

Plan for EEPS Statewide Research Studies and Joint Evaluations

**Prepared by the Evaluation Advisory Group Subcommittee
on Statewide Research Studies and Joint Evaluations***

Submitted to the Director of the Office of Energy Efficiency and the Environment, as required by the October 25th, 2011 order in Case 07-M-0548 and Case 07-G-0141, and the Evaluation Advisory Group for their review and approval.

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***Subcommittee members includes representative from the New York State Energy Research and Development Authority, Central Hudson, National Grid, New York Electric and Gas, Rochester Gas and Electric, Consolidated Edison, Orange and Rockland, PACE Energy and Climate Center, and the New York State Department of Public Service.**

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Introduction/Background

From the inception of New York's ambitious Energy Efficiency Portfolio Standard (EEPS) in 2008, Department of Public Service Staff (Staff) and the Evaluation Advisory Group (EAG) have recognized that some evaluation efforts could be conducted more cost effectively on a statewide or regional basis. The types of projects most suitable for this approach fall into two major categories - statewide evaluation /research studies and joint evaluations.

Statewide evaluation/research studies cover "big picture" topics that have wide applicability to the EEPS program portfolio and its program administrators (PAs). Effective and comprehensive evaluation of the EEPS program portfolio should not be limited to analyses focused solely on program specific process and impact evaluations because this approach only captures part of the story. It is important to also examine the broader impacts of EEPS, including assessing market dynamics (e.g., how is the market evolving?), understanding the effect of emerging technologies (e.g., growing use of LED lighting), and monitoring product baselines (e.g., the percentage of homes in New York with high efficiency furnaces). This type of research can provide numerous benefits including offering insights capable of informing strategic policy decisions, improving program design and implementation, and encouraging more rigorous evaluation results.

Another potentially valuable benefit of statewide research is it can serve as a tool to identify best practices for improving evaluation techniques and consistency. This is especially important considering the magnitude of the EEPS program portfolio, the large number of PAs and the challenges of rigorous evaluation (e.g., sample selection, attribution).

A joint evaluation is generally narrower in scope, but may prove equally important. For similar EEPS programs and energy measures there is the potential for impact evaluation to be conducted by PAs jointly. For example, there is likely not to be any major variances in the energy savings associated with high efficiency residential gas furnaces installed in Albany, Syracuse or Buffalo making this type of research an attractive candidate for a joint evaluation effort.

Figure I presents the advantages of pursuing statewide research studies and joint evaluations:

Figure 1-- Some Advantages of the Joint Statewide Approach

- Encourages the uniform treatment of the common issues, programs, measures, and data needs across NY;
- Promotes consistent evaluation standards and best practices for EEPS evaluation methods and implementation practices;
- Eliminates the need for PAs to conduct an individual impact evaluation of a program or measure that is common across multiple PAs;
- Enables PAs to leverage their evaluation budgets and, therefore, conduct bigger and more rigorous studies at a lower cost to ratepayers;
- Reduces the number of discreet evaluation documents that Staff must review and approve; and
- Reduces the number of evaluation contractors as well as the time and resources devoted to the contractor selection process.

An EAG subcommittee was created in 2010 to coordinate statewide studies among the PAs. This effort has already born fruit in the form of the statewide and joint initiatives recently completed and currently underway. For example, in May 2011, the EAG kicked off a project to develop protocols based on best practices for process evaluation within New York’s program portfolio. More specifically, this effort was designed to provide evaluators with recommendations to facilitate common approaches and increase the compatibility of results across the EEPS program portfolio. The protocols were approved and adopted in February 2012¹

In late 2011, a Request for Proposals (RFP) was released by the New York State Research and Development Authority (NYSERDA) seeking proposals for a baseline study designed to provide a better understanding of the market saturation and the energy savings potential of many of the residential energy measures currently being installed through EEPS programs and emerging technologies. This information will help to determine the degree to which the EEPS programs have influenced the marketplace, inform current program evaluation activities and provide insights for improving program design. Unlike many studies of this type, there will be a strong focus on collecting primary data rather than depending on secondary data,

¹ http://www.dps.ny.gov/Evaluation_Guidelines.pdf

which is less expensive to collect, but potentially less reliable. Project kick-off is expected in the second half of 2012. Similar to the residential and multifamily baseline/potential study, NYSERDA has also volunteered to lead development of a commercial sector baseline/potential study beginning in 2012. An RFP is anticipated in late 2012.

Considerable progress has been achieved in coordinating a joint impact evaluation of gas high-efficiency heating equipment among several PAs. The RFP was released in the spring of 2012. All the evidence suggests that by pooling resources, more robust evaluation data can be achieved at a far lower cost than if the PAs each conduct separate evaluations. This is especially beneficial to the smaller utilities with smaller evaluation budgets. Moreover, the effort should help ease the evaluation contract management burden on the PAs and result in Staff having fewer evaluation plans and documents to review.

The process of moving forward with these statewide studies and evaluations has not been without difficulties. Generally there has been a high level of agreement on the priority research areas, including the details of the project scope and strategy. The major stumbling block has been the administrative details, such as the cost share of the studies, and the contract terms and conditions. Each PA has its own internal structure and policies for procurement and managing contracts. Simply stated most PAs cannot simply send a check for their share of project costs. Designating Staff as the contract manager is not an option because of the complexities of the state procurement and contracting process.

In October 2011, the Public Service Commission (Commission) formally embraced the concept of statewide studies and joint evaluation, recognizing the potential of this approach to both enhance evaluation rigor and reduce costs. The Commission endorsed the commitment of up to 33% of the EEPS evaluation funds to these studies assigning Staff and the EAG the responsibility for preparing a plan for executing statewide/joint evaluations that identifies priority projects, defines budgets, and provides an overall implementation strategy.

The Commission stated: “Within 120 days of this order, Staff, working with the Evaluation Advisory Group, is directed to prepare a plan identifying programs and research areas for which joint evaluation will be performed, the costs of evaluation, and the program administrator(s) that will manage the evaluation. With approval of the Director of OEEE,

evaluation funds may be reallocated to the program administrator(s) selected to manage the joint evaluation and research studies.”²

This plan responds to the Commission order and covers the following topics:

- Priority projects and timetables
- Descriptions and rationale for the priority projects
- Estimated project budgets
- Formula for the allocation of costs among PAs
- Legal issues (e.g., contract terms and conditions)
- Project management
- Data issues(e.g., data confidentiality)
- Contractor selection process
- Role of the key players - EAG, Staff, PAs

Statewide Evaluation Budget

In October 2011, the Commission reauthorized for an additional four-year period ending December 31, 2015 most of the EEPs energy efficiency programs that were scheduled to expire on December 31, 2011.³ Approximately \$1.5 billion in electric funding was authorized to support programs, along with about \$635 million in natural gas funding. Funding equaling about five percent of program budgets is dedicated to evaluation activities.

Table 1 presents electric and natural gas funding by program administrator along with estimated evaluation budgets. These budget amounts are subject to change and may be adjusted by future Commission action.

² Case 07-M-0548 and Case 07-G-0141 *Order Authorizing Efficiency Programs, Revising Incentive Mechanism, and Establishing a Surcharge Schedule*, issued and effective October 25, 2011.

³ Ibid

Table 1. Electric and Natural Gas Funding by Program Administrator (\$000)

Program Administrator	Program Budget	5% Evaluation Budget
<i>ELECTRIC PROGRAMS:</i>		
NYSERDA Statewide Outreach & Education	\$24,000	\$1,200
NYSERDA DPS General Awareness	\$14,067	\$703
NYSERDA	\$729,393	\$36,470
Central Hudson	\$31,725	\$1,586
Con Edison	\$367,115	\$18,356
NYSEG	\$65,853	\$3,293
Niagara Mohawk	\$206,821	\$10,341
O&R	\$24,391	\$1,220
RG&E	\$39,641	\$1,982
<i>Electric Total</i>	<i>\$1,503,005</i>	<i>\$75,150</i>
<i>NATURAL GAS PROGRAMS:</i>		
NYSERDA	\$379,754	\$18,988
Central Hudson	\$2,625	\$131
Con Edison	\$59,658	\$2,983
Corning	\$1,160	\$58
NYSEG	\$5,771	\$289
Niagara Mohawk	\$42,197	\$2,110
O&R	\$2,148	\$107
RG&E	\$20,844	\$1,042
KEDLI	\$28,657	\$1,433
KEDNY	\$51,085	\$2,554
NFG	\$40,160	\$2,008
St. Lawrence	\$1,213	\$61
<i>Natural Gas Total</i>	<i>\$635,271</i>	<i>\$31,764</i>
ALL EEPS TOTAL	\$2,138,276	\$106,914

Priority Projects - Schedule and Budget

This plan outlines several statewide and joint studies recommended for funding based on a review of current evaluation efforts and unmet needs. This plan outlines projects covering several years, but also recognizes that factors such as the evolving nature of energy programs and

policies, technological advancements, the economy and the marketplace can result in changes in evaluation priorities and needs. As a result, this plan will be updated on an as needed basis and subject to a comprehensive review, at least, annually. A subject for a statewide research study or joint evaluation can be recommended for consideration by Staff, or by any EAG member, at any time.

Updates on project status will be provided at monthly EAG meetings and to the relevant EAG subcommittees on a mutually agreed upon schedule. All key project deliverables (e.g., survey instruments, sample designs, draft reports) will be shared with PAs providing funding. Ample opportunity for review and comment will be provided, but it is expected that that the reviews will be timely and consistent with the project timetable.

Table 2 provides the EAG's list of priority projects with estimates of project timing and cost. The next section discusses each priority project in more detail, providing a brief description and rationale.

Table 2. Priority Projects*

Project	Completed	Current	Planned – Short Term	Proposed – Long Term	Total
Statewide Research Studies					
Process Evaluation Protocols Development	** \$50,000	-	-	-	
Process Evaluation Protocols – Follow-up on Implementation and Effectiveness	-	-	\$50,000	-	\$50,000
Statewide Residential/Multifamily Baseline/Potential	-	**	-	\$2,500,000	\$2,500,000
Statewide Commercial Baseline/Potential	-	**	-	\$4,000,000	\$4,000,000
Top-Down Energy Indicator/Econometric Study – Identify Methods and Conduct Pilot Assessment	-	-	\$TBD	-	\$TBD
Top-Down Energy Indicator/Econometric Study – Full Statewide Effort	-	-	-	\$TBD	\$TBD
Enhanced Load Research Project	-	-	\$3,500,000	-	\$3,500,000
TOTAL Statewide Studies	-	-	\$3,550,000	6,500,000	\$10,050,000
Statewide Joint Evaluations					
Non-Participant Customer/Spillover Analysis	-	-		1,000,000	\$1,000,000
Statewide Process/Market Evaluation	-	-	\$300,000	-	\$300,000
Small Business Direct Install Impact Evaluation	-		\$600,000	-	\$600,000
Residential Gas HVAC Impact Evaluation	-	\$350,000	-	-	\$350,000
Individual Program Measure Evaluations	-	-	\$TBD	\$TBD	TBD
TOTAL Joint Evaluations	-	\$350,000	\$900,000	\$1,000,000	\$2,250,000
TOTAL Statewide Studies and Joint Evaluations	-	\$950,000	\$4,450,000	\$7,500,000	\$12,300,000

Notes: * Budgeted costs represent estimates only. Actual project costs may be significantly higher or lower depending on the scope of work and the timing of the project.

** Project paid for from SBC or EEPS 2009-2011 evaluation budgets.

The current list of anticipated projects accounts for only a small portion of the statewide joint evaluation funding available in the 2012 – 2015 EEPS program cycle. The plan anticipates that the EAG and Staff will propose and develop additional joint projects to meet the on-going needs of program planners, implementers and evaluators. The projects in Table 2 illustrate what has already been accomplished, what is currently under way and what is currently being planned. As noted in Table 2, the costs of the projects are rough estimates. More exact estimates will become available as project details and requirements more fully emerge.

Priority Projects Description and Rationale – Statewide Research Studies

Process Evaluation Protocols: Development and Follow-up on Implementation and Effectiveness

The Process Evaluation Protocols project was the first statewide study initiated by a special subcommittee of the EAG and was managed by NYSERDA on behalf of Staff and the EAG. The primary objective of the Protocols project was to develop common process evaluation planning, design, implementation, and reporting protocols, and to establish and investigate best practices for conducting process evaluations of the EEPS program portfolio. In the development of the Protocols, an independent evaluation contractor performed a literature review of the process evaluation practices and protocols used throughout the United States and then compared these findings to the specific needs of New York’s programs. In conjunction with this literature review, the contractor also contacted and interviewed leading experts in the energy efficiency program evaluation community. An annotated list of best practices and recommendations resulted from this research. The Protocols were finalized by the EAG in early 2012.

The Protocols are intended to supplement New York’s Evaluation Guidelines by providing additional guidance and direction. More specifically, the Protocols will be used by PAs to better identify ways that EEPS programs can maximize energy saving opportunities and operate more effectively. They are also designed to encourage coordination among the program administrators and to help ensure that process evaluations are conducted in a cost-effective manner. Like the Evaluation Guidelines, these protocols will be reviewed and updated periodically by Staff in consultation with the EAG. The objective of the review process is to help

to ensure that New York's evaluation efforts are consistent with best practices and responsive to the evolving nature of the State's energy program portfolio.

The proposed protocol review should also be conducted as a statewide study. Research questions may include, but not be limited to:

- How the process protocols are being implemented by program administrators and their evaluation contractors?
- Are there are specific difficulties in implementation and adherence to the protocols?
- Would there be a benefit to providing program administrators with customized training seminars or other instructional opportunities on the application of the protocols?
- What benefits, if any, have been gained by using process evaluations in the manner prescribed in the protocols?
- Could process evaluation be more effectively used to help inform impact evaluation and vice versa?
- Have process evaluation recommendations been sufficiently detailed and actionable?
- How are the results of process evaluations being incorporated into both addressing program refinement and future planning?, and
- Are there areas in which the process evaluation protocols are not sufficient, specifically regarding demand response programs, educational programs, or other special topics?

This study should be undertaken once adequate time has passed for the PAs to gain experience with the Protocols and establish a track record, likely to be in early 2014. The cost to develop the original protocols was less than \$50,000. The cost of this follow-up study/review is not expected to exceed that amount, but is currently estimated at \$50,000 to ensure adequate resources are available to conduct primary data collection such as interviews with Staff, PAs, and expert independent evaluators. It is expected that all PAs would fund and participate in this study.

Statewide Residential / Multifamily Baseline and Potential Study

NYSERDA is currently undertaking a statewide residential/multifamily, existing and new building, energy baseline and energy efficiency potential study. A focus of this research will be on collecting primary data. Similar statewide studies in New York have relied primarily on

secondary data, which is less costly to collect, but likely to be less reliable. This study, commencing in 2012, will significantly add to the knowledge base for program impact evaluation, policy and program planning. Given its anticipated value, this study should be updated periodically to keep the information current as the baseline evolves due to factors such as changes in the building stock, the marketplace, technological advances, energy prices, energy codes and the influence of energy efficiency programs.

Similar to the 2012 study, the overall objective of a follow-up study would be to better understand the energy use in the residential sector, including the saturations of energy consuming equipment (electric, gas, and other fuels), the penetrations of energy efficient equipment, and the use of energy management practices. The follow-up study should also collect customer household and demographic information and assess the market for non-electric heating and water heating equipment to determine changes in the efficiency of equipment compared to the 2012 study.

To ensure time-series measurement of the key indicators collected during the 2012 study, the follow-up study would likely include the following components:

- Surveys and On-Site Visits of Existing Buildings - phone surveys and on-site visits of a representative statewide sample of single (1-4 units) and multifamily (5+ units) to assess residential single family and multifamily buildings for key characteristics including:
 - Existing inventory of primary HVAC and water heating equipment
 - Availability, type, efficiency, and use of secondary heating sources.
 - HVAC controls
 - Lighting inventory
 - Customer supplied hours of operation and set points for all major energy-using equipment
 - Household appliances
 - Plug loads
 - Building shell characteristics
- Surveys and On-Site Visits of New Construction – phone surveys and on-site visits of a representative statewide sample of newly constructed and newly occupied single-family

homes and multifamily buildings. The on-site visits would include an updated energy rating for each home and document factors such as building shell characteristics by employing tests including blower door, duct blaster and infrared photography of wall insulation. Unlike data on existing housing stock, there is relatively little measurement data on the energy performance of new homes.

- Residential Potential Study - a study of additional technical, economic and achievable residential energy efficiency opportunities in 3 and 5 year time periods with the prime objective of identifying new opportunities. The study would also recommend programs or actions to pursue opportunities identified as cost-effective.

The follow-up study could be conducted two to three years after the completion of the initial study and build upon lessons learned in the first effort (expected to be completed in 2014). Cost would likely be similar to the initial study, but some efficiency can be gained since methods and data collection would be similar. The estimated cost for this project is about \$2.5 million and it is expected that all PAs would fund and participate in this study.

Statewide Commercial Baseline and Potential Study

Like the residential and multifamily baseline/potential study, NYSERDA has volunteered to fund and lead the development of a commercial baseline/potential study. The details of this initiative are still under development by NYSERDA, Staff and the other EAG members, but the project is expected to commence in 2012. There is agreement that New York would significantly benefit from a follow-up study to the initial study because it would provide the data to monitor changes in the baseline over time. Like the residential/multifamily study, this information will be invaluable to facilitate policy decisions, program development and program evaluation.

The follow-up study could be conducted two to three years after the initial study, and build upon the lessons learned in the first effort. Ultimately the timing of the follow-up study is dependent on completion of the initial study. Cost would likely be similar to the first study, but some efficiency can be gained because research methods and data collection would be similar. We estimate that this project budget to be about \$4.0 million. It is expected that all PAs would fund and participate in this study.

“Top-Down” Energy Indicator/Econometric Study of Net Savings

The EAG has frequently discussed the challenges of attributing net energy savings, and other benefits, to specific programs. In other words, what percent of the program benefits would have been achieved if the program was not available. Attempting to document “what would have happened” has long been a long standing challenge for evaluators. (This is often called net-gross-analysis.) A number of statewide studies could be considered in response to this research challenge and to help better understand the “true effects” of the EEPS programs on the State’s overall energy consumption.

The scale of energy efficiency effects under EEPS and other programs (e.g., programs sponsored by the Federal government) have expanded to the point that collective program impacts can be expected to impact the overall trend in energy consumption. A rigorous and proven methodology for a top-down approach for assessing change in energy consumption resulting collectively from energy efficiency programs has not yet emerged, but the concept is worthy of further review as a complement to our current evaluation activities. The approach has the ability to identify factors that more traditional evaluation might not fully capture (e.g., change in energy prices, business cycles, consumer learning and adaptation). Modeling could examine consumption trends by fuel type over time to examine how different variables explain changes in energy use. Top down indicators could be energy intensity in certain sectors.

This type of study is not widely used but study methods are currently being developed and pilot tested. Accordingly an initial scoping effort to examine approaches that could be applied in New York should be undertaken as a first step, possibly in 2012 or 2013.

The California Public Utilities Commission is undertaking two pilot studies to assess “top-down” effects. Staff and EAG members have been monitoring those efforts and expect that results will be available in August 2012. Therefore, the EAG recommends postponing development of more specific plans and allocation of funds to allow for the California results and experience to be considered. As New York specific plans are discussed and designed, the EAG recommends a cautious and thoughtful approach as to how this new area of evaluation can best serve the State. It is expected that all PAs would fund and participate in this study.

Enhanced Load Research Project

Relatively little attention has been devoted to load research, but better understanding load shapes can reap considerable benefits. This proposed study would measure hourly load shapes, power factors and dynamic voltage behavior in the residential (i.e., single-family and multi-family) and commercial sectors (e.g., offices, restaurants, warehouses, lodging, and retail). The results of the study would provide information to support:

- Energy efficiency impact evaluations,
- Improved power system modeling,
- Consumer consumption & conservation potential studies,
- Energy and peak demand forecasting, and
- Individual measure benefits / cost testing.

The study would focus initially on the residential and small commercial sectors. A sample of 800 to 1,200 homes and business, stratified by energy consumption level and geography, would be on-site metered.

To ensure robust data, about three years of data will be required. A feasibility study prior to undertaking the full load research work is recommended in 2012 to determine the appropriate metering technologies, sampling strategies, logistics, and coordination with other evaluation studies. Some field work of a limited scope and duration is recommended to identify the advantages and disadvantages of different metering technologies. The total cost of the project is approximately \$3.5 million dollars and we expect participation from all the PAs, except for the gas only companies. The estimated cost breakdown for the study assuming the use of non-intrusive meters is shown in Table 3.

Table 3. Enhanced Load Research Cost Estimate

Study Element	Year 1	Year 2	Year 3	Year 4	Estimated Cost
Feasibility Study	\$150,000				\$150,000
Study plan & sample design	\$300,000				\$300,000
Data Storage and Management		\$200,000	\$25,000	\$25,000	\$250,000
1,000 meters, installed		\$1,250,000			\$1,250,000
Data collection (\$30/point/month), 3 years		\$366,667	\$366,667	\$366,667	\$1,100,000
Quarterly/annual reports and analysis		\$150,000	\$150,000	\$150,000	\$450,000
TOTAL	\$450,000	\$1,966,667	\$541,667	\$541,667	\$3,500,000

Priority Projects Description and Rationale – Statewide Joint Evaluations

Coordinated Non-Participant Studies to Support Program Evaluation

Learning from program non-participants is an integral part of the evaluation process. A statewide market sector level study of non-participants can provide valuable information not easily obtained through program specific evaluations. Pursuit of such information in a statewide study provides consistencies in the methodological approach (e.g., survey designs), protection of customer data confidentiality (e.g., Public Service Law requirements) and cost savings in the sampling and data collection process (e.g., reduction in the number of non-participant surveyed). Moreover, because service territories of EEPS utility program administrators overlap with respect to gas and electricity franchise areas, evaluation efforts also overlap, but a coordinated effort could avoid this problem.

Potential insights from this research would include:

- Degree of customer knowledge of energy efficiency and energy efficiency programs,
- Level of participation in energy programs from multiple sources (e.g., utility, NYSERDA, Federal government)
- Energy efficiency actions taken independent of EEPS programs, and

- Customers' ability and willingness to participate in an energy efficiency program.

It is anticipated that several potential joint non-participant studies will be identified over the next three years. Two such studies, identified for near term implementation are described below.

Non-Participant Spillover Joint Study

As discussed earlier, attribution of program benefits is a major concern of the EAG and an on-going challenge for evaluators nationwide. A specific concern is accounting for non-participant spillover. In other words, did the energy program influence customers not participating in an energy program to take an energy efficiency action (e.g., a non-participating retailer increases availability of energy efficient appliances because of increased demand resulting from an energy efficiency program).

NYSERDA is currently conducting a robust update of two commercial sector non-participant spillover studies to generate a non-participant spillover multiplier to be applied to several of its major commercial sector programs. The study currently underway is using state-of-the-art methods and triangulation of results in an attempt to most accurately capture the effects of these programs on non-participants in program years 2007-2010. For later program years, a follow-up to this study could be undertaken by all PAs as a way to capture total non-participants spillover efficiently, effectively and in a non-overlapping or duplicative manner.

In order to meet acceptable confidence/precision standards, and to employ rigorous methods, the cost of the study could approach \$1,000,000. However, this cost could be largely offset by avoided evaluation costs by each PA. Key factors impacting project cost will be the specific sectors and markets selected for study. If the research was to cover program years 2011 and 2012, the study would begin in 2013. It is expected that all PAs would fund and participate in this study.

Statewide Process/Market Evaluation

In 2011 National Grid sponsored a study of EEPS programs, comparing the program offerings and incentive levels of the New York PAs. A database of EEPS measures was compiled, interviews were conducted with PAs and Staff, and energy efficiency program structures in other states and regions were examined. This research helped to identify important insights into the EEPS program portfolio including program differences and similarities, opportunities and challenges for better coordination, and specific recommendations to improve program delivery.

As a follow-up and supplement to this study, we recommend surveying market actors and participating and non-participating customers about their awareness and understanding of EEPS programs, impressions of the program options, and how program participation decisions are made. The goal of the study would be to identify ways to more effectively engage customers with EEPS programs, including improving program coordination and addressing the opportunities, challenges, and recommendations resulting from the recently completed benchmarking study.

The budget would likely be around \$300,000. Optimal timing of this study would be a 2012 start date. It is expected that all PAs would fund and participate in this study.

Small Business Direct Install (SBDI) Programs Impact Evaluation

The Small Business Direct Install (SBDI) program is offered by several New York PAs, and provides free energy efficiency lighting assessments and direct installation of measures to nonresidential customers with metered demand of less than 100kW on a cost-sharing basis. The direct installation of selected measures is subject to 70/30 cost-sharing, where the utility is responsible for 70% of the total installed measure costs. The SBDI program generally includes lighting measures such as:

- Linear fluorescent fixtures with higher efficiency lamps and ballasts,
- LED exit signs,
- Occupancy sensors,
- Replacement of incandescent bulbs with compact fluorescents (CFLs) and,

- Small commercial refrigeration measures (some programs).

An impact evaluation of similar SBDI program measures would be an ideal joint evaluation. The study would focus on documenting the energy savings attributable to each measure for more accurately tracking program achievements and providing data to update the Technical Manual (TM) that is used to estimate energy savings at the measure level⁴ In addition, gross energy and peak demand savings would be estimated, using an analysis of operating hours supported by participant telephone surveys and on-site surveys (including sites with metering equipment installed on key measure installations).

A net-to-gross analysis based on a self-report methodology supported by participant telephone surveys would also be performed. The objective of this activity would be to develop gross annual energy and peak demand savings estimates for specific technology groups such as:

- Linear fluorescents (new and retrofit T8 fixtures),
- CFLs,
- Occupancy sensors,
- LED exit signs,
- Metal halide (MH) fixtures,
- LED refrigeration case strip lights,
- ECM fan motors,
- Refrigerated case door heater controls.

This joint impact evaluation would pay special attention to using a sample design that accurately reflects the contribution to program savings by market segment and measure/technology type. This is critically important to meeting the 90/10 precision targets in a heterogeneous program population made up of small commercial customers (≤ 100 installed kW).

The study would include a review of the TM savings algorithms to confirm their accuracy and completeness. Savings calculations for both energy and peak demand would be applied at the measure level using primary and secondary data. The analysis steps would include:

⁴ <http://www.dps.ny.gov/TechManualNYRevised10-15-10.pdf>

- Perform a detailed review of savings algorithms included within the TM,
- Verify the savings calculations, and
- Attempt to identify the potential source(s), remedies and required adjustments in reported savings if/where errors/inconsistencies are found in either the construction of the savings algorithms, and/or the savings estimates.

The study would take approximately one year to complete and would be expected to cost approximately \$600,000. Evaluation planning would take place over approximately two months, and phone surveying efforts would add an additional two months. On site verification and metering is the most time consuming element and would be expected to take approximately six months to complete. Gross and net impact analysis would require about one month in total.

Residential Gas High Efficiency Heating Program Impact Evaluation

The Residential Gas High Efficiency Heating program provides incentives to residential customers for the installation of high-efficiency residential gas heating and water heating equipment and related controls in efforts to advance the adoption of high-efficiency heating ventilation and air conditioning (HVAC) equipment. The Residential Gas High Efficiency Heating program promotes the installation of efficient, cost-effective gas furnaces, boilers and other equipment at the time that replacement equipment is needed by the residential customer, primarily by providing incentives to customers for the purchase and installation of approved high-efficiency equipment.

Rebates are available for equipment upgrades only, and vary by measure and by geographical area. New construction is not eligible for rebates under this program.

The overall objective of this study⁵ is to develop gas savings impacts based on measures installed in the Gas High Efficiency Heating Program for all participating PA's in New York State. A goal is to determine the extent of savings from customers who participated since program inception in July 2009, but this timeframe could be adjusted based upon the number of months of pre and post installation gas usage data needed for the analysis.

⁵ Note: this joint Residential Gas impact evaluation is currently in the contractor selection stage and will be paid for from 2009-2011 EEPS evaluation funds.

Additional research objectives include:

- Compare the outcomes and cost effectiveness of the Gas High Efficiency Heating program to the public policy goals set forth by the Commission,
- Assess free ridership, spillover, rebound effect, interaction and realization rates; and
- Assess persistence of savings via billing analysis
- Assess the incremental costs (by measure) associated with high efficiency alternatives from base level efficiency units (as stipulated in the EEPS Technical Manual)

The impact evaluation will focus on calculating actual energy and demand savings and determining persistence of measure impacts. The evaluation will include at least two main components. They include:

- Sample-based verification of direct installations -- distinct from the program quality assurance/quality control (*QA/QC*) effort. The verification element of the evaluation will serve several objectives, including:
 - Quantifying and verifying the type, specification and frequency of measures installed and operating,
 - Determining the reasons for any discrepancies in measure counts, including any fraudulent submissions for incentives or possible removal of measures, and
 - Identifying any operational or performance issues for further study by program staff.
- Pre-post analysis of consumption histories of the census of program participants and a matched comparison group of non-participants; examples include a pre-post census approach, a participant and non-participant modeling approach using PRISM software, and a monthly participant and non-participant model including demographic characteristics from customer surveys.

The study will utilize both primary and secondary data sources. Specific techniques expected to be used include field visits, participant and non-participant surveys, billing data analyses and the Statistically Adjusted Engineering (SAE) method. The estimated cost of the project is expected to be around \$350,000. The impact evaluation results will be used prospectively to make program adjustments, improvements, and recommendations.

Individual Program Measure Evaluations

There is great commonality of certain specific measures across programs and PAs. (For example, high efficiency linear fluorescent lighting contributes a large share of savings in many programs.) As existing measures are reviewed and new measures are considered, a possible approach for PAs is to work together and perform a joint evaluation of a specific measure, rather than each working separately to perform multiple evaluations of the same technology. At this time a specific list of such measures has not been developed, but we expect this type of research to be an important part of joint evaluation work on both a short term and long term basis.

Allocation of Costs Among Program Administrators

While all PAs are expected to engage in the statewide and joint evaluation studies that have a direct linkage to their programs and portfolios, PAs would have the ability to opt out of any particular study for good cause. At this time, it is envisioned that all PAs will participate in and fund the identified statewide studies given the comprehensive nature of those studies. However, it might be reasonable for a PA to opt out of a joint evaluation study if the PA already has a comparable evaluation study planned, underway, recently completed, or if there is no comparable program within the PA's portfolio.

For both statewide studies and joint evaluations, each PA's share of the cost will be based on their proportional share of the total EEPS evaluation funding by fuel type. Costs may be adjusted should a PA decide to opt out of a study.

- For statewide studies and joint evaluations that are gas only or electric only, each PAs share of the cost will be based on their percentage of the total EEPS evaluation budget by fuel type as shown in Table 4.
- For statewide studies and joint evaluations that are both gas and electric fuel types, each PA's share of the cost will be based on their percentage of the total EEPS evaluation budget, combining gas and electric fuel types, as shown in Table 5.

Table 4. PA Cost Share for Individual Gas or Electric Projects

Program Administrator	Program Budget	5% Evaluation Budget	Percent of Total Evaluation Budget For Fuel Type
<i>ELECTRIC PROGRAMS:</i>			
NYSERDA Statewide Outreach & Education	\$24,000	\$1,200	1.60%
NYSERDA DPS General Awareness	\$ 14,067	\$ 703	0.94%
NYSERDA	\$729,393	\$36,470	48.53%
Central Hudson	\$31,725	\$1,586	2.11%
Con Edison	\$367,115	\$18,356	24.43%
NYSEG	\$65,853	\$3,293	4.38%
Niagara Mohawk	\$206,821	\$10,341	13.76%
O&R	\$24,391	\$1,220	1.62%
RG&E	\$39,641	\$1,982	2.64%
<i>Electric Total</i>	<i>\$1,503,005</i>	<i>\$75,150</i>	<i>100.00%</i>
<i>NATURAL GAS PROGRAMS:</i>			
NYSERDA	\$379,754	\$18,988	59.78%
Central Hudson	\$2,625	\$131	0.41%
Con Edison	\$59,658	\$2,983	9.39%
Corning	\$1,160	\$58	0.18%
NYSEG	\$5,771	\$289	0.91%
Niagara Mohawk	\$42,197	\$2,110	6.64%
O&R	\$2,148	\$107	0.34%
RG&E	\$20,844	\$1,042	3.28%
KEDLI	\$28,657	\$1,433	4.51%
KEDNY	\$51,085	\$2,554	8.04%
NFG	\$40,160	\$2,008	6.32%
St. Lawrence	\$1,213	\$61	0.19%
<i>Natural Gas Total</i>	<i>\$635,271</i>	<i>\$31,764</i>	<i>100.00%</i>
ALL EEPS TOTAL	\$2,138,276	\$106,914	

Table 5. PA Cost Share for Combined Electric and Gas Projects

Program Administrator	Electric & Gas Program Budget	5% Evaluation Budget	Percent of Total EEPS Evaluation Budget
NYSERDA	\$1,147,213	\$57,361	53.65%
Central Hudson	\$34,350	\$1,718	1.61%
Con Edison	\$426,773	\$21,339	19.96%
Corning	\$1,160	\$58	0.05%
NYSEG	\$71,624	\$3,581	3.35%
Niagara Mohawk	\$249,018	\$12,451	11.65%
O&R	\$26,538	\$1,327	1.24%
RG&E	\$60,485	\$3,024	2.83%
KEDLI	\$28,657	\$1,433	1.34%
KEDNY	\$51,085	\$2,554	2.39%
NFG	\$40,160	\$2,008	1.88%
St. Lawrence	\$1,213	\$61	0.06%
ALL EEPS TOTAL	\$2,138,276	\$106,914	100.00%

Participant Ground Rules

Complex multiparty projects, as discussed in this plan, will involve many details relative to project scope, contractor selection, contract review, project management, invoice processing and payment and review and adoption of the final recommendations. A clear, concise set of basic ground rules, agreed to by all parties at the outset, will go a long way toward smoothing the inevitable bumps in the road that can occur in a jointly administered and funded project. Even though more work needs to be done, we have made substantial progress in establishing the ground rules as outlined below:

Legal Considerations

A project administrator’s own “Terms and Conditions” will guide the contract(s), but in some cases, Terms and Conditions may require modifications to accommodate the complex requirements of multiparty agreements.

Participation Agreement

Each sponsor of a statewide/joint projects initiative will sign a Participation Agreement which stipulates the basic terms and conditions of the project and authorizes the project administrator to manage the contract(s) on the group's behalf. The Participation Agreement is also designed to provide the necessary legal structure including addressing key issues such as the responsibility of the parties (liability/indemnification); representations and warranties; default and termination; and governing law and jurisdiction.

Project Administrative Fee & Financial Terms

An administrative fee may be assessed to cover the project administrator's implementation costs. Because the EAG anticipates a wide range of statewide/joint projects will be undertaken, the EAG is not proposing a standard administrative fee for all projects regardless of the size, scope or duration. All administrative fees must be proposed prior to adopting the Participation Agreement. All fees will be subject to review by the EAG and approval by Staff. The EAG does not expect that administrative fees will exceed 10% of the project costs for most studies.

A segregated account will be established to house all pre-paid funds collected from the participating PA's (i.e., project budget and fee). These funds will be used by the project administrator to process vendor invoices. Any unused portion of the project budget will be refunded based upon the same pro-rata share used for collection to fund the project.

Data Confidentiality

Conducting evaluation and research efforts cutting across utility service territories requires special consideration relative to meeting the Commission's long held priority of protecting the confidentiality of customer data. To supplement existing Commission and DPS data confidentiality policies, a Confidentiality Agreement will be developed and signed for each project by each participating PA. The Confidentiality Agreement will be tailored for the needs of each project.

Contractor Selection Process

All primary contractors performing work as part of the statewide/joint projects initiative will be selected through an open competitive review process. The PA selected as project administrator will undertake the lead role in developing the Request for Proposals (RFP). Staff and the EAG will serve in an advisory capacity and play a key role in facilitating the necessary consensus on key elements of the RFP including project scope, estimated budget and the criteria for selecting the winning contractor(s). An RFP review team, comprised of representatives of the project administrator, the EAG and Staff will be established to score each proposal and recommend the winning proposal(s). Each member of the review team will have equal standing in this process.

Contract Management

Management of statewide studies and joint evaluations involves functions critical to the success of the project including a transparent RFP and contractor selection processes, coordination of procurement related issues across project sponsors, management of project schedule and deliverables, and representation of progress to the EAG.

A key question is who should manage the statewide and joint projects. How should the manager be selected? What factors should be considered (e.g., PA budget, expertise, staff availability)?

There are several concerns relative to assigning management responsibility by sector or size of evaluation budget. They include:

- Assigning an entire market sector to a single program administrator to manage is likely to prove overly burdensome
- Opportunities would be eliminated for program administrators with proportionally smaller EEPS budgets to participate in study management.
- If market sectors are pre-assigned to program administrators with the expectation that the program administrators will provide a contractor for all market sector related studies, there is no guarantee that the contractor will have the time or ability to perform adequately on each study that may be assigned now or in the future

Ultimately, the ideal candidate to manage a study would be the organization that proposed the project because there is likely to be a positive connection between interest and dedication to the success of the work. It will be important to encourage as much participation from PAs as possible, taking advantage of each PA's unique talents and skills.

The EAG has continually demonstrated that it can collaboratively come to agreement on key issues. Moving forward, the EAG is confident that the distribution of studies and evaluation management can be determined collaboratively as well. To date, NYSERDA has volunteered and managed the Process Evaluation Protocols statewide study and is now in the process of managing the Residential Baseline and Potential study and will soon undertake the commercial baseline study. Con Edison has stepped forward to manage the Residential Gas Efficiency program impact study. The expectation is that other PAs, both large and small, will step forward to manage future statewide studies and joint evaluations.

Additional Ground Rules

The EAG recognizes that in some instances the ground rules do not always offer complete detail, such as providing an outline of a participation agreement. A top priority of the EAG will be to fill in these gaps. The EAG has made significant progress in this regard. Specifically, an EAG subcommittee working on the Residential Gas High Efficiency Heating Program Impact Evaluation project has, along with the manager for the project, Consolidated Edison, invested considerable time and resources in developing detailed documents covering critical project parameters. These documents, including the participation and confidentiality agreements, hold great potential to serve as a model for future projects.