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EVALUATION PLAN GUIDANCE FOR EEPS PROGRAM ADMINISTRATORS

The New York Energy Efficiency Portfolio Standard (EEPS), one of the nation's most ambitious energy efficiency initiatives, requires a significant commitment to transparent, accurate, and timely evaluation. The need for an increased commitment to evaluation is based on several factors including:

- Major increase in energy efficiency program funding.
- Utility eligibility for lost revenue recovery or shareholder incentive payments related to the successful implementation of energy efficiency programs.
- Increased role of energy efficiency in deferring transmission and distribution infrastructure upgrades.
- Increased priority and need for reliable data to facilitate the State's and the New York Independent System Operator's (NYISO) planning and forecasting efforts.
- Need to track progress toward EEPS goals.

For these reasons, the following guidelines were established to facilitate the timely, efficient oversight of EEPS program administration and performance.

Background

On June 23, 2008, in Case 07-M-0548, the Commission established the EEPS and approved the first group of EEPS energy efficiency programs. The order took several important steps to provide for the comprehensive and rigorous evaluation of EEPS programs including increasing from 2 percent to 5 percent the portion of the program budgets dedicated to evaluation and establishing a statewide Evaluation Advisory Group (EAG) to advise the Commission and Department of Public Service staff (Staff) on evaluation related issues. Moreover, the Commission requested that all EEPS program proposals include "a detailed plan for evaluation of each program, including details on the scope and the method of measurement and verification activities."[1]

[1] Case 07-M-0548, Order Establishing Energy Efficiency Portfolio Standard and Approving Programs, dated June 23, 2008.

In order to facilitate the implementation and oversight of EEPS program evaluation, the Order also instructed Staff to, within 45 days, issue Evaluation Guidelines (Guidelines) to inform evaluation planning activities and bring uniformity to evaluation practices and reporting. The Guidelines were developed with input from the EAG, which consists of Staff, utilities, NYSERDA, New York Power Authority (NYPA), Long Island Power Authority (LIPA), state and local government agencies, energy efficiency experts, energy efficiency advocacy groups, and consumer and business advocates. The goal of the Evaluation Guidelines is to provide direction to program administrators involved in the preparation of evaluation plans and to create a foundation for the overall EEPS evaluation effort. The Guidelines are an important step in providing not only the elements of an acceptable evaluation plan, but the standards to strengthen the accountability, accuracy, and usefulness of the evaluation results. The EAG, along with Staff's evaluation team, are responsible for keeping the guidelines up to date, reflective of best evaluation practices, and responsive to the particular needs of New York State's EEPS program portfolio. In addition, the EAG periodically reviews the guidelines to ensure their effectiveness and applicability to evolving needs. Feedback from the EAG is welcome at any time. Also, several members of the EAG and Staff are represented on the Northeast Energy Efficiency Partnership's (NEEP) Regional Evaluation, Measurement and Verification Forum (EM&V Forum). Many of the issues under consideration by the EM&V Forum parallel issues of concern to the EAG, thereby providing an excellent opportunity for sharing ideas and working together to promote transparent, timely and cost-effective evaluation practices. For example, NEEP recently completed a net-to-gross (NTG) scoping study, which was a high priority research topic with the EAG.

Creating an Evaluation Plan

The most efficient approach to effective evaluation planning is to consider program evaluation needs as part of the program design process. Developing an initial evaluation plan in preparation for launching a program allows program evaluators to work with program planners to identify data collection needs, establish budget estimates, and to synchronize evaluation goals with the program's performance goals. It also documents, for the Commission and ratepayers, a serious commitment to rigorous and transparent evaluation.

The details of the evaluation plans will vary depending on the size, scope, and type of programs, but all evaluation plans will be guided by the core principles of providing reliable, timely, and transparent results. At the early stage of program development, program administrators (PAs) may have some difficulty in determining certain aspects of the evaluation design, such as the sampling methodologies, but are, at a minimum, expected to share their initial strategies. An evaluation plan check list is provided in Appendix A. Program administrators may also consider pooling resources to evaluate similar programs on a regional basis. For example, several utilities are considering working together to evaluate a gas furnace rebate program.

Evaluation plans are subject to Staff review and approval.

Components of the Evaluation Plan

A comprehensive evaluation plan should include the following:

- Program summary, including goals and objectives.
- Evaluation goals and priorities (with program theory and logic model, if appropriate).
- Process evaluation methodology -- Process evaluation assesses program design and implementation. It is also used to identify opportunities for program improvement and track program progress.
- Impact evaluation methodology -- Impact evaluation quantifies energy and demand savings and identifies other potential program impacts as appropriate (e.g., environmental benefits). This component should delineate the information to be reported, including energy savings (e.g., MWh, independent and coincident kW and therms), the appropriate measurement and verification approach, and how various attribution factors, such as free ridership and spillover, will be addressed.[2]

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[2] "Spillover" refers to the energy savings associated with energy efficient equipment installed by consumers who were influenced by an energy efficiency program, but without direct financial or technical assistance from the program. Spillover includes additional actions taken by a program participant as well as actions undertaken by non-participants who have been influenced by the program. Sometimes spillover is referred to as "free-drivership" or as "market effects." These market effects may be current or may occur after a program ends. When market effects occur after a program ends, they are referred to as "momentum" effects or as "post-program market effects."

[2] "Free ridership" refers to the percentage of savings attributed to customers who participate in an energy efficiency program but would have, at least to some degree, installed the same measure(s) on their own if the program had not been available.

- Net to gross analysis -- Net to gross analysis (NTG) is represented as a ratio that compares the gross savings of a program to the energy savings actually attributable to the program. Energy savings are estimated after adjusting for factors such as measurement error, measure installation quality, user behavior, and the actions program participants and non-participants would have taken absent the program (e.g., free ridership and spillover). The decision path proposed to arrive at net savings should be discussed.
- Sampling strategies and sample design.
- Data reliability standards (e.g., targeted levels of confidence and precision for customer surveys, measurement and verification).
- Steps to reduce uncertainty by minimizing both systematic bias and random error. The value of a rigorous precision and confidence level is reduced if the sample is significantly biased.
- Data collection and management process (e.g., what data will be collected and in what format, data quality control).
- Timeline for major evaluation milestones.
- Evaluation report format.
- Evaluation budget -- The evaluation budget established by the Commission provides for evaluation funding of up to 5 percent of a program administrator's total program budget. The budgets for individual programs may be more or less than 5 percent.
- Roles and responsibilities (i.e., who does what).
- Interaction with Staff- Define process for allowing Staff adequate opportunity to review and comment on key elements of the evaluation such as work plans, draft surveys, sample designs and draft reports. In addition, the plan should explain how Staff will be kept informed of evaluation progress.
- Evaluation policy -- Describe how the program administration function will be organizationally separated from the evaluation function.
- Multi-year evaluation strategy, if appropriate.
- Other relevant issues (Program issues will vary depending on the program.).

Evaluation Protocols

The evaluation plans are enhanced when their development is guided by a single set of statewide evaluation protocols applicable to all program administrators (including program administrators not subject to the Commission's jurisdiction). The use of common terminology and methodologies enables statewide sharing and analysis of results and accurate tracking of statewide progress toward EEPS energy saving goals.

The primary goal of the protocols is to apply acceptable minimum standards for all programs rather than mandate a "one size fits all" approach. The protocols do not represent a rigid doctrine but offer flexibility to allow the objectives of quality evaluation to be met using the most reliable, responsive, and cost effective approaches. Care was taken to avoid requirements that are unduly burdensome or that add unneeded costs to program efforts.

Common sense dictates that a relatively inexpensive energy efficiency education program (e.g., a brochure program) would not typically require the same level of evaluation rigor and budget as a program investing millions of dollars in distributed generation projects. For programs that have collected extensive evaluation data, a full-scale evaluation may not be necessary every year, especially if there is no reason to assume that the evaluation results would fluctuate significantly from year to year. In general, evaluation efforts should be prioritized so that the riskiest, or highest impact, elements of an energy efficiency program portfolio receive the greatest attention. Cases where the highest standards and the greatest frequency of evaluation would typically include assessment of programs:

- Providing expensive infrastructure investments
- Eligible for utility incentive payments or lost revenue recovery
- Targeted for a significant budget increase
- Producing results far above or below expectations
- Implemented as an innovative program on a pilot basis
- Containing measures with high energy savings variability
- Based on a limited existing knowledge base
- Making large contributions to the overall portfolio savings.

In September 2011, there were approximately 100 EEPS programs. Therefore, it is not practical to provide program administrators with comprehensive and detailed evaluation guidelines customized for every EEPS program design. However, we are able to offer core

guidelines to accommodate all program designs, which are detailed enough to ensure the high quality evaluation demanded by the Commission. PAs and program evaluators may supplement the core guidelines with the National Action Plan for Energy Efficiency (NAPEE) *Model Energy Efficiency Program Impact Evaluation Guide*.[3] The NAPEE Guide is a key result of the efforts of a nationwide team of respected energy and evaluation program experts to develop a national action plan for energy efficiency[4]. The NAPEE Guide contains a clear and concise discussion of the various approaches to developing robust evaluation, measurement, and verification procedures. Overall, the key to a successful evaluation plan is a strategy that is consistent with our recommendations herein, and is based on the use of the generally accepted evaluation approaches articulated in the NAPEE Guide and other reputable sources. Finally, the rationale for the selected program evaluation approach needs to be clear, justifiable and articulated in the evaluation plan.

As the EEPS programs mature, Staff and the EAG will place increased focus on developing evaluation strategies and methodologies to promote greater consistency in the evaluations efforts across the EEPS program portfolio. In February 2012, for example, detailed process evaluation protocols reflecting best industry practices were adopted by Staff and the EAG.

Common Terminology and Definitions

It is important for all evaluation plans to use common terminology to improve the consistency of results and common understanding by all stakeholders. Staff recommends that PAs and evaluators use the most recent version of the reference document produced under the auspices of the NEEP EM&V Forum, *Glossary of Terms*.[5] It is based on a review of many evaluation reference documents and input from members of the EM&V Forum, including participants in New York's EAG.

It is important to clarify that our definition of "realization rate" reflects adjustments to a program's gross energy savings estimate, but does not reflect the impacts of free ridership and spillover. The realization rate is the ratio of project tracking system savings data (i.e., initial

[3] http://www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf
[4] The effort was facilitated by the U.S. Department of Energy and the Environmental Protection Agency.
[5] http://neep.org/uploads/EMV%20Forum/EMV%20Products/EMV_Glossary_Terms_Acronyms.pdf

estimates of project savings) to savings adjusted for data errors and incorporating the evaluated or verified results of the tracked savings. Free ridership and spillover are captured in the net to gross ratio to reflect the degree of program induced actions. Specifically, the gross energy savings estimate, refined by the realization rate, is adjusted to reflect the negative impacts of free ridership and the positive impacts of spillover.

NTG ratio = (1-Free ridership) + Spillover

Impact Evaluation Methodologies

There are often multiple approaches for estimating the same evaluation variable. For example, operating hours of a CFL in a residential home can be estimated either by a phone survey that simply asks residents how long they run their lights, or by metering actual usage. The latter approach is dramatically more expensive, but much more accurate. The NAPEE Guide (Chapters Four and Five) presents options for selecting approaches to evaluating gross and demand energy savings. The approaches are based on widely accepted standards such as the *International Performance Measurement and Verification Protocol* (IPMVP), which is often referenced as a guide to measurement and verification efforts. A more detailed reference document that program administrators might find helpful is the *Regional EM&V Methods Guidelines*, developed by the NEEP EM&V Forum.[6]

In most cases, the data that is collected includes:

- Energy savings (e.g., annual, seasonal, monthly, and hourly)
- Demand savings (e.g., peak, coincident, average, other)
- Operating hours
- Persistence of measures - short and long term persistence, as appropriate (e.g., energy savings persistence of an energy management system could drop off sharply in a few months if settings are readjusted incorrectly but under normal circumstances, building insulation may see little performance decline over many years)
- Free ridership, spillover, rebound effect, interactions and realization rate

[6]http://neep.org/uploads/EMV%20Forum/EMV%20Products/A2%20Regional%20EMV%20Methods%20Savings%20Assumptions%20Guidelines%20May%202010%20-%20FINAL.pdf

In addition to documenting program impacts, another key objective of impact evaluation is to provide feedback that can be used to update the "New York Standard Approach for Estimating Efficiency Programs – Residential, Multi-Family and Commercial/Industrial Measures" (Technical Manual), which is updated periodically to reflect enhancements, additions and modifications. An ongoing, long-term DPS goal is to have the Technical Manual estimates and formulas based on results of the impact evaluations of New York's program portfolio. In the development and implementation of impact evaluation plans, especially those that are measure specific, attention should be placed on collecting the data necessary to inform the Technical Manual revision process, to the extent possible.

While process evaluation is normally the primary source of data to inform recommendations for improving program operation and design, experience has demonstrated that impact evaluation can also be a useful tool for enhancing energy programs. For example, in developing estimates of program energy savings, an impact evaluation could include interviews with managers of multifamily buildings, who in addition to providing insights regarding the operation of energy measures within their buildings, might also provide valuable insights for improving program effectiveness. Moreover, impact evaluation can also provide valuable insights in other critical ways including enhancing data collection, program tracking and the reliability of energy savings estimates. As a result, impact evaluations should, to the degree practicable, seek information to serve as the basis for actionable recommendations for program improvement and provide specific steps/tasks for implementing the recommendations. These objectives should be reflected in evaluation plans.

Process Evaluation

The type of data collection process should be described (e.g., mail survey, phone survey of non-participants). At a minimum, the following issues should be addressed:

- Level of customer satisfaction with the program.
- Effectiveness of the program delivery mechanism from the position of the program delivery contractors, program customers, trade allies and other key stakeholders. Did the delivery mechanism differ from the program plan? If yes, how and why?
- Effectiveness of program promotion.
- Barriers to program participation.
- Assessment of remaining program potential (e.g., retailers participating in a program to increase the percentage of Energy Star appliances might be asked about appliance stocking patterns. If the percentage of Energy Star appliances available is high, program potential might be low.)
- Assessment of non-participants. Why didn't the customer participate?
- Identify lessons learned and provide specific actionable recommendations for program improvement. To the extent possible, the recommendations will include specific steps/tasks for implementation.
- Review program data collection and program tracking systems.

Appendix C of the NAPEE Guide offers a brief discussion of process evaluation. A more detailed discussion of process evaluation can be found in the *California Energy Efficiency Evaluation Protocols* (p.131).[7]

To further enhance process evaluation of New York's energy programs, detailed process evaluation protocols were formally adopted in February 2012 to supplement our Evaluation Guidelines. These protocols (***New York State Evaluation Protocols - a supplement to the New York State Evaluation Guidelines Updated 2012***) were developed under the guidance of the EAG, through a contract with the Johnson Consulting Group, managed by the New York State Energy Research and Development Authority. The Protocols are available in the EEPS evaluation section of the DPS web page: www. http://www.dps.ny.gov/EEPS_Evaluation.html

[7] http://www.calmac.org/events/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006.pdf

All evaluation plans submitted to Staff for review and approval on or after March 1, 2012 shall be consistent with the Protocols. For evaluation plans approved prior to March 1, 2012, every reasonable effort shall be made to achieve consistency with the Protocols.

Minimum Measurement and Statistical Standards

The minimum accuracy standard for customer surveys and estimating gross energy savings at the program level is set at the 90/10 confidence/ precision level. At this level, you can be 90 percent confident that the measured value (for example, the energy reduction resulting from a program) is within +/- 10 percent of the reported value. The 90% level of confidence measurement target was recommended by EEPS Working Group III, which was established to consider evaluation issues as part of EEPS Proceeding. It is also consistent with the guidelines provided in the 1978 Public Utilities Regulatory Policies Act (PURPA) for confidence/precision levels to be used when estimating demand. This is a rigorous standard that, depending on the program type and the population size, may prove impractical or too costly to achieve. When designing the sample, minimizing sample bias is critically important. The value of a rigorous precision and confidence level is dramatically reduced if the sample is significantly biased. For example, technologies, such as call screening and cell phones, have made it more difficult to connect with potential survey respondents and create an unbiased sample. If the 90 percent confidence within +/- 10 precision standard is not realistic, the evaluation plan should clearly indicate the reasons it is not practical and offer detailed justification for an alternative approach.

For questionnaires that target program participants and non-participants, the minimum standard is also 90 percent confidence within +/-10 precision. As with the case for gross savings, in instances where this is not practical or cost effective, the evaluation plan should offer justification and explanation for an alternative level of confidence and precision.

Capturing Impacts Beyond Specific Programs

Evaluation of the EEPS should not be limited to analysis focused only on program specific process and impact evaluation because this approach captures only part of the story. It is also important to examine the broader impacts of EEPS, including assessing market dynamics (e.g., how is the market evolving?), understanding the effects 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 heating equipment). This type of research can provide numerous benefits including insights capable of informing strategic policy decisions, improving program design and implementation, and encouraging more rigorous evaluation results.

In many cases conducting "big picture" research as a statewide or regional effort makes sense. Compared to an individual PA acting alone, a coordinated approach can often result in lower costs and more rigorous results. Another potentially valuable option for statewide/joint research is to develop best practices for improving evaluation techniques and consistency. This is especially important considering the magnitude of the EEPS program portfolio and the large number of PAs.

The EAG created a subcommittee to develop a priority list of the most viable studies for using a coordinated approach and to move these projects forward. Achievements include the recently adopted Process Evaluation Protocols (February 2012) and the release of an RFP in late 2011 seeking a contractor to conduct a statewide residential baseline study.

In October 2011, the Commission endorsed the statewide/joint studies approach by stating. "In some cases, evaluation of similar programs and measures will prove more cost effective, and potentially more rigorous, if conducted jointly by two or more program administrators. To facilitate this approach, up to 33% of total evaluation budgets may be used for joint evaluation and research studies approved by the Director of the Office of Energy Efficiency and Environment."[8]

Ethical and Performance Standards

Program administrators must take all necessary steps to eliminate the opportunities for bias in conducting program evaluations. This is a critical issue considering that the organization responsible for program administration is also responsible for program evaluation. To protect the integrity of the EEPS evaluations, PAs should, to the greatest extent possible, create an organizational separation between the program implementation and program evaluation functions. Department Staff will be closely monitoring the evaluation process including reviewing key evaluation deliverables (e.g., sampling plans, draft surveys, reports), the quality of

[8] CASE 07-M-0548 – Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard. October 25, 2011

the work product, and compliance with the EEPS evaluation guidelines. Staff engages its evaluation technical assistance contractor to help to review and assess the PA evaluation plans and related documents. In addition, Staff occasionally asks the EAG to help to review key evaluation documents. The review form used to assess the content of an evaluation plan is provided in Appendix E.

Program Evaluation Frequency

Early program evaluation efforts should focus on process-related issues to serve as an early warning system, especially for new programs. This approach can be used to determine if the program is operating smoothly and is responsive to stakeholder objectives and needs as well as to identify opportunities to make improvements that can reduce costs and increase program effectiveness. Generally, evaluations focusing on verifying energy savings cannot be completed until a sufficient number of projects in a program have been completed and post-installation operations can be observed. As a result of this variability, we are not establishing a rigid timetable for process evaluation and impact evaluations. Generally, we would expect to see results as soon as reasonably possible. A typical timetable would include a process evaluation in program year 1, and an impact evaluation in program year 2 or 3. The number and frequency of evaluations that are conducted for a program depend on the type and size of the program, the evaluation cost, and other factors, such as the rigor of previous evaluations. The evaluation timetable should be included in the Evaluation Plan.

Database Management Guidelines

A data management system to track EEPS program projects is an integral part of program implementation, and collecting the "right data" is important for effective evaluations. Therefore, detailed data must be compiled for all EEPS program projects. The specific program-participant level data elements that must be collected for every project and term explanations are provided in Appendix C. The data highlighted in Appendix C is designed to guide the program administrator to collect the necessary data to conduct rigorous evaluations. The database must also store key evaluation results such as energy savings (gross and net savings), cost benefit ratios and participant satisfaction scores. The program tracking and reporting specifications will be subject to a major review in 2011. For the Department's guidelines on protecting data confidentiality, please see Appendix D.

Reporting Formats and Frequency

Transparency is a high priority and, therefore, the Commission required PAs to submit monthly, quarterly and annual program reports, and directed Staff, in consultation with the EAG, to develop reporting guidelines, which are available on the EEPS evaluation web page However, a current priority for Staff and the EAG is to establish a statewide database and reporting system that will streamline the reporting process. The new database system is expected to be in place in 2012. While as much data as possible should be made public, the Evaluation Advisory Group will carefully consider data security and confidentiality issues. In addition, Staff and the EAG will ensure that reporting protocols are carefully designed to protect against multiple program administrators counting the same energy savings when, for example, a NYSERDA audit program recommends a lighting upgrade and the customer implements the upgrade with a rebate from a utility program. In that case, a determination would be needed on whether the energy savings should be credited to the audit or the rebate program.

EEPS Evaluation Web Page

More detailed information, including key document and reports, can be found here:

http://www.dps.state.ny.us/EEPS_Evaluation.html

Appendix A

Checklist for an Evaluation Plan and Report

This checklist is designed to serve as a guide for those involved in preparing evaluation plans. It is not all-inclusive list of requirements. Evaluation plans must include all pertinent information required by the guidelines and must offer evaluation designs capable of meeting high standards for accountability, accuracy, and usefulness of the evaluation results.

Item	**Content (Please provide plan page numbers for each bullet)**
Program Background	➢ Describe program under evaluation ➢ Explain the program objectives (energy savings, market transformation ➢ Program theory (logic model, if available) ➢ Anticipated savings (highlight program benefits – energy savings, services provided) ➢ Program schedule ➢ Program budget
Evaluation Approach - General	➢ Evaluation goals (primary and secondary) ➢ Brief overview of evaluation approach ➢ How does the evaluation approach support program goals? ➢ Budget ➢ Evaluation timetable ➢ Staff/consultant resources; list of evaluation contractors. Also note selection process ➢ Ethical and operational standards
Detailed Evaluation Approach	➢ Process evaluation methodology ➢ Impact evaluation methodology ➢ Net to gross analysis – which factors will be considered (free riders, spillover, etc.) ➢ Sampling strategies and design ➢ Targeted level of confidence and precision ➢ Steps to identify and mitigate threats to data reliability ➢ Data collection and management process ➢ Schedule with deliverable dates ➢ Budget priorities by major evaluation activities ➢ Evaluation team – key responsible individuals at organization
Reporting	➢ Frequency and format of status reports ➢ Data collection and tracking process ➢ Final reports should include sections about: • Methodology • Key results • Recommendations • Summary and conclusions • Appendices with detailed documentation of all of the above

Appendix B

References

1. Case 07-M-0548, Proceeding on Motion of the Commission Regarding an Energy Efficiency Portfolio Standard. http://www.dps.state.ny.us/Case_07-M-0548.htm See in particular: Order Establishing Energy Efficiency Portfolio Standard and Approving Programs (issued and effective June 23, 2008), pages 37-38.

2. National Action Plan for Energy Efficiency (2007) *Model Energy Efficiency Program Impact Evaluation Guide*. http://www.epa.gov/cleanenergy/documents/evaluation_guide.pdf Developed by the National Action Plan for Energy Efficiency Leadership Group and intended to help those involved in implementing the five key policy recommendations of the national Action Plan for Energy Efficiency. The intended users of the guide are program designers and evaluators looking for guidance, resources, and references on the evaluation process and the challenges of documenting energy and demand savings and avoided emissions. It includes sections for policy makers, illustrations of model programs, resources, and a glossary.

3. State of California, Public Utilities Commission. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals (April 2006).*
http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/rulemaking/eeEvaluation.htm
This lengthy document, the culmination of a years-long collaborative, describes and presents protocols to guide the evaluations of California's energy efficiency programs. Their intended users are policy makers, program administrators, and contractors retained to design and conduct evaluations. The protocols cover impact, process, and market effect evaluations as wells as codes and standards and emerging technology program evaluations, and evaluation budgets.

4. State of California, Public Utilities Commission. *California Evaluation Framework (June 2004).*
ftp://ftp.cpuc.ca.gov/Egy_Efficiency/CaliforniaEvaluationFrameworkSept2004.doc
This document provides a consistent, systemized, cyclic approach for planning and conducting evaluations of California's energy efficiency and resource acquisition programs. It provides information concerning when evaluations should be conducted, the types of evaluation that can be conducted, and a discussion of approaches for conducting those studies. The document was also used as a foundation for the Protocols described above.

5. Efficiency Valuation Organization. *IPMVP Public Library of Documents.*
http://www.evo-world.org/
The IPMVP library of documents consists of the various volumes of the International Performance Measurement and Verification Protocol (IPMVP). The IPMVP provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities. It may also be used by facility operators to assess and improve facility performance. Energy conservation measures (ECMs) covered in the protocol includes fuel saving measures, water

efficiency measures, load shifting and energy reductions through installation or retrofit of equipment, and/or modification of operating procedures.

6. Consortium for Energy Efficiency Energy *Efficiency Program Evaluation: A Guide to the Guides* http://www.cee1.org/eval/eval-res.php3
The CEE's "Guide to the Guides" clarifies the relationships among evaluation documents with a national scope, particularly the DOE/EERE's *Impact Evaluation Framework for Technology Deployment Programs* and the National Action Plan for Energy Efficiency's *Model Energy Efficiency Program Impact Evaluation Guide*. The "Guide to the Guides" also identifies other evaluation guides written for particular regions or states that may have broader implications, and other useful documents and resources related to evaluation.

7. Ontario Power Authority.
http://www.powerauthority.on.ca/Page.asp?PageID=122&ContentID=6271 Website with links to documents describing the Ontario Power Authority's energy efficiency program and approach to evaluation, verification, and measurements. OPA's approach considers energy and peak demand savings, cost-effectiveness, and market impacts of energy efficiency program.

8. Northeast Energy Efficiency Partnerships, Inc. *Regional Evaluation, Measurement, and Verification Forum.*
http://www.neep.org/policy_and_outreach/EMV.html
This webpage provides links to documents produced by the NEEP Evaluation, Measurement and Verification Forum. The NEEP is a regional nonprofit organization whose mission is to promote the efficient use of energy in homes, buildings and industry in the Northeast U.S. through regionally coordinated programs and policies. The Evaluation, Measurement and Verification Forum was established in order to help Northeast states and interested stakeholders to develop and use common regional protocols to estimate, evaluate, track and report energy-related savings, costs and emission reductions from demand-side resources.

9. Northeast Energy Efficiency Partnerships, Inc. *The Need for and Approaches to Developing Common Protocols to Measure, Verify and Report Energy Efficiency Savings in the Northeast: Final Report (January 2006).*
http://www.neep.org/files/Protocols_report.pdf
This report addresses: (1) the specific policy needs for common protocols to measure, verify and report energy savings in the Northeast, (2) the level of transparency and consistency in existing M&V protocols and economic frameworks used in the Northeast states; and 3) lessons to learn from experience with M&V protocols in other states and regions of the country. The report provides conclusions and recommendations to policymakers for how common regional protocols can be developed to serve key policy interests. The intended audience includes stakeholders in the Northeast (e.g., policy makers and regulators, evaluators, modelers, program implementers including utilities) as well as other states that are likewise grappling with how improved and more consistent M&V approaches can simplify and enhance their efforts to advance energy efficiency.

Appendix C

Data to be Collected for Program Evaluation Purposes

For each program, this list contains the data elements to be routinely collected and maintained, as applicable, for each measure for each participant in a program. These data must be maintained in electronic form by PAs to measure the progress of their energy efficiency programs. **This revised list contains data elements required by the Technical Manual Appendix M and N and is currently being vetted by the EAG and IAG.** The program-tracking database must be maintained at the measure level. The participant-level data will serve as the foundation for the monthly, quarterly, and annual reports required by the DPS. There are a number of variables that must be included in any program-tracking database. These should be available to the DPS staff and evaluation contractors within 30 days following a data request. For details on the requirements of the program tracking database for midstream, upstream and public awareness program information, please see the reporting manual, which is available on the EEPS evaluation web page.

Table: Variables Required for Participant-Level Program-Tracking Databases for Downstream Incentive Programs

Tracking Database Variables	Definition of Variables
PA/PROGRAM INFORMATION	
Program administrator	Utility or NYSERDA
Program ID	Program ID will be assigned by DPS at a later date.
Program name	Program name
PARTICIPANT INFORMATION [1]	
Participant first name	Participant first name
Participant last name	Participant last name
Participant telephone number	Participant telephone number
Participant fax number	Participant Fax number
Participant E-Mail address	Participant E-Mail address
Service street address	Street address at which measure was installed
Service city	City in which measure was installed
Service ZIP code	ZIP code associated with the service street address and city
Weather station assignment number [2]	The weather station ID assigned to the participant service address
Account number	Utility account number affected by the installation of the efficient measures

[1] See Appendix D for the Customer Data Guidelines, which clarify the process for maintaining the confidentiality of customer data. Usually, the participant is the end user (i.e., the person on whose premises the measure was installed and who received the rebate). In some cases, the participant could be a building owner who is renting to either residential or nonresidential tenants and who receives the rebate for installing measures in apartments or offices.

[2] Weather data (heating and cooling degree days) will be obtained from PA-maintained weather stations or from NOAA weather stations which have been mapped to customer sites based on ZIP codes.

Tracking Database Variables	Definition of Variables
Meter number	The meter number associated with the account number affected by the installation of efficient measures
Service turn-on date	The date of service turn for the program participant
Rate classification	Rate classification
Site-specific primary NAICS [3]	The two-digit NAICS for the affected dwelling/building
Building type/dwelling type [4]	Description of the dwelling or building type
KEY PROJECT DATES [5]	
Program application date [6]	Program application date
Application approval date	Date on which application was approved
Post-installation inspection date	Date on which measure installation was inspected on site by program administrator. Note that post-installation inspection dates may not be available or they might only be available for a sample of program participants.
Rebate payment date	Date on which rebate check was issued.
MEASURE AND REBATE INFORMATION	
Measure-project name	Name of measure
Measure description	Description of the measure
Measure quantity	Quantity of the measure
Unit description	Description of the unit (e.g., tons, square feet, lamp)
Rebate amount per unit [7]	Rebate amount per unit
Financing amount per unit	Financing amount per unit
INSTALLATION-TYPE INFORMATION	
Type of Installation (TRC Approach)	A flag indicating whether the record is a case of normal, early, or special circumstance replacement or an add-on measure. ER=Early Replacement; NR=Normal Replacement; SC=Special Circumstance; AO=Add On.

[3] The North American Industry Classification System (NAICS) was developed as the standard for use by Federal statistical agencies in classifying business establishments for the collection, analysis, and publication of statistical data related to the business economy of the U.S. NAICS replaces the Standard Industrial Classification (SIC) system.

[4] A list of common facility or building types or codes (e.g., DOE 2 Model Types; NYSERDA list of facility types) is included in the Technical Manual.

[5] The program application date, the application approval date, and the rebate payment date must be provided. For projects in which the application is received, approved, and a rebate is paid to the participant all in the same day, the date would be the same for all three variables.

[6] The application date is the date on the application, or if that is missing, the date on which the administrator received the application.

[7] PAs could design rebates on various bases (e.g., per bulb, per refrigerator, per pool pump, per ton in the case of chillers or per cubic feet for insulation). If incentives are based on performance (whole building or custom project), the unit would be "1" and the rebate per unit would be the total rebate received.

Tracking Database Variables	Definition of Variables
Effective Useful Life (EUL)	The effective useful life (median number of years that measure is expected to remain in use based on national data) of the measure being installed, as prescribed by the Commission, or, if none prescribed, as estimated by the PA.
Remaining Functional Period	**For Add-on measures:** N/A **For normal, end of life replacements (this includes breakdowns prior to and after the EUL):** N/A **For early replacements:** The remaining useful life (RUL), which is the EUL minus the actual or estimated age of the old equipment in place. For more details, see Appendix M of the Technical Manual. **For special circumstance replacements:** The default functional period (DFP) which is ¼ of the EUL (rounded to the nearest whole number) of the efficient measure being installed. For more details, see Appendix N of the Technical Manual.
Adjusted EUL	**For Add-on measures:** N/A **For normal, end of life replacements:** N/A **For early replacements:** That number of years at full savings in which the present value of savings approximates that of the dual baseline approach set forth in tables in Appendix M of the Technical Manual. **For special circumstance replacements:** That number of years at full savings in which the present value of savings approximates that of the dual baseline approach set forth in tables in Appendix N of the Technical Manual.

Tracking Database Variables	Definition of Variables
Measure Resource cost (including installation) per unit	**For add-on measures:** The full cost of the measure **For normal, end of life replacements:** The incremental cost between the currently-on-the-market standard, minimally-compliant equipment and the new, efficient equipment[8] **For early replacements:** The adjusted full cost of the new efficient equipment. For more detail, see Appendix M of the Technical Manual. **For special circumstance replacements:** The adjusted full cost of the new efficient equipment. For more detail, see Appendix N of the Technical Manual.
Ratio of incremental savings to full savings	**For add-on measures:** N/A **For normal, end of life replacements:** N/A **For early replacements:** For more detail, see Appendix M of the Technical Manual. The ratios appear as column headers in the tables. **For special circumstance replacements:** For more detail, see Appendix N of the Technical Manual.

[8] If PAs can track incremental costs by measure or project in their program tracking databases, they should do so. However, this might not always be possible. In some cases, incremental costs for measures may be obtained from another source (e.g., the NYSERDA Measure-Level Database) and assigned to individual measures. Because it is assumed that PAs have reviewed the incremental costs of measures they promote as part of the technology screening process, the identification of incremental costs is expected to be relatively straightforward. Note that there may be some cases in which the installation costs of the efficient equipment are larger than the installation costs of the standard equipment. The formula for estimating incremental costs should be documented.

Tracking Database Variables	Definition of Variables
Ratio of incremental costs to full costs	**For add-on measures:** N/A **For normal, end of life replacements:** N/A **For early replacements:** For more detail, see Appendix M of the Technical Manual. The ratios appear as column headers in the tables. **For special circumstance replacements:** For more detail, see Appendix N of the Technical Manual.
PROJECT SAVINGS INFORMATION	
Estimated gross first-year kWh savings per unit[9]	**For add-on measures**: Use full first-year gross first-year kWh savings per units **For normal, end-of-life replacements**: Use incremental gross first-year kWh savings per unit **For early replacements**: Use full first-year gross first-year kWh savings per units **For special circumstance replacements**: Use full first-year gross first-year kWh savings per units
Source of Estimated First-Year Gross Savings	Enter "TM" for calculations based on Technical Manual, "C" for custom measures, or "O" for calculations based on some other database.
Variance from Technical Manual	For measures in the Technical Manual, what is the ratio (e.g., 0.80 or 1.0 if no difference) of the gross first-year savings reported above to the gross first-year savings calculated using the Technical Manual. If measure not in the Technical Manual, enter "NA."

[9] Gross savings are defined as the change in energy consumption and/or demand that results directly from program-related actions taken by participants in the DSM program. The gross savings reported by the PAs are referred to as *ex ante* values since they have not been adjusted by *ex post (after measure installation)* evaluation efforts. If the project is a custom measure then all savings can be at the project level rather than per unit.

Tracking Database Variables	Definition of Variables
Estimated gross first-year on-peak kW savings per unit (NYISO)	**For add-on measures**: Use full first-year gross kW savings per units **For normal, end-of-life replacements**: Use incremental first-year gross kW savings per unit **For early replacements**: Use full first-year gross first-year kW savings per units **For special circumstance replacements**: Use full first-year gross first-year kW savings per units
Estimated gross first-year therm (natural gas) savings per unit	**For add-on measures**: Use full first-year gross first-year therm savings per units **For normal, end-of-life replacements**: Use incremental gross first-year therm savings per unit **For early replacements**: Use full first-year gross first-year therm savings per units **For special circumstance replacements**: Use full first-year gross first-year therm savings per units
Net-to-gross ratio [10]	Net-to-gross ratio
Estimated net first-year kWh savings per unit [11]	Estimated net first-year kWh savings per unit
Estimated net first-year on-peak kW savings per unit (NYISO)	Estimated net first-year on-peak kW savings per unit according to NYISO peak, as defined in the Technical Manual.
Estimated net first-year therm savings per unit	Estimated net first-year therm savings per unit
Gross coal savings per unit	Gross coal savings per unit consistent with the gross first-year savings per unit reported above.
Gross kerosene savings per unit	Gross kerosene savings per unit consistent with the gross first-year savings per unit reported above.
Gross oil savings per unit	Gross oil savings per unit consistent with the gross first-year savings per unit reported above.
Gross propane savings per unit	Gross propane savings per unit consistent with the gross first-year savings per unit reported above.

[10] Program Administrators should use the NTGR value (0.90) in the current Technical Manual, unless Staff has accepted a more appropriate value from a study on a case by case basis. The goal of the default NTGR is to establish a consistent starting point for all PAs.

[11] Net savings are the total change in load that is attributable to the utility DSM program. This change in load may include, implicitly or explicitly, the effects of spillover, free riders, state or federal energy efficiency standards, changes in the level of energy service, and natural change effects. The net savings reported by the PAs are referred to as ex ante values since they have not been adjusted by ex post (after measure installation) evaluation efforts.

Tracking Database Variables	Definition of Variables
Gross water savings per unit	Gross water savings per unit consistent with the gross first-year savings per unit reported above.

Appendix D

STATE OF NEW YORK DEPARTMENT OF PUBLIC SERVICE

THREE EMPIRE STATE PLAZA, ALBANY, NY 12223-1350

www.dps.state.ny.us

PUBLIC SERVICE COMMISSION

GARRY A. BROWN
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Commissioners

PETER McGOWAN
General Counsel

JACLYN A. BRILLING
Secretary

May 1, 2011

Via E-Mail
Evaluation Advisory Group

Dear Sir/Madam:

On June 12, 2009, I wrote to you to provide guidance for the proper collection and handling of customer energy consumption data for EEPS/SBC program evaluation purposes. The Customer Data Guidelines (guidelines) were developed to clarify the process for maintaining the confidentiality of customer data and specifically addressed customer energy consumption data that would be analyzed to estimate the energy savings resulting from EEPS/SBC programs.

In response to concerns expressed by EEPS/SBC program administrators and the Evaluation Advisory Group, Staff revised these guidelines to allow utilities administering EEPS programs to provide program non-participant contact information to their evaluation contractors under specific circumstances and restrictions. Data from non–participants can help us to more fully understand a program's strengths and weaknesses including insights into why some customers chose not participate. This type of information can play an important role in achieving the Commission objective of reliable and rigorous evaluation, and providing results that can lead to better and more cost effective programs.

The revised guidelines are attached. If you have any comments or questions, please contact Bill Saxonis at william_saxonis@dps.state.ny.us or 518-486-1610.

Sincerely,

Floyd E. Barwig
Director
Office of Energy Efficiency and the Environment

Attachment

REVISED - APRIL 2011

Customer Data Guidelines

Analyzing utility customer energy consumption data is often a cost effective approach for documenting energy savings from System Benefits Charge (SBC), Energy Efficiency Portfolio Standard (EEPS), and other Commission-approved energy efficiency programs. Customer energy consumption data is collected before and after energy actions are implemented and statistically analyzed (e.g., adjusted for variables such as weather) to produce estimates of energy savings. This approach can provide valuable data at a lower cost than site visits or end use metering. While customer data may facilitate rigorous and cost effective evaluation, priority must be given to protecting the consumer's privacy and data.

Staff has developed guidelines for securing customer consent and maintaining confidentiality of customer data. These guidelines should be followed by program administrators and their evaluation contractors seeking access to customer energy consumption data.

Customer Consent Form

To ensure that the customer knowingly agrees to disclose his/her confidential data, the program administrator should furnish to program *participants* a form authorizing the release of certain specifically enumerated customer data to the program administrator and, if applicable, the evaluation contractor. The availability of customer data must be limited to the minimum data necessary to conduct the evaluation, consistent with evaluation guidelines approved by DPS evaluation Staff. This data could include consumption data, but may not include payment histories. A customer signature or the equivalent (i.e., an electronic signature) is required. The consent form should explain that the data will be used only for program evaluation purposes, confidentiality will be strictly protected, and results will only be reported in the aggregate. The customer consent language should be displayed prominently, directly above the customer's acceptance signature, if possible. The consent form should be included as part of the program application material.

To further facilitate the evaluation process, the consent form should also include language requiring program participants to agree to cooperate with activities designed to evaluate program effectiveness, such as responding to questionnaires and allowing on-site inspection and measurement of installed program supported measures.

Utility-Evaluator Confidentiality Agreement

Program evaluators contracted by an EEPS or SBC program administrator must sign an agreement with the utility providing the data that states that they will keep customer information, including energy consumption data, confidential at all times. The agreement must specify how the data will be used and reported and explain the process for disposing of the data at the conclusion of the evaluation project. Program evaluator agreements should be submitted

as part of the evaluation plans approved by Staff. Key components of the agreement must include:

1) The contractor will maintain the confidentiality of all customer data;

2) All customer information provided to the contractor will be used solely to evaluate energy efficiency programs consistent with the agreement;

3) Customer information will be safeguarded from unauthorized disclosure with all reasonable care;

4) At the conclusion of the evaluation project, or if the program administrator and evaluator end their business relationship, the evaluator will return to the utility all customer information (including any data or analyses generated from the data) and/or provide proof to the utility that the data was destroyed;

5) If the program evaluator and/or the program administrator is affiliated with or doing work for any retail energy business interest, then the program evaluator must provide specific details on the program evaluator's internal security arrangements that will keep the customer data secure from employees involved in unregulated retail energy business related activities in the service territory from which the data was extracted; and

6) Each program evaluator that receives customer information must agree to indemnify the providing utility from any and all harm that may result from the inappropriate release of customer information by the program evaluator or its representatives.

Non-Participant Customer Information

Analysis of program non-participant energy consumption data can play a key role as a control against which to measure the participant group results, including helping to identify naturally occurring energy efficiency. In other cases, non–participants may be surveyed to more fully understand a program's strengths and weaknesses. The evaluator would need to clearly articulate and justify the need for and uses of the data to the customer's utility and Staff.

The Department recognizes that obtaining consent forms from non-participants could be a burden on program administrators. To facilitate quality evaluations and ensure that evaluations are implemented in a cost effective manner, the exchange of personally identifiable information, defined as information that is capable of directly indentifying an individual, for *non-participants* between a utility and its evaluation contractor will be permissible under the circumstances and restrictions described here. When an approved evaluation plan calls for analysis of non-participant energy consumption, the information shall be redacted by the customer's utility to remove all personally identifiable information and only provide consumption information identified by generalized category such as service class, customer type (e.g., single family) or location (e.g., Manhattan). In instances when, after the redacting process, a customer might still be identifiable (e.g., the customer is the single large industrial customer in a small service territory), the utility should seek customer consent for inclusion of

the information in the evaluation process through a signed customer consent form or exclude the information from the evaluation process.

For evaluation surveys requiring personally identifiable customer information, the utility may provide such information to its contractors without a consent form provided the following requirements are met. The evaluation contractor must demonstrate to the providing utility that the information is needed to complete the specific evaluation survey for which it is requested. The evaluation contractor must also demonstrate that the information sought is the least amount necessary, both in terms of number of customers and level of detail for each customer, to complete the relevant evaluation survey. Finally, the data shall be made available pursuant to a written confidentiality agreement, including all the provisions described above.

Information to be provided by a utility without prior customer consent should never include payment history or detailed usage history. Usage history, if provided at all, shall be limited to general categories of usage (e.g. commercial customers using over 100 kW) and shall only be provided when necessary to ensure evaluation surveys are sufficiently targeted. Details of the customer information that will be provided to program evaluators, including the exact type of information, the type of evaluation survey for which it will be used, sample sizes and sampling techniques shall be contained in the evaluation plans approved by Staff.

If a customer, whose personally identifiable information has been provided to an evaluation contractor without prior written consent, indicates that he/she is unwilling to participate in evaluation activities, or otherwise wishes not to be contacted in relation to program evaluation, the evaluation contractor must report such to the utility within a reasonable time. The utility will compile and maintain a “do not contact” list and refrain from including any customers on that list in future evaluation activities.

Appendix E

DPS Evaluation Plan Review Form

The following form is a template used by the Staff and evaluation contractors as a guide to evaluate PA evaluation plan performance and conformance with the Evaluation Guidelines.

DPS Evaluation Plan Review Form for

Review of the EM&V Work Plans

Name of Person Doing Review:
Administrator Name: _____
Program Name(s): _____
Contact Individual at administrator: _____
Contact phone/E-mail: (___) ___ - _____
Program Implementer: _____
Evaluation Contractor: _____
Evaluation Plan Received (Date): _____
Review Returned (Date): _____
Program Budget: $ _____ .00
Five percent of the program budget: $ _____.00
Evaluation Budget as $ _____ & Percent of Program Budget: ___%

Summary

Overall Comments on Plan:

_____

_____

_____

Recommended to accept without additional changes: ___Yes ___No

(If no, complete the following "changes needed" section)

Changes Needed (Be specific about what must be addressed in revised draft)

1. _____
2. _____
3. _____

Specific Areas of Comment

The follow table is provided to record specific issues and concerns during the review process that help amplify and explain the above comments.

(Rows without entries are determined to be acceptable)

DPS Evaluation Plan Review Subject	Comment or Explanation of Issue (Be brief and focused as possible)	Is this critical to be corrected before approval? Y/N
Overall Comments		
Planned inclusion of DPS at critical steps		
Overall detail and clarity of plan		
Clarity of task descriptions		
Adequate independence of evaluation contactors		
Draft and final reporting dates meet DPS needs		
Plan follows DPS protocols and guidelines		
Impact Evaluation		
Overall impact evaluation methods and approach		
Approach for estimating kWh savings		
Approach for estimating peak kW		
Approach for estimating total natural gas savings		

Approach for peak gas savings[20]		
IPMVP Option or justification for not meeting IPMVP		
Approach for field measurements and verification		
Baseline setting approach for impact assessment		
Sampling plan or sampling approach for impact assessments - adequacy, non-biased (for each data collection element), representativeness		
Data and data sources used in impact assessments		
Net to Gross approach and rigor applied		
Program Cost-effectiveness		
Approach and data used for assessing cost effectiveness		
Market Effects and Spillover		
Approach for assessing market effects or coordinating with market effects study		
Approach for assessing participant spillover		

[20] Peak Gas is defined as the therm savings over a 24 hour period for which the mean temperature for that day is zero degrees Fahrenheit. Gas consumption does not increase after this point in NY (as the mean temperature goes below zero).

Market Assessments		
Approach for assessing program-related market issues and operations		
Other market assessments issues		
Provide Ongoing Feedback and Guidance		
Process for getting information to program fast enough to be useful in the current program		
Process Evaluation		
Overall process evaluation methods and approach		
Adequacy of researchable issues		
Degree of focus on improving program operations and effectiveness		
Data collection approaches and efforts		
Survey and interview processes and approaches for participants and non-participants		
Reviews of operations, efforts and approaches		
Sampling approach and adequacy		
Provide Ongoing Feedback and Guidance		
Process of documenting and providing early results to administrators		

Observations on Cost of Effort		
Ability of the evaluation to inform technology-specific TRM change considerations, if appropriate.		
Other Comments or Issues		

Revised Plan Review Comments

To be completed after revised plan is submitted.

_____

_____

Are recommendations included in Revised Plan ___Yes ___ No

Recommendations not included in Revised Plan:

_____

_____

_____

Reasons provided by administrator for not including changes:

_____

_____

Have concerns been satisfactorily addressed ___Yes ___ No

If no, explain below.

1. Put in issue here
2. Put in issue here
3. Put in issue here