Evaluation and Research Plan - Fiscal Year 2017

(July 1, 2016 to June 30, 2017)

New Jersey's Clean Energy Program
Energy Efficiency and Renewable Energy Programs

September 21, 2016

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I. Introduction

This report is the ninth evaluation and research plan prepared by the Center for Energy, Economic and Environmental Policy ("CEEEP") since 2004. It sets out a proposed process for establishing and executing a detailed evaluation and research plan for New Jersey's Clean Energy Program ("NJCEP"). This report also summarizes evaluation activities recently completed or currently underway, identifies major issues facing the Board related to New Jersey's Clean Energy Program and how the evaluation activities proposed in this and past plans will support the Board's decision making process as it addresses these issues.

Table 2 and Appendix A of this report includes a full list of previous evaluation plans and reports.

The following evaluation studies have been undertaken since the last circulated Evaluation Plan in February 2015. Some of these are complete while others are in progress:

- **Benchmarking and Metrics Studies** have been completed to compare the effectiveness of the NJCEP and utility-administered programs with those in other jurisdictions, and establish goals for the New Jersey programs.
- **Avoided Cost Assumptions:** In May 2016, CEEEP provided its Avoided Cost assumptions to AEG for electricity and natural gas (wholesale and retail), capacity, environmental externalities (CO2), and line losses.
- **Cost-Benefit Analysis:** Prospective CBA of energy efficiency and renewable energy programs sponsored by the NJCEP, market managers and utilities will be conducted by the AEG Team for CEEEP's review. CEEEP will continue to conduct retrospective NJCEP EE CBAs.
- **Portfolio-level Process Evaluation:** Completed in January 2016.
- **Baseline Evaluation RFP:** At Treasury, awaiting to be issued.
- **CHP Evaluations:** Conducted by the AEG Team in consultation with CEEEP to inform CHP and Distributed Generation program design.
- **OSW Evaluations:** Wind assessments have been conducted for BPU internal purposes by Rutgers University.
- **Protocols Evaluation:** Rutgers University has issued the RFP to evaluate the Protocols (aka Technical Resource Manual) and provide updates for selected measures.

Evaluation and research activities are intended to provide a continual feedback loop to policymakers, program administrators and program managers. It is therefore important to integrate evaluation findings along with actual tracking of results, so that corrective actions can be taken and long-term policy decisions can be framed. Future evaluation plans should consider having ongoing evaluation tasks that may provide almost real-time program improvement information. As a long-term objective it may be worthwhile to explore how evaluation can be made an integral part of a program design.

With the new Program Administrator, the AEG Team, now is an ideal time to continue to integrate evaluation planning with the strategic planning process. As part of this integration, there are three substantive areas that future evaluation planning should consider. First, evaluation should be viewed as a strategic activity and continued to be given the associated level of support and priority. Second, continual evaluation should be part of ongoing program administration and activities as opposed to a separate, after-the-fact endeavor. Continual evaluation, particularly tracking metrics over time and across jurisdictions and comparing them to standard benchmarks is critical. Third, evaluations of all ratepayer funded energy efficiency and renewable energy programs should be coordinated to efficiently leverage ratepayer evaluation expenditures. Evaluation studies provide justification for continuing ratepayer funded energy efficiency and renewable energy programs, so a robust evaluation framework is critical to providing ratepayers full value for programs they fund.

Also shaping the planning of evaluation activities are two major policy initiatives that may impact energy efficiency and renewable energy programs. These initiatives include:

- Tracking progress towards the five goals set out in the State Energy Master Plan (EMP) dated June 2011[1], including:
    - Drive down the cost of energy for all customers
    - Promote a diverse portfolio of new, clean, in-State generation
    - Reward energy efficiency and energy conservation and reduce peak demand
    - Capitalize on emerging technologies for transportation and power production
    - Maintain support for the renewable energy portfolio standard of 22.5% of energy from renewable sources by 2021
- The release by the U.S. Environmental Protection Agency (EPA) of the Clean Power Plan, which is presently under judicial review and could impact future EMP and evaluation activities, and the State's Implementation Plan.

It is important to note at this juncture that for a holistic planning and implementation process, a key requirement is that of a long-term funding and contractual commitment. Ideally a long-term evaluation plan should be developed which is synchronous with the four-year funding cycle for NJCEP programs (also referred to as the Comprehensive Resource Analysis). Under the current practice of developing short-term one year long CRA funding budgets, it is not possible to develop a comprehensive multi-year evaluation plan. This evaluation plan is therefore developed taking into consideration the budget and contractual limitations and the studies that will be needed to support identified policy initiatives.

Several entities that are involved in the oversight, delivery, evaluation and management of New Jersey's Clean Energy program will have a role in implementing this evaluation plan including[2]:

- The Board of Public Utilities (the "Board" , "BPU")
- The Office of Clean Energy ("OCE")
- Rutgers Center for Energy, Economic and Environmental Policy ("CEEEP")
- Applied Energy Group ("AEG") in its current role as Program Administrator
- The utilities in their role managing their energy efficiency programs and the Comfort Partners program
- The Evaluation Committee, including representatives from the BPU, AEG, and CEEEP, in its role developing evaluation plans, coordinating the evaluations, and most importantly communicating the results of any evaluations with the BPU and other stakeholders and tracking whether recommendations from evaluations are implemented.
- The Division of Rate Counsel ("Rate Counsel") in its role of participating in the development of the evaluation plan, reviewing and commenting on draft evaluation plans and proposed modifications to the Protocols, and reviewing and commenting on evaluation reports
- Other stakeholders in their role of participating in and providing feedback on evaluation activities.

[2] Please note that under the new program administration structure there is a single program administrator role. The ongoing strategic management process is establishing the administrative structure for evaluation.

II. Purposes of Evaluation

New Jersey's Clean Energy Program ("NJCEP"), one of the nation's most ambitious energy efficiency and renewable energy initiatives, requires a significant commitment to transparent, accurate, and timely evaluation. The need for a commitment to evaluation is based on several factors, including:

- The need for regulatory accountability given the significant and increasing level of public funds dedicated to energy efficiency and renewable energy programs
- The need to assess the effects that the presence of both NJCEP and utility-administered program have on the impacts and administration of each
- The need to provide clear and concise reporting to policymakers and the general public concerning both the energy savings and impacts of the program, and cost-effectiveness of the programs in achieving those impacts
- The need to establish objective measures of progress towards state policy and program goals including in deferring generation, transmission and distribution infrastructure upgrades and meeting greenhouse gas goals
- The need to evaluate and improve the administration of the program, and potential for incentive payments related to the successful implementation of energy efficiency and renewable energy programs
- The need for continual improvement and program performance at a programmatic and portfolio level based on the review of annual and periodic evaluations
- The desire to have NJCEP programs at the forefront of emerging technologies and innovative program design
- The potential for efficiency savings and distributed renewables to be bid into the new PJM Reliability Pricing Market[3]
- The need to ensure that energy efficiency and renewable energy programs are designed and administered to provide benefits commensurate with their costs, and to achieve the desired goals in a cost-effective manner
- The need to assure that the measurement protocols used to measure energy savings and other program benefits are technically accurate and reflective of current market conditions
- The need to provide timely feedback to program managers, program administrators, and policy makers

Program evaluation can have a number of different purposes and can be either backward looking or forward looking. Both of these perspectives are valuable and important. Although the goals of evaluation can be articulated in a number of different ways, they generally fall under one of the following categories:

Retrospective:

[3] PJM has recently proposed new rules for compensation to Demand Response resources and for capacity payments

- Quantifying the historical impacts of programs – in energy, environmental and/or economic terms – to assess whether goals have been achieved
- Quantifying the costs and benefits, of the programs to assure that ratepayers are receiving adequate benefits from their investments, and are receiving the maximum possible benefits from the funds expended
- Assessing whether the performance of the organizations delivering programs were good enough to warrant payment of performance incentives (i.e. for achieving goals in a cost-effective manner)
- Qualitative review of program procedures, processes, participation, marketing, and other activities to provide a review of how the program operates on a functional basis and to provide recommendations for improving operations in the future

Prospective:

- Identifying keys to program successes and/or failures so that the program elements associated with such successes are continued, emphasized even more and/or applied to other initiatives where appropriate, and elements associated with failures are changed
- Assessing whether programs can be improved to be more effective – whether in attracting participants, obtaining more system savings, increasing participant satisfaction, and/or improving the efficiency of service delivery
- Assessing which historically pursued opportunities warrant continued attention and which do not (e.g. if the market is sufficiently transformed, or if new lower estimates of savings potential cannot justify market interventions)
- Assessing current baseline conditions of existing homes and businesses to determine the type and efficiency of equipment currently installed
- Identifying new opportunities for cost-effective savings (i.e. market potential study)
- Estimating the economic impacts of future initiatives to determine whether they should be pursued (i.e. whether the benefits exceed the costs)
- Establishing market benchmarks (e.g. market share for a particular efficient product and degree of market transformation) and/or performance indicators against which future program progress can be measured
- Undertaking a thorough review of the protocols used to measure energy savings and other program benefits to assure that they are technically accurate and consistent with current market conditions, thereby assuring a proper foundation for future evaluations

III. Types of Evaluation Activities

The main types of evaluation activities include:

- Overall Goals, Objectives and Outcomes Assessment;
- Economic impact and leveraging of New Jersey Clean Energy Program, including both positive impacts such as creation of clean energy industry jobs, federal funding, and private capital, and negative impacts resulting rate surcharges needed to pay for the program;
- Cost Benefit Analysis;
- Benchmarking and Metric Studies;
- Market Potential Studies;
- Market Assessments;
- Baseline Studies;
- Impact Evaluations;
- Process Evaluations;
- Tracking System Assessments; and
- Review of Protocols for Estimating Program Impacts.

Table 1 shows the studies that have been conducted in New Jersey since 2009 and some of the anticipated studies from 2017 through 2020. Appendix D shows the studies conducted from 1999 to 2008 and a description of the various types of evaluations. For more details on these studies, see Table 2, Table 3, and Appendix A. More details on the proposed evaluations can be found in Section V.

Table 1: New Jersey Evaluation Timeline: 2009-2020

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BPU Proceedings	CRA Funding Cycle 2009-2012				CRA Funding Cycle 2013-2016				CRA Funding Cycle 2017-2020			
EDECA												
CRA Proceeding												
EMP												
Major Evaluation Studies												
Evaluation Plan												
Cost-Benefit Analysis												
Retrospective	**EE**	**EE**	**EE**		**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**
Prospective	**EE**								**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**
Market Potential				**EE/RE**	**EE/RE**							
Market Assessment												
Benchmarking Study							EE					
Baseline Study									**EE**			
Impact Evaluation	**EE/RE**											
Process Evaluation												
Tracking System Assessment												
TRM Annual Update	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**	**EE/RE**
3rd Party Review of TRM								EE/RE				
Economic Impact Study						EE/RE						
Goals, Objectives, & Outcomes							EE/RE					
Survey & Focus Group												

IV. Procurement of Evaluation Studies

In order to facilitate the procurement of the necessary studies to support energy efficiency program planning, CEEEP proposes that the list of reoccurring "Evaluation" studies be divided into those that are market assessments and those that evaluate EE programs.

This division would allow the Program Manager (AEG Team) to procure the necessary market assessments it needs to conduct its strategic planning and program design via its contract, assuming the appropriate AEG contract modification is executed. By having the AEG Team procure these studies that do not involve evaluations of their performance, this avoids the contracts being procured either via Rutgers University or the NJ Treasury. This should expedite their procurement and improve the delivery of these studies in a timely manner to support programming efforts.

Table 2 divides the list of studies into Market Assessments and Evaluations.

Table 2: Division of Routine Studies into Market Assessments and Evaluations

Study Name	**Market Assessment (Procured via AEG)**	**Evaluation (Procured via Rutgers or Treasury)**
Baseline Study	X	
Market Potential	X	
Market Assessment	X	
Cost-benefit Analysis		
Before the Fact (planning)	X	
After the Fact (evaluation)		X*
Impact Evaluations		X
Process Evaluations		X
Protocols/Technical Resource Manual		X

Note: There may be additional studies initiated on an ad hoc basis.

* Conducted by CEEEP.

All studies, whether categorized as Market Assessment or Evaluation, would be managed from start to finish by the NJ Clean Energy Program Evaluation Committee, consisting of BPU Staff, CEEEP, and members of the AEG Team. The Evaluation Committee would review and approve the scope of work, the budget, the actual work conducted for the study, and the draft and final presentations and reports.

V. Proposed Evaluation Activities

The proposed evaluation activities for FY 2017 are described below.

The schedule of studies as shown in Table 3 is dependent upon timely action by the parties responsible for conducting such studies.

a. FY 2017 (July 1, 2016 to June 30, 2017) Evaluation Activities

Residential and Commercial-Industrial Baseline Evaluation of NJCEP including Appliance Saturation Survey:

There are several baseline studies that should be considered before the next CRA proceeding to inform the next market potential study. The market potential study that EnerNOC conducted provided an estimated baseline for many measures (including lighting) in the Residential, Commercial, and Industrial sectors using secondary data. It is important that New Jersey specific baselines using primary data be established, though, for future market potential studies. There are several baseline studies that were recommended in the 2010 Evaluation plan and by Rate Counsel that should be considered:

- Residential Appliance Saturation Survey
- Residential HVAC
- Residential New Construction
- C&I Equipment Saturation Survey
- C&I New Construction
- Lighting Measures (both Residential and C&I)

These could usefully be combined into complete building characteristics baseline studies, for the residential and for the C&I sectors, similar to the baseline study being initiated in New York (and in Maryland). This approach would have the advantage of capturing a comprehensive description of the building stock, rather than focusing only on subsets of those characteristics (as in the list above). There could even be some useful synergies between the state studies, if it were possible to coordinate the studies.

This Scope of Work is currently at Treasury waiting to be approved and issued.

Technical Reference Manual Evaluation (TRM, aka Protocols)

Purpose: The TRM calculates the savings of individual energy efficiency measures and therefore having an up-to-date and independently verified manual is critical to measuring program success. The TRM is reviewed and updated annually but has not been independently reviewed by a third party.

CEEEP, through Rutgers University Procurement, has released a Scope of Work to have a third party contractor conduct a review of New Jersey's TRM, focusing on priority measures identified by Team AEG.

Review and Continuing Update of TRM

The current New Jersey Clean Energy Protocols to Measure Resource Savings were established by the Board in September 2004 and have been updated several times, most recently in December 2015[4]. The Protocols were developed to measure resource savings, including energy, capacity, and other resource savings. The Protocols are also used in determining energy and cost savings associated with the Energy Savings Improvement Program.

A thorough, comprehensive review of the protocols is warranted to assure that they provide a technically accurate and current foundation for the new program administrator's assessment of the effectiveness, and cost-effectiveness, of existing programs. The Protocols should be updated annually or as new programs or measures are added, coincident with the Board's approval of annual program plans and budgets. Compliance filings submitted by any program manager should include proposed protocols for any new programs or program components. The annual updates should incorporate improved data to be collected as a result of implementing recommendations of the Data Work Group.

The Program Administrator shall include any proposed modifications to the Protocols as part of their annual compliance filings. Currently, AEG compiles the proposed changes to the Protocols and prepares a redlined version that includes all of the proposed changes in conjunction with the compliance filing. AEG circulates the proposed changes for comment, review and assess the comments, and prepare a final draft for submittal to the OCE for consideration by the Board.

AEG will coordinate with the OCE to prepare documents required for consideration by the Board of any proposed changes to the Protocols and will submit proposed changes to the Protocols to the OCE for consideration by the Board each year.

Renewable Evaluation Study

Purpose: The aim of this study is to evaluate the effectiveness of the current suite of renewable programs, including the SREC registration program, Societal Benefits Charge (SBC) incentives and implementation of net metering and interconnection standards, in an effort to reach the State's RPS goals at the least cost to the ratepayer. Moreover, this study shall help inform the Office of Clean of effectiveness of market-based policies and programs versus SBC derived incentives in developing the renewable energy market in New Jersey.

CEEEP is currently beginning Phase I of this work, which includes collecting data from national and reputable studies on the costs and characteristics of renewable energy

[4] NJ Clean Energy Program Protocols to measure resource savings – revisions to March 2014 Protocols, December 2015.

resources that are covered by the range of New Jersey policies. These renewable resources include on and offshore wind, small-scale wind, solar (PV), biomass, combined heat and power, and fuel cells (with and without heat recovery). These policies include grants, incentives, renewable portfolio standards, net metering, etc. From this data set, comparisons among various renewable energy resources could be made based upon cost (capital, operating, maintenance, and cost per kWh and cost/therm), environmental benefits (air emissions, greenhouse gases, and other environmental impacts), above market costs that require funding, and in-state vs. out-of-state expenditures associated with renewable energy resource.

Market Potential:
This study should provide an updated assessment of cost-effective, achievable energy efficiency and renewable energy potential. It should look not just at existing measures, but at emerging technologies as well. As in the past, this study would be a key input to a 2017 BPU decision on the next 4-year funding cycle for the clean energy initiative.

Impact Evaluations:

The following impact evaluations are recommended:

- Home Performance with Energy Star;
- Local Government Energy Audit;
- Pay for Performance;
- Direct Install;
- EE Products (Washers, Appliance Recycling);
- Combined Heat and Power;
- Economic Development Authority CEP Programs;
- Sustainable Jersey;
- Renewable Energy Incentive Program;
- SREC Registration Program;
- Grid Supply Program; and
- Other utility-administered Programs.

These impact evaluations would assess program energy savings impacts in order to assess the effectiveness on the programs and would calibrate savings assumptions associated with the various incentive programs. The evaluations should include analysis of the effect the presence of both NJCEP and utility-administered program have on the impacts of each. In the case of the Home Performance with Energy Star study, actual energy bill savings from program participants would be evaluated.

In addition to the major evaluation studies that are mentioned above, there are several types of studies that occur on an annual basis. These studies include:

Update Evaluation Plan
This evaluation plan should be updated annually as part of the program and budget planning process. An updated evaluation plan that identifies the major evaluation

activities proposed for the following year and budgets necessary to perform those activities should be submitted coincident with the compliance filings.

CEEEP will coordinate with the OCE and Program Administrators to develop the annual evaluation plan. The evaluation plan will describe major evaluation activities proposed for the following year, identify the entity responsible for implementing each component of the plan and proposed budgets for performing the evaluation activities.

The AEG Team has developed an evaluation tracking tool that lists all recommendations made in evaluation studies and the status of the implementation of that recommendation.

Cost Benefit Analysis

Cost benefit analysis should assess the costs and benefits of individual programs and measures as well as the overall portfolio of programs. Costs should include both the costs of implementing the programs as well as any contributions made by participants or others. Benefits should include both resource savings and environmental, health and other savings as deemed appropriate and documented with supporting justification. In addition, rate and bill impact analyses should be performed. The cost benefit analysis should take a multi-year view of the programs taking into consideration that new programs may have high startup costs.

CEEEP believes that the Board should formally approve the methodologies to be used to assess the costs and benefits of the programs, including the PCT, the PACT the RIM test, the TRC test and the SCT. Such approval should follow a thorough review of these methodologies and the proper role of each in evaluation of the NJCEP and utility-administered programs. CEEEP will work with the Office of Clean Energy and the Clean Energy Council to facilitate a coordinated review of proposed cost benefit analysis methodologies and develop recommendations for consideration by the Board, with opportunity for input from stakeholders.

CEEEP's approach to cost-benefit analysis is quantitative and, in general, does not take into account qualitative characteristics of the various programs and measures. The model simply measures how a program or measure's costs relate to its benefits. The model depends on quality information from the program implementers who propose various programs and measures.

CEEEP will review prospective cost-benefit analyses conducted by AEG for proposed programs and perform retrospective CBAs on completed energy efficiency programs. The purpose of performing the analysis on *completed* programs is to determine how cost-effective the programs were as one way to help program managers assess the programs. The purpose of performing the analyses on *proposed* programs is to project how cost-effective the proposed programs are and to have a common point of comparison to compare the various programs and measures.

Based on the Evaluation Work Group[5] report in 2014 there is program data that needs to be integrated into the program administrators data management system to provide a feedback mechanism for continual and timely program evaluation.

[5] http://ceeep.rutgers.edu/wp-content/uploads/2015/01/Evaluation-and-Research-Plan-2014-Draft-Report.pdf

VI. Responsibilities for Performing Evaluation Activities

Several entities that are involved in the oversight, delivery, evaluation and management of New Jersey's Clean Energy program will have a role in implementing this evaluation plan including:

- The Board of Public Utilities (the "Board" , "BPU");
- The Office of Clean Energy ("OCE");
- Rutgers Center for Energy, Economic and Environmental Policy ("CEEEP");
- Applied Energy Group ("AEG") in its role as Program Administrator;
- The Evaluation Committee;
- The Division of Rate Counsel ("Rate Counsel"); and
- Other Stakeholders.

The Board

The Board approves program budgets and plans on an annual basis. As part of the annual program and budget approval process the OCE will submit proposed evaluation budgets and activities to the Board for consideration. The Board authorizes the release of RFPs for evaluation services and approves the selection of contractors to provide evaluation services. The Board approves the protocols used for estimating energy savings.

The OCE

The OCE oversees all evaluation activities including:

- Development of evaluation plans and budgets and preparing recommendations for consideration by the Board
- Review and approval of RFPs for evaluation services prior to submitting to the Board for approval
- Participate as a member of any team put together to evaluate proposals submitted and to select evaluation contractors
- The OCE designates a Contract Manager for each evaluation contractor that has responsibility for reviewing and approving all invoices and any final reports
- Making recommendations on Protocols

Rate Counsel

Rate Counsel provides input on behalf of New Jersey ratepayers, including monitoring, reviewing and providing input on the following:

- Evaluation plans and budgets
- Evaluation protocols, benchmarks and metrics
- RFPs for performance of evaluation work
- Evaluation activities and reports

CEEEP

CEEEP has entered into a multi-year Memorandum of Agreement (MOA)[6] with the Board to provide program evaluation services. As set out in the MOA, CEEEP is responsible for formal evaluation of the effectiveness of the programs. CEEEP has overall responsibility for managing evaluation activities including:

- Preparation of annual and multi-year evaluation plans;
- Managing the implementation of the plans;
- Performing retrospective cost benefit analyses and updating avoided cost estimates used to perform cost benefit analysis; and
- Reviewing prospective cost benefit analyses performed by AEG on proposed energy efficiency programs; and
- Managing Market Potential Studies, Baseline Studies, Market Assessments (except R&D activities as note below), Process Evaluations, and Impact Evaluations. For each of these types of evaluations CEEEP will:
- Develop sections of the annual evaluation plan indicating when these types of evaluations should be performed and any specific issues the evaluation will assess;
- Coordinate with the Program Coordinator to ensure that the annual budgets approved by the Board include funding for any recommended evaluation activities;
- Determine whether the evaluations can be performed in-house at Rutgers or if an RFP will be issued for an outside contractor;
- Assist with the preparation of RFPs;
- Either issue the RFP or coordinate with AEG if the RFP is to be issued by Treasury;
- Participate on the team that evaluates any proposals received in response to RFPs;
- Review any draft reports issued by evaluation contractors; and
- Track implementation of recommendations included in evaluation reports.
- Monitor national and regional evaluation activities including NEEP, CESA and CEE
- Participate as a member of evaluation committees;
- Provide OCE with periodic reports concerning activities;
- Provide recommendations regarding benefits of continuing support for these activities; and
- Identify national and regional evaluation activities that can support NJ's evaluation efforts. Such activities should be specifically identified in the annual evaluation plan.

Program Administrator (AEG Team)

In its role as Program Administrator, AEG will support evaluation activities as follows:

[6] The 4 year MOA (June 1, 2013 through May 31, 2017) was approved by the Office of Management and Budget (OMB) on May 21, 2013. Authorization of funding for activities to be performed by CEEEP in FY2016 has not been approved as of this time.

- Assist in the development of annual and multi-year evaluation plans;
- Assist in drafting the scope of work for evaluation RFPs;
- Coordinate the development of annual evaluation plans with the development of annual programs and budgets for consideration by the Board;
- Manage day-to-day activities of selected outside evaluation contractors including:
    - Assist with the collection of data needed to perform evaluations;
    - Review of draft and final reports;
    - Ensuring work is performed in accordance with work plans and on schedule;
    - Provide recommendations regarding payment of invoices;
    - Provide OCE with updates regarding status of evaluation projects; and
    - Coordinate approval of work plans, invoices, final reports and other documents with the designated BPU Contract Manager.
- Coordinate with CEEEP and program managers regarding implementation of recommendations;
- Perform cost effectiveness screening for proposed new programs;
- Maintaining and updating the Protocols for Measuring Resource Savings
- Review and provide input into cost benefit analyses; and
- Coordinate with CEEEP and the program managers to develop proposed revisions to protocols, coordinate soliciting comments on proposed changes and coordinate with OCE to develop draft Board Orders and present proposed changes to the protocols to the Board for consideration.

Though not a formal evaluation activity, the Program Administrator has an on-going responsibility to continually re-assess their operations and programs based on informal market feedback. They also may lead research and development activities (once approved by the OCE), including the hiring of contractors to carry out such work. Finally, they are also obvious "customers" for the more formal evaluation work to be managed by CEEEP. All of that information – from informal market feedback, R&D work and formal evaluation studies – should inform the Program Administrator in carrying out of their program design responsibilities.

The Evaluation Committee

The Evaluation Committee is made up of BPU staff, representatives from AEG, and CEEEP. The Evaluation Committee has a role in developing evaluation plans, coordinating the evaluations, and most importantly communicating the results of any evaluations with the BPU and other stakeholders and tracking whether recommendations from evaluations are implemented.

Appendix A: Previous Evaluation Plans and Studies

Evaluation Plans

1. "New Jersey Clean Energy Program, 2004-2005 Evaluation and Research Plan Phase 1: Activities to be Initiated 2004", Center for Energy, Economic, and Environmental Policy, August 5, 2004.

2. "2004 – 2005 Evaluation and Research Plan Phase 2: Activities to be Initiated 2005", Center for Energy, Economic, and Environmental Policy, February 4, 2005.

3. "2006 Evaluation and Research Plan", Center for Energy, Economic, and Environmental Policy, February 15, 2006.

4. "2007 Evaluation and Research Plan", Center for Energy, Economic, and Environmental Policy, February 19, 2007.

5. "2010-2011 Evaluation and Research Plan", Center for Energy, Economic, and Environmental Policy, January 27, 2010.

6. "2012 Evaluation and Research Plan", Center for Energy, Economic, and Environmental Policy, July 31, 2012.

7. "2014-2015 Evaluation and Research Plan", Center for Energy, Economic and Environmental Policy, April 30, 2014.

Evaluation Studies

8. "New Jersey Comprehensive Resources Analysis Market Assessment", XENERGY, Inc., August 19, 1999.

9. "The Market for Operations and Maintenance Training in New Jersey", Pacific Energy Associates, May 25, 2000.

10. "Commercial/Industrial Chiller Market Database Report", Pacific Energy Associates, September 26, 2000.

11. "Residential New Construction Attitude and Awareness Baseline Study", Roper Starch Worldwide, June 2001.

12. "Compressed Air Systems Market Assessment In the Public Service Electric and Gas Service Territory", Aspen Systems Corporation, May 2001.

13. "New Jersey Residential HVAC Baseline Study", XENERGY, Inc., November, 16, 2001.

14. "Evaluation of Home Energy Audit Tools", Center for Energy, Economic, and Environmental Policy, February 19, 2004.

15. "New Jersey LIWAP and NJ Comfort Partners Comparison of Programs and Evaluation Findings", Apprise, June 2004.

16. "New Jersey Clean Energy Program, 2003 Program Evaluation - Energy Efficiency and Renewable Energy Programs", Center for Energy, Economic, and Environmental Policy, July 30, 2004.

17. "New Jersey Energy Efficiency and Distributed Generation Market Assessment", KEMA Inc., August 2004.

18. "New Jersey Renewable Energy Market Assessment", Navigant Consulting Inc., August 2, 2004.

19. "Protocols to Measure Resource Savings ",Center for Energy, Economic, and Environmental Policy, September 2004

20. "Impacts of Environmental Externalities Upon Relative Costs of Renewable Technology & Impact of The Deployment of Renewable Generation On The market Price of Electricity", Center for Energy, Economic, and Environmental Policy, October 7, 2004.

21. "Process Evaluation of the Renewable Energy Programs Administered and Managed by the New Jersey Board of Public Utilities, Office of Clean Energy", Aspen Systems Corporation, November 2004.

22. "Economic Impact Analysis of a 20% New Jersey Renewable Portfolio Standard", Center for Energy, Economic, and Environmental Policy, December 8, 2004.

23. "Program Cost-benefit Analysis of 2003 New Jersey Clean Energy Council Energy Efficiency Programs", Center for Energy, Economic, and Environmental Policy, July 28, 2005.

24. "Appliance Cycling Evaluation", Center for Energy, Economic, and Environmental Policy, September 2, 2005.

25. "Energy Efficiency Market Assessment of New Jersey Clean Energy Programs", Summit Blue Consulting, LLC., July 20, 2006.

26. "Preliminary Review of Alternatives for Transitioning the New Jersey Solar Market from Rebates to Market-Based Incentives", Summit Blue Consulting and Rocky Mountain Institute, March 15, 2007.

27. "NJCEP 2007 Business Survey Report", Market Strategies, November 6, 2007.

28. "Protocols to Measure Resource Savings ",Center for Energy, Economic, and Environmental Policy, December 2007.

29. "Cost-benefit Analysis of the New Jersey Clean Energy Program Energy Efficiency Programs", Center for Energy, Economic, and Environmental Policy, January 9, 2008.

30. "Assessment of the New Jersey Renewable Energy Market", Summit Blue Consulting, March 24, 2008.

31. "Review and Update of Energy Efficiency Market Assessment For the State of New Jersey", Center for Energy, Economic, and Environmental Policy, June 2008.

32. "NJCEP 2008 Residential Survey Report", Market Strategies, August 22, 2008.

33. "CEEEP's Cost-Benefit Model Manual", Center for Energy, Economic, and Environmental Policy, November 18, 2008.

34. "Combined Heat & Power (CHP) Program Impact Evaluation", KEMA, Inc., June 10, 2009.

35. "New Jersey's Clean Energy Program Residential HVAC Impact Evaluation and Protocol Review", KEMA, Inc., June 11, 2009.

36. "Residential New Construction Program Impact Evaluation", KEMA, Inc., June 17, 2009.

37. "New Jersey's Clean Energy Program Residential CFL Impact Evaluation and Protocol Review", KEMA, Inc., July 9, 2009.

38. "New Jersey's Clean Energy Program Energy Impact Evaluation and Protocol Review: SmartStart Program Protocol Review", KEMA, Inc., July 10, 2009.

39. "New Jersey's Clean Energy Program Energy Impact Evaluation: Customer On-site Renewable Energy Program (CORE)", KEMA, Inc., July 13, 2009.

40. "New Jersey's Clean Energy Program Energy Impact Evaluation: SmartStart Program Impact Evaluation", KEMA, Inc., July 29, 2009.

41. "Cost-Benefit Analysis of the 2007 New Jersey Clean Energy Program Energy Efficiency Programs", Center for Energy, Economic, and Environmental Policy, March 2010.

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VII. Appendix B: Evaluation Activity Definitions

The following definitions of evaluation activities are included in the Glossary of Terms and Acronyms prepared for the Regional Evaluation, Measurement and Verification Forum[7] that are applicable to the evaluation activities described in this report:

Achievable Potential - The amount of energy or demand savings within a defined geographical area or population that can be achieved in response to specific energy efficiency program designs, delivery approaches, program funding, and measure incentive levels. Achievable potential studies are sometimes referred to as Market Potential studies.

Avoided Costs - In the context of energy efficiency, these are the costs that are avoided by the implementation of an energy efficiency measure, program, or practice. Such costs are used in benefit cost analyses of energy efficiency measures and programs. Because efficiency activity reduces the need for electric generation, these costs include those associated with the cost of electric generation, transmission, distribution, and reliability. Typically, costs associated with avoided energy and capacity are calculated. Other costs avoided by the efficiency activity can also be included, among them the value of avoided emissions not already embedded in the generation cost, impact of the demand reduction on the overall market price for electricity, avoided fuel or water, etc. For natural gas efficiency programs, avoided costs include components of the production, transportation, storage, and service that are variable to the amount of natural gas delivered to customers.

Baseline - Conditions, including energy consumption and related emissions that would have occurred without implementation of the subject measure or project. Baseline conditions are sometimes referred to as "business-as-usual" conditions and are used to calculate program related efficiency or emissions savings. Baselines can be defined as either project-specific baselines or performance standard baselines (e.g. building codes).

Baseline Data - The baseline conditions of the facilities, market segment, generating equipment, or other area of focus of the subject project or program.

Benchmarking - A process that compares the energy, emissions, and other resource-related conditions of a facility against industry best practices.

Benefit-Cost Ratio - The mathematical relationship between the benefits and costs associated with the implementation of energy efficiency measures, programs, practices, or emissions reductions. The benefits and costs are typically expressed in dollars. Also see Benefit Cost Test and Avoided Cost.

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[7] Glossary of Terms and Acronyms, Version 1.0, Prepared for the Regional Evaluation, Measurement and Verification Forum by Paul A. Horowitz, PAH Associates, March 2009

Benefit Cost Test - Also called Cost-Effectiveness Test. The methodology used to compare the benefits of an investment with the costs. Five key benefit-cost tests have, with minor updates, been used for over 20 years as the principal approaches for energy efficiency program evaluation. These five cost-effectiveness tests are the participant cost test (PCT), the utility/program administrator cost test (PACT), the ratepayer impact measure test (RIM), the total resource cost test (TRC), and the societal cost test (SCT).

Cost-Benefit and Cost-Effectiveness Analysis - Analysis that compares the benefits associated with a program or measure's outputs or outcomes with the costs (resources expended) to produce them. Cost-benefit analysis is typically conducted to determine the relationship of the program's benefits and costs, as a ratio, once the decision has been made to implement or design the program; programs with benefit-cost ratios greater than 1.0 provide overall ratepayer benefits. Cost-effectiveness analysis is generally undertaken to compare one program or program approach to other approaches, or options for the use of funds, to determine the relationship among the options. The terms are often interchanged in evaluation discussions.

Cost-Effectiveness - An indicator of the relative performance or economic attractiveness of any energy efficiency investment or practice. In the energy efficiency field, the present value of the estimated benefits produced by an energy efficiency program is compared to the estimated total costs to determine if the proposed investment or measure is desirable from a variety of perspectives (e.g. whether the estimated benefits exceed the estimated costs from a societal perspective).

Economic Potential - The amount of savings opportunities that can be acquired cost-effectively.

Evaluation - The conduct of any of a wide range of assessment studies and other activities aimed at determining the effects of a program, understanding or documenting program performance, program or program-related markets and market operations, program-induced changes in energy efficiency markets, levels of demand or energy savings, or program cost effectiveness. Market assessment, monitoring and evaluation (M&E), and measurement and verification (M&V) are aspects of evaluation.

Impact Evaluation - An evaluation of the program-specific directly induced quantitative changes (e.g. kWh, kW, and therms) attributable to an energy efficiency program.

Market Assessment - An analysis that provides an assessment of how and how well a specific market or market segment is functioning with respect to the definition of well-functioning markets or with respect to other specific policy objectives. Generally includes a characterization or description of the specific market or market segments, including a description of the types and number of buyers and sellers in the market, the key actors that influence the market, the type and number of transactions that occur on an annual basis, and the extent to which market participants consider energy efficiency as an important part of these transactions. This analysis may also include an assessment of

whether a market has been sufficiently transformed to justify a reduction or elimination of specific program interventions. Market assessment can be blended with strategic planning analysis to produce recommended program designs or budgets. One particular kind of market assessment effort is a baseline study, or the characterization of a market before the commencement of a specific intervention in the market, for the purpose of guiding the intervention and/or assessing its effectiveness later.

Net-to-Gross Ratio (NTGR) - A factor representing net program savings divided by gross program savings that is applied to gross program impacts to convert them into net program load impacts. The factor itself may be made up of a variety of factors that create differences between gross and net savings, commonly including estimated free riders and spillover. Other adjustments may include a correction factor to account for errors within the project tracking data, breakage, and other factors that may be estimated which relate the gross savings to the net effect of the program. Can be applied separately to either energy or demand savings.

Potential Studies - Studies conducted to assess market baselines and future savings that may be expected for different technologies and customer markets over a specified time horizon. Potential is typically defined in terms of 1) technical potential - savings estimate based solely on currently and anticipated available technology; 2) achievable potential - savings estimate based on market forces, codes and standards, equipment efficiency, and energy efficiency programs; and 3) economic potential - estimate of savings limited by only those found to be cost-effective.

Process Evaluation - A systematic assessment of an energy efficiency program for the purposes of documenting program operations at the time of the examination and identifying and recommending improvements to increase the program's efficiency or effectiveness for acquiring energy resources, while maintaining high levels of participant satisfaction.

Technical Potential - An estimate of energy savings based on the assumption that all existing equipment or measures will be replaced with the most efficient equipment or measure that is technically feasible over a defined time horizon, without regard to cost or market acceptance.

Appendix C: NJ BPU Clean Energy Program: Evaluation Work Group Recommendations

Objective: To identify data required (already collected or needs to be collected through IMS or outside of IMS) in order to perform the various types of energy evaluation studies.

Approach: The table below (Table 1) lists primary data[1] required against each type of evaluation study. This is then matched with the IMS Data Table (Table 2). Together these two documents provide an overall idea of how going forward the IMS can be used while conducting evaluation studies.

	Type of Energy Evaluation Study	Data within IMS Scope (already collected or needs to be collected)	Data outside IMS Scope
A	**Baseline** – a type of market assessment studies that provide a snapshot in time of the state of a market. These studies define what the state of the market is at the beginning of a particular program as a means of comparison for future results. Most recent baseline study was performed by EnerNoc in 2013.	1. Existing energy efficiency measure data i. List of all major appliances, number, their age or year of installation, energy efficiency rating, manufacturer, manufacturer product identification codes (model number, model name), location (EDC area), building type 2. Replacement measures i. List of replacement appliances, number, their age or year of installation, energy efficiency rating, manufacturer, manufacturer product identification codes (model number, model name), location (EDC area), building type	1. Load reduction as a result of ongoing Demand Response programs 2. Population/ Demographics
B	**Technical and Market Potential** – Technical potential is an estimate of the total level of EE/RE resources available unrestrained by economics. Economic potential screens for available EE/RE resources that are economically viable compared to other available alternatives. Market potential estimates the realistic level of economic resources that can be developed taking into consideration other market factors. Most recent technical and market potential study was performed by EnerNoc in 2013.	1. See baseline study 2. Existing measure cost, electricity and natural gas usage by month, and measure life 3. Replacement measures cost, electricity and natural gas usage by month, and measure life.	1. Ownership type – rented/ self-usage (residential) 2. New construction 3. Information about future measures, building codes etc.

C	**Market Assessment** - address specified market attributes such as customer awareness, market barriers (and strategies to remove/reduce them), product and service availability, prices, new products, and market share of energy efficient products and services. They can also provide insight into key aspects of program impacts, including estimated free rider and spillover effects. Most recent studies performed in 2006 and 2008.	1. Marketing budgets of program managers and utilities 2. Reason for each measure replacement (equipment failure, economics, program incentives, etc.) 3. Incentives for each measure	
D	**Impact Evaluations** - support the measurement of energy savings, the amount and distribution of savings, and the appropriateness and comprehensiveness of measures. Most recent studies performed by KEMA in 2009.	1. Monthly electric and natural gas bills for 12 months, date of bills	
E	**Benchmarking** – compares savings and cost-effectiveness of programs run by different managers Benchmarking study planned for in 2014	1. See impact evaluation	1. Savings and costs of similar programs in other states
F	**Process Evaluations** - address implementation effectiveness, operational efficiency, and customer satisfaction, attitudes, and awareness related to specified programs. Most recent process evaluation conducted in 2004	1. Time to complete each major milestone from initial program contact to final payment of incentives 2. Note: many important processes are not part of IMS	
G	**Cost-benefit analysis** (prospective and retrospective) - should assess the costs and benefits of individual measures, programs and the overall portfolio of programs. Cost-benefit analyses have been conducted in 2004, 2005, and annually since 2008.	1. See baseline and technical market potential 2. Program administrative budgets	1. Other non-IMS data includes price forecasts, discount rate, emissions, costs of emissions, and electrical and natural gas losses
H	**Tracking System Assessments**		
I	Technical Resource Manual (**Protocols**)	Should IMS independently produce the calculations in the protocol?	

		Note: Calculations from the Protocols provide values that end up in IMS but IMS itself does not affect the Protocols	
J	**<u>Clean Energy Economic Impact</u>** – assessing the size and economic impact of the NJ Clean Energy Economy	1. Name and complete contact information of vendors/contractors 2. NAICS code for vendors/contractors 3. Company revenue and employment in New Jersey 4. Number of employees in clean energy jobs (or percent of time spent on clean energy jobs) 5. Total wages (or percent) in clean energy jobs 6. Occupations of employees in clean energy jobs 7. Specific information for each project (hours, wages, benefits, types of employees, cost of materials, cost of wages)	1. Induced impact of clean energy economy

Appendix D: New Jersey Evaluation Timeline: 1999-2008

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BPU Proceedings			CRA Funding Cycle 2001-2004				CRA Funding Cycle 2005-2008			
EDECA										
CRA Proceeding										
EMP										
Major Evaluation Studies										
Evaluation Plan										
Cost-Benefit Analysis										
Retrospective							EE			EE
Prospective										
Market Potential	EE/RE					EE/RE				EE
Market Assessment								EE		RE
Benchmarking Study										
Baseline Study		EE	EE							
Impact Evaluation										
Process Evaluation						RE				
Tracking System Assessment										
Protocols						EE/RE			EE/RE	
Economic Impact Study						RE				
Goals, Objectives, & Outcomes										
Survey & Focus Group									EE/RE	EE/RE

A. Overall Goals, Objectives and Outcomes Assessment should serve as a "report card" style evaluation and assess various programs relative to quantifiable overall legislative goals (specifically goals as set through the NJ Energy Master Plan and other state/federal directives such as 2050 GHG reduction goal).

B. Economic Impact Analysis should assess the impacts of the NJCEP and utility-administered programs on the State's economy. Analysis should include both the positive impacts such as clean energy-related investment and employment, and negative impacts resulting from the utility rate surcharges needed fund the programs. Positive and negative impacts should be assessed for the New Jersey economy overall, and for different sectors of the economy.

C. Cost Benefit Analysis should assess the costs and benefits of individual measures, programs and the overall portfolio of programs. Costs should include both the costs of implementing the programs as well as any contributions made by participants or others. Benefits should include both resource savings and environmental, health and other savings. CEEEP uses the cost tests described in the California Standard Practice Manual.[8]

CEEEP has developed a cost-benefit model for estimating the costs and benefits of New Jersey's Clean Energy Programs[9]. This tool has been used for calculating the costs and benefits of historic programs. CEEEP has developed a measure and program level data template for data collection from utilities and market managers so as to conduct the cost-benefit modeling[10]. In previous Evaluation Plans, there were four important tasks with regards to CEEEP's cost-benefit modeling that were recommended which did not occur.

1. a process for developing OCE/BPU approval on inputs to the models such as avoided transmission and distribution costs, externalities, etc. should be developed;

2. standardized cost-benefit tests, including the participant cost test (PCT), the utility/program administrator cost test (PACT), the ratepayer impact measure test (RIM), the total resource cost test (TRC), and the societal cost test (SCT), should be adopted in coordination with the OCE and codified;

3. CEEEP should explore consideration of non-energy benefits and costs such as increased comfort levels or increased home values that could result from measures installed under programs such as the Home Performance with Energy Star program; and

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[8] California Standard Practice Manual: Economic Analysis of Demand-side Programs and Projects, California Public Utilities Commission, October 2001.
[9] CEEEP's Cost-Benefit Model Manual, Center for Energy, Economic, and Environmental Policy, 2006.
[10] CEEEP Measure and Program Data Template (Cost-Benefit Analysis), December 2014.

4. CEEEP will work with the Program Administrator, the AEG Team, to improve the reporting of relevant program measure data, in particular to obtain near real-time data so that cost-benefit results will also be available in near real time.

Cost-benefit analyses have been conducted in 2004, 2005, and annually since 2008. The analysis includes both NJCEP and utility-administered programs.

D. Benchmarking and Metrics Studies should compare the effectiveness of the NJCEP and utility-administered programs with those in other jurisdictions, and establish goals for the New Jersey programs. These analyses should include the establishment of objectively measurable steps toward the achievement of market transformation and other defined goals.

E. Market potential studies assess the technical, economic and market potential for energy efficiency and renewable energy measures. Technical potential is an estimate of the total level of energy efficiency or renewable energy resources available unrestrained by economics. Economic potential screens for available energy efficiency and renewable energy resources that are economically viable compared to other available alternatives, and, market potential estimates the realistic level of economic resources that can be developed taking into consideration other market factors. Market potential studies were conducted in 1999, 2004, 2008, and 2012.

F. Market assessments address specified market attributes such as customer or market actor awareness and attitudes, market barriers to efficiency and/or renewable energy investments, product and service availability, common practice, prices, new products, and market share of energy efficient products and services. They should also include an assessment of other key aspects of program impacts, including estimated free rider and spillover effects. Market assessments should identify barriers to program participation and strategies to remove or reduce such barriers. In addition to NJCEP programs, the effects of utility-sponsored programs should be studied. Market assessments may also be necessary to estimate savings from programs such as the Energy Star Products program since these estimates rely on assessments of market penetration rates of different measures. Market assessments should be performed every three to five years to help gauge the success of the programs and to provide updated market information to inform changes to programs. For example, Honeywell and TRC incorporated some of the recommendations of the assessments performed in July 2006 and March 2008 into their respective 2008 and 2009 programs.

G. Baseline studies are market assessment studies that provide a snapshot in time of the state of a market. These studies define what the state of the market is at the beginning of a particular program as a means of comparison for future results. The last baseline studies were performed in New Jersey by the utilities in 2000. Summit Blue updated some baseline studies as part of the energy efficiency and renewable energy market assessment. The market potential study that EnerNOC recently completed provides an

estimated baseline for many measures (including lighting) in the Residential, Commercial, and Industrial sectors utilizing secondary data. It is important that New Jersey specific baselines be established, though, for future market potential studies and effective program planning. The 2014-2015 plan recommended undertaking detailed building characteristics baseline studies, for both residential and commercial buildings. The emphasis of these studies will be to describe the existing building stock in New Jersey, along with its energy and equipment characteristics, in order to better estimate efficiency opportunities by market sector, to target new efficiency initiatives, and to measure the progress of future program efforts in improving the efficiency of New Jersey's building stock. These studies will be similar in scope to those currently planned in New York and completed in Maryland. In addition, the BPU is looking into renewing their Consortium for Energy Efficiency ("CEE") membership, which includes the opportunity to sponsor the annual Energy Star Awareness Survey. The survey may be useful in determining appliance saturations in New Jersey and eliminate the need for the Residential Appliance Saturation Survey and C&I Equipment Saturation Survey.

H. Impact evaluations support the measurement of energy savings and other program goals, including the amount and distribution of savings, and the appropriateness and comprehensiveness of measures. Impact evaluations test the assumptions used to estimate the level of energy savings or renewable energy delivered by the installation of various technologies. Impact analyses should employ industry-accepted methods of analysis that rely on well-developed engineering and statistical analysis techniques including the possibility of energy-use simulation models, multivariate regression models, and/or other analytic tools. In addition to leveraging data collected through the course of program implementation, the analyses may employ billing analysis, end-use metering, site visits, customer surveys, or other data development studies as needed. KEMA conducted a comprehensive impact evaluation for several programs in 2009. The 2014-2015 plan recommended conducting a portfolio benchmarking and metrics study, to better understand how New Jersey programs and accomplishments compare to those in other states. This plan also recommends conducting comprehensive impact evaluations, to quantify current program accomplishments.

I. Process evaluations address implementation effectiveness, operational efficiency, and customer and market actor satisfaction, attitudes, and awareness related to specified programs. Process evaluations also seek to find ways to improve the efficiency of the delivery of programs and to identify critical roadblocks and opportunities to increase the availability of efficient measures and qualified trade allies to support customer adoption. A renewable energy process evaluation was conducted in 2004. A comprehensive portfolio level process evaluation which shall assess the success of the current programs and administrative structures in addressing the needs of the New Jersey marketplace, to inform the design and structure future of energy efficiency programs, was recommended to be carried out as soon as possible and was completed in January 2016. A portfolio level process evaluation would look externally to trade allies, contractors and participants to develop lessons learned and gain suggested improvements as well as learn about awareness, satisfaction and

insights into the overall portfolio. As part of this study a 'Marketing Evaluation' can also be conducted, which look into the effectiveness of marketing budget of program managers and utilities. Surveys and focus groups are conducted to determine the perceptions of, and interest in, current and new programs. These studies have several major uses including:

- Aid in program design by measuring customer receptiveness to alternative program designs/attributes and identifying roadblocks to participation.
- Aid in communication planning by measuring customer preferences for various media, methods of communication, and value propositions.
- Understand the effectiveness - strengths and weaknesses - of New Jersey's efforts to date to increase consumer awareness, interest, and participation.
- Track some of the key perceptions measured in prior surveys in order to measure changes in awareness, media/communications preferences, interest, attitudes, and behaviors relevant to energy efficiency, clean power, and the State's programs designed to promote them.
- Understand more fully consumers' multiple motivations for getting involved with energy efficiency and clean energy.

Surveys and focus groups were alternated for Residential and Business programs each year in the past, but have not been conducted since 2008.

J. Tracking system assessments review the tracking systems to ensure consistent tracking and reporting, and collection of all necessary data. This step is critical in determining what level of detail is available for all other analyses related to the established programs. Stakeholders should have an opportunity to provide feedback on what data is necessary and data should be available for the public to evaluate and use taking into consideration protection of confidential customer information.

K. Protocols are used in New Jersey to estimate program savings. The Protocols use measured and customer data as input values into measure specific algorithms. The savings algorithms for NJCEP are a combination of results from various impact evaluations (primarily in the Northeast) and engineering estimates of savings that have been developed based on manufacturer data, program monitoring and evaluation data, and information from other programs. The data and input values for the protocol algorithms come from the program application forms and tracking systems, or from standard values. There should be a comprehensive review of the current protocols to assure that they are technically accurate and reflective of current technology and government standards. The protocols should subsequently be updated and validated frequently to ensure that the measures remain technically accurate and current. Stakeholders should have an opportunity to comment on the protocols before implementation, as well as the opportunity to comment on inputs. These Protocols are updated and approved by the Board on an annual basis.