NTG component of future evaluations by exploring new evaluation designs and methods. These efforts may include surveys to assess non-participant SO, market effects and follow-up verification studies, as well as increasing the number, depth and breadth of validity checks.

Evaluation Recommendation 7: Develop and implement an enhanced evaluation design to learn more about the decision-making process for replacing major equipment, in future evaluation designs.

Response to Evaluation Recommendation 7: NYSERDA will consider and include in future evaluation designs, to the extent possible, multi-faceted approaches to assess homeowner or participant decision-making criteria for replacing equipment.

Evaluation Recommendation 8: Future evaluations desiring to gather information on non-energy impacts need to include measure quotas in survey and sampling design and evaluation cost estimates.

Response to Evaluation Recommendation 8: NYSERDA will attempt to include the assessment of more non-energy impacts, to the extent possible, in future evaluation designs. More specific plans will be developed on this research topic to the extent it is included in future impact evaluations.

Evaluation Recommendation for the NYS DPS and New York Utilities:

Develop a process to store participant billing records for a specified period rather than allowing older data to be placed in archives on the utilities' regular schedule.

Work with NYSERDA and the utilities' evaluators to develop a standard way to provide billing data thereby placing NYSERDA and utility evaluations on the same level.

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NYSERDA's Energy Efficiency Portfolio Standard Program

Quarterly Report to the Public Service Commission
Quarter Ending December 31, 2012

State of New York
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New York State Energy Research and Development Authority
Francis J. Murray, Jr., President and CEO

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