



Public Service Commission

Gregg C. Sayre
Interim Chairman and
Interim Chief Executive Officer

Diane X. Burman
Commissioner

Thomas Congdon
Deputy Chairman and
Executive Deputy

Paul Agresta
General Counsel

Kathleen H. Burgess
Secretary

Three Empire State Plaza, Albany, NY 12223-1350
www.dps.ny.gov

April 24, 2017

Ms. Kathleen Burgess, Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, NY 12223-1350

Re: Matter 16-00561 – In the Matter of the Clean Energy Advisory Council

Dear Secretary Burgess:

Enclosed please find the meeting materials for the April 27, 2017, Clean Energy Advisory Council (CEAC) Steering Committee meeting, to be held from 12:30 to 3:30 pm. The meeting is open to the public and will be held in the **3rd Floor Hearing Room** of the Department of Public Service office located at Three Empire State Plaza, Albany, New York. In addition, interested parties may attend the meeting via video at the Department's Buffalo and New York City offices or via webinar and teleconference. The webinar and conference call information are provided below.

Those wishing to attend the videocasting in Buffalo to view the CEAC Steering Committee's meeting may do so in room 1050 on the 10th floor of the Commission's offices at the Ellicott Square Building, 295 Main Street, Buffalo, NY. **Anyone planning to observe the meeting in the Buffalo offices must notify Ruth Hunt at 716-847-3941, 48 hours in advance of the meeting.**

Those wishing to attend the videocasting in New York City to view the CEAC Steering Committee's meeting may do so in the video conference on the 4th floor of the Commission's offices at 90 Church Street, New York, NY. **Pursuant to procedures established by the building management, anyone planning to observe the meeting in the New York City office must notify Jan Goorsky at 212-417-2378, 48 hours in advance of the meeting, and must be prepared to show valid photo identification upon arrival at 90 Church Street.**

The attached meeting materials include:

- April 27th CEAC Meeting Agenda
- Draft Meeting Minutes for the February 7, 2017 CEAC Meeting
- Voluntary Investment & Other Market Development Monthly Update
- Community Choice Aggregation Outline
- Revised Voluntary Investment & Other Market Development Scope
- Clean Energy Implementation & Coordination Monthly Update

- Metrics, Tracking & Performance Assessment Monthly Update
- Draft Online Dashboard Report
- Revised Metrics, Tracking & Performance Assessment Scope
- Draft Energy Efficiency Procurement & Markets Report
- Revised CEAC 2017 Meeting Schedule
- Revised CEAC Work Plan

WebEx and Conference Call Information:

WebEx Event Address for Attendees:

<https://nyserda-events.webex.com/nyserda-events/onstage/g.php?MTID=e2e82d2e88c1f76b4c3a3344710c8604e>

Event Number: 661 023 865

Event Password: CEAC

Audio Conference: 1-415-655-0001

Access Code: 661 023 865

Sincerely,

/s/

Colleen Gerwitz

Director of Program Management &
Planning

Office of Markets & Innovation

Enc.

April 27, 2017
Clean Energy Advisory Council
Steering Committee Meeting
12:30pm – 3:30pm

In-Person/Webinar/Teleconference

AGENDA

The **agenda** for the meeting is attached and provided below.

- | | |
|--|--------------|
| 1. Roll Call | (5 minutes) |
| 2. Old Business | (5 minutes) |
| a. February 7 th Meeting Minutes | |
| 3. Voluntary Investment & Other Market Development Working Group | (20 minutes) |
| a. Monthly Update | |
| b. Community Choice Aggregation Outline | |
| c. Revised Scope | |
| 4. Clean Energy Implementation & Coordination Working Group | (15 minutes) |
| a. Monthly Update | |
| 5. Metrics, Tracking & Performance Assessment Working Group | (45 minutes) |
| a. Monthly Update | |
| b. Draft Online Dashboard Report | |
| c. Revised Scope | |
| 6. Energy Efficiency Procurement & Markets Working Group | (45 minutes) |
| a. Draft Energy Efficiency Procurement & Markets Report | |
| 7. Other Business | (10 minutes) |
| a. Revised Meeting Schedule | |
| b. Revised Work Plan | |
| 8. Comments from the Public | (10 minutes) |

WebEx and Conference Call Information

WebEx Event Address for Attendees:

<https://nyserda-events.webex.com/nyserda-events/onstage/g.php?MTID=e2e82d2e88c1f76b4c3a3344710c8604e>

Event Number:	661 023 865
Event Password:	CEAC
Audio Conference:	1-415-655-0001
Access Code:	661 023 865

Clean Energy Advisory Council (CEAC) Meeting Minutes

Held on
February 7, 2017
1:00pm-3:00 pm

Roll Call

The following organizations were represented on the Steering Committee:

Colleen Gerwitz, New York State Department of Public Service
David Margalit, New York State Energy Research and Development Authority
Mark Beaudoin, AVANGRID, Inc. / Iberdrola
Anthony Campagiorni, Central Hudson Gas and Electric Corporation
Matt Ketschke, Consolidated Edison Company of New York, Inc.
Michael Deering, Long Island Power Authority
Cliff Mason, National Fuel Gas Distribution Corporation
John Isberg, National Grid USA Service Company, Inc.
Nathan Markey, New York Power Authority
Roberta Scerbo, Orange and Rockland Utilities, Inc.
Mike Voltz, PSEG Long Island

Jesse Feinberg, Consolidated Edison Company of New York, Designee, Clean Energy Implementation & Coordination Working Group
John Maxwell, ERS, Alternate Designee, Metrics, Tracking & Performance Assessment Working Group
Tom Rienzo, NYS Department of Public Service, Co-Chair, Voluntary Investment & Other Market Development Working Group
Adam Flint, Binghamton Regional Sustainability Coalition, Designee, Low & Moderate Income Clean Energy Initiatives Working Group
Megan Fisher, NYSERDA, Co-Chair, Energy Efficiency Procurement & Markets Working Group
Frank Murray, NRDC, Designee, REV Energy Efficiency Best Practices Working Group

John Rhodes, President and CEO, NYSERDA

Old Business

January 10, 2017 Meeting Minutes

The meeting minutes of the January 10, 2017 meeting were approved by the Steering Committee.

REV Energy Efficiency Best Practices Working Group

Frank Murray, Designee, NRDC, began with an update on Working Group activities prior to a presentation by Karin Lang, TRC Solutions, and Kevin Hale, NYSERDA, on the *Draft REV Energy Efficiency Best Practices Guide (Draft Guide)*, that was submitted on January 31, 2017. Mr. Murray stated that the Working Group began with 50 best practice suggestions and, as a result of an iterative analytical process, subsequently honed this list to 5 best practices that are emblematic of any best practice. Each of the original suggestions have been listed in the Draft Guide appendix. In addition to

Karin Lang, Mr. Murray also thanked Caroline Reuss, NYSERDA, for her support in developing and finalizing this work product.

Kevin Hale, NYSERDA, began the presentation of the Draft Guide by reviewing the Working Group Scope that includes outlining energy efficiency best practices under a Reforming the Energy Vision (REV) framework, as well as a process for future revisions and updates. He stated that the Working Group investigated best practices, nationwide, that could be actionable and replicable.

Mr. Hale stated that the Working Group was challenged in identifying “off-the-shelf” REV opportunities or identifying other entities within the United States that are employing similar approaches. However, the Working Group did find success in identifying promising elements of the researched initiatives that offer the potential to advance REV objectives.

Ms. Lang, TRC Solutions, presented the approach used in developing the Draft Guide. The approach began with agreement on six objectives to be used as a filter for identifying best practices: customer engagement with distributed energy resources (DER) markets; ability to stimulate DER providers; potential for greater private sector investment; potential to deliver system benefits; potential to support new utility earnings opportunities; and carbon reduction. Ms. Lang identified and explained the top five best practices highlighted in the Draft Guide as:

- (1) Use data driven market segmentation to create customized offerings for customers;
- (2) Conduct utility specific assessments of both the long-term economic and achievable energy efficiency potential;
- (3) Build programs, policies, and market structures to reward a combination of energy efficiency and demand management;
- (4) Tie energy efficiency and demand-side management incentives to project savings outcomes through a Pay-for-Performance approach; and
- (5) Create a “one-stop shop” and bundled services/measures approach to energy efficiency.

Mr. Hale wrapped up the presentation by presenting a summary of the Draft Guide recommendations which include:

- Consideration of the needs and benefits of a more formal forum, such as the Massachusetts Energy Efficiency Council;
- Encouraging Program Administrators (PAs) to use the Draft Guide as a tool during program design and implementation, as well as encouraging the NYS DPS to reference the Draft Guide when evaluating portfolios and program proposals from PAs;
- The Clean Energy Implementation and Coordination (CEIC) Working Group should consider allocating ample time and resources to sharing lessons learned and best practices and the Metric, Tracking and Performance Assessment (MTPA) Working Group should consider establishing a consistent evaluation framework to capture and disseminate shared learning and best practices.

Mr. Hale also added that the Working Group is not recommending a continuation of its activities, although some members expressed interest in exploring a more formal forum.

Ms. Gerwitz, NYS DPS, expressed her gratitude for the work product produced, given the very broad scope.

Mr. Beaudoin, AVANGRID, thanked the Working Group and asked about data segmentation and energy efficiency potential studies and how the Draft Guide may suggest bringing that perspective to the individual PAs. Mr. Hale suggested a potential workshop opportunity and stated that there are entities in the industry that can provide these services.

Mr. Flint, Binghamton Regional Sustainability Coalition, shared the elements of the Draft Guide that he particularly liked, including the “one-stop shop” idea, as well as some previous efforts that are now offered within NYSERDA’s Clean Energy Communities efforts. He also stated that synergies are key given the diversified funding streams, thus low-to-moderate income issues should be folded into the best practices effort. Mr. Flint commented that more resources should be made available to allow various stakeholders to participate in ongoing discussions.

In response to an inquiry by Nathan Markey, NYPA, regarding whether the “pay-for-performance” recommendation was intended to suggest limitations or guardrails, Ms. Lang stated that this was the result of an examination of out-of-state practices that involve verified (or actual) savings. She cautioned that guardrails could limit creativity. Mr. Rhodes added that NYSERDA and NYS DPS are engaged in data gathering to further explore efforts in this area.

Mr. Murray, NRDC, expressed his observations regarding the intersection of practices and policies and suggested that the CEIC Working Group consider exploring these issues. He also stated that, in the context of exploring the best practices, PA experience and input is invaluable and that it is critical that they remain engaged in the process. He also suggested that there is a meaningful role for outside experts.

In response to an inquiry by Mr. Isberg, National Grid, regarding who would carry this effort going forward given that the top best practices have been identified, Mr. Margalit suggested that where there are existing groups which are appropriate to pick up a continuing stream of work, the work should be transferred. Mr. Margalit, NYSERDA also expressed his gratitude for what he observed was a large amount of effort.

Ms. Gerwitz offered a clarification for the Draft Guide that utility Energy Efficiency Transition Implementation Plans (ETIPs) are not barred from integrating energy efficiency and demand management but must continue to achieve a minimum level of energy efficiency. Staff and the Commission have repeatedly encouraged this integration particularly within the context of the DSIP filings. She also stated that the NYS DPS continues to be interested in best practices and the lessons learned but supports the recommendation to discontinue the Working Group’s efforts for the time being, as Staff compiles and considers all the recommendations from the various CEAC working groups.

Mr. Rhodes added his thanks for the work product, calling this effort “well done.”

Metrics, Tracking & Performance Assessment Working Group

John Maxwell, ERS, MTPA Alternate Designee reported on the status of the Working Group’s three major work products. The *Evaluation Guidelines Recommendations* have been issued and this task is complete. Phase I of the *Draft Performance Metrics Report* has been released for comment and was scheduled to be further discussed at this meeting, with Phase I slated to be completed by the end of February. The *On-line Dashboard Recommendations Report*, also is progressing with the development of a list of features and the solicitation of input from stakeholders.

Mr. Maxwell proceeded to provide an overview of the *Draft Performance Metrics Report* (Phase I), which is intended to address basic metrics to gauge program progress. Phase II is oriented toward the metrics and measurement for market transformation efforts. Mr. Maxwell described the legacy knowledge and systems from which the Working Group had begun its work, as well as the input the Working Group has received from the CEAC and associated stakeholders.

In addressing baseline definitions, Mr. Maxwell cautioned that the details quickly become complex and the exceptions are often easier to define. Mr. Murray, NRDC, agreed, stating that he found the Draft Report challenging to read. In response to Mr. Murray's inquiry as to the difference between the current practice and any new approaches being proposed, Mr. Maxwell stated that, with few exceptions, most of the definitions remain the same as in the past. Jennifer Meissner, NYSERDA, added that the definitions reflect the most current practices, yet they may not meet all future wants and needs. The goal is to achieve common ground.

Ms. Gerwitz, NYS DPS, encouraged the Working Group to consider, within the context of REV, the usefulness of reporting the full value of energy efficiency as opposed to only reporting the incremental savings based on building or equipment code, similar to what is being done in California. She recognized that this issue may be beyond the scope of this current report but encouraged the Working Group to take the additional time that it may need to record any open questions that may not be ripe but should be considered at some point in the future, as well as bring some of the outstanding items to closure.

Mr. Maxwell presented the metrics (energy savings, demand savings, renewable energy generation, participant bill savings, greenhouse gas emission reductions, private investment, etc.) and their respective underlying basis. This led to a discussion regarding the consistency of the definitions among topic, sector, and PAs.

When reporting on progress specifically related to GHG emission reductions, Ms. Gerwitz suggested that her preference would be for "non-net" totals in the reporting, in other words if an initiative reduces fossil fuel consumption and increases electricity use (ex. Electric Vehicles) reporting should clearly state the effects on GHG emissions rather than solely reporting a net reduction in GHG emissions. Ms. Gerwitz noted the Draft Report recommends treating GHG emissions as net and energy savings as "non-net". This was further addressed in response to an observation offered by Mr. Flint, Binghamton Regional Sustainability Coalition, regarding the differences between these efforts and how information is reported in the Greenhouse Gas Inventory. Ms. Meissner agreed that these reporting measures could be more clearly provided in the future.

Ms. Gerwitz also requested the Working Group confirm whether the definition for peak MW reductions were consistent with the definitions being used in utility demand reduction programs

In response to an inquiry from Mr. Flint regarding methane, Ms. Meissner explained that the levels are generally considered to be negligible as they are not found in large quantities in the combustion sources being considered. She stated that the Working Group is confident that the measure is being captured within the bounds of what is considered reasonable by industry standards.

Based on Steering Committee input during the presentation, Mr. Maxwell suggested that the Working Group provide a Revised Draft Report. Ms. Gerwitz agreed and thanked the group for their efforts,

suggesting that the Working Group propose any necessary time extensions. Mr. Rhodes, NYSERDA also thanked the group for their efforts.

Voluntary Investment & Other Market Development Working Group

Tom Rienzo, DPS, VIOMD Co-Chair, reported that the Working Group reached a consensus decision to recommend forgoing their next task of developing another *Voluntary Investment Report*. Mr. Rienzo stated that the Working Group concluded that such a report, as proposed, would likely provide little insight beyond what will be learned through ongoing efforts. The Working Group also believes that the *Pilot Parameters Report* and the development and implementation of a *Clean Energy Fund Investment Plan* provides the opportunity for substantive outcomes and learning opportunities to inform the NYS Public Commission and the CEAC. The Working Group believes that there are multiple opportunities for Working Group members, and the CEAC as a whole, to continue collaboration and information sharing through other proceedings and activities.

Regarding the Working Group's Community Choice Aggregation (CCA) efforts, the CCA subgroup has identified three models on which to focus their efforts and has established a schedule for deliverables. A CCA-specific Work Plan is under development.

Ms. Gerwitz concurred with and offered her support for the proposal to forego the *Voluntary Investment Report*, stating that the current status of these matters remains in the learning stages. Mr. Margalit added that it also makes sense to operate in more of a "learn by doing" mode, although the Working Group members may be called upon for their expertise as activities progress.

Energy Efficiency Procurement & Markets Working Group

Megan Fisher, NYSERDA, EEPM Co-Chair, reported that the Working Group will be holding an all-day meeting on February 10, 2017 to discuss the structure and market flows of various business models and the implications of different market actors in different sectors, while ensuring that the methods comply with key market and REV principles. The subgroups will consult ahead of the meeting to discuss specific procurement models using three analytical tools developed by the Working Group: (1) Foundational Market Principles; (2) Market Flow Diagrams; and a (3) Business Model Template. The overall goal is to embark on a strong start in the preparation of a draft report that is due to the Steering Committee in April 2017.

Clean Energy Implementation and Coordination Working Group

Jesse Feinberg, Consolidated Edison Company of New York, CEIC Designee, reported that as the Working Group has completed their report drafting, the focus has shifted to ongoing coordination and to the implementation phase of its role. Its role is to provide a collaborative forum for information sharing with a goal of keeping the program incentive inventory up to date and shared through a useful platform that is to be determined.

Low & Moderate Income Clean Energy Initiatives Working Group

Adam Flint, Binghamton Regional Sustainability Coalition, Designee, referenced the Working Group's presentation of the *Alternative Approaches to Providing LMI Clean Energy Services Report*, presented at the January 7, 2017 meeting and filed, with revisions, on February 3, 2017. Mr. Flint identified future efforts of the Working Group as discussions of the possibility of an LMI earnings adjustment mechanism (EAM) with the Energy Efficiency Procurement Working Group, as well as a discussion on whether this Working Group should continue with additional future work.

Other Business

Ms. Gerwitz, NYS DPS, shared that Audrey Zibelman, Chair, New York State Public Service Commission, will be resigning from her position. She also shared that Dave Margalit, Chief Operating Officer, NYSERDA and CEAC Steering Committee Co-Chair, would be resigning from his position. Ms. Gerwitz announced that Sarah Osgood, Chief of Staff, NYSERDA would be stepping in as CEAC Steering Committee Co-Chair.

In response to these announcements, Mr. Rhodes, NYSERDA, stated that, despite the personnel changes, the fundamentals of the overall effort remain the same. He emphasized that energy efficiency continues to be central to the mission of the State, NYSERDA, and to the utilities. He expressed his gratitude for the work accomplished to date, recognizing that some work is winding up while other work continues.

Ms. Gerwitz agreed that a lot of great work has been completed and she offered her thanks to all, stating that, to date, over 120 individuals and more than 50 organizations have participated in a diverse set of CEAC activities. She also stated that the focus during 2017 will be on energy efficiency and recommended the following changes to the CEAC structure going forward:

- The Steering Committee will meet quarterly (or, in the alternative, every other month) and meetings will be held in-person;
- The status of the Low & Moderate Income Clean Energy Initiatives and REV Energy Efficiency Best Practices Working Groups will be put "on hiatus";
- The Energy Efficiency Procurement and Markets and Voluntary Investment & Other Market Development Working Groups will finish their respective work products and file reports;
- Working Group representatives will continue to participate at the Steering Committee;
- The Clean Energy Implementation and Coordination and Metrics, Tracking & Performance Assessment Working Groups continue to have substantial work to complete;
- Ms. Gerwitz indicated that she would be recommending that NYS DPS Staff be tasked with drafting an Energy Efficiency Straw Proposal based upon the CEAC work products to be shared by early summer 2017, to round out the availability of the *Clean Energy Investment Fund Plan* and the utility ETIPs, enabling the public to simultaneously consider all the work efforts.

In response to an inquiry by Mr. Maxwell, ERS, regarding obtaining Steering Committee feedback given the adjusted meeting schedule, Ms. Gerwitz stated that any feedback necessary in the interval between scheduled meetings could be provided through emails or conference calls.

Mr. Murray, NRDC, offered his opinion that the meetings held by conference call have not generally resulted in the same level of valuable information exchange as those meetings held in-person. Ms.

Gerwitz agreed, stating that her expectation is that even if a Working Group is on “hiatus,” the respective Working Group Designees should continue to participate at the Steering Committee meetings. Mr Murray and Mr. Flint appreciated this perspective and commented that it was important to maintain diverse viewpoints at the Steering Committee level and allow for continuity if the Working Groups were called back into action.

Mr. Murray also suggested that a quarterly meeting of two hours’ duration may be insufficient and that perhaps a three-hour meeting timeframe would be more appropriate. He further suggested that the interval between the June meeting and the October meeting may be too lengthy, and that perhaps a September meeting should be considered.

Mr. Beaudoin, AVANGRID, agreed with the proposals for quarterly meetings of a three-hour duration and sought confirmation that the purpose of the suggested DPS Staff Straw Proposal was to coordinate the availability of information.

In response to an inquiry by Mr. Flint, Binghamton Regional Sustainability Coalition, regarding the timeframe for certain Working Groups to complete assignments, it was determined that subsequent phone calls would be undertaken to discuss schedules as well as whether the Working Group should continue with any additional future work.

Public Comments

There being no other business to discuss and no comments from the public, the meeting was adjourned.

Steering Committee Update

Voluntary Investment and Other Market Development Working Group

A Work Plan reflecting the updates described below and highlighting those activities expected to occur prior to the April 27, 2017 Clean Energy Advisory Council (CEAC) Steering Committee Meeting is attached. The revisions to the Working Group's Work Plan affect the CEAC Work Plan.

Research and Recommendations Report:

Recent Progress:

This deliverable was eliminated.

Community Choice Aggregation Report:

Recent Progress:

The CCA subgroup held three hour-long calls on February 15th, March 8th, and March 29th. The calls are well attended, with, on average, more than 15 subgroup participants on each call. The subgroup has used a "key elements map" as a visual tool to guide and reflect the group's thinking about CCAs, the value they provide, and how they may be executed. The map, which will evolve as discussions continue, currently focuses on three CCA objectives: informed energy consumption (transparency, trust, staff/resources); cost savings (supply and bill savings); and local decision making about energy sourcing (competitive engagement/participation and authority to use collective buying power to dictate terms of commodity purchasing and accountability). The map also touches on the benefits of CCA, administration of CCAs, and general CCA barriers and limitations. This map has allowed the group to centralize their thinking to inform the outline submitted by the subgroup to the CEAC. The subgroup has already begun to take the key elements map and, in alignment with the outline, build a draft of the report. An initial draft began circulated in early March. Along with meeting minutes, a new version of the draft, reflective of prior subgroup discussions, is provided to the subgroup ahead of each call.

*Community Choice Aggregation (CCA) Subgroup
Voluntary Investment and Other Markets Working Group
Work Plan*

Background:

By order issued January 21, 2016 (January CEF Order),¹ the New York Public Service Commission (the Commission) established the Clean Energy Advisory Council (CEAC). The Commission required that the CEAC address specific issues and provide the Commission or Staff with recommendations and reports regarding such issues. To comply with the Commission directives, the CEAC developed a structure that relies upon Working Groups to conduct the necessary research and analysis and to prepare reports regarding their findings and recommendations.

The CCA Work Group is a subgroup of the Voluntary Investment & Other Market Development Working Group (“Working Group”). The overall purpose of the Voluntary Investment & Other Market Development Working Group is to develop strategies to maximize energy efficiency, renewable energy and distributed energy resources (DER) deployment, identifying approaches for adoption in the non-residential sectors, which may also include approaches that encourage and recognize voluntary investments in clean energy technology and solutions that help accelerate and increase achievement of the Clean Energy Standard and State Energy Plan (SEP) goals more broadly.

The CCA Work Group will examine CCA models, the degree to which the model enables voluntary investment, and policy and program considerations that will advance effective CCA activity, which also advance the State’s clean energy goals.

Overview:

To complete the work assigned by the Working Group in accordance with the schedule established in the Voluntary Investment & Other Market Development Working Group Scope, the subgroup expects to meet once every three weeks, or as necessary to accomplish the group’s objectives. The CCA subgroup expects most of its meetings to be conducted as teleconferences, however, if necessary, the subgroup will also conduct webinars and in-person meetings. Between meetings, the subgroup members will conduct work through email.

The CCA Subgroup intends to provide updates regarding progress and working schedule to the Working Group on a quarterly basis.

¹ Case 14-M-0094 et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016).

Schedule:

Task	Responsibility	Due Date	Status
Updates to Steering Committee:			
<i>Send Written Update to Steering Committee</i>	<i>Co-Chair/Secretary</i>	<i>2/1/17</i>	Complete
<i>Send Written Update to Steering Committee</i>	<i>Co-Chair/Secretary</i>	<i>4/20/17</i>	Complete
<i>Send Written Update to Steering Committee</i>	<i>Co-Chair/Secretary</i>	<i>6/15/17</i>	
CCA Subgroup Recommendations Report:			
Draft Outline	Brad Tito	3/15/17	Complete
Finalize Outline	Brad Tito	3/1/17	Complete
Send Outline to Working Group	Brad Tito	4/20/17	Complete
First Full Draft Report	Brad Tito	5/15/17	
Send Draft Report to Working Group	Brad Tito	6/1/17	
Finalize Report	Brad Tito	6/10/17	
Send Final Report to Working Group/Steering Committee	Brad Tito	6/15/17	
Submit Final Report Incorporating Steering Committee Comments	Brad Tito	7/20/17	
CCA Subgroup Meeting Schedule			
Kickoff Meeting 1	All Members	12/13/16	Complete
Meeting 2	All Members	1/25/17	Complete
Meeting 3	All Members	2/15/17	Complete
Meeting 4	All Members	3/8/17	Complete
Meeting 5	All Members	3/29/17	Complete
Meeting 6 (Cancelled)	All Members	4/19/17	
Meeting 7	All Members	5/10/17	
Meeting 8	All Members	5/31/17	
Meeting 9	All Members	6/21/17	
Final Meeting	All Members	7/12/17	

Revisions:

This Work Plan is a living document and the Working Group will revise it on a regular basis to include additional tasks assigned to the Working Group and to reflect any changes to the Working Group schedule. Revisions to this Work Plan will be included as a component of the Written Update to the Steering Committee. In instances where the Working Group determines that it will be unable to meet the deadlines established by the CEAC Steering Committee, it will comply with the revision process outlined in the CEAC Work Plan and update this Work Plan accordingly.

*Community Choice Aggregation (CCA) Subgroup
Voluntary Investment and Other Markets Working Group
Outline*

- I. Executive Summary
- II. Introduction
 - a. Description of the Clean Energy Advisory Council, the Voluntary Investment and Other Markets Working Group, and the CCA Subgroup
 - b. CCA Subgroup Statement of Purpose

The Community Choice Aggregation Subgroup will examine CCA models, the degree to which these models enable voluntary investment, and policy and program considerations that will advance effective CCA activity, which also advance the State's clean energy goals.
 - c. Background and Context
 - i. Reforming the Energy Vision (REV)
 - ii. Community Choice Aggregation Definition and History
 - iii. CCA in New York
- III. Methodology
 - a. CCA Subgroup
 - i. Working Group participation / facilitation / process for gathering input
 - ii. Approach to developing the report
- IV. CCA Key Elements
 - a. Overview
 - b. Potential Outcomes / Objectives of CCA in New York
 - i. Cost Savings
 - 1. Rate Savings through Bulk Supply Procurement
 - 2. Utility Bill Savings through Energy Efficiency, Demand Management, and Clean Energy
 - ii. Informed Energy Consumption

1. Public Outreach and Engagement
 2. Consumer Education
 - iii. Local Decision Making about Energy Sourcing
 1. Strategic Development of Distributed Energy Resources (DER)
 2. Renewable Energy
 3. Other Considerations
 - c. Benefits and Beneficiaries
 - i. Customers
 - ii. Community
 - iii. Local Economy
 - iv. Environment
 - d. CCA Structures and Administrative Capabilities
 - i. Roles and Responsibilities
 1. State Regulators and Agencies
 2. Utilities
 3. Municipalities
 4. CCA Administrator
 5. Energy Services Companies
 - ii. CCA Organizational Options
 1. Volunteer Organization
 2. Non-Profit Organization
 3. Local Development Corporation (LDC)
 4. Public Authority
 5. Municipally Run
 - iii. Organizational Management
 1. Staffing
 2. Resources and Capabilities
 - e. Discussion
 - i. Overcoming Constraints, Limitations, and Barriers
- V. Implications for Policy
- a. Key Insight 1
 - b. Key Insight 2
 - c. Key Insight 3
 - d. Key Insight 4
- VI. Conclusion

Voluntary Investment & Other Market Development Working Group Scope

Purpose:

The overall purpose of the Voluntary Investment & Other Market Development Working Group is to develop strategies to maximize energy efficiency, renewable energy and distributed energy resources (DER) deployment, identifying approaches for adoption in the non-residential sectors, which may also include approaches that encourage and recognize voluntary investments in clean energy technology and solutions that help accelerate and increase achievement of the Clean Energy Standard and State Energy Plan (SEP) goals more broadly.

Guiding Principles & Clean Energy Advisory Council (CEAC) Protocols:

Working Group activities in support of feasible and impactful findings are expected to include:

- Conducting and implementing Working Group activities with transparency and openness;
- Planning and implementing a work agenda and schedule of activities in support of the Working Group objectives;
- Compiling research;
- Directing analysis and studies;
- Soliciting expert advice;
- Developing options and proposals for consideration with particular focus and emphasis on implications and benefits to customers;
- Assessing options and proposals against objectives, and arriving at written feasible recommendations that provide the underlying rationale and, as needed, documents dissenting views along with associated rationale;
- Informing the development and implementation of programs among New York's clean energy program administrators;
- Providing regular written updates on the Working Group's activities and progress; and
- Sharing final work products and notable interim work products.

Protocols regarding CEAC Steering Committee and Working Group interactions include:

- Working Group scopes are authorized by the Steering Committee. Working Groups may at any time propose revisions and additions to the Working Group scopes for Steering Committee consideration but the initial objectives and deliverables of each group will focus on Commission assigned activities. The Steering Committee will guide and authorize Working Group scopes that lead to recommendations that help inform the future development of programs.
- Each Working Group will establish its own work plan and schedule and should incorporate opportunities for non-member input and feedback, as appropriate and feasible and shall provide routine updates to the Steering Committee on its progress. The Steering Committee will identify potential overlap and coordination between Working Group activities and will suggest opportunities for integration or sharing resources between and among Working Group activities.

- Working Group reports and other documents will typically be provided to the Steering Committee for review and comment two to three weeks prior to final deliverable due dates. The Steering Committee will review and assess Working Group products against the overall objectives and purpose of the Clean Energy Advisory Council and Working Groups. The Working Group shall consider Steering Committee comments and shall document whether it has incorporated or rejected each comment with associated rationale in a new section of the report or in an appendix to the report. The Working Group retains ownership of final work products and is under no obligation to revise its recommendations in response to Steering Committee feedback. The Working Group shall work with Staff to ensure all final work products are filed in DMM and posted to the DPS website.

Initial Objectives:

The Voluntary Investment & Other Market Development Working Group is initially tasked with:

- (1) Voluntary Investment Pilot Parameters – Develop parameters to guide potential Voluntary Investment Pilots, which at a minimum must identify a known barrier(s) that the pilot must be designed to address, elicit outcomes that demonstrate ‘additionality,’ ‘replicability,’ and ‘scalability,’ as supported through voluntary investment, identify possible ‘sectors,’ ‘categories,’ or ‘activities’ that will be considered appropriate for pilot projects and measurement and verification for how each pilot will prove its effectiveness in eliciting private, third-party investment.
- (2) Voluntary Investment Research and Recommendations Report – Develop recommendations for incentives and/or other approaches that foster voluntary investments in energy efficiency, renewable energy and DER. The Working Group shall explore opportunities that maximize energy efficiency and DER deployment in the commercial and industrial sectors, potentially identifying new mechanisms and accounting protocols that both facilitate voluntary investments in clean energy technologies, and can help accelerate and increase achievement of the Clean Energy Standard and SEP goals. The Working Group shall consider early learnings from utility Self-Direct programs, NY-Prize initiative, REV demonstrations, development of the NYGATS/REC markets, and any other initiatives that can provide useful, “real-world” examples to inform approaches to voluntary market activity. To the extent that the proposal includes recommendations regarding collection and allocation of ratepayer funding, the proposal should analyze the impact of such changes on all customer classes.
- (3) Community Choice Aggregation Recommendations Report - In completion of the direction from the Commission to look at Community Choice Aggregation (See Order in Case 14-M-0224) regarding how CCA can accelerate the adoption of energy efficiency, renewable energy and distributed energy resources, a subgroup of the larger working group will develop a report to examine CCA models, the degree to which the model enables voluntary investment, and policy and program considerations that will advance effective CCA activity, which also advance the State’s clean energy goals.
- (4) Recommendation Regarding Continuation of Working Group Activities - Determination as to whether the Working Group has fulfilled its purpose upon the completion of the initial objectives or recommended additional objectives and tasks for the Working Group to pursue.

Tasks/Deliverables:

Task/Deliverable	Expected Completion Date
Provide final Voluntary Investment and other Market Development Work Scope, including member list and member roles provided to Steering Committee • Provide to DPS Staff • Final Filed in DMM	6/10/16 6/17/16
Initial detailed Voluntary Investment and other Market Development Work Plan • Draft submitted to CEAC Steering Committee • Final filed in DMM	7/1/16 8/1/16
Voluntary Investment Pilot Parameters Report: • Draft Submitted to CEAC Steering Committee for Comment • Final Filed in DMM	11/23/16 12/21/16
~~Voluntary Investment Research and Recommendations Report:~~ • ~~Outline Submitted to CEAC Steering Committee for Comment~~ • ~~Draft Submitted to CEAC Steering Committee for Comment~~ • ~~Final Filed in DMM~~	~~Q2 2017~~ ~~Q3 2017~~ ~~Q3 2017~~
Community Choice Aggregation Recommendations Report: • Outline Submitted to CEAC Steering Committee for Comment • Draft Submitted to CEAC Steering Committee for Comment • Final Filed in DMM	~~6/15/20~~ /17 ~~Q3-6/15~~ /2017 ~~Q3-7/20~~ /2017
Provide a Recommendation to the Steering Committee as to whether the Working Group has completed its purpose and should be folded or provide a revised Working Group Scope with additional objectives, tasks and deliverables.	At any time, but no later than 90 days following the completion of previously assigned deliverables

Members:

Name	Role	Company/Organization	Email
Tom Rienzo	Co-Chair	DPS	Thomas.Rienzo@dps.ny.gov
John Williams	Co-Chair	NYSERDA	John.Williams@nyserda.ny.gov
Mark Lorentzen	Designee	TRC	mlorentzen@trcsolutions.com
William Acker	Alternate Designee	NY-BEST Consortium	acker@ny-best.org
Anne Reynolds	Member	Alliance for Clean Energy NY	areynolds@aceny.org
Jennifer Metzger	Member	Citizens for Local Power	jentmetzger@gmail.com
Jay Merves	Member	City of New York	jmerves@nyceec.com
David Logsdon	Member	Con Edison	logsdond@coned.com
Chris Wentlent	Member	Exelon	Christopher.Wentlent@constellation.com
Radmila Miletich	Member	IPPNY	radmila@ippny.org
Mike Mager	Member	Multiple Intervenors	mmager@couchwhite.com
Brandon Dyer	Member	National Grid	Brandon.Dyer@nationalgrid.com
Carrie Hitt	Member	Nextera Energy Resources	Carrie.Hitt@nexteraenergy.com
Kelli Joseph	Member	NRG Energy	kelli.joseph@nrg.com
Randall Solomon	Member	NYPA	randall.solomon@nypa.gov
Kevin Schmalz	Member	NYSEG/RG&E	rkschmalz@nyseg.com
Carl Hum	Member	Real Estate Board of NY	CHum@rebny.com
Jamil Khan	Member	SolarCity	jkhan@solarcity.com

CCA Subgroup:

Name	Role	Company/Organization	Email
Jen Metzger	Member	Citizens for Local Power	jentmetzger@gmail.com
Brad Tito	Member	NYSERDA	bradford.tito@nyserda.ny.gov
Kelly Connell	Member	DPS	Kelly.Connell@dps.ny.gov
Paul Fenn	Member	Local Power, Inc.	paulfenn@gmail.com
Michael Rauch	Member	Renewable Highlands	mbr.rauch@gmail.com
Leo Wiegman	Member	Croton Energy Group	lwiegman@crotonenergy.com
Radina Valova	Member	Pace Energy and Climate Center	rvalova2@law.pace.edu
Valerie Strauss	Member	Association for Energy Affordability	vstrauss@aea.us.org
Brian Bowe	Member	Constellation	Brian.Bowe@constellation.com
Sam Morgan	Member	Constellation	morgansa@conedsolutions.com
Arjun Makhijani	Member	Institute for Energy and Environmental Research	arjun@ieer.org
Kerri Ann Kirschbaum	Member	ConEd	KIRSCHBAUMK@coned.com
Sara Margaret Geissler	Member	ConEd	GeisslerS@coned.com
Jason Miller	Member	ConEd	MILLERJAS@coned.com
Elena Futoryan	Member	ConEd	FUTORYANE@coned.com
JoAnne D Seibel	Member	Orange and Rockland	seibeljo@oru.com
Kevin Schmalz	Member	AVANGRID	rkschmalz@nyseg.com
Marc Webster	Member	AVANGRID	mpwebster@nyseg.com
Glenn Weinberg	Member	Joule Assets	gweinberg@jouleassets.com

Name	Role	Company/Organization	Email
Louise Gava	Member	MEGA	lgava@megaenergy.org
Dan Welsh	Member	Sustainable Westchester	-
Juliana Griffiths	Member	National Grid	Juliana.Griffiths@nationalgrid.com
Maggie Downey	Member	Cape Light Compact	mdowney@capelightcompact.org
Irene Weiser	Member	Tompkins County Council of Governments	irene32340@gmail.com

Steering Committee Update

Clean Energy Implementation & Coordination Working Group

A Revised Work Plan reflecting the updates to the Work Plan described below is attached.

E² Transition Recommendations Report: Complete

Multiple Incentives Inventory & Recommendations Report: Complete

Utility / NYSERDA Coordination Report: Complete

Program Administrator Coordination:

- Incentive Inventory: This spreadsheet was updated to include new programs, upcoming programs, and changes to current programs in the market. The Incentive Inventory will be included with this update for Steering Committee review.
- On-going Meetings: The CEI&C Working Group held its second in-person coordination meeting on April 19, 2017 to further test the collaboration process set out in the Coordination Report. During this meeting, the Working Group reviewed the updated Incentive Inventory and discussed new and changed programs. In addition, three specific programmatic areas were discussed:
 1. Upstream and midstream initiative coordination
 2. LMI coordination with utilities
 3. FlexTech referrals to utilities

The working group invited program managers and designers to participate to maximize the effectiveness of these three discussions and encourage future communication. These discussions helped to lay the groundwork for future pilot/program development, while also identifying concrete points of collaboration in areas like LMI and FlexTech.

- Upcoming Meetings: Additional ongoing monthly and quarterly meetings were also scheduled; those meetings are included as part of the work plan. Potential topics of discussion for future meetings include the following:
 - New procurement models for EE/DR and how to coordinate them with existing programs
 - Commercial program coordination
 - Battery & EV updates

Future meetings will also check back on previous subjects to determine how coordination has progressed and whether improvements need to be made.

Clean Energy Implementation & Coordination Working Group Work Plan

Background:

By order issued January 21, 2016 (January CEF Order),¹ the New York Public Service Commission (the Commission) established the Clean Energy Advisory Council (CEAC). The Commission required that the CEAC address specific issues and provide the Commission or Staff with recommendations and reports regarding such issues. To comply with the Commission directives, the CEAC developed a structure that relies upon Working Groups to conduct the necessary research and analysis and to prepare reports regarding their findings and recommendations.

The CEAC established the Clean Energy Implementation & Coordination Working Group to coordinate planning and implementation among New York's clean energy program administrators, in consultation with DPS Staff to better support New York's clean energy policy objectives, provide clarity to the market, and serve ratepayers.

Overview:

To complete the work assigned by the Steering Committee in accordance with the schedule established in the Clean Energy Implementation & Coordination Working Group Scope, the Working Group expects to meet once a month. The Working Group expects monthly meetings to be conducted as teleconferences, and quarterly/annual meetings to be conducted in-person. Between meetings, the Working Group members will conduct work through email.

The Working Group intends to provide updates regarding progress and working schedule to the Steering Committee at the Steering Committee's public meetings.

¹ Case 14-M-0094 et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016).

Schedule:

Task	Location	Date	Status
Quarterly In-Person Meeting	NYSERDA (Albany & NYC)	4/19/17	
<i>Upstream & Midstream program coordination</i>			<i>Complete</i>
<i>LMI coordination with utilities</i>			<i>Complete</i>
<i>FlexTech referrals to utilities</i>			<i>Complete</i>
May Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
June Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
July Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
August Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
Quarterly In-Person Meeting	NYSERDA (Albany & NYC)	9/13/17	
<i>Topics TBD</i>			
October Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
November Meeting	Conference Call	TBD	
<i>Topics TBD</i>			
Annual In-Person Meeting	TBD	12/6/17	
<i>Topics TBD</i>			
FILE INCENTIVE INVENTORY	DMM	December	

Revisions:

This Work Plan is a living document and the Working Group will revise it on a regular basis to include additional tasks assigned to the Working Group and to reflect any changes to the Working Group schedule. Revisions to this Work Plan will be included as a component of the Written Update to the Steering Committee. In instances where the Working Group determines that it will be unable to meet the deadlines established by the CEAC Steering Committee, it will comply with the revision process outlined in the CEAC Work Plan and update this Work Plan accordingly.

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
Central Hudson	Electric	Commercial & Industrial Sector	Prescriptive	Prescriptive	Rebate	LEDs; exit signs; lighting; occupancy sensor; air compressors; low flow devices; heat pumps; chillers; VFD; Programmable Thermostats	Through prescriptive rebates, participants select energy efficient equipment from a pre-qualified list. Rebates are issued upon completion of the project and submission of the rebate application. This program is geared toward larger commercial customers either replacing lighting, or looking for a more in depth analysis of their energy usage.	2016-2018	Downstream	Program	LEDs; exit signs; lighting; occupancy sensor; air compressors; low flow devices; heat pumps; chillers; VFD; Programmable Thermostats	Commercial & Industrial	Central Hudson	Financial
Central Hudson	Electric	Commercial & Industrial Sector	Direct Install Lighting	Prescriptive	Cost share- up to 70% with the \$/kWh cap	Lighting	The program offers customers an energy assessment on their current lighting that includes information on potential energy savings and anticipated payback as well as incentives that cover an “up to” incentive model of the lighting measures and installation costs. This program is aimed towards small commercial customers looking for a simple lighting replacement.	2016-2018	Upstream	Program	Lighting	Commercial - Small Business	Central Hudson	Financial
Central Hudson	Electric	Commercial & Industrial Sector	Custom	Custom	\$0.16 per kWh Saved	custom; passing BCA	Equipment that does not qualify for a prescriptive rebate will be eligible for a custom rebate through custom projects. Applications must be pre-approved by the implementation contractor before the equipment is purchased and installed and projects must have a Total Resource Cost Test benefit-cost ratio of at least 1.0.	2016-2018	Downstream	Program	All	Commercial & Industrial	Central Hudson	Financial
Central Hudson	Electric	Commercial & Industrial Sector	Online Lighting Portal	Prescriptive	\$0.24 per kWh Saved	LED Lighting	The tool was designed to support the current small business program, providing a unique and more economical direct-to-the-ratepayer LED solution. The platform both educates the end user and delivers best in class LED solutions, taking all of the guess work out of this otherwise overly complicated process. The tool displays the estimated annual and lifetime savings plus offers interest free financing for PayPal customers. Upon receipt of the products, the customer is provided clear direction with a room-by-room outline format insuring the installation is a success. From an M&V perspective the customer is required to answer questions that helps to best calculate the energy savings for that exact customer.	2016-2018	Downstream	Program	Lighting	Commercial & Industrial	Central Hudson	Both
Central Hudson	Electric	Commercial & Industrial Sector	Self-Direct Program	Self Direct	Total project must be no more than 7.5% less than program only \$/MWh	Unique to project per customer enrolled	See Self Direct Guidance	2017-2018	Downstream	Program	All	Commercial & Industrial	Central Hudson	Financial
Central Hudson	Electric	Residential	Online Marketplace CenHub	REV Demo/EE Marketing tool utilizing EE incentives	Instant Rebate, Rewards Program	8000 unit sales and \$40,000 PSR's in Year 1	Central Hudson is offering an ecommerce site as an enhancement to its existing customer web experience. Instant rebates are available at checkout on various brands of smart thermostats, LED lighting, and smart strips.	2016-2018	Upstream	Pilot	Smart thermostats, LED lighting, and smart strips.	Residential	Central Hudson	Both
Central Hudson	Electric	Residential	Residential Electric HVAC	Prescriptive	Rebate	Air Conditioner; Heat Pump; Geothermal; Heat Pump Water Heater; Programmable Thermostat;	The Residential Electric HVAC Program targets residential customers interested in purchasing or replacing their electric heating and cooling systems with the energy efficient options offered by the program.	2016-2018	Downstream	Program	HVAC	Residential	Central Hudson	Financial
Central Hudson	Electric	Residential	Residential Appliance Recycling	Prescriptive	\$50 per unit	Refrigerator; Freezer	The program incentivizes residential customers to remove inefficient refrigerators, freezers, and room air conditioners from the electric system and dispose of them in an environmentally safe and responsible manner.	2016-2018	Downstream	Program	Refrigerator; Freezer	Residential	Central Hudson	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
Central Hudson	Electric	Residential	Residential Lighting (Point of Sale)	Prescriptive	Specialty LED-\$3.00 per bulb; LED-\$2.00 per bulb	Lighting	The Residential Lighting Program incentivizes the purchase and installation of efficient lighting utilizing an upstream strategy to provide customers incentives on qualifying LED light bulbs at participating retailers. Customers receive an instant incentive at the point-of-purchase.	2016-2018	Upstream	Program	Lighting	Residential	Central Hudson	Financial
Central Hudson	Electric	Residential	Behavioral Modification	Prescriptive	Online portal	Mailed and emailed report	The goal of this program is to reduce consumption via socially-and information-driven behavioral change and raise general awareness of energy efficiency and Central Hudson’s Demand Management programs., where applicable.	2016-2018	Upstream	Program	All	Residential	Central Hudson	Non-Financial
Central Hudson	Gas	Commercial	Prescriptive	Prescriptive	Rebate	Storage Water Heater; Indirect Water Heater; Furnace; Steam Boiler; Boiler Reset Control; ECM ;Programmable Thermostat	Through prescriptive rebates, participants select energy efficient equipment from a pre-qualified list. Rebates are issued upon completion of the project and submission of the rebate application.	2016-2018	Downstream	Program	Storage Water Heater; Indirect Water Heater; Furnace; Steam Boiler; Boiler Reset Control; ECM ;Programmable Thermostat	Commercial	Central Hudson	Financial
Central Hudson	Gas	Commercial	Custom	Custom	\$1.00 per therm Saved	custom; passing BCA	Equipment that does not qualify for a prescriptive rebate will be eligible for a custom rebate through custom projects.	2016-2018	Downstream	Program	All	Commercial	Central Hudson	Financial
Central Hudson	Gas	Residential	Residential Gas HVAC	Prescriptive	Rebate	Efficient Furnace; ECM Fan; Efficient Water Boiler; Efficient Steam Boiler; Boiler Reset Control; Programmable Thermostat; Gas Storage Water Heater; Indirect Water Heater;	The Residential Gas HVAC Program targets residential customers interested in purchasing or replacing their gas heating systems with the energy efficient options offered by the program.	2016-2018	Downstream	Program	HVAC	Residential	Central Hudson	Financial
Central Hudson	Gas	Residential	Behavioral Modification	Behavioral	Report	Behavioral modification	Energy reports are to be sent periodically to customer households to give them self-awareness and a peer comparison of their energy usage. Customers are also provided access to an online tool to track energy consumption and offer tips to reduce usage	2016	Upstream	Program	All	Residential	Central Hudson	Non-Financial
Con Edison	Electric	Commercial	C&I	Prescriptive	rebate; Maximum 50% of project cost and 100% of measure cost	high efficiency lighting and controls, heating, ventilation and air-conditioning (“HVAC”) measures, VFDs, and motors	traditional equipment replacement program that is designed to encourage C&I customers to identify energy saving opportunities, develop a building performance improvement plan, and implement cost-effective retrofit projects.	2016-2018	Downstream	Program	high efficiency lighting and controls, HVAC measures, VFDs, motors and energy efficiency studies.	Commercial	Con Edison	Financial
Con Edison	Electric	Commercial	C&I	Custom	\$.16 kWh; Maximum 50% of project cost and 100% of measure cost. Capped at \$1,000,000	Non-lighting measures un-qualified for the prescriptive track.	Flexible and innovative equipment replacement program that is designed to encourage C&I customers to identify energy saving opportunities, develop a building performance improvement plan, and implement cost-effective retrofit projects.	2016-2018	Downstream	Program	Non-Prescriptive	Commercial	Con Edison	Financial
Con Edison	Electric	Commercial	Self-Direct	Customer	TBD	Customer determined	The program will allow eligible business customers the opportunity to administer their own energy efficiency efforts in lieu of participating in the Company’s electric C&I Program.	2017-2019	Downstream	Program	All	Commercial	Con Edison	Financial
Con Edison	Electric	Commercial	Commercial Direct Install (Formerly Small Business Direct Install)	Prescriptive	Incentives up to 70% of total material and installation costs	Lighting and Refrigeration	Free energy efficiency assessment and installation of energy efficient lighting and refrigeration measures at low cost to customers whose average peak demand is up to 300kW. Program offers Incentives of up to 70 percent of the total material and installation costs.	2016-2018	Downstream	Program	Lighting and refrigeration	Commercial - Small to mid size Business	Con Edison	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
Con Edison	Electric and Gas	Residential	Residential	Prescriptive	Rebate	appliance rebates, electric and gas HVAC efficiency rebates	Receive a \$75 rebate for the purchase of a CEE Tier II or III rated refrigerator. Con Edison also offers rebates for the following ENERGY STAR products: dehumidifiers \$20, room air conditioners \$30, dishwashers \$50, and clothes washers \$35. Up to \$1000 in cooling and heating HVAC rebates	2016-2018	Downstream	Program	appliance rebates, electric and gas HVAC efficiency rebates	Residential	Con Edison	Financial
Con Edison	Electric	Residential	Bulk Recycling	Prescriptive	Rebates and recycling service	refreigerator and room AC recycling, and appliance rebates	The program will offer an appliance recycling service to multi-family buildings in the service territory through a coordinated removal and recycling of refrigerators, freezers, and room air conditioners from multi-family buildings. Additionally, the program would support working with retailers to host drop off recycling events	2017-2018	Downstream	Program	refreigerator and room AC recycling, and appliance rebates	Multi-Family	Con Edison	Financial
Con Edison	Electric	Residential	Retail Lighting	Prescriptive	Mark downs on LEDs	LEDs	The retail lighting program will improve and increase market share of ENERGY STAR LED lamps and Appliances within the Con Edison territory. Through coordination with manufacturers and retailers discounted lighting with be offered for ENERGY STAR LED lamps.	2017-2018	Upstream	Program	LEDs	Residential	Con Edison	Financial
Con Edison	Electric and Gas	Residential	Smart Kids Energy Education	Behavioral and no-cost DIY measures	Take home kit	high-efficiency water measures and LED lamps	Provide fifth grade students in with a take-home kit of energy efficiency measures and accompanying classroom instruction on behavior change	2016-2018	Downstream	Program	high-efficiency water measures and LED lamps	Residential	Con Edison	Non-Financial
Con Edison	Electric	Residential	BQDM Direct Install Lighting	Prescriptive	DI of LEDs	LEDs	The ETIP portfolio will claim KWh savings on lighting distributed through the BQDM lighting program.	2017-2018	Downstream	Program	LEDs	Residential	Con Edison	Financial
Con Edison	Electric	Multifamily	Multifamily	Direct Install, Prescriptive, and Custom	Rebate	lighting, occupancy sensors, control systems, and HVAC systems.	Prescriptive and direct install rebates are available. Custom rebates are also available for both electric and gas customers, along with financing from NYCEEC.	2016-2018	Downstream	Program	lighting, occupancy sensors, control systems, and HVAC systems.	Multifamily	Con Edison	Financial
Con Edison	Electric	Residential	Home Energy Reports REV demo (Part of Connected Homes Platform)	Behavioral	Home Energy Report	Behaviorial Strategy	Provide customers with better information on their energy use and personalized energy saving advice. Provide the Company with measurable and verifiable information about customer behavior. Help increase participation in other efficiency programs as customers are encouraged to purchase energy efficient equipment and appliances for their homes. Currently active as REV demo, prospective to become system-wide.	2016-2018	Downstream	Pilot	Behavioral	Residential	Con Edison	Non-Financial
Con Edison	Electric	Residential	Home Energy Reports REV demo (Part of Connected Homes Platform)	Prescriptive	Home Energy Report	Solar PV; Home Services; Smart Thermostats;	Products: referral to SunPower for residential solar PV and possibly PV + storage systems; referral to Sealed for energy efficiency audits/retrofits and energy appliance installations and repairs; smart thermostats including Nest's Seasonal Savings, a service that helps customers adjust temp. settings.	2016-2018	Downstream	Pilot	Solar, storage, audits, EE retrofits, appliances, smart thermostats	Residential	Con Edison	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
Con Edison	Electric and Gas	Residential	REV Demo Storefront (Part of Connected Homes Platform)	Prescriptive	Marketplace; rebates	LED lightbulbs, advanced power strips, smart thermostats, and clothes washers, refrigerators, electric water heaters, gas water heaters, dishwashers, dehumidifiers, and ACs	Provide point-of-sale (POS) rebates for LED lightbulbs, smart thermostats, and advanced powerstrips through direct purchase via the Con Ed marketplace storefront. Also provides rebates for other products purchased through marketplace.	2016-2018	Downstream	Pilot	LED lightbulbs, advanced power strips, smart thermostats, and clothes washers, refrigerators, electric water heaters, gas water heaters, dishwashers, dehumidifiers, and ACs	Residential	Con Edison	Financial
Con Edison	Gas	Commercial	C&I	Prescriptive	rebate; Maximum 50% of project cost and 100% of measure cost	Heating, ventilation and air-conditioning (“HVAC”) measures such as furnaces and boilers, in addition to measures like insulation.	Traditional equipment replacement program that is designed to encourage C&I customers to identify energy saving opportunities, develop a building performance improvement plan, and implement cost-effective retrofit projects.	2016-2018	Downstream	Program	HVAC measures such as furnaces and boilers, in addition to measures like insulation and energy efficiency studies.	Commercial	Con Edison	Financial
Con Edison	Gas	Commercial	C&I	Custom	\$2 therm; Maximum 50% of project cost and 100% of measure cost. Capped at \$250,000	Measures un-qualified for the prescriptive track that can pass TRC.	Flexible and innovative equipment replacement program that is designed to encourage C&I customers to identify energy saving opportunities, develop a building performance improvement plan, and implement cost-effective retrofit projects.	2016-2018	Downstream	Program	Non-Prescriptive	Commercial	Con Edison	Financial
Con Edison	Gas	Commercial	Commercial Direct Install	Prescriptive	Incentives up to 70% of total material and installation costs (up to 100% for gas measures).	Gas measures	Free energy efficiency assessment and installation of high efficiency gas measures at low cost to customers whose average peak demand is up to 300kW. Incentives of up to 70 percent of the total material and installation costs (up to 100% for current gas measures).	2017-2019	Downstream	Program	High rinse spray valves, faucet aerators	Commercial - Small Business	Con Edison	Financial
Con Edison	Gas	Residential	Residential	Prescriptive	Rebate	gas HVAC efficiency rebates	Program defrays the costs of improvements to heating and cooling equipment, water heater, or duct and air sealing. Con Edison customer, live in a 1- to 4-family home, and purchase and install eligible high-efficiency heating and cooling equipment are eligible for the program	2016-2018	Downstream	Program	HVAC	Residential	Con Edison	Financial
Con Edison	Gas	Multifamily	Multifamily	Direct Install, Prescriptive, and Custom	Rebate	high-efficiency water measures, HVAC maintenance and weatherization, boilers, control systems, and insulation.	Prescriptive and direct install rebates are available. Custom rebates are also available for both electric and gas customers, along with financing from NYCEEC.	2016-2018	Downstream	Program	high-efficiency water measures, HVAC maintenance and weatherization, boilers, control systems, and insulation.	Multifamily	Con Edison	Financial
Con Edison	Electric	All	Commercial System Relief Program	Custom	Incentive Payment	Behavioral modification upon request	Program designed to shave off network and load area peak loads for infrastructure investment deferrals. Customers are asked to reduce load at a pre-specified time, which depends on their location, if the forecasted peak for the next day is at least 92% of the summer forecasted peak. At least 21 hours of advance notification are given to customers. Customers are paid for their capability to reduce load.	2016	Downstream	Program	Demand response	Commercial	Con Edison	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
Con Edison	Electric	All	Distribution Load Relief Program	Custom	Incentive Payment	Behavioral modification upon request	Program designed to relieve stress on a specific network in case of a contingency to improve service reliability. Notification may be immediate or may be issued several hours in advance. Customers are paid for their capability to reduce load.	2016	Downstream	Program	Demand response	Commercial	Con Edison	Financial
Con Edison	Electric	Residential	Bring Your Own Thermostat (BYOT)	Behavioral	\$85 Rebate as well as a \$25 annual performance payment during the third summer	Thermostats	Customers enrolled in the Bring Your Own Thermostat Program allows Con Edison to make brief, limited adjustments to their central air-conditioner setting during the summer to reduce demand and high energy use. Customers are always in control and can override the settings at any time.	2016-2018	Downstream	Program	Thermostats	Residential	Con Edison	Financial
Con Edison	Electric	Commercial	Demand Management Program	Custom	Incentive Payments	Thermal storage, battery storage, Chiller/HVAC/BMS/Controls, Lighting/LED, DR Enablement, Fuel Switching, Non-electric AC	Program offers enhanced incentives for technology that will help improve operational performance of buildings and reduce electric demand.	2017-2019	Downstream	Program	Thermal storage, battery storage, Chiller/HVAC/BMS/Controls, Lighting/LED, DR Enablement, Fuel Switching, Non-electric AC	Commercial	Con Edison	Financial
Con Edison	Electric	All	Brooklyn-Queens Demand Management Program	Portfolio of DERs procured through RFI, RFC, Auction, RFP, RFQ and through adders to Con Edison and NYSERDA programs	Custom incentives with an overall budget of \$3.6 million/peak MW	Portfolio including EE, CHP, Fuel Cells, Battery , DR, solar, and thermal storage	\$150 Million budget to procure 41 MW of resources in the three BQDM networks (Ridgewood, Richmond Hill, Crown Heights) in order to enable deferral of a major new substation	2016-2018	Downstream	Program	EE, CHP, Fuel Cells, Battery, DR, solar, and thermal storage	All	Brooklyn - Queens	Financial
Con Edison	Electric	All	Targeted Demand Management	Portfolio for capital deferral projects	Custom	Portfolio including EE, CHP, Fuel Cells, Battery and DR, per project need	No identified project yet so nothing to report. It is a \$60 million funding source for any appropriate projects we identify in 2016 or 2017.	2016-2017	Downstream	Program	EE, CHP, Fuel Cells, Battery and DR, per project need	All	Con Edison	Financial
Con Edison	Electric	Residential	Con Edison Smart AC Program	Behavioral	Wifi enabled room AC, participants earn rewards/prizes	Air Conditioners	~ Provides smartAC kits to participants for DR purposes ~ Provide wi-fi enabled owners incentive to enrol ~ Con Edison enabled direct control of AC unit during high-demand events ~ Participants earn rewards and are eligible for prizes ~ Targeting 18,000 AC units for 8,000 customers	2016-2018	Downstream	Pilot	Air Conditioner	Residential	Con Edison	Financial
Con Edison	Electric	Commercial	2017 Demand Management Program	Custom	Incentive Payments	Thermal storage, battery storage, Chiller/HVAC/BMS/Controls, DR Enablement, Fuel Switching, Non-electric AC	Program offers enhanced incentives for technology that will help improve operational performance of buildings and reduce electric demand.	2017-2019	Downstream	Program	Thermal storage, battery storage, Chiller/HVAC/BMS/Controls, DR Enablement, Fuel Switching, Non-electric AC	Commercial	Con Edison	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
Con Edison	Electric	All	Smart Charge New York Program	Behavioral	\$5 per month to keep device installed. \$20 bonus if participant abstains from charging during summer peak hours (June - Sept, 2-6PM, Monday- Friday).	Plug-In Electric Vehicles that charge within Con Edison service territory	\$5 per month to keep device installed and to charge in the Con Edison Service Territory. \$20 bonus if the participant abstains from charging from 2-6pm on weekdays during summer months (June-September). Additional \$0.05/kwh if participant charges any day during off-peak hours (12 midnight – 8 AM).	2017-2019	Downstream	Program	Plug-In Electric Vehicles	All	Con Edison	Financial
National Fuel Gas	Gas	Residential	Residential Rebate Program	Prescriptive	Rebate	Hot Air Furnace; Hot Water Boiler; Steam Boiler; Storage Tank Water Heater; Tank less Water Heater; Indirect Water Heater; Programmable Thermostats	The Residential Rebate Program offers equipment replacement rebate incentives for single family and multi-family residential dwellings, to encourage them to install high efficiency space heating and water heating appliances.	2016	Downstream	Program	Hot Air Furnace; Hot Water Boiler; Steam Boiler; Storage Tank Water Heater; Tank less Water Heater; Indirect Water Heater; Programmable Thermostats	Residential & Multifamily	National Fuel Gas	Financial
National Fuel Gas	Gas	Commercial	NRCIP	Prescriptive/ custom	Rebate; \$15 per Mcf	Furnaces; Hot water boiler; steam boiler; unit heater; infrared heater; vent damper; pipe insulation; duct insulation; demand control ventilation; water heater; cooking equipment; controls	NRCIP is a space, water and process heating equipment replacement program that offers fixed and customized rebate incentives to any non-residential customer paying into the Conservation Incentive Program surcharge.	2017	Downstream	Program	Furnaces; Hot water boiler; steam boiler; unit heater; infrared heater; vent damper; pipe insulation; duct insulation; demand control ventilation; water heater; cooking equipment; controls	Commercial	National Fuel Gas	Financial
National Fuel Gas	Gas	Residential	LIURP	Prescriptive/ custom	Direct install	Custom measures delivered to low income customers in NFG territory	LIURP is a weatherization program designed specifically for low income customers. Participants receive a heating system check, an energy audit, weatherization measures, an infiltration reduction, natural gas usage reduction measures and consumer education.	2016	Downstream	Program	All gas	Residential - Low Income	National Fuel Gas	Financial
National Grid (Brooklyn Union)	Gas	Residential	Residential Engagement Program	Behavioral	Audit	Behavioral strategy	Home energy report and access to real time energy use	2016-2018	Upstream	Program	Audit	Residential	National Grid (Brooklyn Union)	Non-Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
National Grid (Brooklyn Union)	Gas	Residential	Residential Efficiency Platform	Prescriptive	Rebate	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Two step process with online assessment and online report to take action on recommendations via an e-commerce website where they can purchase measures and receive a rebate.	2017-2018	Downstream	Program	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Residential	National Grid (Brooklyn Union)	Financial
National Grid (Brooklyn Union)	Gas	Residential	Residential Program	Prescriptive	Rebate	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Providing free and reduced measures to residential customers through take home kits and online rebates	2016-2018	Downstream	Program	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Residential	National Grid (Brooklyn Union)	Financial
National Grid (Brooklyn Union)	Gas	Commercial	C&I Program	Prescriptive/ custom, and Direct Install	Rebate	space and water heating systems along with associated controls, steam traps, insulation, and commercial kitchen equipment. Direct Install program offers free installation of low flow faucet aerators, showerheads and Thermostatic Raditor valves. Includes a Food Service POS pilot targeting fryers & convection ovens.	Focused on the retrofit market providing technical services along with prescriptive and custom incentives as well as direct install measures to encourage the installation of a wide variety of gas energy-efficient measures to upgrade everything from building systems to manufacturing processes	2016-2018	Upstream & Downstream	Program	space and water heating systems along with associated controls, steam traps, insulation, and commercial kitchen equipment. Direct Install program offers free installation of low flow faucet aerators, showerheads and Thermostatic Raditor valves.	Commercial	National Grid (Brooklyn Union)	Financial
National Grid (Brooklyn Union)	Gas	Multifamily	Multifamily Program	Prescriptive/ custom, and Direct Install	Rebate	Space and water heating systems along with associated controls, steam traps, insulation, and gas chiller. Direct Install program offer free installation of low flow faucet aerators, showerheads and Thermostatic Raditor valves.	The Multifamily Program is designed to increase the installation of energy efficiency measures in existing, multifamily buildings by working with property owners, managers, trade allies and tenants.	2016-2018	Upstream & Downstream	Program	Space and water heating systems along with associated controls, steam traps, insulation, and gas chiller. Direct Install program offer free installation of low	Multifamily	National Grid (Brooklyn Union)	Financial
National Grid (Keyspan)	Gas	Residential	Residential Program	Prescriptive	Rebate	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Providing free and reduced measures to residential customers through take home kits and online rebates	2016-2018	Downstream	Program	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Residential	National Grid (Keyspan) LI	Financial
National Grid (Keyspan)	Gas	Residential	Residential Efficiency Platform	Prescriptive	Rebate	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Two step process with online assessment and online report to take action on recommendations via an e-commerce website where they can purchase measures and receive a rebate	2017-2018	Downstream	Program	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Residential	National Grid (Keyspan) LI	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
National Grid (Keyspan) LI	Gas	Commercial	C&I Program	Prescriptive/custom, and Direct Install	Rebate	space and water heating systems along with associated controls, steam traps, insulation, gas chiller and commercial kitchen equipment. Direct Install program offers free installation of low flow faucet areators, showerheads and Thermostatic Raditor valves. Includes a Food Service POS targeting fryers & convection ovens.	Focused on the retrofit market providing technical services along with prescriptive and custom incentives as well as direct install measures to encourage the installation of a wide variety of gas energy-efficient measures to upgrade everything from building systems to manufacturing processes	2016-2018	Upstream & Downstream	Program	space and water heating systems, low flow faucet areators, showerheads and Thermostatic Raditor valves.	Commercial	National Grid (Keyspan) LI	Financial
National Grid (Keyspan) LI	Gas	Multifamily	Multifamily Program	Prescriptive/custom, and Direct Install	Rebate	Space and water heating systems along with associated controls, steam traps, insulation, and gas chiller. Direct Install program offers	The Multifamily Program is designed to increase the installation of energy efficiency measures in existing, multifamily buildings by working with property owners, managers, trade allies and tenants.	2016-2018	Upstream & Downstream	Program	space and water heating systems, low flow faucet areators, showerheads and	Multifamily	National Grid (Keyspan) LI	Financial
National Grid (Keyspan) LI	Gas	Residential	Residential Engagement Program	Behavioral	Audit	Behavioral Strategy	Home energy report and access to real time energy use	2016-2018	Downstream	Program	Audit	Residential	National Grid (Keyspan) LI	Non-Financial
National Grid (Niagara Mohawk)	Electric	Commercial	C&I Program	Prescriptive/custom	Rebate	Prescriptive incentives include lighting systems and controls, Energy management systems, including vending misers and hotel occupancy sensors and compressed air systems. Custom incentives are provided for other measures not served by the prescriptive measures	Focused on the retrofit market providing technical services along with prescriptive and custom incentives to encourage the installation of a wide variety of energy-efficient electric measures to upgrade everything from building systems to manufacturing processes	2016-2018	Downstream	Program	All	Commercial	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Electric	Commercial	Small Business Services	Prescriptive/custom	Direct install, Incentive: \$/kWh or % of Proj Costs	lighting and controls, refrigeration, HVAC, and other unique custom	Energy efficiency of small, non-residential business customers by providing energy audits, savings analysis, incentives, financing, and direct installation	2016-2018	Upstream	Program	lighting and controls, refrigeration, HVAC, and other unique custom	Commercial - Small Business	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Gas	Commercial	C&I Program	Prescriptive/custom	Rebate	space and water heating systems along with associated controls, steam traps, insulation, and commercial kitchen equipment	Focused on the retrofit market providing technical services along with prescriptive and custom incentives to encourage the installation of a wide variety of gas energy-efficient measures to upgrade everything from building systems to manufacturing processes	2016-2018	Downstream	Program	space and water heating systems along with associated controls, steam traps, insulation, and commercial kitchen equipment	Commercial	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Electric	Multifamily	Multifamily Program	Prescriptive	Rebate	free energy audit, incentives for attic ventilation, ductwork wrapping, air infiltration testing, lighting replacements, refrigerator replacement, low-flow shower heads, faucet aerators, hot water pipe wrap and tank wrap, smart Wi-Fi thermostats, LED lighting, and smart plugs	The Electric Multifamily Program (“this program”) is designed to increase the installation of energy efficiency measures in existing, multifamily buildings by working with property owners, managers, trade allies and tenants. The initiative includes free energy audits	2016-2018	Downstream	Program	free energy audit, incentives for attic ventilation, ductwork wrapping, air infiltration testing, lighting replacements (“CFL”), programmable thermostats, refrigerator replacement, low-flow shower heads, faucet	Multifamily	National Grid (Mohawk Valley)	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
National Grid (Niagara Mohawk)	Gas	Multifamily	Multifamily Program	Prescriptive	Rebate	Free energy audit and report. Direct Install program offers free installation of low flow faucet aerators, showerheads, hot water pipe wrap and tank wrap, smart Wi- Fi thermostats and Thermostatic Raditor valves.	The Multifamily Program is designed to increase the installation of energy efficiency measures in existing, multifamily buildings by working with property owners, managers, trade allies and tenants. The initiative includes free energy audits with installation of low cost, direct install measures.	2016-2018	Upstream	Program	Energy audit and report, low flow faucet aerators, showerheads, hot water pipe wrap and tank wrap, smart Wi-Fi thermostats and Thermostatic Raditor valves.	Multifamily	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Electric	Residential	Residential Engagement Program	Behavioral	Audit	programming thermostats, monitoring and adjusting home temperatures via wireless-enabled thermostats, and powering down or turning off equipment and electronics	Home energy reports and access to real time energy use	2016-2018	Upstream	Program	Audit	Residential	National Grid (Mohawk Valley)	Non-Financial
National Grid (Niagara Mohawk)	Electric	Residential	Residential Efficiency Platform	Prescriptive	Rebate	lighting, smart Wi-Fi thermostats, power strips, aerators and appliances	Two step process with online assessment and online report to take action on recommendations via an e-commerce website where they can purchase measures that are self installed. The goal of the audit program is to educate customers to reduce consumption and to practice energy efficiency in their homes.	2016-2018	Downstream	Program	lighting, smart Wi-Fi thermostats, power strips, aerators and appliances	Residential	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Electric	Residential	Electric Residential Consumer Products	Prescriptive	Rebate	heat pump water heaters, stand- alone / storage water heaters, water heater tank wraps, hot water pipe insulation, compact fluorescent	This program incentivizes customers to purchase high efficient electric Energy Star Products and or electric HVAC measures.	2016-2018	Downstream	Program	heat pump water heaters, stand-alone / storage water heaters, water heater tank	Residential	National Grid (Mohawk Valley)	Financial
National Grid (Niagara Mohawk)	Electric	Residential	Residential Engagement Program	Behavioral	Audit	Behavioral Strategy	Home energy reports and access to real time energy use	2016-2018	Upstream	Program	Audit	Residential	National Grid (Mohawk Valley)	Non-Financial
National Grid (Niagara Mohawk)	Gas	Residential	Residential Efficiency Platform	Prescriptive	Rebate	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Two step process with online assessment and online report to take action on recommendations via an e-commerce website where they can purchase measures and receive a rebate.	2016-2018	Downstream	Program	faucet aerators, showerheads, and smart Wi-Fi thermostats.	Residential	National Grid (Mohawk Valley)	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
National Grid (Niagara Mohawk)	Gas	Residential	Residential Program	Prescriptive	Rebate	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Providing free and reduced measures to residential customers through take home kits and online rebates	2016-2018	Downstream	Program	furnaces (with electronic commutated motors), boilers, water heaters, controls, pipe insulation and water tank wraps.	Residential	National Grid (Mohawk Valley)	Financial
NYISO	Electric	Commercial	Day-Ahead Demand Response Program (DADRP)	Custom	Energy payment based on amount of reduction	Customer determined	Participant submits an "energy offer" to reduce consumption. If energy price reaches the level the participant chooses, then participant receives an energy schedule and the resulting energy price (LBMP). Mandatory if scheduled.	2016	Downstream	Program	Demand response	Commercial		Financial
NYISO	Electric	Commercial	Demand Side Ancillary Service Program (DSASP)	Custom	Payment from ancillary services market	Customer determined	Participant submits a "reserve" and/or "regulation" service offer to NYISO. If accepted and scheduled, participant receives market payment based on market clearing price and performance. Mandatory if scheduled.	2016	Downstream	Program	Demand response	Commercial		Financial
NYISO	Electric	Commercial	Emergency Demand Response Program (EDRP)	Custom	Energy payment based on amount of reduction. Higher of \$500/MWH and LBMP	Customer determined	Participant receives energy payment for performance during a reliability event by reducing usage or switching to a behind-the-meter generator. Voluntary to perform. Payment is higher of \$500/MWH or LBMP.	2016	Downstream	Program	Demand response	Commercial		Financial
NYISO	Electric	Commercial	Installed Capacity-Special Case Resource (SCR)	Custom	Energy payment based on amount of reduction. Also receive monthly capacity payments to be "on call" by the NYISO	Customer determined	Participant receives energy payment for performance during a reliability event by reducing usage or switching to a behind-the-meter generator. Also receives money from the capacity market for being available when called upon by NYISO. Mandatory performance if called upon. Participants are tested for performance at least twice a year for one hour.	2016	Downstream	Program	Demand response	Commercial		Financial
NYPA	N/A	Public Schools K-12	K-Solar	Custom	Solar pricing based on aggregated demand. Assistance with SED and contract	Solar	Aggregated solar contract for public schools (K-12) across New York State	Ongoing	Downstream	Program	Solar	Public Schools K-12	Statewide	Non-Financial
NYPA	N/A	Facilities that fall under Executive Order 88	OMAP - Operations and Maintenance Acceleration Program	Competitive Grant	Competitive grant with required cost share	Facility Operation and Maintenance Program	The O&M Acceleration Program (OMAP) Grant Competition aims to accelerate minor operations and maintenance (O&M) projects, including rehabilitation work, at state facilities in New York.	Closed Oct 2015	Downstream	Program	O&M	Facilities that fall under Executive Order 88	Statewide	Financial
NYPA	Fuel Neutral	Government/ Public	NYEM (New York Energy Manager)	Custom	N/A	building energy management	Optimization of key energy using assets within buildings using real time meter and BMS based data and advisory services	2015-2025	Midstream/ Downstream	Program	Energy management information systems, XaaS - Anything as a service	Government/ Public Sector	Statewide	Non-Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
NYSEG	Electric	Commercial	C/I Electric Program	Prescriptive/ Custom	Rebate	lighting/lighting controls, HVAC. Air to air heat pumps, other custom measures	Program offering to non-residential customers to improve the efficiency of eligible facilities through both prescriptive incentives (applicable when a customer's needs match a broad range of pre-determined measures) and custom incentives (applicable when a customer's project requires site-specific engineering and cost analysis).	2016	Downstream	Program	lighting/lighting controls, HVAC. Air to air heat pumps, other custom measures	Commercial	NYSEG	Financial
NYSEG	Electric	Commercial	Small Business Direct Install	Prescriptive	Up to 70% cost share	Interior & exterior lighting, exit signs, canopy lighting, commercial refrigeration	Program offering to non-residential small business customers under 110 kw demand to improve the efficiency of eligible facilities through cost sharing mechanism.	2016	Upstream	Program	Interior & exterior lighting, exit signs, canopy lighting, commercial refrigeration	Commercial	NYSEG	Financial
NYSEG	Electric	Commercial	Self-Direct Program	Self Direct	TBD	Customer determined	Customer self-directs use of their energy efficiency surcharges	2016	Downstream	Program	All	Commercial	NYSEG	Financial
NYSEG	Electric	Commercial	Distribution Load Relief Program	Tariff	\$2.75-\$3.00/kw payment per month (May-Sep) for Reservation Option. \$0.15/kWh	Load Relief - curtailment for demand response events on specified circuits	The DLRP program is a contingency demand response program for commercial customers or aggregators. Commitment to provide at least 50 kW of load relief on a day-of notification basis from May to September. Customers/aggregators are paid a monthly premium to be on call for events and receive compensation for load relief provided during events.	2016	Downstream	Program	Demand response	Commercial & Industrial	NYSEG	Financial
NYSEG	Electric	Commercial	Commercial System Relief Program	Tariff	\$2.75-\$3.00/kw payment per month	Load Relief - curtailment for demand response events to reduce peak	The DLRP program is a contingency demand response program for commercial customers or aggregators. Commitment to provide at least 50	2016	Downstream	Program	Demand response	Commercial & Industrial	NYSEG	Financial
NYSEG	Gas	Commercial	C/I Gas Program	Prescriptive/ Custom	Rebate	boilers, furnaces, controls and thermostats	Program offering to non-residential customers to improve the efficiency of eligible facilities through both prescriptive incentives (applicable when a customer's needs match a broad range of pre-determined measures) and custom incentives (applicable when a customer's project requires site-specific engineering and cost analysis).	2016	Downstream	Program	boilers, furnaces, controls and thermostats	Commercial	NYSEG	Financial
RGE	Electric	Commercial	C/I Electric Program	Prescriptive/ Custom	Rebate	lighting/lighting controls, HVAC. Air to air heat pumps, other custom measures	Program offering to non-residential customers to improve the efficiency of eligible facilities through both prescriptive incentives (applicable when a customer's needs match a broad range of pre-determined measures) and custom incentives (applicable when a customer's project requires site-specific engineering and cost analysis).	2016	Downstream	Program	lighting/lighting controls, HVAC. Air to air heat pumps, other custom measures	Commercial	RGE	Financial
RGE	Electric	Commercial	Small Business Direct Install	Prescriptive	Up to 70% cost share	Interior & exterior lighting, exit signs, canopy lighting, commercial refrigeration	Program offering to non-residential small business customers under 110 kw demand to improve the efficiency of eligible facilities through cost sharing mechanism.	2016	Upstream	Program	Interior & exterior lighting, exit signs, canopy lighting, commercial refrigeration	Commercial	RGE	Financial
RGE	Electric	Commercial	Self-Direct Program	Self Direct	TBD	Customer determined	Customer self-directs use of their energy efficiency surcharges	2016	Downstream	Program	Customer determined	Commercial	RGE	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
RGE	Electric	Commercial	Distribution Load Relief Program	Tariff	\$2.75-\$3.00/kW payment per month (May-Sep) for Reservation Option. \$0.15/kWh	Load Relief - curtailment for demand response events on specified circuits	The DLRP program is a contingency demand response program for commercial customers or aggregators. Commitment to provide at least 50 kW of load relief on a day-of notification basis from May to September. Customers/aggregators are paid a monthly premium to be on call for events and receive compensation for load relief provided during events.	2016	Downstream	Program	Demand response	Commercial & Industrial	RGE	Financial
RGE	Electric	Commercial	Commercial System Relief Program	Tariff	\$2.75-\$3.00/kW payment per month (May-Sep) for	Load Relief - curtailment for demand response events to reduce peak system load.	The DLRP program is a contingency demand response program for commercial customers or aggregators. Commitment to provide at least 50 kW of load relief on a day-of notification basis from May to September.	2016	Downstream	Program	Demand response	Commercial & Industrial	RGE	Financial
NYSERDA	Fuel Nuetral	Agriculture	Agriculture Energy Audit Program	Custom	Provides no-cost audit at a level that farmer desires. Level I,II,III. NYSERDA and	Technical Assistance	Provide farms and on-farm producers with no-cost energy audits containing information on specific energy efficiency measures, including estimated energy savings, implementation costs and payback, enabling the farms to make well-informed investment and implementation decisions. In addition,	2016-2017	Downstream	Program	Technical Assistance	Agriculture	Statewide (must pay SBC)	Financial
NYSERDA	Electric	Agriculture	2030 Greenhouse Lighting and Systems Engineering	Collaboration		Greenhouse lighting and systems	Establish self-sufficient Greenhouse Lighting and Systems Engineering consortium to develop new control systems and lighting technologies for greenhouses.	2017-2023	Upstream		Greenhouse lighting and systems	Agriculture		Non-Financial
NYSERDA	Fuel Neutral	Clean Transportation	Drive Clean Rebate for EVs	Custom	Up to \$2,000 per car, details to be released upon program launch	Electric vehicles	Incentive for the purchase of plug-in vehicles from NYS car dealers. Point-of-sale incentive, applied through the dealersships.	2016-2020	Downstream	Program	Electric vehicles	All	Statewide	Financial
NYSERDA	Fuel Neutral	Codes	Support Advancements to the New York Energy Code	Custom	No incentives	Energy Code	Includes: NY Stretch Code development; development support to Department of State; studies, etc. Will inform & will be updated through the zero-net energy roadmap	2016-2017	Upstream	Program	Codes	New Construction	Statewide (must pay SBC)	Non-Financial
NYSERDA	Fuel Neutral	Codes	Improve Compliance with and Enforcement of the New York State Energy Code	Custom	No incentives	Code Enforcement	Includes: training, tools, field support, compliance studies, development & strengthening of new market roles; etc. Will inform & will be updated through the zero-net energy roadmap	2016-2017	Upstream	Program	Codes	New Construction	Statewide (must pay SBC)	Non-Financial
NYSERDA	Fuel Neutral	Commercial	Commercial Implementation Assistance Program	Custom	Performancce based incentive	Measures not covered by utility programs	transition program that offers cost sharing on project implementation additive to utility ETIPs, Launched Q2 2016: http://www.nyserda.ny.gov/All-Programs/Programs/Commercial-Implementation-Assistance-Program	2016-June 2017	Downstream	Program	•Advanced lighting projects •Deep energy retrofit projects •Advanced monitoring and control systems	Commercial	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Commercial	FlexTech	Custom	Offers cost-sharing up to 50%, or \$250,000 which ever is less.	Technical Assistance	offers cost-shared technical assistance, feasibility studies, and energy master planning; launched Q1 2016	2016-2018	Downstream	Program	Technical Assistance	Commercial	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Commercial	RTEM (Real Time Energy Management)	Custom	Approved	drives next generation EE by supporting comprehensive monitoring, metering, and system level analytics	launched Q3 2016	2016-2021	Midstream	Program	Real time energy management	Commercial	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	Commercial	Commercial Real Estate Tenant	Custom	Approved	drives above code EE improvements during lease/buildout; includes cost-shared energy modeling and package development	launched Q3 2016	2016-2019	Midstream	Program	Energy modeling	Commercial	Statewide (must pay SBC)	Both

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA	Fuel Neutral	Commercial	REV Campus Challenge	Custom	Approved	provides tools and scorecards; share lessons learned; conduct competitions and recognize accomplishments	launched Q4 2015	2016-2025	Downstream	Program		Colleges & Universities	Statewide (must pay SBC)	Both
NYSERDA - Green Bank	N/A	Green Bank	Distributed Sun - SUN 8	Asset Loan & Investment		Bridge Loan	NY Green Bank (“NYGB”) is providing a 12-month senior secured \$1.0 million bridge loan facility (the “Bridge Loan”) to Distributed Sun, LLC. (“DSUN”), a national energy services provider, and its affiliate SUNEIGHT LLC. Bridge Loan proceeds will finance project interconnection advanced payments to New York State Electric & Gas Corporation (“NYSEG”) for up to 8 community distributed generation (“Community DG”) solar projects. This transaction is expected to support the deployment of up to 22.5 megawatts (“MW”) of photovoltaic (“PV”) solar in New York State (“NYS”), providing residents and businesses with a greater variety of energy choices and, ultimately, lower-cost clean energy opportunities	N/A	N/A	N/A	N/A	N/A	NYSEG	Financial
NYSERDA - Green Bank	N/A	Green Bank	SolarCity	Asset Loan & Investment		Construction Financing Revolver & Medium Term Loan	NY Green Bank (“NYGB”) has entered into two transactions with SolarCity Corporation (“SolarCity”) to accelerate the deployment of solar projects across New York State (“NYS”). The two transactions fund, respectively, a static pool of SolarCity’s existing solar assets, and new solar projects – as one provides a five-year non-recourse term loan, and the other provides construction financing for SolarCity’s upcoming solar projects in New York. The post-construction term loan facility was arranged by Bank of America Merrill Lynch (“BoFA Merrill Lynch”), a global corporate and investment bank engaged by SolarCity. NYGB expects that approximately 54 megawatts (“MW”) of projects will be financed as a result of these two transactions, representing approximately 7,000 solar systems in NYS.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	Hebrew Home	Asset Loan & Investment	N/A	Senior Debt	NY Green Bank (“NYGB”) and Bank of America Merrill Lynch (“BoFA Merrill”) are co-financing the installation of a combined heat and power (“CHP”) system at the Hebrew Home for the Aged at Riverdale (“HHAR”), in New York City as part of a larger arrangement and aggregation strategy. This transaction will save HHAR an estimated \$1.6 million annually by replacing current infrastructure with cleaner, more efficient alternatives.	N/A	N/A	N/A	N/A	N/A	NYC	Financial
NYSERDA - Green Bank	N/A	Green Bank	NYCHA	Asset Loan & Investment	N/A	Bridge Loan	NY Green Bank (“NYGB”) is committing \$11.0 million in a short-term loan (the “Loan”) made to New York City Housing Authority (“NYCHA”) in New York City, New York. The \$11.0 million in total loan proceeds will be used to finance the installation of LED lighting retrofits in up to 18 buildings inhabited by low-to-moderate income (“LMI”) tenants. This transaction is expected to save NYCHA 10% - 15% in annual energy costs by replacing current lighting equipment with cleaner, more efficient alternatives.	N/A	N/A	N/A	N/A	N/A	NYC	Financial
NYSERDA - Green Bank	N/A	Green Bank	Plug Power	Term Loan	N/A	Senior Secured Debt	NY Green Bank (“NYGB”) is providing term financing to Latham, NY-based hydrogen and fuel cell systems manufacturer Plug Power, Inc. (“PP”) to support deployment and growth of its New York State (“NYS”) operations. This transaction will enable PP to expand deployments, adding up to 1,300 GenDrive units with commercial customers, replacing current infrastructure with cleaner, more efficient alternatives, while growing its NYS labor force by nearly 100 new employees.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA - Green Bank	N/A	Green Bank	Northport-East Northport Union Free School District	Asset Loan & Investment	N/A	Term Loan	NY Green Bank (“NYGB”) and Signature Public Funding Corp., a subsidiary of Signature Bank, (“SPFC”) are collectively committing approximately \$12.9 million in an equipment lease (the “Lease”) made to Northport-East Northport Union Free School District (“Northport” or the “District”) in Suffolk County, New York. The approximately \$12.9 million in total lease proceeds will be used to finance the installation of energy improvements in nine schools and an administrative building in the District. This transaction is expected to save Northport ~\$1.1 million per year by replacing current infrastructure with cleaner, more efficient alternatives. Bank of America Merrill Lynch (“BofA Merrill”) facilitated the transaction as part of a larger arrangement and aggregation strategy with NYGB.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	Vivint Solar	Asset Loan & Investment	N/A	Medium Term Loan	NY Green Bank (“NYGB”) is committing \$37.5 million to participate in a five-year term loan for Vivint Solar Inc. (“Vivint Solar”), a national residential solar installer. As a participant with other banks in the \$313.0 million credit facility, NYGB’s capital will help to establish a new medium term lending market to finance residential solar systems in New York State (“NYS”) and provide liquidity for Vivint Solar to develop additional projects in NYS. The up to 38 megawatts (“MW”) of new projects that are expected to be financed as a result of this transaction represent approximately 5,000 residential solar systems in the State	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	Sealed	Warehousing / Aggregation	N/A	Revolving Debt	A \$5.0 million senior-secured revolving credit facility provided by NYGB will allow Sealed Inc. , an energy software company, to offer an innovative financing option to its customers to cover the costs of home energy efficiency measures.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	Sunrun	Warehousing / Aggregation + Asset Loan & Investment	N/A	Senior Secured Revolver and Subordinated Term Loan + Construction Financing Revolver	NYGB has entered into two transactions to accelerate the deployment of more than 5,000 solar projects at homes across NYS by Sunrun, Inc. Sunrun is a national solar provider that markets and develops residential solar energy systems. The two transactions complement each other – as one provides financing to fund the purchase of materials and installation of the solar projects, and the other provides postconstruction financing.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA - Green Bank	N/A	Green Bank	Mosaic	Warehousing / Aggregation	N/A	Senior Debt	NYGB is participating in a \$200.0 million credit facility for Solar Mosaic, Inc., a national financial technology company that provides homeowners loans to finance the installation of solar systems on their home. As a participant, NYGB’s capital is expected to facilitate Mosaic’s financing of up to 1,200 residential solar systems in New York State.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	BQ	Warehousing / Aggregation	N/A	Senior Debt	BQ Energy is a renewable energy project developer specializing in landfill and brownfield site redevelopment. BQ and NYGB have closed on the first transaction of an anticipated \$30.0 million portfolio that will utilize the same standardized approach for upcoming projects. In this arrangement, BQ will receive a construction loan to finance a 1.4 megawatt (“MW”) solar project located on a closed municipal landfill located in Patterson, NY. Upon completion, the construction loan will be refinanced with a term loan provided by NYGB.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA - Green Bank	N/A	Green Bank	Energy Investment Corporation	Credit Enhancement	N/A	Letter of Credit	NYGB has provided two letters of credit totaling \$5.5 million to New York-based Energy Improvement Corporation, a not-for-profit, local development corporation formed to promote and facilitate meaningful energy savings through energy efficiency and renewable generation improvements to existing properties throughout New York State.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
NYSERDA - Green Bank	N/A	Green Bank	United Wind	Asset Loan & Investment	N/A	Revolver	United Wind will install over 160 distributed wind energy systems for residential, agricultural and commercial customers throughout Central and Western New York State, facilitated by a \$4.0 million revolving construction loan from NYGB. United Wind’s systems will foster greater access to renewable energy, while NYGB’s participation will help develop a strong track record for distributed renewable energy construction financings in the State.	N/A	N/A	N/A	N/A	N/A	Central & Western NYS	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA - Green Bank	N/A	Green Bank	Level Solar	Warehousing / Aggregation	N/A	Revolving Debt	\$25.0 million credit facility provided by NYGB will allow Level Solar, a New York-based solar provider that designs and installs systems at no cost to the customer, to materially grow its customer base. By providing renewable power to homeowners through long-term power purchase agreements, Level Solar is expected to reach sufficient scale to attract financing entirely through private markets.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA - Green Bank	N/A	Green Bank	RenewFund Finance	Asset Loan & Investment		Subordinated Capital	NYGB will provide up to \$20.0 million in subordinated capital to RenewFund Finance, a wholly-owned subsidiary of Renew Financial, 1 to support the extension of up to \$100.0 million of unsecured loans to as many as 12,000 homeowners Statewide for residential renewable energy and energy efficiency improvements.	N/A	N/A	N/A	N/A	N/A	Statewide	Financial
NYSERDA	Fuel Neutral	Commercial	REV Campus Challenge - Technical Assistance for Roadmaps	Custom	Approved	kick-start campus clean energy progress by enabling institutions to hire an energy consultant to aid in the evaluation of existing energy-related conditions on campus and establish a plan for managing changing campus energy needs	launched Q4 2016	2016-2018	Downstream	Program	Technical Assistance	Colleges & Universities	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Communities	Clean Energy Communities	Custom	PON 3298	Community "clean energy actions" instigated by the municipality.	Drive energy efficiency and deployment of clean energy in local government through technical assistance, outreach, engineering support, tools, and clear guidance for implementing 10 clean energy High-Impact Actions	2016 - 2018	Upstream	Program	All	Local governments	Statewide	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
NYSERDA	Fuel Neutral	Communities	Community Energy Engagement Research	Engagement			Deploy locally-based organizations that implement strategic services to drive energy efficiency and renewable energy deployment to residential, multi-family, and small business customers with a focus on improving energy affordability and increasing deployment of distributed energy resources for LMI households and communities throughout New York State.	2017-2019	Upstream					
NYSERDA	Electric	Energy Storage	Removing barriers to deploying distributed energy storage	Energy storage	Provides educational and technical guidance through implementation contractors	Technical Assistance and Pilots	Includes energy storage safety and performance testing, improving permitting process, developing tools that identify best fit customers, increasing confidence in deployed systems through performance validation, and customer, AHJ and vendor outreach and educational content. Pilots to demonstrate and evaluate the ability of energy storage systems to address multiple electric system needs in addition to any of a host site will also be competitively selected.	2016-2019	Downstream	Pilot	Energy Storage	All	Statewide	Both
NYSERDA	Fuel Neutral	Industrial	Strategic Energy Management	Custom	Provides no-cost educational and technical guidance through an implementation Strategic Energy Management coach contractor	Technical Assistance	Pilots to prove the value of Strategic Energy Management. Pilots (2 planned) will consist of 11 industrial manufacturers each working in a cohort to guide the facilities in implementing Strategic Energy Management at the company. NYSERDA to provide training and guidance through an implementation contractor.	2016-2018	Midstream	Pilot	All	Industrial	Statewide (must pay SBC)	Non-Financial
NYSERDA	Fuel Neutral	Industrial	On-site Energy Manager	Custom	Offers cost-sharing up to 75% of the cost of an On-site Energy Manager for 15 months up to \$235,000	Technical Assistance	Pilots to prove the value of having a dedicated On-site Energy Manager. Pilots (2 planned) will consist of 15 industrial manufacturers with total annual energy expenditures greater than \$500,000.	2016-2018	Midstream	Pilot	All	Industrial	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Industrial & Agriculture	Industrial and Process Efficiency	Custom	Performance Based incentives: (Based on one year of savings) Upstate \$0.10/kWh Downstate \$0.16/kWh, Fossil Fuel \$6/MMBtu, O&M improvements \$0.04/kWh,Fossil Fuel \$2/MMBtu	Process efficiency	Offers performance-based incentives to manufacturers and data centers implementing cost effective process efficiency improvements capped at 50% of the project cost with maximum incentives of \$1 million per electric project, \$500,000 per non-electric fuel project and \$2 million per facility. IPE's goal is to help manufacturers and data centers increase product output and improve data processing as efficiently as possible. Will address expansion/new construction efforts. (Basic buildings improvements ie lighting, HVAC etc. referred to utilities)	2016-2017	Downstream	Program	Process efficiency	Industrial & Agriculture	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Industrial & Agriculture	Flexible Technical Assistance - Industrial & Data Centers	Custom	Offers cost-sharing up to 50%, or \$250,000 which ever is less.	Technical Assistance	Offers cost-sharing up to 50%, or \$250,000 (whichever is less), of eligible technical assistance study costs that evaluate the energy savings associated with potential process improvements.	2016-2018	Downstream	Program	Technical Assistance	Industrial & Agriculture	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	LMI	Low-Income Forum on Energy	Forum			An awareness and education initiative that supports information sharing amongst low-income energy stakeholders and service providers. Activities include meetings, conferences, webinars, and newsletters. This is a continuation of the ongoing LIFE initiative.	2016-2019	Downstream	Program	Forum	Residential - Low Income	Statewide	Non-Financial
NYSERDA	Fuel Neutral	LMI	REVitalize NY	Technical assistance			Technical assistance for low and moderate income communities to take on community energy planning activities associated with the development of a clean energy project. RFP out late 2016, followed by tech. transfer through 2019.	2017-2019	Upstream	Program	Technical Assistance	Residential - Low Income	Statewide	Non-Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA	Fuel Neutral	Multifamily	Multifamily Targeted Option				Provides incentives to building owners for installing new equipment from a list of eligible upgrades.	2016	Downstream	Program	All proven energy efficiency technologies. New technologies are evaluated on a case by case basis.	Multifamily	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Multifamily	Multifamily Comprehensive Option				Provides incentives to building owners for reducing their building's energy usage by at least 25%.	2016	Downstream	Program	All proven energy efficiency technologies. New technologies are evaluated on a case by case basis.	Multifamily	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Multifamily	Retrofit NY	Competition		MF LMI Design Competition	MF LMI Design Competition	2016	Downstream	Program	Competition	Multifamily	Statewide	Non-Financial
NYSERDA	Fuel Neutral	New Construction	Commercial New Construction program	Custom	Cost-shared technical assistance to analyze and identify recommended gas and electric measures, and performance-based incentives for electric demand and electric energy savings measures, with an emphasis on increasing information on, awareness of, and demand for deep energy savings and zero net energy construction for new and gut rehab in, residential building construction (single	Transition Incentives, Technical Support & Quality Assurance for 2016 & 2017. Note that the Technical Assistance is provided by firms qualified through Energy Modeling Partners (see below).	Support to building owners and their design teams to influence the design and construction of new buildings and major renovations in the commercial sector towards greater energy efficiency and sustainability • Financial incentives (performance-based \$/KW summer peak savings and \$/kWh of annual savings) offered for custom and whole building projects based on energy modeling. 6 tiers of performance: one tier for custom measures and 5 tiers for whole building measures established based on % beyond code cost savings of design for all measures (all fuels), with higher incentive rates for more comprehensive and deeper saving projects. Per measure, per project, and % of incremental cost caps based on participation path (custom, whole building); • Commissioning support at 10% of financial incentives up to a maximum of \$25,000.	2016-2017	Upstream & Downstream	Program	All	Commercial	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	New Construction	Low-rise Residential New Construction-Market Rate	Custom	Increasing information on, awareness of, and demand for deep energy savings and zero net energy construction for new and gut rehab in, residential building construction (single	Transition Incentives, Technical Support & Quality Assurance for 2016 & 2017	Proposed Builder Incentives: • Tier 1 (meets anticipated 2016 energy code): EPA ENERGY STAR Homes Version 3.0, plus Minimum kWh savings and Air Leakage minimum requirements, with adjustments as necessary for gut rehabilitations. For 1-2 family & attached townhouses (up to 10), \$0/dwelling unit. For Multi unit up to 50 units, \$0/dwelling unit and for Multi unit from 51 to 100 units, \$0/dwelling unit. • Tier 2 (12% to 15% above the anticipated 2016 energy code): EPA ENERGY STAR Homes Version 3.1, plus Minimum kWh savings and Air Leakage minimum requirements. In 2016, for 1-2 family & attached townhouses (up to 10), \$0/dwelling unit. Launch planned for July 2016. Opportunity to transition the incentive program to the utilities for beyond 2017. Proposed Incentives: • Tier 1: EPA ENERGY STAR Multifamily High Rise program requires 15% utility cost savings above current NYS commercial energy code, , with	2016-2017	Downstream	Program	All	Residential	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	New Construction	Multifamily New Construction-Market Rate	Custom	Increasing information on, awareness of, and demand for deep	Transition Incentives, Technical Support & Quality Assurance for 2016 & 2017. Collaboration opportunity with ongoing NYSERDA		2016-2017	Upstream & Downstream	Program	All	Multifamily	Statewide (must pay SBC)	Both

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA	Fuel Neutral	New Construction	Energy Modeling Partners	Custom	Incentives associated with technical support offered by qualified firms offered through the new construction program offerings.	Energy Modeling	Screens & identifies qualified providers for technical support; includes deep energy savings category. Currently covers commercial new construction. Plan to expand the effort in 2016 to cover multifamily and low-rise new construction, and possibly broaden types of support.	2016-2017	Upstream	Program	Energy modeling	New Construction	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	New Construction / LMI	Low-rise Residential New Construction- LMI	Custom	Increasing information on, awareness of, and demand for deep energy savings and zero net energy construction for new	Transition Incentives, Technical Support & Quality Assurance for 2016 & 2017	Proposed Builder Incentives: • Tier 1 (meets anticipated 2016 energy code): EPA ENERGY STAR Homes Version 3.0, plus Minimum kWh savings and Air Leakage minimum requirements, with adjustments as necessary for gut rehabilitations. For 1-2 family & attached townhouses (up to 10), \$0/dwelling unit. For Multi unit up to 50 units, \$0/dwelling unit and for Multi unit from 51 to 100 units, \$0/dwelling unit.	2016-2018	Downstream	Program	All	Residential - Low Income	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	New Construction / LMI	Multifamily New Construction- LMI	Custom	Increasing information on, awareness of, and demand for deep energy savings and zero net energy construction for the multifamily new construction and gut rehabilitation markets (over three-stories in height) is	Incentives, Technical Support & Quality Assurance for 2016, 2017, & 2018. Collaboration opportunity with ongoing NYSERDA Energy Modeling Partners support.	Launch planned for July 2016. LMI support planned to continue beyond 2017. Proposed Incentives: • Tier 1: EPA ENERGY STAR Multifamily High Rise program requires 15% utility cost savings above current NYS commercial energy code, , with adjustments as necessary for gut rehabilitations. Technical support and access to NYSERDA’s compliance review would be available for LMI projects but no direct incentives will be offered. • Tier 2: Align with the EPA ENERGY STAR Multifamily High Rise program requirements and additionally require a minimum of 20% utility cost savings above ASHRAE 90.1 2010, or 15% above the relevant NYS commercial energy code, whichever is greater, with adjustments as necessary for gut rehabilitations. In 2016, incentives for the first 10 to 40	2016-2018	Upstream & Downstream	Program	All	Multifamily - Low Income	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	NY Prize & SmartGrid	DER Interconnection	Interconnection			Investment plan focuses on innovation to: • Advance the methods, technology, and industry knowledge that will reduce the cost, complexity, and time to interconnect DER. • Optimize the use of available distribution system capacity. Advance the methods, technology, and industry knowledge required to enable accelerated interconnection of DER in areas of high DER penetration on NY’s electric grid	2016	Upstream	Program	Interconnection	All	Statewide	Non-Financial
NYSERDA	Electric	NY Prize & SmartGrid	High Performing Grid	Grid optimization			The program will make investments in research that accelerate realization of an advanced, digitally enhanced and dynamically managed electric grid that results in more efficient asset utilization (e.g., reduced operating margins, reduced power demands, reduced energy losses) and improved reliability, and resiliency to climate change induced weather-events. Such investments are also expected to build the capacity to integrate and expand the use of, clean distributed energy resources thereby increased customer engagement in energy markets on a customer-by-customer basis as well as enabling the development of community-based energy systems such as microgrids.	2016	Upstream	Program	Grid Optimization	All	Statewide	Both
NYSERDA	Fuel Neutral	Onsite Power	CHP	Custom	PON 2568	CHP	Coordination with ConEdison on "CHP Target Zones" and reinforcing complementary programs in BQDM.	2016-2018	Downstream	Program	CHP	Commercial & Industrial	Con Edison	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
NYSERDA	Fuel Neutral	Onsite Power	CHP	Outreach	Customer outreach	Expos, other events	Have historically partnered well with utilities	2016-2018	Downstream	Program	CHP	Commercial & Industrial	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Onsite Power	Small Wind	Custom	PON 2439	Small Wind	PON 2439	2016-2018	Downstream	Program	Wind	All	Statewide	Financial
NYSERDA	Fuel Neutral	Onsite Power	CHP	Custom		CHP incentives and market transformation support	NYSERDA organized a cohort (including NYSERDA, LIPA, PSEG-LI, and National Grid) that has joined as inaugural members of USDOE CHP for Resiliency Accelerator Partnership Program	2016-2018	Downstream	Program	CHP	Commercial	Statewide	Financial
NYSERDA	Fuel Neutral	Onsite Power	Fuel Cells	Custom			Analysis for Soft Cost Reduction	2016-2018	Downstream	Program	Fuel cell	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Onsite Power	ADG-to-Electricity	Custom			Analysis for Soft Cost Reduction	2016-2018	Downstream	Program	ADG-to-Electricity	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Solar Thermal	Custom		Solar Thermal	Incentive for repalcement of electric domestic hot water heaters. The PON is now closed because the funding was fully subscribed	2016	Downstream	Program	Solar thermal	Residential	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Develop comprehensive policy framework	Policy		Develop comprehensive policy framework for accelerated growth of renewable heating & coolin markets	Policy framework with options to grow the renewable heating & cooling markets	2017	Downstream	Program	Renewable heating and cooling	All	Statewide	Non-Financial
NYSERDA	Oil & Propane	Renewable Heating & Cooling	Renwable Heat New York	Custom	http://www.nyserda.ny.gov/All-Programs/Programs/Renewable-Heat-NY	Biomass heating	Replace old inefficient wood boilers with new efficient boilers and pellet stoves	2016-2018	Downstream	Program	Biomass heating	Residential	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Geothermal cost reduction	Various		Develop detailed cost reduction and resource models. Use to develop a comprehensive set of initiatives to acclerate GSHP market growth	Team conducting analysis	2017	Downstream	Program	Geothermal	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Renewable Thermal Technologies Alliance	Engagement		Launch northeast regional cooperative initiative to develop standardization around contracts and M&V protocols and a database of technology and loan performance		2016	Upstream	Program	Renewable heating and cooling	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Geothermal campus Challenge	Custom		Geothermal	Partner with NYPA to conduct feasibility studies, schematic design, and financing of geothermal installations on SUNY colleges, universities, and state buildings.	2017-2021	Downstream	Program	Geothermal	Commercial & Institutional	Statewide (must pay SBC)	Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Ground Source heat Pump Incentive Program				Provide financial incentives for ground sourec heat pump intstallations. \$1,500 per ton residential, and \$1,200 per ton Commercial	2017-2019	Downstream	Program	Ground Source Heat Pumps	All	Statewide (must pay SBC)	Finanial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Show benefits of geothermal to utility peak demand shaving	Custom		Geothermal	Retained E3 to conduct analysis on geothermal peak demand shaving benefits for utilities	2016	Upstream	Pilot	Geothermal	All	Statewide (must pay SBC)	Non-Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
NYSERDA	Fuel Neutral	Renewables Optimization	Energy Storage Technology and Product Development				Innovation to support hardware cost reductions and performance improvements in energy storage technologies	2017-2019	Upstream	Program				
NYSERDA	Fuel Neutral	Residential	Home Performance	Custom	Contractor incentives which will reduce over time and end 12/31/2016	heating and cooling systems, insulation and air sealing, DHW, doors, lighting	Opportunity to collaborate on marketing and outreach, incentives, program management platform; consumer incentives ended on 9/1/2016	2016-2018	Upstream & Downstream	Program	heating and cooling systems, insulation and air sealing, DHW, doors, lighting	Residential	Statewide (must pay SBC)	Financial and non-
NYSERDA	Fuel Neutral	Residential / LMI	Assisted/ Empower program	Custom	50% to 100% cost of the measures, capped, based on income level	heating and cooling systems, insulation and air sealing, DHW, doors, lighting	Opportunity to collaborate on incentives, program management platform; currently coordinating on referrals to low income component of program - opportunity to improve effectiveness of referral process	2016-2018	Upstream & downstream	Program	heating and cooling systems, insulation and air sealing, DHW, doors, lighting	Residential	Statewide (must pay SBC)	Financial and non-
NYSERDA	Fuel Neutral	REV Technical Assistance	REV Connect	Technical assistance			Central forum for third parties to submit project ideas and receive expert guidance, feedback and facilitation, and will match ideas with customers, communities, and utilities to advance high quality REV demonstrations, non-wire alternatives and other innovative projects	2016-2018	Upstream			All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Workforce	Sector Partnership Building O&M		\$4.2 million available through PON. \$400,00 NYSERDA cap per project, 50% cost share required	training targeting any energy technologies and systems	Working with employer to develop corporate training systems for building operations and maintenance staff targeting energy efficiency improvements and GHG emission reductions.	2016-2019	Upstream	Program	training targeting any energy technologies and systems	Commercial, Multifamily, Industrial	Statewide (must pay SBC)	Financial
O&R	Electric	Commercial	Small Business Direct Install Program	Prescriptive/ custom	up to 70% cost share	lighting; refrigeration and cooling	Turn-key streamlined customer experience to business customers with an average peak demand of less than 110 kW; includes free audit, cost share and no interest payment plans	2016-2018	Upstream	Program	lighting; refrigeration and cooling	Commercial	O&R	Financial
O&R	Electric	Commercial & Industrial Sector	C&I Electric Program	Prescriptive/ custom	cost share	High efficiency lighting and controls, HVAC measures, refrigeration measures and variable speed drives - Custom rebates for all cost-effective projects targeting energy reduction.	The Commercial and Industrial Electric Program is designed to provide prescriptive and custom rebates including rebates for high efficiency lighting and controls, HVAC measures, refrigeration measures, and variable speed drives, along with rebates for custom efficiency projects.	2016-2018	Downstream	Program	High efficiency lighting and controls, HVAC measures, refrigeration measures and variable speed drives - Custom rebates for all cost-effective projects targeting energy reduction.	Commercial & Industrial	O&R	Financial
O&R	Electric	Residential	Residential Electric Program	Prescriptive	Free; rebate	Energy Star Appliances, lighting, air conditioners, refrigerators, smart strips and recycling of refrigerators, freezers and room ACs	The program provides rebates for ENERGY STAR® appliance upgrades and recycling of refrigerators, freezers and room air conditioners. Participating customers also receive a free energy saving kit containing CFL bulbs and energy efficiency information as a thank-you.	2016-2018	Downstream	Program	Appliances, lighting, air conditioners, refrigerators, smart strips and recycling of refrigerators, freezers and room ACs	Residential	O&R	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
O&R	Gas	Residential	Residential Gas Program	Prescriptive	Free; rebate	Thermostats; heating equipment; water heating equipment; low flow kits	The Residential Gas Program provides incentives to customers who purchase energy efficient heating and water heating equipment in addition to programmable thermostats.	2016-2018	Downstream	Program	Thermostats; heating equipment; water heating equipment; low flow kits	Residential	O&R	Financial
O&R	Electric/Gas	Residential	Marketplace	Prescriptive	Free, rebate	Appliances, lighting, air conditioners, refrigerators, smart strips , smart thermostats, and home energy services including free home audits	Online store for energy efficient equipment with instant rebates. Trade Allies participate and package services including AC tune ups with instant rebates and smart thermostat installation and home performance solutions. Marketplace is aligned with the Residential Efficient Product Program offerings.	2016-2018	Upstream	Program	Appliances, lighting, air conditioners, refrigerators, smart strips , smart thermostats, and home energy services including free home audits	Residential	O&R	Both
O&R	Electric	Residential/Small Business	BYOT	Prescriptive	Free, rebate	Smart Thermostats	The BYOT Program is a direct load control program utilizing air conditioning cycling for demand response relief from May to September of each year. Customers are provided a sign up incentive (\$85) for each eligible thermostat enrolled and qualify for a performance incentive (\$25) starting the second summer .	2016-2018	Downstream	Program	Smart thermostats	Residential/Small Commercial	O&R	Financial
O&R	Electric	Commercial & Industrial Sector	System Relief Program	Custom	\$3/kW Monthly payment and \$0.50/kWh performance payment	Load Relief - curtailment or generation provided for demand response peak shaving events	The CSRP program is a peak shaving demand response program for commercial and industrial customers. Customers commit to provide at least 50 kW of load relief on a day-ahead notification basis from May to September. Customers are paid a monthly premium to be on call for events and receive compensation for load relief provided during events.	2016-2018	Downstream	Program	Demand response	Commercial & Industrial	O&R	Financial
O&R	Electric	Commercial & Industrial Sector	Distribution Load Relief Program	Custom	\$3-5/kW Monthly payment and \$0.50/kWh performance payment	Load Relief - curtailment or generation provided for demand response contingency events	The DLRP program is a contingency demand response program for commercial and industrial customers. Customers commit to provide at least 50 kW of load relief on a day-of notification basis from May to September. Customers are paid a monthly premium to be on call for events and receive compensation for load relief provided during events.	2016-2018	Downstream	Program	Demand response	Commercial & Industrial	O&R	Financial
PSEG LI	Electric	Residential	Residential Electric Program	Prescriptive	Rebate	Lighting, Air conditioners, power strips, air purifiers, appliance recycling, clothes washers & dryers, pool pumps, refrigerators, central A/C, programmable thermostats	Midstream and end user rebates	2016	Upstream & Downstream	Program	Lighting, Air conditioners, power strips, air purifiers, appliance recycling, clothes washers & dryers, pool pumps, refrigerators, central A/C, programmable thermostats	Residential	PSEG LI	Financial
PSEG LI	Electric	Commercial	CEP: Prescriptive	Prescriptive / Custom	Rebate; 70% maximum cost share	Chillers, compressors & air dryers, cool roof, HVAC, lighting, refrigeration, thermal storage, variable frequency drives		2016	Downstream	Program	Chillers, compressors & air dryers, cool roof, HVAC, lighting, refrigeration, thermal storage, variable frequency drives	Commercial	PSEG LI	Financial
PSEG LI	Electric	Commercial	CEP: Technical Assistance	Prescriptive	Rebate; Tiered Cost Share; Rebate per LEED Point	LEED Certification and Points; Engineering Studies presenting opportunity for electric demand reduction; Energy Star® Benchmarking.	LEED Points: \$500/point for points related to electric energy savings. Up to 70% of energy modeling and commissioning costs for LEED projects (\$50,000 max for energy modeling, \$100,000 max for commissioning). Engineering Studies: Tiered cost-share rebates for studies that present demand reduction opportunities up to 70% of study cost (\$50,000 max) Energy Star® Benchmarking: Tiered cost-share rebates up to 100% (\$5,000 max)	2016	Downstream	Program	Technical Assistance	Commercial	PSEG LI	Both

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
PSEG LI	Electric	Commercial	CEP: Custom/WB/Retrofit	Custom	Rebate	Custom Measures; passing Benefit-Cost Analysis	Equipment that does not qualify for a prescriptive rebate and New Construction Whole Building projects (projects that include ECMs for building envelope, lighting, HVAC, building controls) will be eligible for a custom rebate. Projects must have a Total Resource Cost benefit-cost ratio of at least 1.0.	2016	Downstream	Program	Custom	Commercial	PSEG LI	Financial
PSEG LI	Electric	Residential	Cool Homes	Prescriptive	Rebate	Central Air Conditioners, Air-source heat pumps; Ductless Mini Split system and GSHP	Customer rebate and contractor incentive	2016	Downstream / Midstream	Program	Central Air Conditioners, Air-source heat pumps; Ductless Mini Split system and GSHP	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Lighting	Prescriptive	\$.80 - \$2.00 CFLs & \$3.00-\$4.00 LEDs not to exceed 50% of retail price	CFL's - Common & Specialty LED's A-19 & Specialty/Fixtures	Upstream	2016	Upstream	Program	Lighting	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Clothes Washers	Prescriptive	\$75.00	ENERGY STAR "Most Efficient" only	Customer rebate	2016	Downstream	Program	Clothes washers	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP Pool Pumps	Prescriptive	\$150-\$350 rebate and \$75-\$100 contract incentive	ENERGY STAR Two-Speed and ENERGY STAR Variable Speed	Customer rebate and contractor incentive	2016	Upstream & Downstream	Program	Pool pumps	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Smart Power Strips	Prescriptive	\$10.00	Advanced Power Strips	Online catalog (buy down)	2016	Upstream	Program	Smart Power Strips	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Refrigerators	Prescriptive	\$75.00	ENERGY STAR "Most Efficient" only	Customer rebate	2016	Downstream	Program	Refrigerators	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Room Air conditioners	Prescriptive	\$25.00 \$30.00 \$50.00	ENERGY STAR Room A/C ≤6k Btuh Room A/C >6k & ≤8k Btuh Room A/C > 8k < 14k Btuh	Customer rebate	2016	Downstream	Program	Room Air conditioners	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Appliance Recycling	Prescriptive	\$50.00 Reward and \$35.00 online catalog vouchers	Recycle secondary refrigerator/freezer and RAC and dehumidifiers	Customer reward and online catalog vouchers	2016	Downstream	Program	Appliance recycling	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Room air purifiers	Prescriptive	\$25.00-\$50.00	ENERGY STAR Room Air Purifiers	Customer rebate	2016	Downstream	Program	Room air purifiers	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	EEP: Dryers	Prescriptive	\$150.00 & \$300.00	ENERGY STAR Electric Dryers and Heat Pump Dryers	Customer rebate	2016	Downstream	Program	Dryers	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	REAP	Prescriptive		CFLs/6K-8K-10K-12K BTU Room Air Conditioners/25 Pint and 70 Pints Dehumidifiers/Electric Hot Water - Pipe Insulation-Faucet Aerators-Low Flow Showers-Water Temperature Turndown/Customer Education/Health & Safety Inspection. Currently REAP Program is providing a 2-pack LED gift for customer's participating in REAP Program.	Customer service	2016	Downstream	Program	REAP	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	HPD	Prescriptive	Direct Install Program. Contractor paid per measure	high efficiency bulbs, duct sealing, duct insulation, air sealing, elect. DHW low flow devices	contractor incentive	2016	Upstream	Program	HPD	Residential	PSEG LI	Financial
PSEG LI	Electric	Residential	HPwES	Custom	15%, cap of \$1,000, on approved measures	Insulation, Air selaing, Duct sealing	Customer rebate	2016	Downstream	Program	HPwES	Residential	PSEG LI	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
PSEG LI	Electric	Residential/Small commercial	Direct Load Control Tariff	Tariff		\$85 sign up; \$25/year for next 4 years - currently performance contingent		2016	Downstream	Program	Demand response	Residential/Small commercial	PSEG LI	Financial
PSEG LI	Electric	commercial	Commercial System Relif Tariff	Tariff		\$5/kW/month reservation fee: \$0.25/kwh performance fee - coordinated with NYISO program activity and Distribution relief program		2016	Downstream	Program	Demand response	commercial	PSEG LI	Financial
PSEG LI	Electric	commercial	Distrubtion Load Relief Tariff	Tariff		\$3/kW/month reservation fee: \$0.25/kwh performance fee - coordinated with NYISO program activity & Commercial relief program		2016	Downstream	Program	Demand response	commercial	PSEG LI	Financial
PSEG LI	Electric	Residential/Small commercial	LIPAEEdge Direct Load Control	Prescriptive		Installation of free thermostat - new installations likely to cease in early 2017 with exhaustion of remaining inventory		2016	Downstream	Program	Demand response	Residential/Small commercial	PSEG LI	Financial
RGE	Gas	Commercial	C/I Gas Program	Prescriptive/ Custom	Rebate	boilers, furnaces, controls and thermostats	Program offering to non-residential customers to improve the efficiency of eligible facilities through both prescriptive incentives (applicable when a customer's needs match a broad range of pre-determined measures) and custom incentives (applicable when a customer's project requires site-specific engineering and cost analysis).	2016	Downstream	Program	boilers, furnaces, controls and thermostats	Commercial	RGE	Financial
NYSEG	Electric	Multifamily	Multifamily Electric Program	Prescriptive	Free; up to 70% cost	lighting, smart power strips and hot water efficiency measures	Common area lighting and exit signs. Dwelling unit LED lights, smart power strips. Energy efficient faucet aerators & shower heads and water heater pipe wrap for electrically heated water.	2016	Downstream	Program	lighting, smart power strips and hot water efficiency measures	Multifamily	NYSEG	Financial
NYSEG	Gas	Multifamily	Multifamily Gas Program	Prescriptive	70% cost share	showerheads, faucet aerators, and pipe wrap.	The program offers electric measures such as domestic hot water measures including efficient showerheads, faucet aerators, and pipe wrap.	2016	Downstream	Program	showerheads, faucet aerators, and pipe wrap.	Multifamily	NYSEG	Financial
RGE	Electric	Multifamily	Multifamily Electric Program	Prescriptive	Free; up to 70% cost	lighting, smart power strips and hot water efficiency measures	Common area lighting and exit signs. Dwelling unit LED lights, smart power strips. Energy efficient faucet aerators & shower heads and water heater pipe wrap for electrically heated water.	2016	Downstream	Program	lighting, smart power strips and hot water efficiency measures	Multifamily	RGE	Financial
RGE	Gas	Multifamily	Multifamily Gas Program	Prescriptive	70% cost share	showerheads, faucet aerators, and pipe wrap.	The program offers electric measures such as domestic hot water measures including efficient showerheads, faucet aerators, and pipe wrap.	2016	Downstream	Program	showerheads, faucet aerators, and pipe wrap.	Multifamily	RGE	Financial
NYSEG	Electric	Residential	Refrigerator Freezer Recycling Program	Prescriptive	\$50 per refrigerator/freezer	refrigerator/ freezer; lighting	The Refrigerator and Freezer Recycling Component offers customers free removal and recycling of an old refrigerator or freezer and a \$50 rebate check. An efficient lighting package is also offered to customers at the time of appliance pickup if the customer signs a pledge to install the new lighting.	2016	Downstream	Program	refrigerator/ freezer; lighting	Residential	NYSEG	Financial
NYSEG	Gas	Residential	Residential Gas Program	Prescriptive	Rebate	furnace, boiler, indirect water heater and thermostat incentives	The program offers customers with residential natural gas service rebates to install high efficiency natural gas space and domestic water heating equipment.	2016	Downstream	Program	furnace, boiler, indirect water heater and thermostat incentives	Residential	NYSEG	Financial

Current Initiatives

This program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Program Name	Program Type	Incentive Detail	Targeted Measure	Description	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non-Financial
RGE	Electric	Residential	Refrigerator Freezer Recycling Program	Prescriptive	\$50 per refrigerator/freezer	refrigerator/ freezer; lighting	The Refrigerator and Freezer Recycling Component offers customers free removal and recycling of an old refrigerator or freezer and a \$50 rebate check. An efficient lighting package is also offered to customers at the time of appliance pickup if the customer signs a pledge to install the new lighting.	2016	Downstream	Program	refrigerator/ freezer; lighting	Residential	RGE	Financial
RGE	Electric/Gas	Residential	Marketplace	Prescriptive	Rebates for selected products	LED lighting, advanced power strips, smart thermostats	Online store for energy efficient equipment with instant rebates. Other services will be added in the future.	2016	Upstream	Pilot	LED lighting, advanced power strips, smart thermostats	Residential/Small Commercial	RGE	Financial
RGE	Gas	Residential	Residential Gas Program	Prescriptive	Rebate	furnace, boiler, indirect water heater and thermostat incentives	The program offers customers with residential natural gas service rebates to install high efficiency natural gas space and domestic water heating equipment.	2016	Downstream	Program	furnace, boiler, indirect water heater and thermostat incentives	Residential	RGE	Financial
NYSEG	Electric	Residential/Small Commercial	Direct Load Control Tariff	Tariff	\$20 plus control equipment for room A/C. \$85 for a Bring Your Own	Load Relief - Smart Thermostats and Room A/C	The Direct Load Control Program is a direct load control program utilizing air conditioning cycling for demand response relief from May to September of each year. Customers are provided a sign up incentive for enrolling and a performance incentive for each event participated in.	2016	Downstream	Program	Demand response	Residential/Small Commercial	NYSEG	Financial
RGE	Electric	Residential/Small Commercial	Direct Load Control Tariff	Tariff	\$20 plus control equipment for room A/C. \$85 for a Bring	Load Relief - Smart Thermostats and Room A/C	The Direct Load Control Program is a direct load control program utilizing air conditioning cycling for demand response relief from May to September of each year. Customers are provided a sign up incentive for enrolling and a	2016	Downstream	Program	Demand response	Residential/Small Commercial	RGE	Financial

Prospective Initiatives

This planned program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Strategy	Program Type	Status	Description	Notes	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
Central Hudson	Electric	Residential	Lighting-Peak Perks	Prescriptive	Planning	Product: LED lighting offered on the CenHub online marketplace. Provide additional value to customers in Targeted Demand Management program to participate in CenHub and purchase lighting at zero cost.	Customer information to be left at home after successful installation of equipment to enroll into Peak Perks. (TDM Zone program)	2016	Upstream	Program	Lighting	Residential	Central Hudson	Financial
Central Hudson	Electric	Residential	LMI Lighting Program	Prescriptive	Planning	Products: LED lighting. Central Hudson is leveraging relationships made with Philips lighting to purchase LED lightbulbs at a low cost. We are partnering with agencies in our service territory to distribute these bulbs to low to moderate income customers.	We are working through program rules and M&V protocols to capture energy savings.	2016	Upstream	Program	Lighting	Residential - Low Income	Central Hudson	Financial
Central Hudson	Electric	Residential	Advanced Data Services\Smart Meter Opt In	Data	Planning	Customers that want a richer and deep analytic experience have the option to subscribe to a value advanced data service offering with the installation of a smart meter. Customers will be offered an initial data analytics package.	We are looking at our existing TOU rate and potential future iterations based on the Track 2 Order	Late 2016/Early 2017	Downstream	Program	Smart Meters	Residential	Central Hudson	Non-Financial
Con Edison	Electric	Commercial	Online Marketplace: Building Efficiency	Prescriptive	Planning	Products; Will assess if customers desire utility-consulting services to scope ECM projects, connect customers to qualified market partners, and line up financing options.	REV Demo	2017	Upstream	Pilot	EE retrofits, financing	Commercial	Con Edison	Non-Financial
Con Edison	Electric	Residential	Home Energy Reports & Marketplace	Data	Currently active as REV demo, prospective to become system-wide	~Motivate customers to use less energy by providing customers with information on energy use and personalized energy saving advice. ~Provide the Company with information about customer behavior. ~Help increase participation in other efficiency programs as customers are encouraged to purchase energy efficient equipment and appliances	Launch in Q2 to 275,000 customers in Brooklyn and Westchester	2017-2018	Downstream	Pilot	Home energy reports	Residential	Con Edison	Non-Financial
Con Edison	Electric	Multifamily	Home Energy Reports, Points and Rewards	Data	Planning	In addition to the goals of the REV demo above, specifically targets multifamily customers and tests customer behavior in repsonse to the addition of a points and rewards platform.	Launch Q2 '17	2017-2018	Downstream	Pilot	Home Energy Reports, Points & Rewards Platform	Multifamily	Con Edison	Mixed
Con Edison	Electric	Residential	Retailer Incentive Program - residential plug-load and appliance products	Prescriptive	planning	Engage retailers through incentive payments in an effort to increase adoption of the most energy-efficient residential plug-load and appliance products in the market. The Energy Star Retail Products Platform initiative has been adopted by utilities across the country with the aim of achieving large-scale market transformation.	Launched Dec '16	2016-2018	Upstream	Pilot	Plug load and appliances	Residential	Con Edison	Financial
Con Edison	Electric	Residential	Retailer Lighting Program	Prescriptive	Planning	The retail lighting program will improve and increase market share of ENERGY STAR LED lamps within the Con Edison territory. Through coordination with manufacturers and retailers, discounted lighting with be offered for ENERGY STAR LED lamps. The program will have an “upstream” rebate design, in that Con Edison will pay rebates directly to lighting manufactures who agree under the terms of an executed Memorandum of Understanding (MOU) to provide prescribed instant discounts to customers purchasing eligible lamps at participating retailers.	To launch in March 2017	2017	Upstream	Program	Lighting	Residential	Con Edison	Financial

Prospective Initiatives

This planned program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Strategy	Program Type	Status	Description	Notes	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
Con Edison	Electric and Gas	LMI	LMI REV Demo	TBD	Reviewing proposal from 2/3/2017 RFI	RFI issued to find partners offer new products and services to low- and moderate-income customers	REV Demo	TBD	Downstream	RFP	TBD	LMI	Con Edison	TBD
Con Edison	Electric	Residential	Clean Virtual Power Plant	Solar + Storage	Planning	This REV demonstration project is designed to demonstrate how aggregated fleets of solar plus storage assets in hundreds of homes can collectively provide network benefits to the grid, resiliency services to customers, monetization value to Con Edison	REV Demo	2017	Downstream	Pilot	Solar + Storage	Residential	Con Edison	Non-Financial
Con Edison	Electric	Residential	New Homeowners	No-cost DIY measures	Planning	Send new homeowners LED lamps, water measures, and information about other incentives Con Edison offers that may be useful to them as they get settled in their new home. Will have a B group that only receives LED lamps and will use a coupon to procure the water measures.	Launching spring '17	2017	Downstream	Pilot	LEDs, water measures	Residential	Con Edison	Non-Financial
Con Edison	Gas	Residential	New Homeowners	No-cost DIY measures	Planning	Send new homeowners LED lamps, water measures, and information about other incentives Con Edison offers that may be useful to them as they get settled in their new home. Will have a B group that only receives LED lamps and will use a coupon to procure the water measures.	Launching spring '17	2017	Downstream	Pilot	LEDs, water measures	Residential	Con Edison	Non-Financial
Con Edison	Electric	Commercial	DIY Lighting	No-cost DIY measures	Planning	Email small business owners coupons for free LED lamps, which they can redeem on the Marketplace. Lamps get sent to business for installation by customer. Will require QA/QC.	Launching Q2 '17 targeting 150 customers	2017	Downstream	Pilot	LEDs	Small Business	Con Edison	Non-Financial
Con Edison	Gas	Multifamily	Steam Heating	Technology Demo	Piloting	Smart TRVs	Installed Smart TRVs in a multifamily building to test effectiveness in achieving energy savings and tenant comfort as compared to traditional TRVs.	2017	Downstream	Pilot	Smart TRVs	Multifamily	Con Edison	Non-Financial
National Grid	Electric	Commercial	Buffalo-Niagara Medical Campus	Solar, Dynamic Load Management	Planning	National Grid will work with partners to launch a demonstration project with two branches testing an in-front-of-the-meter neighborhood solar model in an underserved, low-to-moderate income market as well as a first step distributed services platform (DSP) including dynamic load management			Downstream	Pilot	Solar, Dynamic Load Management	Commercial / Residential	National Grid	Financial
National Grid	Electric	Residential	Fruit Belt Neighborhood Solar	Solar	Planning	This demonstration project will test the benefits resulting from integration and development of an in-front-of-the-meter, concentration of PV solar within an under-adopting, low-income neighborhood.	Launched in Q2 -2016 Funding Source: REV	Year 1 through Year 2	Downstream	Pilot	Solar	Residential	National Grid	Financial
National Grid	Electric	Commercial / Residential	Community Resilience - Potsdam	Community Microgrid	Planning	The demonstration project will test customer interest along with business-model feasibility of a community microgrid solution linking critical facilities, essential services, and local distributed generation.	Received approval in December 2015 Funding Source: REV	18 month project	Downstream	Pilot	Microgrid	Residential	National Grid	Financial
National Grid	Electric	Residential	Clifton Park	Demand Reduction	Planning	The proposed Demand Reduction Demonstration Project provides the town of Clifton Park residents with price signals, tools and information enabled by infrastructure investments, and distributed energy resources provided by partners to reduce demand during peak times.	Received approval July 2016 Funding Source: REV	Will run 3 years	Downstream	Pilot	All	Residential	National Grid	Financial

Prospective Initiatives

This planned program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Strategy	Program Type	Status	Description	Notes	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
National Grid	Electric	Residential / Commercial	Tiered Incentives Program	TBD	Planning	Would be program and outcome based and would include tiered options such as basic efficiency, connectivity, bundled measures, targeted areas and income qualified.	Funding Source: ETIP	2018-2020	Upstream/Downs tream	Program	All	TBD	National Grid	Financial
NYPA	Electric	Five largest cities after NYC: Yonkers, Albany, Syracuse, Rochester & Buffalo	Five Cities Program	Demand Reduction	Planning	Competitive grant program for the Five Cities. Applications must be for city energy efficiency/energy savings projects and some level of cost share is anticipated. Details TBA 2016	General EE	2016-2017	Downstream	Program	All	Government	5 largest cities after NYC	Financial
NYSEG	Electric	Residential	Behavioral program	Home Energy Report	Planning	Energy reports are to be sent periodically to customer households to give them self-awareness and a peer comparison of their energy usage. Customers are also provided access to an online tool to track energy consumption and offer tips to reduce usage		2017	Downstream	Program	Behavioral	Residential	NYSEG	Non-Financial
NYSEG	Electric	Residential	Residential Electric Program	Prescriptive	Planning	Products: window A/C, dehumidifiers, heat pump water heaters, other relevant equipment		2017	Downstream	Program	window A/C, dehumidifiers, heat pump water heaters, other relevant equipment	Residential	NYSEG	Financial
NYSEG	Electric	Residential	Online Marketplace: Energy Marketplace	Prescriptive	Planning	Products: LED light bulbs, Refrigerator, Thermostat, Surge Protector, Washer		2017	Upstream	Program	LED light bulbs, Refrigerator, Thermostat, Surge Protector, Washer	Residential	NYSEG	Financial
NYSERDA	Fuel Neutral	Agriculture	Agriculture Energy Information and Efficiency Opportunities	Various	Planning	Provides technical information and guidance on energy efficiency to the agriculture sector through established and trusted resources. Tools and resources will include Best Practice guidelines, benchmarking, technical assistance and pilot demonstrations of advanced energy efficiency technologies.		2017-2021	Downstream	Program/pi lots	Tools & resources	Agriculture	Statewide (must pay SBC)	Both
NYSERDA	Fuel Neutral	Clean Transportation	Public Transportation			Advance innovative technologies that can improve the energy performance of public transportation and electrified rail. Includes: needs identification with MTA, develop demo protocol, support of product adaptation to meet system needs, development of procurement specs, development of NYPA financing packages.		2017						
NYSERDA	Fuel Neutral	Codes	Develop zero-net energy roadmap	Roadmap	Planning	Identify/develop strategies to achieve zero-net energy new construction by 2030 at market scale across all sectors	Will address commercial, multifamily, low-rise new construction & major renovations. Will also include strategies to advance energy codes & compliance.	2017	Upstream	Program	Roadmap	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Codes	NYC Stretch Code assistance					2017						
NYSERDA	Fuel Neutral	Commercial	Remote Auditing	Auditing	Planning	Addition to RTEM		2017	Upstream	Pilot	Remote Energy Management	Commercial	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Commercial	K-12 Sector Strategy	Efficiency	Planning			2017	Downstream	Program	EE retrofits	Schools K-12	Statewide	Both
NYSERDA	Fuel Neutral	Commercial	Business Models	Financing	Planning	Performance contracting expansion and new business models		2017	Downstream	Pilot	Financing	Commercial	Statewide	Both
NYSERDA	Electric	Energy Storage	Solar and Storage	Solar + storage	Planning	Incentive offering to support solar + storage deployment with a focus on high value locations on the electric system	Will likely need to wait for July/August	2017	Downstream	Program	Solar + Storage	All	Statewide	Both
NYSERDA	Fuel Neutral	Innovation	Market Development & Business Model Innovation					2017						

Prospective Initiatives

This planned program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Strategy	Program Type	Status	Description	Notes	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA	Fuel Neutral	Innovation	Renewables Value Improvement			Increase the economic viability of renewable resources by developing and demonstrating solutions that improve the capacity factors, energy value, BOS hardware costs, and O&M costs at existing and new sites for PV and wind power.		2017						
NYSERDA	Electric	LMI	Community/Shared Solar	Solar	Planning	Financial support to shared solar projects that support LMI participation.	Pre-development funding will be made available in late 2016.	2017	Downstream	Pilot	Solar	Residential - Low Income	Statewide	Financial
NYSERDA	Fuel Neutral	LMI	Transition Zero Design Competition	Competition	Planning	Design competition targeting net zero retrofit of residential buildings with the goal of developing a scaleable, self-sustaining market for deep energy retrofits in the affordable housing market segment, which could then be applied to market rate housing segment.		2017-2025	Downstream	Program	Competition	Residential - Low Income	Statewide	Both
NYSERDA	Fuel Neutral	LMI	Healthy Homes Feasibility	Feasibility study	Planning	Study to assess available funding and NYS infrastructure to support integrated health/energy interventions targeted at Medicaid recipients. Also validate healthcare cost savings associated with health/energy interventions in the home.	Feasibility study to take place in Q4 of 2016. Based on the results of the feasibility study, NYSERDA may design and implement a pilot (in partnership with HCR and DOH). The projected timeline on the rollout of the pilot would be mid 2017.	2017	Upstream	Program	Study	Residential - Low Income	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Market Insights	EE Soft Cost Challenge			Invite ideas for reducing soft costs		2017						
NYSERDA	Fuel Neutral	Multifamily	Multifamily Building Solutions Network	Technical assistance	Planning	Network of vetted, qualified energy professionals to work with building owners.		2017	Upstream	Program	Technical Assistance	Multifamily	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Multifamily	Multifamily Energy Efficiency Service Solutions	Various	Planning	Business Model Innovation Fund, Soft Cost Reduction Tools, HVAC Contractor Initiative, Additional Contractor Initiatives		2017	Upstream	Pilot	Various	Multifamily	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Multifamily	Creating Opportunities in Traditionally Under Addressed Markets	Various	Planning	Tenant Unit Turnover, Tenant Access Communications Toolkit, Real Estate Websites, Mid-market engagement pilots, underwriters comp database		2017	Upstream	Pilot	Various	Multifamily	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Multifamily	Multifamily New Construction Contest ("Niagara")					2017						
NYSERDA	Fuel Neutral	New Construction	Expand market adoption of zero-net energy construction for the low-rise multifamily sector	Technical assistance	Planning	Includes: integrated project delivery; technical assistance;	Will inform & will be updated through the zero-net energy roadmap	2017	Upstream	Program	Technical Assistance	Multifamily	Statewide	Non-Financial
NYSERDA	Fuel Neutral	New Construction	Advance LMI New Construction Performance to Zero-Net Energy	Various	Planning	Includes: activities to help enable underwriting through the utility allowance; supporting high performance pilots; integrating high performance criteria into agency solicitations; etc.	Will inform & will be updated through the zero-net energy roadmap	2017	Upstream	Pilot	Various	Residential - Low Income	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Products	Air-Source Heat Pumps	Prescriptive	Planning	Upstream and midstream (manufacturer, distributor, and contractor) engagement, coordination, education, and incentives. Activities will include, but are not limited to, pilots targeting both fuel oil and electric resistance, tool development, and collaborating on marketing and communications materials.	Any incentives will be given upstream and midstream, not directly to consumers.	2017-2020	Upstream	Pilot	Air source heat pumps	All	Statewide	Both
NYSERDA	Fuel Neutral	Products	Advanced Rooftop Units	Prescriptive	Planning	Upstream and midstream (manufacturer, distributor, and contractor) engagement, coordination, education, and incentives. Activities will include, but are not limited to, pilots to test alternative business models for contractors, tool development, peer exchanges, and collaborating on marketing and communications materials.	Any incentives will be given upstream and midstream, not directly to consumers.	2017-2020	Upstream	Pilot	HVAC	Commercial	Statewide	Both
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Geothermal demonstration projects in NYC	Demonstration	Planning	ConEd sending list of proposed demonstration sites	Proposed sites are: 1) Cornell University facility on Roosevelt Island, 2) St. John's University, 3) Hospital in BQDM area. ConEd will own the loop field.	2017	Downstream	Pilot	Geothermal	Commercial	Con Edison	Non-Financial

Prospective Initiatives

This planned program summary represents a snapshot in time and is subject to change.

Company	Commodity	Sector	Strategy	Program Type	Status	Description	Notes	Program Year	Upstream / Downstream	Pilot / Program	Technologies	Segment	Location	Financial / Non- Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Develop geothermal standards for NYC office of Sustainability	Technical assistance	Planning	Develop geothermal installtion standards and credentials for installers to help in the rollout of NYC's new geothermal bill.	Donovan coordinating with Cathy Passion in NYC's Office of Sustainability	2017	Upstream	Pilot	Geothermal	All	Con Edison	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Community Renewable Heating & Cooling Pilot	Campaign	Planning	Community based campaigns promoting a combination of envelope improvements, air source heat pumps, ground source heat pumps, solar thermal and/or biomass	Similar to Solarize Program	2017-2019	Upstream	Pilot	Renewable heating and cooling	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Increase utility investment in geothermal	Engagement	Planning	Bring together utilities, geothermal industry stakeholders, and financing companies to discuss opportunities for growth.	Coordinating with Kevin Hale	2017	Upstream	Pilot	Geothermal	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	R-H&C preformance based Incentive	Custom	Planning	R-H&C incentive based on therms/btu's delivered, and CO2 reduction for ground & air source heat pumps, and solar thermal	Designing program	2017-2018	Downstream	Program	Renewable heating and cooling	All	Statewide	Financial
NYSERDA	Fuel Neutral	Renewable Heating & Cooling	Geothermal cost reduction	Various	Planning	Develop detailed cost reduction and resource models. Use to develop a comprehensive set of initiatives to acclerate GSHP market growth	Team conducting analysis	2017	Downstream	Program	Geothermal	All	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Residential	Energy Efficiency Meter	Custom	Planning	Potential for performance-based incentives, aggregation, M&V		2017-2018	Downstream	Pilot	Various	Residential	Statewide	Both
NYSERDA	Fuel Neutral	Residential	Home Value Pilot	Custom	Planning	Drive consumer demand by including EE in a home's value	Anticipate fall 2016	2017-2018	Upstream	Program	Various	Residential	Statewide	Both
NYSERDA	Fuel Neutral	Residential	Residential Home Platform	Engagement	Planning	Consumer education hub potentially linking to utility marketplace web sites; working with "find a contractor" web sites	Need to meet with joint utilities to scope out	2017	Upstream	Program	Various	Residential	Statewide	Non-Financial
NYSERDA	Fuel Neutral	Residential	Expanding Delivery Infratructure	Engagement	Planning	Expand the energy efficiency service delivery infrastructure to increase scale	Spring/summer 2017	2017-2018	Midstream/Upstream	Pilot	Various	Residential	Statewide	Both
NYSERDA	Fuel Neutral	REV	Voluntary Investment Pilot					2017						
NYSERDA	Electric	Solar	Affordable Solar			Expand market access for LMI solar electric customers		2017						
Orange & Rockland	Electric	Residential	Online Marketplace: DER Residential Offering	Marketplace	Planning	Products: programmable thermostats, window A/C, refrigerators and dehumidifiers; solar, central A/C, pool/well pumps and home energy savings services, via third party supplier installations	Up and running.	2016	Upstream	Pilot	programmable thermostats, window A/C, refrigerators and dehumidifiers; solar, central A/C, pool/well pumps and home energy savings services	Residential	O&R	Financial
PSEG Long Island	Electric	Commercial	Combined Heat and Power	Custom	Planning	Would more or less replicate NYSERDA's offering in balance of State			Downstream	Program	CHP	Commercial	PSEG LI	Both
PSEG Long Island	Electric	Municipality	Communities Rewards	Custom	Planning	Would more or less replicate NYSERDA's offering in balance of State			Downstream	Program	Various	Government	PSEG LI	Both
PSEG Long Island	Electric	Commercial	CPACE	Technical assistance	Planning	Technical Assistance in Pursuing CPACE applications			Downstream	Program	Technical Assistance	Commercial	PSEG LI	Non-Financial
PSEG Long Island	Electric	Commercial	Targetted Performance	Custom	Planning	Customized offerings for Hospitals, Nursing Homes and Multi Resi Housing			Downstream	Program	Various	Hospitals, Nursing homes, Multifamily	PSEG LI	Financial
PSEG Long Island	Propane & Oil	Residential	Low Income Thermal	Custom	Planning	Expansion of Low Income program to offer propane and oil savings components			Upstream	Program	Various	Residential - Low Income	PSEG LI	Financial
PSEG Long Island	Propane & Oil	Residential	HPWES Thermal	Custom	Planning	Expansion of Home Performance program to offer propane and oil savings components			Downstream	Program	Various	Residential	PSEG LI	Financial
PSEG Long Island	Electric	Residential	Behavioral program	Prescriptive	Planning	Launch of a significantly sized Residential Behavioral Offering			Downstream	Program	Behavioral	Residential	PSEG LI	Financial
RG&E	Electric	Residential	Behavioral program	Prescriptive	Planning	Energy reports are to be sent periodically to customer households to give them self-awareness and a peer comparison of their energy usage. Customers are also provided access to an online tool to track energy consumption and offer tips to reduce usage		2017	Downstream	Program	Behavioral	Residential	RG&E	Non-Financial
RG&E	Electric	Residential	Residential Electric Program	Prescriptive	Planning	Products: window A/C, dehumidifiers, heat pump water heaters, other relevant equipment		2017	Downstream	Program	window A/C, dehumidifiers, heat pump water heaters, other relevant equipment	Residential	RG&E	Financial

Steering Committee Update

Metrics, Tracking and Performance Assessment Working Group

The Metrics, Tracking and Performance Assessment (MTPA) Working Group has four objectives and subgroups associated with each:

1. **Evaluation Guidelines Recommendations** – Provide guidance to DPS staff in updating for REV
2. **Performance Metrics** – Defining program performance metrics and methods for tracking them
3. **On-line Dashboard** – Provide input to NYSERDA in creating a dashboard for tracking metrics
4. **EM&V Coordination**

During this past period MTPA working group members focused on the Metrics and Dashboard topic areas.

Evaluation Guidelines Recommendations Report:

- This task is complete. The group filed the final report and posted companion content. Evaluation Guidelines should be viewed as a living document and updated, as needed, based on later work product and outcomes of the MTPA working group and other working groups. For example, as performance metrics for market transformation programs are finalized, the Evaluation Guidelines may require updates to address these metrics and methods. Furthermore, other working groups should be informed of elements of the guidelines, e.g., advanced M&V.

Performance Metrics Report:

The Performance Metrics Recommendations Report focuses on basic performance metrics to gauge progress across all clean energy programs.

Recent Progress:

- The working group is revising the report to respond to questions and comments from the 2/7/17 Steering Committee meeting. The group plans to email the Steering Committee a revised version in May. The Steering Committee then can provide additional feedback via email or request that the Performance Metrics Report be placed on the 6/22/17 Steering Committee meeting. The group will finalize the report after receiving comments via email or at the meeting.

Updates to the Work Plan:

- The working group is requesting an extension for filing the final report in DMM. The work plan has been revised based on the schedule above.

Expected Coordination/Task Dependencies:

- Performance Metrics Recommendations will need coordination with:

- o Data Tracking E2 Working Group: to obtain documentation on metrics previously identified and to leverage the output of this group, as applicable, in forward-looking metrics

Online Dashboard Recommendations Report:

The report will be recommending implementing the Dashboard in two phases: basic, standardized, and public-facing quarterly dashboard reporting requirements (Phase 1) and interactive user features, drill-down capability, the ability for the user to generate tables, related graphics, and expanded contextual information (Phase 2).

Recent Progress:

- The Working Group has completed a draft of this report and it will be discussed at the 4/27/17 Steering Committee meeting.

Updates to the Work Plan:

- The Steering Committee granted an extension for submittal of the draft report at the 2/7/17 meeting due to cancellation of the March Steering Committee meeting. The work plan has been updated to reflect extension of the draft and final report deadlines.

Expected Coordination/Task Dependencies:

- The MTPA Working Group's Performance Metrics report has informed key metrics to be presented in the Dashboard.

EM&V Coordination Report:***Recent Progress:***

- The Working Group is proposing to combine the EM&V Coordination with Phase 2 of the Performance Metrics report. The combined report would cover market transformation metrics and coordination between NYSERDA and utilities on EM&V activities. A revised scope has been provided for the Steering Committee to review at the 4/27/17 meeting.

Updates to the Work Plan:

- The work plan has updated to reflect the deadlines proposed in the revised scope.

Expected Coordination/Task Dependencies:

- EM&V Coordination Plan requires understanding of the work underway by the CEIC working group.

Metrics, Tracking and Performance Assessment Working Group Work Plan

Background:

By order issued January 21, 2016 (January CEF Order),¹ the New York Public Service Commission (the Commission) established the Clean Energy Advisory Council (CEAC). The Commission required that the CEAC address specific issues and provide the Commission or Staff with recommendations and reports regarding such issues. To comply with the Commission directives, the CEAC developed a structure that relies upon Working Groups to conduct the necessary research and analysis and to prepare reports regarding their findings and recommendations.

The CEAC established the Metrics, Tracking and Performance Assessment Working Group to develop recommendations for a consistent approach to metrics, data tracking and performance assessment, inclusive of evaluation, measurement & evaluation (EM&V) that looks to advances in technology and approaches to reduce and limit the dollars required for these functions while maintaining needed reliability, which will increase the dollars available for program delivery. The Working Group will also identify and recommend metrics and approaches for evaluating market development and transformation.

Overview:

To complete the work assigned by the Steering Committee in accordance with the schedule established in its work scope, the Metrics, Tracking and Performance Assessment Working Group plans to meet weekly. The Working Group expects most of its meetings to be conducted as teleconferences; however, the Working Group will also conduct webinars and in-person meetings if necessary. One in-person meeting has been scheduled for July 20, 2016. Between meetings, the Working Group members will conduct work through sub-group teleconference meetings and via email. Subgroups have been established and preliminarily staffed, based upon initial member interest for each major work area. Further drilldown on specific sub-group assignments will be finalized in the near future.

Objectives:

The Working Group will focus on five main objectives that are closely linked and therefore will develop a foundation that directs its work plan to meet the discrete needs of each deliverable while ensuring that each objective is informed by one another. These areas are as follows:

1. Evaluation Guidelines Recommendations Report
2. Coordination of EM&V Activities
3. Performance Metrics
4. On-line Dashboard
5. Recommendations Regarding the Continuation of Working Group Activities

¹ Case 14-M-0094 et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016).

The Working Group intends to provide updates regarding progress and working schedule to the Steering Committee at the Steering Committee's public meetings.

Schedule & Status Tracking:

Task	Responsibility	Due Date	Status
Updates to Steering Committee:			
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>7/6/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>8/10/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>9/12/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>10/13/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>10/27/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>11/23/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>12/6/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>1/3/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>1/31/16</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>4/20/17</i>	<i>Completed</i>
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>6/15/17</i>	
<i>Send Written Update to Steering Committee</i>	<i>Steering Committee Designee</i>	<i>8/31/17</i>	
Evaluation Guidelines Recommendations Report:			
Discuss Current Guidelines, Working Group (WG) Members Identify Interest in Task	Co-Chairs and WG	6/16/16	Completed
Identify Revision Areas, Assign Sub-Group of Interested WG Members to Undertake Task	Co-Chairs and WG	6/23/16	Completed
Further Refine Areas for Revision/Addition, Begin Developing Outline, Assign Recommendations Text, Begin Developing Specific Revisions	Co-Chairs and Sub-Group	6/30/16	Completed
Draft Evaluation Guidelines Recommendations Report Outline V1 sent to Sub-Group	Assigned Member	7/5/16	Outline Completed & Submitted to Steering Committee
Written Feedback on Draft Outline V1 Provided by Subgroup	Sub-Group	7/7/16	
Subgroup Feedback Incorporated and Draft Outline V2 Sent to Full Working Group	Assigned Member	7/8/16	
Written Comments on Outline V2 Provided by Full Working Group	Working Group Members	7/12/16	
Draft Evaluation Guideline Text V1 provided to Sub-Group	Assigned Member(s)	7/12/16	
Revised Draft Outline V3 Provided to Full Working Group	Assigned Member	7/14/16	
Written Subgroup Feedback on Draft Evaluation Guideline Text V1	Sub-Group	7/14/16	

Task	Responsibility	Due Date	Status
Evaluation Guideline Text V2 Compiled and Provided to Full Working Group	Assigned Member	7/18/16	
Full Working Group Provides Comments on Draft Evaluation Guideline Text V2 (In-person Meeting)	Working Group	7/20/16	
<i>Draft Outline V3 Submitted to CEAC Steering Committee for Comment</i>	<i>Co-Chair</i>	<i>8/10/16</i>	
Receive CEAC Steering Committee Comments on Outline V3	Designee/Co-Chairs	8/17/16	Draft Report Completed and Submitted to Steering Committee
Finalize Outline V4	Assigned Member	8/19/16	
Draft Evaluation Guidelines Recommendations Report V1 and Evaluation Guideline Text V3 provided to Working Group	Assigned Member(s)	9/2/16	
Written Comments from Working Group on Evaluation Guidelines Recommendation Report V1	Working Group	9/6/16	
<i>Draft Evaluation Guidelines Recommendations Report V2 Submitted to CEAC Steering Committee for Comment</i>	<i>Co-Chair</i>	<i>9/9/16</i>	
Receive CEAC Steering Committee Comments	Designee/Co-Chairs	9/19/16	Final Report Completed and sent to Steering Committee and filed in DMM
Revised (if needed) Draft Evaluation Guidelines Recommendations Report V3 Provided to Full Working Group	Assigned Member	9/26/16	
Finalize Evaluation Guidelines Recommendations Report	Assigned Member	9/30/16	
<i>File Final Evaluation Guidelines Recommendations Report and Provide Evaluation Guideline Text To DPS Staff²</i>	<i>Co-Chair</i>	<i>10/3/16</i>	
<i>Evaluation Guidelines Issued</i>	<i>DPS</i>	<i>11/1/16</i>	<i>Completed</i>

² The 1/21/16 CEF Framework Order in Case 14-M-0094 directed DPS Staff to issue revised Evaluation Guidelines by November 1, 2016. The output of this Working Group activity will be both a summary level Evaluation Guidelines Recommendations Report as well as suggested Evaluation Guideline Text to aid DPS staff in making revisions to the Guidelines document.

Market Transformation Metrics & Coordination of EM&V:			
Discuss Coordination Plan, Working Group (WG) Members Identify Interest in Task	Co-Chairs and WG	6/16/16	Completed
Assign Interested WG Members to Sub-Group to Undertake Task	Co-Chairs and WG	6/23/16	Completed
Begin Development of Strawman for Coordination Efforts (i.e., Identify Activities/Outcomes Requiring Coordination, Possible Coordination Approaches, Etc.)	Co-Chairs and Sub-Group	6/30/16	Completed
Gather Further Input from Sub-Group Members on Coordination Needs and Approaches	Assigned Member	7/7/16 and continuing	Ongoing
Discuss EM&V Coordination Plan with Full WG at In-Person Meeting	Working Group	7/20/16	Complete
Revised Strawman V21 and Construct for EM&V Coordination Plan Outline V2 Shared with Full WG	Assigned Member	7/26/16	Date to be revised
<i>Submit Market Transformation Metrics & Coordination of EM&V Outline to CEAC Steering Committee for Comment</i>	<i>Co-Chairs</i>	<i>6/15/17</i>	
<i>Submit Draft Market Transformation Metrics & Coordination of EM&V to CEAC Steering Committee for Comment</i>	<i>Co-Chairs</i>	<i>11/28/17</i>	
<i>File Final Market Transformation Metrics & Coordination of EM&V</i>	<i>Co-Chairs</i>	<i>1/12/18</i>	

Performance Metrics Recommendations Report:			
Discuss Metrics Recommendation Report, Working Group (WG) Members Identify Interest in Task	Co-Chairs and WG	6/16/16	Completed
Assign Interested WG Members to Sub-Group to Undertake Task	Co-Chairs and WG	6/23/16	Completed
Coordinate with Data Tracking E2 Working Group to Obtain Documentation on Metrics Previously Identified, Coordinate with Energy Efficiency Procurement & Markets Working Group	Co-Chairs and Sub-Group	Early July TBD	Ongoing
Discuss Potential Metrics with WG Members, Including New Areas Requiring Metrics, at In-Person Meeting	Co-Chairs and WG	7/20/16	Complete
Develop Draft Outline V1 of Performance Metrics Recommendation Report, Provide to Full WG	Assigned Member	8/16/16	Complete
Full WG Provide Written Comments on Draft Outline	Working Group	8/19/16	Outline Completed and Submitted
Create Revised Draft Outline V2 based on Full WG Comments	Assigned Member	8/23/16	

<i>Submit Outline V2 to CEAC Steering Committee for Comment</i>	<i>Co-Chairs/DPS</i>	<i>9/9/16</i>	to Steering Committee
Receive Steering Committee Comments on Outline	Co-Chairs and Sub-Group	Completed	Completed
Performance Metrics Subcommittee Develop Draft Report Content	Co-Chairs and Sub Group	11/10/16	<i>Completed</i>
Performance Metrics Subcommittee Review Draft Report	Co-Chairs and Sub Group	12/8/16	<i>Completed</i>
Review of Draft Report by full Working Group	Working Group	12/15/16	<i>Completed</i>
<i>Submit Draft Performance Metrics Report V2 to CEAC Steering Committee for Comment</i>	<i>Co-Chairs</i>	<i>1/24/17</i>	<i>Completed</i>
Receive Steering Committee Comments, Prepare Final Draft	Working Group	2/7/17	Completed
Revise Performance Metrics Report as Needed Based on Steering Committee Comments, Provide to Full Working Group for Final Review of Substantive Changes	Co-Chairs and Sub-Group	TBD	
Full Working Group Written Comments Due	Working Group	TBD	
<i>File Final Performance Metrics Recommendations Report</i>	<i>Co-Chairs</i>	<i>7/20/17</i>	

Online Dashboard Recommendations Report:			
Discuss Dashboard Recommendation Report, Working Group (WG) Members Identify Interest in Task	Co-Chairs and WG	6/16/16	Completed
Assign Interested WG Members to Sub-Group to Undertake Task	Co-Chairs and WG	6/23/16	Completed
Initial discussion among full working group regarding dashboard requirements and timeline	Working Group	8/4/16	Completed
Work Group Continued Discussion of Dashboard Requirements	Working Group	8/11/16	Completed
Discussion of Outline V1 Based on WG Input to Help Inform NYSERDA Reporting Plan (Due September 1, 2016)	Co-Chairs and Sub-Group	8/18/16	Completed
Review Outline with Sub-Group and Identify Next Steps to Draft Report Development	Co-Chairs and ~~WG~~ Sub-Group	10/27/16	Completed
Sub-Group Develops Draft Report Content	Co-Chairs and Sub-Group	11/10/16	Completed
Full Working Group Reviews Outline	Working Group	11/10/16	Completed
<i>Submit Outline to Steering Committee</i>	<i>Co-Chairs</i>	<i>11/17/16</i>	<i>Completed</i>
Incorporate Steering Committee Feedback into Outline and Draft Report	Co-Chairs and Sub-Group		Completed
<i>Submit Draft Report to CEAC Steering Committee for Comment</i>	<i>Co-Chairs</i>	<i>4/20/17</i>	<i>Completed</i>

Receive CEAC Steering Committee Comments and Finalize, Provide to Full Working Group for Final Review of Substantive Changes	Co-Chairs and Sub-Group	4/27/17	
Full Working Group Written Comments Due	Working Group	TBD	
<i>File Final On-Line Dashboard Recommendations Report</i>	<i>Co-Chair</i>	<i>5/26/17</i>	

Recommendation to Steering Committee on Continuation of Working Group Activity:			
Develop List of Items to Potentially be Addressed by Working Group in the Future	Co-Chairs	Q4 2017	
Provide Comments on List of Items to Potentially be Addressed by Working Group in the Future and Discuss Whether the Group Should Continue	Co-Chairs Working Group Members	Q4 2017	
Finalize Recommendations to Steering Committee on Future Working Group Activities	Co-Chairs	Q4 2017	
<i>Provide Recommendation to Steering Committee Regarding the Continuation of Working Group Activities</i>	<i>Co-Chairs</i>	<i>No later than Q1 2018</i>	

Revisions:

This Work Plan is a living document and the Working Group will revise it on a regular basis to include additional tasks assigned to the Working Group and to reflect any changes to the Working Group schedule. Revisions to this Work Plan will be included as a component of the Written Update to the Steering Committee. In instances where the Working Group determines that it will be unable to meet the deadlines established by the CEAC Steering Committee, it will comply with the revision process outlined in the CEAC Work Plan and update this Work Plan accordingly.

Metrics, Tracking and Performance Assessment Working Group

Online Dashboard Recommendations Draft Report

I. Overview of Online Dashboard Report Context and Purpose

In the Clean Energy Fund (CEF) Order¹, the Public Service Commission directed the New York State Energy Research and Development Authority (NYSERDA) to work through the Clean Energy Advisory Council (CEAC) to develop and implement an Online Dashboard (Dashboard) to allow tracking of key performance metrics of all ratepayer funded clean energy initiatives.² The Dashboard is expected to be an effective way to provide transparency to stakeholders, and upon execution, replace the need for more traditional quarterly reporting.

Development of the Dashboard will require cooperation from all Program Administrators (PAs). The CEAC Metrics, Tracking and Performance Assessment (MTPA) Working Group recognizes that there is significant work and collaboration that needs to be done to include utility program information into the Dashboard. Following completion of the final version of this Online Dashboard Recommendations Report, NYSERDA will be responsible for creating and finalizing business and technical requirement documents and will continue to consult with DPS Staff and the CEAC on these tasks. Additionally, the MTPA Working Group has additional formal deliverables, such as the Performance Metrics report, that are pertinent to informing the development of Dashboard requirements. These deliverables are also scheduled to be finalized in early 2017, and need to be accounted for within the timeline for the Dashboard.

The MTPA Working Group proposes a two-phase approach consisting of a basic version and advanced version of the Dashboard. This will allow NYSERDA to establish a version providing quarterly reporting while other more advanced features are developed for roll out.

- Phase I Basic Version - Create a static Dashboard that is public facing, meeting basic quarterly reporting requirements.
- Phase II Advanced Version - Create an interactive user interface with drill-down capability and ability to create tables and other visual output of interest.

¹ Case 14-M-0094. et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (filed January 21, 2016).

² The word initiative is used throughout this report for consistency and is synonymous with the word program, but also inclusive of other work beyond the traditional definition of program, such as tariffs, auctions, work with City/State on codes, education campaigns, prepay billing, etc.

II. Inputs to the Online Dashboard Report

The MTPA Working Group undertook a process to identify scope, requirements and recommendations to develop this report. A subgroup of volunteers was formed to provide input to this recommendations report. The subgroup members reviewed and commented on content produced by its members and met regularly to discuss direction. The subgroup work products were also brought to the full MTPA Working Group for review and comment prior to delivery to the Steering Committee. This recommendations report represents a significant work product compiled with contribution by many MTPA Working Group members who were actively engaged in the process of its development.

Best Practice Review of Other Dashboards

Members of the MTPA Working Group were asked to review current online dashboards that exist and provide examples to the group. A document was created to log all examples that were provided. Examples covered a wide range of different type of dashboards representing several states, industries, and types of data. The subgroup members were asked to review these examples and provide feedback. Examples that were reviewed are listed below and additional source information can be found in Appendix A of this report:

- Maryland Energy Administration Dashboard
- Georgia Energy Data Dashboard
- Connecticut Energy Data Dashboard
- Massachusetts Energy Dashboard
- Hawaii State Energy Office Dashboard
- Kentucky Commonwealth Energy and Control System Dashboard
- Minnesota Environmental and Performance Measures Fact Sheet
- Arizona State University Campus Metabolism Dashboard
- Portland Energy.Gov Dashboard

There were several dashboards that the group believes contain features and graphics similar to the items desired for the Dashboard to be developed by NYSERDA. For example, the Georgia Energy Data Dashboard represents a good example of interactive graphs and maps. The Connecticut Energy Data Dashboard has a feature that lets the user switch from table view to graph view of the data. The data reported is also relevant to what will be reported in the CEF. The Hawaii State Energy Office Dashboard is built on their Energy.Gov website similar to the New York State website of Open NY. This website uses Socrata as a graphics tool, which is the same tool that is used on Open NY. This website represents an example of how Open NY could be leveraged for the New York's Dashboard.

An online demo was provided to the subgroup to review the current EEPS Database as well as the functionality of the Open NY Platform. During this demo, DPS Staff discussed the functions of the EEPS Database. Items shown included reports, drill down features and data uploads. The subgroup also received a demo from the Open NY team displaying the options of data

visualization as well as enhancements in development for the platform. These enhancements include a landing page, or primer page that can display both text, images and graphs.

Leveraging Performance Metrics Recommendation Report

The draft MTPA Performance Metrics Phase 1 Recommendation Report was submitted to the CEAC Steering Committee on January 24, 2017. The goal of this document was to arrive at common definitions and methodologies for reporting requirements pertaining to NYSERDA, utilities, LIPA and NYPA. This document will be used as a guide to developing business requirements for definitions of metrics that will be displayed by the Dashboard.

External groups and Stakeholders Insights

A small team of the MTPA Working Group members was assembled with the charge of gathering feedback and insight from external groups/stakeholders. The team discussed several methods of outreach including phone calls, surveys, focus groups, and webinars. The team and Dashboard sub-group ultimately decided to hold two webinars, in order to provide an opportunity to provide and display information and gather input from a large group at once in a timely manner.

To reach stakeholders, the Dashboard subgroup distributed an invitation announcing the Webinars through DPS' Document Matter Management System (DMM). The invitation was filed in the CEAC Matter #16-00561 and the MTPA Matter #16-01008. Additionally, the subgroup issued an email invitation to members of the CEAC Energy Efficiency Procurement & Markets Working Group. It is estimated that over 130 individuals and organizations were reached through this outreach. Further, members of the MPTA were encouraged to forward the invitation to others who may be interested. A total of 48 registered participants attended either or both of the webinars, however it is likely a greater number of individuals participated, given multiple participants within an organization may have participated at many viewers' locations. A list of the organizations that participated is included in Appendix B.

The Dashboard webinars began with an overview of the Dashboard directive and a high-level review of dashboard examples. This was followed by information on the New York Dashboard scope, metrics and functionality, as well as a view of current NYSERDA and utility program reporting. This information was provided at the outset, then the discussion was opened up for stakeholder input and feedback on the Dashboard. Input was prompted with several questions about how stakeholders currently use reported data, the metrics they focus on, and what functional requirements they have. The webinar slide deck can be found in Appendix C.

- In both webinars, there was overall agreement with what the 'strawman' offered: downloadable data (with granularity at the utility service territory level) with supporting

graphics telling overarching stories about the impacts of energy efficiency and other clean energy programs.

Specific data needs and points of feedback raised by webinar participants include:

- With respect to the type of impact metrics the Dashboard intends to display, those related to energy efficiency and emissions were prominent in participants' comments and discussions – presumably because they were most familiar with them. However, based on a review of existing dashboards, we expect that metrics related to renewable electric generation, fuel savings, and customer-bill savings may gain user-interest.
- Webinar participants expressed interest in the ability to access data at a disaggregated reporting level. There was great support for the Dashboard providing metrics that would allow users to view data that could be rolled up by sector, by utility territory, and at the state level. In terms of geographical granularity, there was limited interest in seeing reporting at the county-level. However, during the webinars and in the MTPA Working Group discussions, PAs identified that the provision of county-level data would be administratively burdensome, but total utility service territory would be achievable.

There were discussions related to topics that lie outside the immediate scope of the Dashboard mission, such as metrics reflecting the savings due to Market Transformation (MT). There was also one question raised about whether job creation could be reported, but the group was informed that this is not currently one of the key metrics under consideration.

The MTPA Working Group provides the following conclusion and recommendation, based on the webinars:

- The reporting attributes laid out in the stakeholder outreach presentation seem adequate for Phase I of the Dashboard.
- NYSERDA should consider a second round of feedback, in conjunction with MTPA Working Group organizations, perhaps after making Phase I available and before building Phase II, from individuals at various organizations who actually regularly use and analyze the data.

III. Phase I - Basic Dashboard Requirement Recommendations

A Dashboard is generally and most basically defined as a set of reports or other data that is arranged in a panel format on a single page, or series of pages, in a web browser or SharePoint site.³ Phase I build should focus on designing, building and implementing a Dashboard that is standardized, public facing, and meets basic quarterly reporting requirements of the Public

³ <https://www.interglot.com/dictionary/en/en/translate/dashboard>

Service Commission for all program administrators. As such, the MTPA Working Group recommends that the Phase I Dashboard be developed without interactive features, given the priority to develop and implement a system that can take the place of current reporting needs in the near term.

Metrics in the Dashboard will have common definitions. For the most part, these common definitions are addressed in the MTPA Working Group's Performance Metrics report. The metrics will include:

- Basic clean energy reporting metrics including energy savings, system demand reductions, clean energy generation, participant bill savings, greenhouse gas (GHG) emission reductions and private investment. The recommendation is to provide these metrics on both a committed and acquired basis.⁴
- Budgets and financial status related to contracting process and payments, including both encumbered and expended dollars.⁵
- Where applicable, targets and progress against targets (at the initiative/program and portfolio level).

At a minimum, the MTPA Working Group recommends that the data be added/refreshed on a quarterly basis, on the same schedule as current quarterly report filing requirements, to the fullest extent possible. The basic Dashboard will contain static quarterly snapshots only and will not be a data warehouse for underlying data that is not required to support the Phase I or Phase II outputs or functions (e.g., project level data is not expected to be stored by the Dashboard). As noted earlier, the goal of the basic Dashboard should be to reproduce minimum views of data currently included in quarterly reports.

During Phase I development, the MTPA Working Group recommends that historic data back to January 1, 2016 be loaded into the Dashboard. This will allow the Dashboard from the outset to encompass progress of all current ratepayer funded program portfolios operated by NYSERDA and the utilities. More historic data could potentially be brought into the Dashboard during Phase II, as described later in this report. An easy link to the EEPS historic reporting should be provided for users that need this data in the interim.

Phase I of the Dashboard should also allow for capturing adjustments (e.g., lagged data) and restatements (e.g., fixing material errors) in prior reporting period data. The application of

⁴ Metrics reflected on a committed basis and funds reflected on an encumbered basis represent metrics/funding tied to executed contracts, completed applications which have been determined to meet basic eligibility criteria but for which a contract has not yet been executed, and contracts awarded through a competitive solicitation. Metrics reflected on an acquired basis and funds reflected on an expended basis represent projects/activities which have been completed and funds have been paid.

⁵ See footnote 4.

adjustments and restatements in the current reporting period data should be avoided, as this approach will skew progress trend lines. Adjustments should be processed in an easily understood, non-administratively burdensome manner in the Dashboard.

If possible, given the lack of interactive features and focus on basic reporting, the MTPA Working Group recommends that Phase I of the Dashboard allow users to download data in Excel or other common format in order to conduct their own analysis.

The MTPA Working Group recommends that NYSERDA work toward a timeline of late 2018 or early 2019 for having the Phase I basic Dashboard available to the public.

IV. Phase II - Advanced Dashboard Requirement Recommendations

Some sources go on to further define a Dashboard as a customizable landing page for a business application or workspace to display selected information. It can provide a comprehensive look at the information inside the application or workspace by consolidating lists, libraries, text, images and other data into a dynamic, customizable information portal.⁶ Phase II of the Dashboard will create an increasingly interactive user interface with drill-down/filter capability and the ability to view additional tables and other visual outputs with those filters.

The MTPA Working Group generally recommends that the Dashboard build should be flexible and adaptable to the inclusion of additional metrics or contextual information, should the need arise, and should avoid a rigid construct that would prevent modifications from being made in the future. Consideration should also be given during the design phase for the ease of which and cost associated with future modifications for such adaptations.

Beyond the metrics already addressed in Phase I of the Dashboard, the MTPA Working Group recommends consideration of additional contextual information, e.g., comparison against Clean Energy Standard and State Energy Plan goals.

Though the working group explored other options, including through discussion on the stakeholder webinars, the most granular geographic drill down/filter recommended by the MTPA Working Group is by utility service territory, as this is the current geographic granularity required in reporting, and the MTPA Working Group is not proposing expanding the reporting requirements currently placed on program administrators.

Finally, in the design and development of the Phase II advanced Dashboard, consideration should be given to the inclusion of historical data that will allow for a more complete view of clean energy progress in the State. The MTPA Working Group recommends that data starting at

⁶ <https://www.interglot.com/dictionary/en/en/translate/dashboard>

January 1, 2016 be brought into the Dashboard during the initial Phase I build. In the Phase II Dashboard build, the MTPA Working Group recommends that NYSERDA explore with its technologists whether there is an easy and workable solution to bring in historical data on prior program portfolios (e.g., EEPS), given the benefit of having all clean energy program progress in one place. Regardless of the amount of historic data prior to January 1, 2016 ultimately included in the Dashboard, the historic data will remain available and accessible to users on the DPS website.

The MTPA Working Group recommends that NYSERDA work toward a timeline of late 2019 or early 2020 for having the Phase II basic Dashboard available to the public. If feasible, enhancements can be applied and released by NYSERDA as available, rather than all at once, to build toward the Phase II advanced Dashboard incrementally, over time.

V. Additional Process Recommendations for Dashboard Development

Discovery

NYSERDA with the cooperation of all PAs must perform several steps to be able to complete business and technical requirements of the Dashboard. The MTPA Working Group recommends that the following tasks be included:

- Inventory current data storage systems for all PAs and determine format of the data/file type. Examine if any existing data templates that are already established could be leveraged to receive data into the Dashboard.
- Share best practices among PAs pertaining to data quality rules, data classification and procedures as they currently exist. This should include any protocols for identification of material errors in reporting and for revising previously reported figures.
- Further explore leverage opportunities that exist with use of the existing Open NY platform. The MTPA Working Group received an overview and demonstration of this platform, its data sets and visualizations, and believes that Open NY presents a viable platform for the public-facing Dashboard which, if leverage proves feasible, has potential to save ratepayer funds in the set-up of the Dashboard versus building a system from scratch.

There are also certain details related to recommendations made in this report that the MTPA Working Group acknowledges need to be worked through, in specific, by NYSERDA, utilities and DPS in order to successfully deploy this tool. The MTPA Working Group has spent some time discussing and exploring these areas but believes the specific details should be worked out in the initial discovery and requirement setting for the Dashboard, as NYSERDA begins this work. Such details include: the manner in which adjustments to prior reporting period data are applied, the manner in which historic data is loaded into the Dashboard, and the fact that some current reporting practices do not include time-series data.

Implementation

The MTPA Working Group recommends that, in order to have a successful implementation of the Dashboard, several basic principles and protocols need to be adhered to. These include the following:

- It is the role of the PSC/DPS to set quarterly reporting requirements and deadlines, and determine what needs to be published in DMM on a quarterly basis. Quarterly reporting requirements have already been established by the PSC and are not being changed in this recommendations report or in the development and implementation of the Dashboard.
- PAs are each responsible for their own data quality, data governance and report data preparation.
- All program administrators need to address and agree upon data access, data upload and data security. All data presented in the Dashboard need to be classified as public data.
- Each PA should be responsible for having a named staff member to answer questions about their data. Questions related to utility data should not default to NYSERDA just because NYSERDA is implementing the Dashboard.

The MTPA Working Group also recommends that NYSERDA ensure the Dashboard development and implementation scope is clear in order to avoid scope creep.

Appendix A: Best Practice Website Review Links

1. Maryland Energy Administration Dashboard:
<http://apps.esrgc.org/dashboards/smartenergy/#renewable>
2. Georgia Energy Data Dashboard:
<http://www.georgiaenergydata.org/dashboards/totalenergy>
3. Connecticut Energy Data Dashboard:
<http://www.ctenergydashboard.com/Public/PublicHome.aspx>
4. Massachusetts Energy Dashboard: <http://www.mass.gov/eea/energy-utilities-clean-tech/energy-dashboard/>
5. Hawaii State Energy Office Dashboard: <http://energy.hawaii.gov/resources/dashboard-statistics>
6. Kentucky Commonwealth Energy and Control System Dashboard:
<http://kyenergydashboard.ky.gov/>
7. Minnesota Environmental and Performance Measures Fact Sheet:
<https://www.pca.state.mn.us/sites/default/files/Dashboard%202016%20-%20Minnesota%20Pollution%20Control%20Agency.pdf>
8. Arizona State University Campus Metabolism Dashboard: <http://cm.asu.edu/>
9. Portland Energy.Gov Dashboard: <http://energy.gov/eere/better-buildings-neighborhood-program/downloads/portland-data-dashboard>

Appendix B: Stakeholder Organizations Participating in Webinars

Not all webinar participants identified an organizational affiliation when they signed up for the webinar. The following list is limited to only the organizational affiliations that were identified.

- Citizens for Local Power
- conEdison, Inc.
- Columbia University
- Energy Savvy
- Kasselmann Solar
- National Fuel
- National Grid
- New York Independent System Operator (NYISO)
- New York Power Authority (NYPA)
- New York State Department of Public Service (DPS)
- New York State Electric and Gas (NYSEG)
- New York State Energy Research and Development (NYSERDA)
- Northeast Energy Efficiency Partnerships, Inc.
- Orange & Rockland Utilities, Inc. (O&R)
- Pace Energy & Climate Center
- Public Service Enterprise Group Long Island (PSEG)
- Read and Laniado, LLP
- Rochester Gas and Electric
- TRC Solutions
- Urban Green Council

Appendix C: Stakeholder Outreach Webinar Slides

New York Clean Energy Metrics Dashboard Stakeholder Input Webinar

Hosted by
Clean Energy Advisory Council
Metrics, Tracking & Performance Assessment Working Group

March 28 & 30, 2017



Agenda

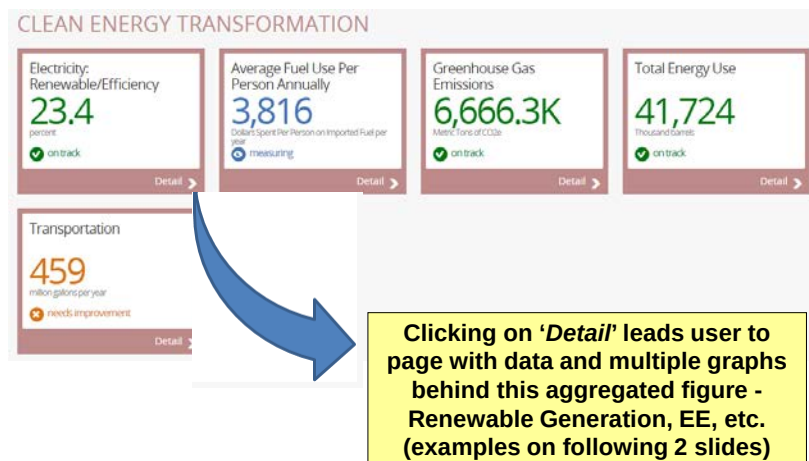
1. Overview of Dashboard Directive
2. High-Level Review of Dashboard Examples
3. NY Dashboard Scope, Metrics and Functionality
4. View of Current Reporting
5. Stakeholder Input
6. Adjourn

Overview of Dashboard Directive

- The NY Public Service Commission's Clean Energy Fund (CEF) Order established the requirement of an Online Dashboard encompassing all ratepayer funded clean energy programs
- This Dashboard will:
 - Allow tracking of key performance metrics of all ratepayer funded clean energy activities
 - Provide transparency to stakeholders
 - Minimizing the administrative burden of compiling, and eliminate the need for, more traditional quarterly reporting
- NYSEDA was directed to work through the Clean Energy Advisory Council to develop and implement this Dashboard

3

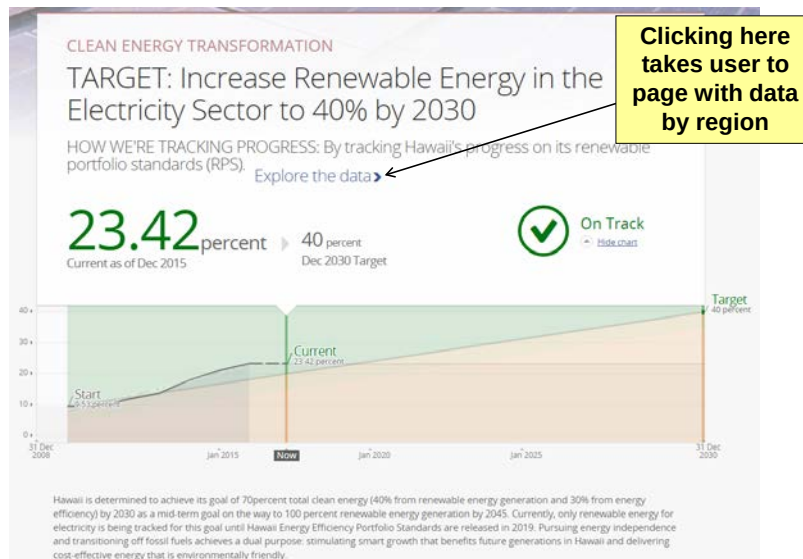
Dashboard Example: Hawaii



Source: <https://dashboard.hawaii.gov/aloha-challenge>

4

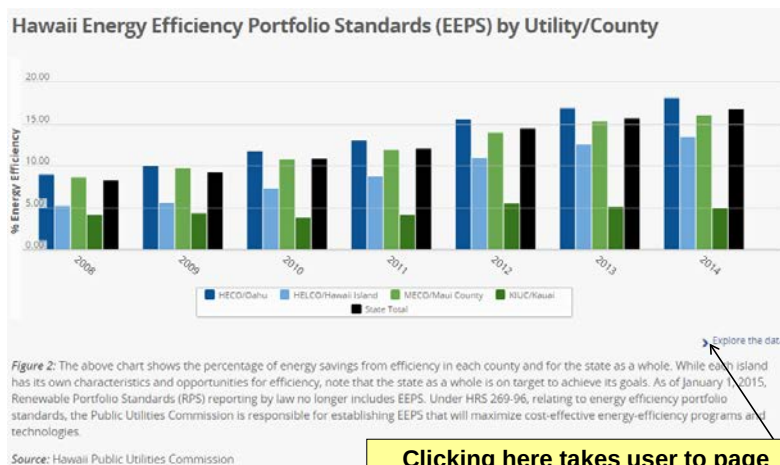
Dashboard Example: Hawaii



Source: <https://dashboard.hawaii.gov/en/stat/goals/5xhf-begg/fgyu-2f7k/b6pj-n292/view>

5

Dashboard Example: Hawaii



Clicking here takes user to page where underlying data can be downloaded

Source: <https://dashboard.hawaii.gov/en/stat/goals/5xhf-begg/fgyu-2f7k/b6pj-n292/view>

6

NY Dashboard Scope

- All ratepayer funded clean energy programs
 - NYSEDA CEF including Market Development, Innovation & Research, NY-Sun, NY Green Bank
 - Utility Energy Efficiency Transition Implementation Plans (ETIPs) and new programs
 - Long Island Power Authority/New York Power Authority programs
- Developed in two phases, basic followed by advanced

7

NY Dashboard Metrics

- Basic clean energy program reporting metrics:
 - Energy savings
 - Clean energy generation
 - Participant bill savings
 - Greenhouse gas emission reductions
 - Private investment
- All metrics will have common definitions for use across all program administrators
- Budgets and financial status will be reported as well, using common definitions
- Progress against targets at the initiative/program and portfolio level

8

NY Dashboard Functionality

- Phase 1 Functionality
 - Static snapshots of quarterly metrics with data being added/refreshed on a quarterly basis incorporating adjustments, restatements, and lagged reporting (not a data warehouse)
 - Ability to interface with the Commission's Document and Matter Management (DMM) system for filing reports
- Phase 2 Functionality
 - Increasingly interactive user interface
 - Drill-down/filter capability
 - Ability to create tables and other visual outputs of interest

9

Objective

The following slides exhibit samples of current reporting in quarterly ETIP and CEF reports.

The following snapshots highlight the types of metrics being currently reported for the existing programs. To facilitate the Working Group's task informing development of a dashboard that delivers maximum utility to its users, we request that you assess your potential use of the data in the context of:

- *Which metrics get reported* - MWh impact (Annual, Lifetime), Mmbtu Savings (Annual, Lifetime), Funding (Budget, Expended, Encumbered, etc.)
- *The level at which impacts are reported* - Program (LMI Multifamily, Commercial New Construction) vs. Sector (C&I, Residential, etc.) vs. Portfolio (aggregated across, say, utility) vs. Category (Energy Efficiency, Renewable Generation, etc.)
- *Format in which dashboard presents the data* - (Tabular form, Charts/Graphs, downloadable spreadsheets etc.)

10

Current Utility Program Reporting

Utility: XXX		QUARTERLY DATA ENTRY AREA:					
Program Name: SBD10		Annual Goals		2016	2017	2018	2019
Program Funding Part: Electric		No. Target		12,146	12,146	12,146	12,146
Program Sector: Incentives & Services		No. Target		10,921	10,921	10,921	10,921
Reporting Period: 1Q-2016		Incentives & Services Budget:		\$ 2,180,401	\$ 2,180,401	\$ 2,180,401	\$ 2,180,401
		Implementation Budget:		\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
		Total Program Budget:		\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
				1Q-2016	2Q-2016	3Q-2016	4Q-2016
				1Q-2017	2Q-2017	3Q-2017	4Q-2017
PROGRAM ENERGY SAVINGS:				12,146	12,146	12,146	12,146
Program Target:				3,016	6,071	9,109	12,146
Annual Gross MWh Target:				10,931	12,146	12,146	12,146
Gross MWh Target to Date:				48,582	18,218	15,182	18,218
Electric Savings:				20	111	3,409	130
Gross First-Year Annual MWh Acquired this Quarter:				20	139	3,628	139
Gross First-Year Annual MWh Currently Committed:				20	206	1,151	139
Total Gross First-Year Annual MWh Acquired to Date & Committed:				40	345	4,779	278
Gross Lifecycle MWh Acquired this Quarter:				362	362	362	362
Gross Lifecycle MWh Acquired to Date:				362	362	362	362
Gross Lifecycle MWh Currently Committed:				362	362	362	362
Total Gross Lifecycle MWh Acquired to Date & Committed:				724	724	724	724
Average Program Expected Useful Life:				13	13.04	13.04	13.04
Electric Peak Demand Savings:				0.008	0.008	0.008	0.008
Gross Peak MW Reduction Acquired this Quarter:				0.008	0.008	0.008	0.008
Gross Peak MW Reduction Acquired to Date:				0.008	0.008	0.008	0.008
Gross Peak MW Reduction Currently Committed:				0.008	0.008	0.008	0.008
Total Gross Peak MW Reduction Acquired to Date & Committed:				0.008	0.008	0.008	0.008
PROGRAM FINANCIAL PERFORMANCE:				\$ 2,180,401	\$ 2,180,401	\$ 2,180,401	\$ 2,180,401
Incentives & Services:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Annual Incentives & Services Budget:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Incentives & Services Expended this Quarter:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Incentives & Services Budget to Date:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Incentives & Services Expended to Date:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Incentives & Services Funds Currently Encumbered:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Total Incentives & Services Funds Expended to Date & Encumbered:				\$ 14,496	\$ 14,496	\$ 14,496	\$ 14,496
Implementation:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Annual Implementation Budget:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Implementation Expended this Quarter:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Implementation Budget to Date:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Implementation Expended to Date:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Implementation Funds Currently Encumbered:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Total Implementation Funds Expended to Date & Encumbered:				\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
Total Program:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Annual Total Program Budget:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Total Program Expended this Quarter:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Total Program Budget to Date:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Total Program Expended to Date:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Total Program Funds Currently Encumbered:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401
Total Program Funds Expended to Date & Encumbered:				\$ 2,780,401	\$ 2,780,401	\$ 2,780,401	\$ 2,780,401

Highly detailed reporting format for EE program activity.

11

Current NYSEDA CEF Reporting: Financial

	Budget Approved as of June 30, 2016	Expended Funds	Open Encumbrances	Pre-Encumbrances	Committed Funds	% of Approved Budget Committed	Budget Approved Remaining Balance
Commercial	\$37,000,000	\$89,106	\$723,503	\$536,322	\$1,348,930	4%	\$35,651,070
Industrial	\$44,100,000	\$387,216	\$1,168,428	\$5,785,027	\$7,340,671	17%	\$36,759,329
Agriculture	\$3,600,000	\$322,543	\$1,021,679	\$10,000	\$1,354,222	38%	\$2,245,778
Multifamily Market Rate	\$5,195,862	-	\$106,572	-	\$106,572	2%	\$5,089,290
Single Family Market Rate	\$18,889,680	\$2,403,410	\$1,450,867	\$1,075,592	\$4,929,869	26%	\$13,959,811
LMI Single Family	\$107,371,400	\$9,701,709	\$1,582,550	\$8,168,526	\$19,452,785	18%	\$87,918,615
LMI Multifamily	\$33,862,500	-	\$418,785	\$307,725	\$726,510	2%	\$33,135,990
Commercial New Construction	\$24,683,975	\$10,647	\$585,363	\$11,829,820	\$12,425,830	50%	\$12,258,145
Low Rise New Construction	\$10,836,000	-	\$95,200	\$564,700	\$659,900	6%	\$10,176,100
Multifamily New Construction	\$10,155,138	-	\$474,819	\$2,543,200	\$3,018,019	30%	\$7,137,119
Anaerobic Digesters	\$12,150,000	-	-	\$4,000,000	\$4,000,000	33%	\$8,150,000
Fuel Cells	\$6,000,000	-	-	-	\$0	0%	\$6,000,000
Small Wind	\$6,090,000	\$97,090	\$639,406	\$159,833	\$896,329	15%	\$5,193,671
Solar Thermal	\$30,616	\$30,616	\$194,383	\$1,834,640	\$2,059,639	69%	\$940,361
Combined Heat & Power	\$48,550,000	\$91,227	\$664,890	\$3,656,825	\$4,412,942	9%	\$44,137,058
TOTAL	\$371,484,555	\$13,133,563	\$9,126,445	\$40,472,210	\$62,732,218	17%	\$308,752,337

Programs

Shading and font-colors suggest ways in which they can be rolled-up.

12

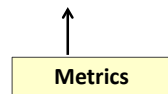
Current NYSEDA CEF Reporting: Program/Initiative

Table 11. Single Family Market Rate Resource Acquisition Transition Initiative Results^{27, 28, 29}

Approval Date: February 29, 2016

Launch Date: March 1, 2016

Resource Acquisition Transition Initiative	Units	Completed Projects through June 30, 2016 with Adjustments	Completed Projects through 7/1/16-9/30/16	Total Completed Projects through September 30, 2016	Current Pipeline Through September 30, 2016 (Committed but not complete)	Grand Total Completed Projects + Pipeline	Cumulative Current Target (2016)	% of Cumulative Current Target (2016)	Total Target through Initiative Completion (2019)	% of Total Target through Initiative Completion (2019)
Energy Efficiency	MWh Annual	292	423	715	430	1,146	1,330	86%	2,020	59%
	MWh Lifetime	4,387	6,343	10,730	6,454	17,184	19,900	86%	43,800	39%
	MWBr Annual	16,240	18,118	35,358	21,269	56,627	67,000	85%	215,900	26%
	MWBr Lifetime	405,991	477,961	883,952	531,726	1,415,678	2,450,000	58%	5,390,000	26%
Renewable Energy	MW	-	-	0	-	-	-	-	-	-
	MWh Annual	-	-	0	-	-	-	-	-	-
	MWh Lifetime	-	-	0	-	-	-	-	-	-
	MW	-	-	0	-	-	-	-	-	-
CO ₂ e Emission Reduction (metric tons)	Annual Tons	1,122	1,418	2,541	1,528	4,069	6,630	61%	14,900	28%
	Lifetime Tons	26,516	33,237	59,752	35,943	95,696	159,000	60%	350,000	27%
	Annual Dollars	\$9.27	\$9.38	\$9.65	\$9.41	\$1.06	\$1.72	62%	\$3.77	28%
	Lifetime Dollars	\$6.46	\$8.83	\$15.29	\$9.66	\$24.95	\$40.8	61%	\$89.7	28%
Private Investment (millions)	Dollars	\$4.18	\$5.77	\$9.95	\$5.99	\$15.94	\$34.0	47%	\$79.4	20%
	Participants	565	740	1,305	785	2,090	4,080	51%	8,976	23%



13

Current NYSEDA CEF Reporting: Rollup Example

	Completed Projects through Q2 2016	Completed Projects through 7/1/16-9/30/16	Total Completed thru Q3 2016	Current Pipeline Through Q3 2016 (Committed but not complete)	Grand Total Completed Projects + Pipeline	Cumulative Current Target (2016)	% of Cumulative Current Target (2016)	Total Target through Initiative Completion (2018)	% of Total Target through Initiative Completion (2018)
	195	1,420	1,615	2,092	3,707	6,050	61%	12,100	31%
	2,926	21,360	24,286	11,383	35,612	90,800	41%	181,000	21%
	146	289	435	256	690	20,500	3%	41,000	2%
	2,189	4,317	6,506	3,843	10,349	108,000	9%	616,000	2%
	0	0	0	0	0	0	0	0	0

This is an example of how individual program metrics could be rolled up to provide an aggregated view of CEF progress

14

Stakeholder Input: Questions for Discussion

1. How do you currently use reported data and for what purposes?
2. What key metrics (e.g., energy efficiency, distributed generation, emissions impact) do you use? At what level do you examine these metrics (e.g., program administrator portfolio, program basis, other)?
3. How do you currently obtain the data (e.g., view DPS website, download tables from the DPS website, manually transcribe data)?
4. Is the ability to download data in spreadsheets useful for you?
5. Do you need access to utility-specific information? Will you want the ability to present data for geographic areas? If so at what level?
6. Will visual/graphical representations of the data be helpful?
7. Will the planned data access and processing capabilities meet your needs? If not, what additional capabilities do you seek from a Dashboard tool?

15

Links to Cited Reports and Websites

Source of material on Slides 4-6:

<https://dashboard.hawaii.gov/aloha-challenge>

Another Hawaii website:

<http://energy.hawaii.gov/resources/dashboard-statistics>

CEF Quarterly Reports (excerpts on Slides 12-13)

<https://www.nyserda.ny.gov/About/Publications/Program-Planning-Status-and-Evaluation-Reports/Clean-Energy-Fund-Reports>

Link to Case 15-M-0252: Utility Energy Efficiency Programs (Slide 11)

<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-m-0252&submit=Search+by+Case+Number>

Link to Case 14-M-0094: NYSEDA's Clean Energy Fund

<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=14-M-0094&submit=Search+by+Case+Number>

16

Stakeholder Input: After this Webinar

- Written feedback will be accepted through April 4, 2017
- Written feedback should be emailed to:
Anna.Hughes@nyserda.ny.gov

17

Adjourn

Thank you for participating!

18

Metrics, Tracking & Performance Assessment Working Group Scope

Purpose:

The overall purpose of the Metrics, Tracking & Performance Assessment Working Group is to develop recommendations for a consistent approach to metrics, data tracking, and performance assessment, inclusive of evaluation, measurement & verification (EM&V) that looks to advances in technology and approaches to reduce and limit the dollars needed for these functions while maintaining needed reliability, thereby increasing the dollars available for program delivery. The Working Group will also identify and recommend metrics and approaches for evaluating market development and transformation.

Guiding Principles & Clean Energy Advisory Council (CEAC) Protocols:

Working Group activities in support of feasible and impactful findings are expected to include:

- Conducting and implementing Working Group activities with transparency and openness;
- Planning and implementing a work agenda and schedule of activities in support of the Working Group objectives;
- Compiling research;
- Directing analysis and studies;
- Soliciting expert advice;
- Developing options and proposals for consideration with particular focus and emphasis on implications and benefits to customers;
- Assessing options and proposals against objectives, and arriving at written feasible recommendations that provide the underlying rationale and, as needed, documents dissenting views along with associated rationale;
- Informing the development and implementation of programs among New York's clean energy program administrators;
- Providing regular written updates on the Working Group's activities and progress; and
- Sharing final work products and notable interim work products.

Protocols regarding CEAC Steering Committee and Working Group interactions include:

- Working Group scopes are authorized by the Steering Committee. Working Groups may at any time propose revisions and additions to the Working Group scopes for Steering Committee consideration but the initial objectives and deliverables of each group will focus on Commission assigned activities. The Steering Committee will guide and authorize Working Group scopes that lead to recommendations that help inform the future development of programs.
- Each Working Group will establish its own work plan and schedule and should incorporate opportunities for non-member input and feedback, as appropriate and feasible and shall provide routine updates to the Steering Committee on its progress. The Steering Committee will identify potential overlap and coordination between Working Group activities and will suggest opportunities for integration or sharing resources between and among Working Group activities.

- Working Group reports and other documents will typically be provided to the Steering Committee for review and comment two to three weeks prior to final deliverable due dates. The Steering Committee will review and assess Working Group products against the overall objectives and purpose of the Clean Energy Advisory Council and Working Groups. The Working Group shall consider Steering Committee comments and shall document whether it has incorporated or rejected each comment with associated rationale in a new section of the report or in an appendix to the report. The Working Group retains ownership of final work products and is under no obligation to revise its recommendations in response to Steering Committee feedback. The Working Group shall work with Staff to ensure all final work products are filed in DMM and posted to the DPS website.

Initial Objectives:

The Working Group will conduct a number of activities that are closely linked and therefore is encouraged to structure itself and its work plan to meet the discrete needs of each initial objective outlined below while ensuring that objectives are informed by one another.

- (1) Evaluation Guidelines – Conduct a review of the “New York Evaluation Plan Guidance for EEPs Program Administrators” to determine what changes are necessary to meet the current and future needs of New York’s clean energy programs. Recommendations should balance the need for objective analysis with producing more expedient and actionable information to inform policy decisions and improve individual efforts, including the accuracy and reliability of foundational tools, such as the Technical Resource Manual. Scope to be considered in (5) Recommendation Regarding Continuation of Working Group Activities: Integrate learning from REV demonstration projects and other REV activities in the conduct of this task. Integrate new approaches to evaluation of market transformation programs.
- (2) Performance Metrics—~~Phase 1:~~ Develop common definitions and methods for tracking and reporting various performance metrics. This work shall be informed from the review of current data tracking requirements to be completed by the E² Working Group that preceded the CEAC. The work shall identify program/initiative specific metrics needed to effectively gauge progress. ~~Phase 2: Develop common definitions and methods for tracking and reporting performance metrics applicable to market transformation strategies. This work shall be informed by information gathering on best practices in market transformation measurement. The work shall identify broad market level metrics needed to effectively gauge progress.~~
- (3) Online Dashboard – Provide input to NYSERDA for use in developing and implementing an online dashboard that will allow for tracking of key performance metrics of all ratepayer funded clean energy activities. The online dashboard should provide an effective way to provide transparency to stakeholders, while minimizing the administrative burden of compiling more traditional quarterly reporting.
- (4) Market Transformation Metrics & Coordination of EM&V Activities – Phase 2: Develop common definitions and methods for tracking and reporting performance metrics applicable to market transformation strategies. This work shall be informed by information gathering on best practices in market transformation measurement. The work shall identify broad market-level metrics needed to effectively gauge progress. Provide recommendations for using the CEAC as a ~~Serve as~~ a venue for NYSERDA and Utilities to ensure EM&V activities are properly informed

and complementary rather than duplicative and that results are effectively shared with one another and other stakeholders.

- (5) Recommendation Regarding Continuation of Working Group Activities - Determination as to whether the Working Group has fulfilled its purpose upon the completion of the initial objectives or recommended additional objectives and tasks for the Working Group to pursue.

Tasks/Deliverables:

Task/Deliverable	Expected Completion Date
Final Metrics, Tracking & Performance Assessment Working Group Scope, including member list and member roles provided to Steering Committee • Provide to DPS Staff • Final Filed in DMM	6/10/16 6/17/16
Initial detailed Metrics, Tracking & Performance Assessment Work Plan • Draft submitted to CEAC Steering Committee for Comment • Final filed in DMM	7/1/16 8/1/16
Evaluation Guidelines Recommendations Report • Outline Submitted to CEAC Steering Committee for Comment • Draft Submitted to CEAC Steering Committee for Comment • Final Filed in DMM <i>*Note: The 1/21/2016 CEF Framework Order in Case 14-M-0094 directed Staff to issue revised Evaluation Guidelines by November 1, 2016.</i>	8/10/16 9/9/16 10/3/16
Performance Metrics Recommendations Report: ~~Phase 1~~ • Outline Submitted to CEAC Steering Committee for Comment • Draft Submitted to CEAC Steering Committee for Comment • Final Filed in DMM	9/9/16 1/24/17 ~~2/28/17~~ <u>2/20/17</u>
~~Market Transformation~~ Performance Metrics ~~Recommendations & Coordination of EM&V -Recommendations~~ Report: ~~Phase 2~~ • Outline Submitted to CEAC Steering Committee for Comment • Draft Submitted to CEAC Steering Committee for Comment • Final Filed in DMM	~~4/20/17~~ <u>6/15/17</u> ~~Q3-2017~~ <u>11/28/17</u> ~~Q3-2017~~ <u>1/12/18</u>
Online Dashboard Recommendations Report • Outline Submitted to CEAC Steering Committee for Comment • Draft Submitted to CEAC Steering Committee for Comment	11/17/16 ~~3/10/17~~ <u>4/20/17</u>

Task/Deliverable	Expected Completion Date
Final Filed in DMM	~~4/14/17~~ <u>5/26/17</u>
~~EM&V Coordination Plan providing recommendations and a plan for using the Council as a means for coordination of activities and information sharing.~~ ~~Outline Submitted to CEAC Steering Committee for Comment~~ ~~Draft Submitted to CEAC Steering Committee for Comment~~ ~~Final Filed in DMM~~	~~6/15/17~~ ~~Q4 2017~~ ~~Q4 2017~~
Provide a Recommendation to the Steering Committee as to whether the Working Group has completed its purpose and should be folded or provide a revised Working Group Scope with additional objectives, tasks and deliverables.	At any time, but no later than 90 days following the completion of previously assigned deliverables

Members:

Name	Role	Company/Organization	Email
Jennifer Meissner	Co-Chair	NYSERDA	Jennifer.Meissner@nyserda.ny.gov
Tricia Cioni	Designee	Cascade Energy	tricia.cioni@energysmartindustrial.com
Jon Maxwell	Alternate Designee	ERS	jmaxwell@ers-inc.com
Darren Suarez	Member	Business Council	darren.suarez@bcnys.org
Michael Lauchaire	Member	Central Hudson	mlauchaire@cenhud.com
Mitch Rosenberg	Member	DNV GL	mitch.rosenberg@dnvgl.com
Peggie Neville	Member	DPS	Peggie.Neville@dps.ny.gov
Jake Oster	Member	EnergySavvy	jake@energysavvy.com
Steve Bonanno	Member	National Grid	Stephen.Bonanno@nationalgrid.com
Evan Crahen	Member	NFG	CrahenE@natfuel.com
Lynn Hoefgen	Member	NMR	lhoefgen@nmrgroupinc.com
Arvind Jaggi	Member	NYISO	AJaggi@nyiso.com
Christine Keta	Member	NYPA	christine.keta@nypa.gov
John Zablicki	Co-Chair	NYSEG/RG&E	John_Zablicki@RGE.com
Sandra Eason-Perez	Member	O&R	easonperezs@oru.com
Rosanna Jimenez	Member	Con Edison	jimenezr@coned.com
Sam Swanson	Member	Pace Energy and Climate Center	sswanson@law.pace.edu
Karla Loeb	Member	PosiGen	kloeb@posigen.com
Dimple Gandhi	Member	PSEG LI	dimple.gandhi@pseg.com

**ENERGY EFFICIENCY PROCUREMENT
AND MARKETS REPORT**

April 20, 2017

*This report was developed by the Energy Efficiency Procurement & Markets Working Group
of the Clean Energy Advisory Council*

CONTENTS

CONTENTS.....	2
CONTRIBUTING ORGANIZATIONS	3
LIST OF TERMS.....	4
EXECUTIVE SUMMARY	7
1 Introduction.....	11
2 Policy Context.....	13
3 Energy Efficiency Procurement and Markets	15
3.1 Procurement Models	15
3.1.1 Standard Offer.....	15
3.1.2 Request for Proposals.....	17
3.1.3 Auction.....	18
3.2 Market Models	22
3.2.1 Efficiency in Capacity Markets.....	23
3.2.2 Energy Efficiency Credits	24
3.2.3 Applicable REV Demonstration Projects.....	32
4 Factors Influencing Energy Efficiency Investments	35
4.1 Financing.....	35
4.2 Valuing Energy Efficiency.....	39
4.2.1 BCA Framework	39
4.2.2 Advanced M&V	41
4.3 Energy Efficiency Rate Recovery and Utility Incentives	42
4.3.1 Types of Recovery Mechanisms	42
4.3.2 Utility Energy Efficiency Performance Incentives	45
5 Pay for Performance and New Business Models	47
5.1 Pay for Performance Program Approaches.....	47
5.2 Sealed.....	49
5.3 Lime Energy.....	51
5.4 Metered Energy Efficiency Transaction Structure (MEETS).....	54
5.5 Joule Assets.....	56
6 Energy Efficiency Procurement and Markets Recommendations.....	58

CONTRIBUTING ORGANIZATIONS

- Acadia Center
- Association for Energy Affordability
- Central Hudson
- CLEAResult
- Consolidated Edison
- NYS Department of Public Service
- Lime Energy
- National Grid
- Natural Resources Defense Council
- NYCEEC
- NYSEG/RG&E
- NYSERDA
- Orange and Rockland Utilities
- PSEG Long Island
- Sealed
- TRC
- Urban Green Council

LIST OF TERMS

Advanced Measurement & Verification (also referred to as M&V 2.0) – a new M&V approach that comprises (1) automated analytics that can provide ongoing, near-real time savings estimates, and (2) increased data granularity in terms of frequency, volume, or end-use detail.

Aggregator – a market actor that implements energy efficiency measures for a large group or portfolio of customers from a certain sector and sells the total savings to the program administrator.

Auction – a selection process designed to procure (or allocate) goods and services competitively, where the award is made to a pre-qualified bidder and is based on a financial offer underpinned by a standardized contract.

Business Model - the way in which a company generates revenue and makes a profit from company operations.

Customer – a consumer of energy who pays energy bills and who may be interested in services and offerings from market actors.

Deemed Savings - the amount of energy saved per unit, typically determined in advance of installation, based on prior field data collected from a sample of customers.

Distributed Energy Resources (DERs) – a wide variety of energy resources, including end-use energy efficiency, demand response, distributed storage, and distributed generation. DER will principally be located on customer premises, but may also be located on distribution system facilities.

Energy Efficiency (EE) Measure - any intervention implemented to lower a customer's energy usage. This can include, for example, installing a device, implementing a behavioral practice, or conducting an operational/retro-commissioning action.

Energy Efficiency Project - one or more measures implemented at a single site to lower energy usage.

Energy efficiency Program - a set of activities with similar characteristics and applications (e.g., providing rebates or educating installation contractors and/or customers), administered by an entity or set of organizations to promote the adoption of EE measures. A program is usually defined by its mix of characteristics (e.g. strategy, targeted customer segment, marketing approach, and type of measure).

EE Meter – A meter is an instrument that automatically measures and records the quantity of something, as in gas, water, miles, or time, when it is activated. An EE Meter is an open and standardized tool delivering EE measurement for efficiency savings that is transparent to all parties and can be replicated and verified to produce that same output which is reliable for both markets and grid operators. Use of an EE meter facilitates common measurement, where private companies, utilities, and regulators each calculate the same level of savings for a given set of energy efficiency projects

Efficiency Resource Units (also referred to as Negawatts or Negawatt-hours) – a unit of power or energy saved by increasing efficiency or reducing consumption (as measured using any type of measurement technique).

Evaluation, Measurement & Verification (EM&V) - a set of processes to determine project and/or program energy savings impacts. The measurement and verification steps are often referred to jointly as M&V. The definitions below describe the three processes in the order in which they are typically conducted.

Measurement: This step estimates the amount of energy and/or demand savings resulting from the implementation of an EE measure. There are several common methods of estimating savings, involving a combination of physical measurements, engineering calculations, statistical analysis, and/or computer simulation of buildings. Because EE savings are the difference between actual usage and a counterfactual baseline, “measured” savings are actually all estimations, with varying levels of confidence around the prediction.

Verification: Program staff or third parties verify (often with on-site field inspection) that EE measures have been implemented and are operating properly. This may entail counting the number of measures that have been implemented.

Evaluation: After a given project, program, or portfolio is completed, evaluations analyze its performance and operation, including total energy savings relative to predictions, impact on markets, and cost effectiveness.

Market Actor - Any entity (e.g. an individual customer, business, aggregator, or utility) that creates efficiency resource units.

Negawatts or Negawatt-hours (also referred to as Efficiency Resource Units) – a unit of power or energy saved by increasing efficiency or reducing consumption (as measured using any type of measurement technique).

Normalization – a method for isolating the effect of an EE project when comparing a site’s pre- and post-project energy usage by removing the effect of common variables on the two sets of data.

Pay for Performance (P4P) – a type of program that tracks and rewards energy savings as they occur, usually by examining data from a building’s energy meters, as opposed to the more common approach of estimating savings in advance of installation and offering upfront rebates or incentives in a lump-sum payment.

Procurement - the act of finding, acquiring, or buying goods, services or works from an external source, often via a tendering or competitive bidding process. This paper examines energy efficiency procurement and considers three primary methods: auction, request for proposal, and standard offer.

Request for Proposals (RFP) - a document that solicits proposals, often made through a bidding process, by an agency or company interested in procurement of a commodity, service or asset, to potential suppliers to submit business proposals.

Sector – a category for distinguishing different customer classes and energy use profiles (e.g. industrial, commercial, residential).

Segment – a division within a sector (e.g. hospitality, office, retail).

Standard Offer – a procurement method whereby a fixed price is offered per efficiency resource unit.

Tariff - A collection of public schedules detailing utility rates, rules, service territory and terms of service that a regulated utility files with its public utilities commission for official approval. A tariff approved by a public utilities commission is a binding legal document and must be made available to the public. In effect, it constitutes the contract between a utility and its customers.

EXECUTIVE SUMMARY

The EEPM Working Group was tasked with developing options and a recommended approach for: (1) sustainably procuring energy efficiency (EE) as a utility system resource, including (2) the timing for implementation or testing, (3) whether a designated approach for EE procurement under the Clean Energy Standard (CES) is warranted or a distinct/compatible market, and (4) addressing underserved customer segments (e.g., low-income multifamily, affordable multifamily, and small/medium-sized commercial). The Working Group was also instructed to include in its recommendations: insight from REV demonstration projects and opportunities for new commercial business models that would drive greater EE.

Early on, the Working Group developed procurement and market principles to guide efforts and future endeavors in this space. The principles, as explained in greater detail in Section 6 of the report, are summarized below:

1. Efforts should lead to decreases in energy consumption, improved system utilization, and reduced carbon emissions, relative to business as usual;
2. Acquisition should be competitive and cost-effective, relative to the value created;
3. Procurement should minimize barriers for qualified market actors and new business models;
4. Measurement of delivered efficiency resource units should be standardized to create market confidence; and
5. Procurement of efficiency resource units should aim for stability and consistency, so market actors can understand and manage risk.

The provided scope and principles above reflect the Commission's preference for increasing EE investments beyond existing programs with the objective of reducing the cost of achieving the State's energy goals, and to use innovative procurement mechanisms, business models, and third-party investment to attain greater EE savings. An overarching finding of this report is that pilots or demonstrations should be conducted prior to implementation of an efficiency credit market or a designated approach under the CES. The Working Group surveyed credit market structures in Europe, Australia, and Connecticut, and found they all relied on five key design elements: 1) obligation or target, 2) active administration, 3) cost recovery, 4) sanctions, and 5) tradability. The Group's primary concern with implementing a credit market at this time is the active administration component. The credit markets examined relied on resource-intensive measurement and verification processes, pre-approval of specific EE measures, and significant regulatory oversight that are not in line with expressed goals of the Commission, including reducing the cost of achieving the State's energy goals and creating opportunities for new business models.

In light of these concerns, the Working Group examined advanced measurement & verification (M&V) techniques. New information and communications technologies are enabling the reporting of energy use in buildings in near real-time. Automated analysis through the deployment of emerging software can use improved data access and advanced analytics to automate and accelerate the M&V process. These advanced M&V techniques could be a potential solution to some of the group's administrative concerns, but testing and standardization of these methods is required to gain regulatory understanding of the advantages and shortcomings. Given the central importance of verifying savings under these credit markets and the ability for program loopholes to develop without robust regulatory oversight, the Working Group

agreed that it is likely not prudent to attempt to simultaneously create a new credit market while piloting advanced M&V techniques.

The advent of advanced M&V techniques has caused renewed interest in Pay for Performance (P4P) program structures, which the group also examined. A P4P program buys actual efficiency savings on an ongoing basis from third parties, providing opportunities to shift risk from ratepayers to market actors, finance EE investments using cash flows from the energy savings, and develop an EE services market. The combination of P4P and advanced M&V with an open source EE Meter could build credibility in expected energy savings, thereby enabling more participants, more liquidity, and lower prices. For this reason, the Working Group recommends testing P4P structures with advanced M&V techniques and an open source EE Meter that employ various procurement methods and provide payment for an extended term (beyond first year savings). New business models that highlight the use of these concepts are discussed in Section 5.

The group identified and analyzed three primary procurement methods for EE: standard offers, requests for proposals (RFPs), and auctions. Under a standard offer, the Program Administrators pay qualified customers an incentive for each eligible measure installed or each unit of saved energy (i.e. kWh or therm). Standard offer programs often include requirements that limit participation to specific technologies and/or customer types. An RFP is a widely-used method for procuring products, project proposals from customers or market actors, and services from market actors. The procuring entity develops a description of the desired products or services and solicits proposals, or bids, from interested parties. The level of detail in RFP requirements varies widely, and one or more respondents may win contracts depending on the procuring entity's objectives and requirements. Auctions are a selection process designed to procure (or allocate) goods and services competitively, where the award is made to a pre-qualified bidder and is based on a financial offer underpinned by a standardized contract. Auction award criteria are clearly defined in advance, and for the most part made known to participants.

The group conducted various exercises and had multiple discussions to analyze the pros and cons of each method and to determine if certain methods were more appropriate for specific sectors and/or preferable for EE credit market structures. The group concluded that no one approach is preferable overall or for any given sector, but auctions require the most testing, as traditionally they have been employed the least for EE procurement. Additionally, the group determined that RFPs are better when competition is limited and qualitative selection criteria are desirable. Auctions can provide more transparency than RFPs, and are preferable when there is sufficient competition and price is the most important selection criteria. Auctions can improve price discovery, and execution and award contracting can be very time-efficient. Standard offer is a transparent method that, when appropriately and widely marketed, provides a known rebate price or incentive rate for energy saving products, equipment, and custom projects, and is a good method for providing a "minimum value" of EE. Because multiple procurement methods may be utilized by multiple entities in the future, the group also recommends that best practices regularly be shared between entities and common rules for market actor participation in procurements and procurement design eventually be developed.

To support cost efficient procurement and an eventual move to a more market-based system, the value of EE in various contexts (e.g., as a grid resource and/or method for reducing carbon) must be more

holistically defined. To think through this issue, the group analyzed various factors influencing investment, including financing, rate recovery, and the explicit value placed on EE under current regulations. Key finance takeaways are the desire for high degree of predictability in cash flow analysis, the need for generalized data sets, and the potential for standardized measurement of savings to ascribe value to EE. With regard to rate recovery, while it was not the group's charge to analyze funding sources or cost recovery for EE, the group has concluded that the procurement of grid resources requires funding certainty, and the method for utility cost recovery and related incentives have an impact on both a utility's perception of EE as a grid resource and on market actors' expectations of risk in participating in EE procurements or markets. The report looks at the various ways utilities can recover costs, and how certain recovery methods may support different policy objectives or relate to the value EE is providing in that context.

As access to data can support market development, and the group emphasizes the importance of the PSC resolving data sharing and customer privacy issues by developing and releasing a data anonymization rule. Market actors within the group stressed the importance of contractual and price signal certainty when developing new business models and forecasting cash flows. Capturing the long-term value of each efficiency resource unit can improve economics, stimulate more aggregation, unlock a greater level of efficiency investment, help to stabilize the market, and mitigate barriers to increased financing. The group recommends that the regulatory treatment of the value of EE reflect the measure or project life of various installations. The group also recommends the PSC develop a clear framework for funding efficiency procurement that recognizes its value as an operational and carbon reducing resource. In the medium to long term, the PSC could send clearer market signals by establishing a centralized and unified process to decide EE procurement funding rules, targets, and performance incentives out to 2030. Such a unified process would be easier for market actors to follow, creating a simpler and clearer structure that could enhance the success of the procurement mechanisms the group examined. In addition, some members of the Working Group stress that size of funding is also extremely important if New York wishes to cultivate a large and growing EE market. To that end, these members recommend that the PSC not provide any caps on EE spending, as long as all spending lowers customer bills on average.

The value ascribed to EE resources within the present regulatory construct also influences investment decisions. Under the BCA Framework, utilities are required to consider EE in the same way that it considers other, more traditional infrastructure, and the value it places on these resources is consequently more in line with the impact EE has on the grid. However, some members of the Working Group believe that refinements to the BCA Framework and an EE price signal are needed. These members recommend that the PSC consider establishing a "baseline" value of EE based on the BCA, existing studies, and expected CES cost reductions for the State of New York. This "baseline" value should be considered a price signal "cap" to the market for statewide negawatt reductions, with utilities setting the "cap" value potentially higher in the future based on locational and/or temporal factors. These members also stress the need for BCA calculation transparency and request that the PSC consider development of a public BCA calculation tool. Lastly, these members would like to raise the issue that business models relying heavily on non-energy benefits to create value for customers are at a disadvantage with the current BCA Framework, because the full costs of improvements are included while non-energy benefits are not quantified. This could discourage innovation, both by discouraging the inclusion of measures with high customer costs and potentially imposing a significant administrative burden on market actors to determine

customer costs. The PSC should review this issue and consider making changes or clarifications to the BCA Framework.

Finally, the Working Group would like to emphasize that the PSC should not let the perfect be the enemy of the good, and should move quickly to implement the recommendations in this report and test new methods. The PSC should recognize the costs of inaction to society and the grid, and direct utilities and NYSERDA to err on the side of action in moving to an efficiency procurement model based on robust third-party involvement and market prices based on the true value of EE. However, the Working Group also recommends that utilities and NYSERDA implement new approaches in tandem with existing models that have proven successful to prevent backsliding and support the achievement of New York State energy and carbon goals.

1 Introduction

On January 21, 2016, the New York State Public Service Commission (PSC or Commission) approved the Clean Energy Fund (CEF) Order, which established the Clean Energy Advisory Council (CEAC or Council) to pursue consistent, effective, and transparent clean energy programs throughout the State.¹ The CEAC functions in conjunction with and in support of New York’s Reforming the Energy Vision (REV)² and Clean Energy Standard (CES)³ proceedings. The Council was chartered to support innovation through the transition from current program offerings in order to “enable an effective and coordinated portfolio of programs and initiatives in pursuit of New York State energy objectives, with a focus on energy efficiency, other distributed energy resources (DER)⁴, and non-wires alternatives.”⁵

The Council is structured to facilitate input from both market participants and policymakers and as a transparent means to create vibrant clean energy programs consistent with REV initiatives. The Council consists of a steering committee co-chaired by the Department of Public Service (DPS) and the New York State Energy Research and Development Authority (NYSERDA). Other members include all New York utilities, including the Long Island Power Authority (LIPA) and the New York Power Authority (NYPA). The Council furthermore consists of six working groups that report directly to the steering committee. The working groups include representatives from technology providers, environmental groups, the business community, customer and low income advocates, and members from the organizations represented on the steering committee.

The Energy Efficiency Procurement & Markets Working Group (hereafter, the EEPM Working Group or Working Group) was tasked with developing options and a recommended approach for: (1) sustainably procuring energy efficiency as a utility system resource, including (2) the timing for implementation or testing, (3) whether a designated approach for energy efficiency procurement under the CES or a distinct/compatible market is warranted, and (4) addressing underserved customer segments (e.g., low-income multifamily, affordable multifamily, and small/medium-sized commercial). The Working Group was also instructed to include in its recommendations insight from REV demonstration projects and opportunities for new commercial business models that would drive greater energy efficiency. This report discusses the Working Group’s research and analysis on energy efficiency procurement and markets, and provides recommendations consistent with the tasks enumerated above.⁶

Section 2 discusses the existing policy and regulatory framework that informed the Working Group’s efforts, including the REV proceedings, the CEF Order, Energy Efficiency Transition Implementation Plans (ETIPs), the Benefit Cost Analysis (BCA) Framework, and the CES. Section 3 details

¹ Case 14-M-0094, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (CEF Order) (Issued and Effective January 21, 2016).

² Case 14-M-0101, Proceeding on the Motion of the Commission in Regard to Reforming the Energy Vision.

³ Case 15-E-0302, Proceeding on Motion of the Clean Energy Standard (CES Order) (Issued and Effective August 1, 2016).

⁴ In the REV proceedings, “DER” is used to describe a wide variety of distributed energy resources, including end-use energy efficiency, demand response, distributed storage, and distributed generation.

⁵ Matter 16-00561, In the Matter of the Clean Energy Advisory Council, CEAC Charter (Issued and Effective April 27, 2016).

⁶ This report considers electric energy efficiency procurement only.

examples of current energy efficiency procurement and markets, including case studies from other states and countries, as well as existing REV demonstration projects. Section 4 discusses factors that can influence the adoption of energy efficiency, including financing, utility performance incentives, and cost recovery. Section 5 provides an overview of Pay for Performance (P4P), including advanced measurement and verification's (M&V 2.0) impact on P4P, and a description of several new energy efficiency business models. Section 6 provides the recommendations of the EEPM Working Group, including a discussion on foundational principles and recommended actions for moving forward

2 Policy Context

The Working Group supports the Commission's priority on using energy efficiency as a major component to achieve New York State's energy policy goals, including both a 40 percent reduction in greenhouse gas emissions from 1990 levels by 2030, and the cost-effective achievement of a 50 percent renewables goal by 2030.⁷ In order to achieve these aggressive goals, the Commission has emphasized the use, where possible, of innovative market transformation and procurement strategies to leverage customer and private investment to produce greater energy efficiency savings than are realized under existing programs.

In completing the tasks assigned to it, the Working Group is guided and informed by several recent Commission orders, including those in the REV proceeding, the authorization of ETIPs, the CEF Order, the BCA Framework, and the assumed contributions of energy efficiency in the CES. These proceedings reflect the Commission's preference for increasing energy efficiency investments beyond existing programs to reduce the cost of achieving the State's energy goals, and to use innovative procurement mechanisms, business models and third-party investment to attain these greater energy efficiency savings.

In the REV Track 1 Order, the Commission began to describe its vision of a reformed electric system, driven by customers and non-utility market actors, and enabled by utilities acting as Distributed System Platform (DSP) providers. One of the foundational elements of this new approach is to integrate clean energy and energy efficiency resources within utility operations. The Commission explained that procurement of these resources will be based on RFPs and load modifying tariffs, and potentially through an auction approach. It is also anticipated that apart from these procurements, improved price transparency will result in more competitive markets for energy efficiency.⁸ It further explained that "[a]chieving greater efficiency gains will require more private capital, not only in the form of sharing contributions under efficiency programs, but in the form of unsubsidized market activity."⁹

In the REV Track 2 and CES Orders, the Commission further emphasizes the critical role that energy efficiency must play in achieving state energy policy goals. In the REV Track 2 Order, the Commission explained that energy efficiency will remain a priority area in which utilities may earn performance-based incentives. It also reaffirmed the principle set forth in the ETIPs Order¹⁰ that electric and gas efficiency targets and budgets will serve as a baseline for future efforts.¹¹ In the CES, the Commission stated: "[e]nergy efficiency is a crucial and cost effective means to achieve clean energy

⁷ New York State Energy Planning Board (2015), The Energy to Lead: 2015 New York State Energy Plan, retrieved from: <https://energyplan.ny.gov/Plans/2015.aspx>.

⁸ Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (REV Framework Order) (Issued and Effective February 26, 2015).

⁹ Id., at p.77.

¹⁰ Case 15-M-0252, In the Matter of Utility Energy Efficiency Programs, Order Authorizing Utility-Administered Energy Efficiency Portfolio Budgets and Targets for 2016 – 2018 (ETIPs Order) (January 22, 2016).

¹¹ Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (REV Track 2 Order) (Issued And Effective May 19, 2016).

objectives. Study after study has shown that when deployed well, energy efficiency is the cheapest and most effective manner to reduce carbon emissions in the energy sector.”¹² The achievement of higher levels of energy efficiency savings can clearly benefit individual customers and create system-wide value through the cost-effective achievement of the CES and carbon reduction goals.¹³

The Commission also reinforced its desire in the Track 2 Order to increase market transformation achievements. These include both targeted efficiency that is enabled by newly monetized value streams and transactional platforms, and also efficiency implemented by customers and third-party market participants with a reduced need for direct utility support.¹⁴ The Commission went further in the BCA Framework Order, by requiring utilities to calculate the monetary worth of some of these values, including environmental impacts, in their evaluation of competing resource needs.¹⁵ The Commission required that the BCA Framework be applied whenever utilities propose an investment that could instead be met through DER alternatives, effectively helping to place energy efficiency on a more level playing field with more traditional utility resources when a utility must determine the most cost-effective technology to deploy on the grid.¹⁶

¹² CES Order, at pg. 81.

¹³ CES Order, at pg. 82.

¹⁴ Track 2 Order, at pg. 79.

¹⁵ Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (Issued And Effective January 21, 2016) (BCA Framework Order).

¹⁶ Id., at pg. 33.

3 Energy Efficiency Procurement and Markets

Existing energy efficiency programs already utilize to varying degrees market forces and procurement methodologies to secure energy savings, and thus guidance can be gleaned from these efforts and used for future developments. For example, the six investor-owned utilities, along with PSEG Long Island and NYSERDA (collectively, “Program Administrators”), already procure verifiable energy savings by providing financial incentives to support the deployment and delivery of a variety of energy efficiency measures.¹⁷ In addition, a number of market constructs have been developed that allow for energy efficiency participation. Those programs are discussed below, along with the benefits and shortcomings of each.

3.1 Procurement Models

In considering multiple alternative approaches for utility procurement of energy efficiency as a utility system resource, the Working Group identified three types of procurement methods in use today: standard offers, request for proposals (RFPs), and auctions. As reflected in the recommendations section and the discussion below, no one procurement model is recommended at this time due to the context-specific nature of choosing a procurement method.

3.1.1 Standard Offer

The majority of Program Administrators use a standard offer method in at least one customer sector to procure energy savings for qualified customers. Under a standard offer, Program Administrators pay qualified customers either a prescriptive rebate for each eligible measure installed or an energy savings incentive for each unit of saved energy (i.e. kWh or therm) achieved. Prescriptive rebates are most common in the residential sector, and energy savings incentives are most common in the commercial and industrial sector. Regardless of the type or sector, standard offer programs often include requirements that limit participation to specific technology and/or customer types. While standard offer programs theoretically can be used to incentivize any energy efficiency measure, programs generally exclude measures with higher payback thresholds and/or newer technologies.

The primary benefit of prescriptive rebates is simplicity, or the ability for market actors to have a reliable technology buy-down amount. The downside of prescriptive rebates is potential non-alignment around rebate levels versus savings levels (particularly for whole-building measures). In addition, prescriptive rebates can add significant paperwork and friction to the customer sales process. On the flip side, energy savings incentives offer the benefit of energy savings alignment, but they can suffer from complexity if the energy savings calculation process is too cumbersome. M&V is therefore an important consideration for energy savings incentives.

New York utilities and PSEG Long Island provide standard offers for the delivery of a combination of prescriptive and custom measures. Eligible energy efficiency measures have pre-determined savings

¹⁷ The CEAC Clean Energy Implementation & Coordination Working Group compiled the “New York Program Administrator Coordination Report”, which provides a snapshot of the 153 energy efficiency programs offered by the Program Administrators (input “16-01005” at: <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-01005&submit=Search>.)

calculations based on the “New York Standard Approach for Estimating Energy Efficiency Savings from Energy Efficiency Programs” (Version 4, effective 1/1/2017), also known as the Technical Resource Manual (TRM). Custom measure incentives are designed to accommodate more complex, aggressive, and unique energy efficiency measures and applications where the savings can vary based on facility operations and other unique facility characteristics. Custom measure incentives can be calculated using a performance-based approach for equipment and buildings, although this extends the payment timeline.

Program Administrators have used standard offers to increase market deployment of energy efficiency measures by informing third party equipment vendors and installers, aggregators, and individual customers of the standard offer incentive through various forms of outreach. Program Administrators often rely upon third parties to help administer EE programs across the State, and these third parties are typically hired as implementation contractors through a competitive RFP process. The contractual arrangements can vary, but implementation contracts currently operate largely on a fee-for-service basis and thus have less correlation to valuation of the energy savings the third-party is tasked to acquire.

Standard offer is a transparent method that, when appropriately and widely marketed, provides a known rebate price or incentive rate for energy saving products, equipment, and custom projects. When effectively administered, the standard offer can be counted on by customers and market actors. Larger project developers can factor in incentive rates when estimating costs and payback calculations for customers. Participating wholesale and retail businesses can use the “instant rebate” in their marketing to promote efficient products. Market actors can rely on the incentive levels when developing new business models and planning marketing campaigns. Finally, a standard offer approach can be combined with other procurement methods to provide a “minimum value” of efficiency. For example, a utility could hold auction events, to provide a higher incentive under specific parameters, while also having a standard offer program. In the case that an auction bidder loses, the standard offer can serve as a fallback opportunity, avoiding an “all or nothing” result.

More specifically, prescriptive rebates provide opportunities for targeted efforts. They can be offered at the customer level or can be deployed through energy services providers, installation contractors, retailers, wholesale distributors, and/or manufacturers. New products and focus areas for new customer segments can be added during the implementation of standard offer programs as opportunities arise and market intelligence informs the utility. In the case of custom incentive programs where deeper savings opportunities are possible, custom incentives are adaptable to a range of solutions. This is particularly true for complex multi-measure projects at large commercial facilities, industrial plants, and data centers where major process-related energy efficiency opportunities exist.

Standard offer procurement has disadvantages as well. With standard offer, Program Administrators need to decide what energy efficiency measures qualify and often try to limit risk via heavy-handed upfront quality assurance. This “one size fits on average” approach is not optimal for many customers. With incentive projects, delays may occur due to disagreements between customers or their representatives and program administrators over energy savings calculations. In addition, because the incentive may not be received for some time after project installation and/or may not be applied to the budget of the business unit applying for the incentive, it may not influence purchasing decisions, especially if capital is constrained. When programs are oversubscribed and paused, it is extremely disruptive to the

market and may impact market confidence in future program efforts. Finally, due to standardized rates, standard offer programs may not acquire energy savings for the lowest cost. Due to locational or temporal system needs, some energy efficiency measures may be more valuable than others. This can be corrected for by varying the incentive rate accordingly, but should be balanced with efforts to minimize market confusion.

In addition, because prescriptive rebates are based on deemed savings calculations, the estimated savings may not materialize, and the process for utilities to gain approval to offer new prescriptive rebates can be long and time-consuming. Also, prescriptive rebates are usually limited to individual pieces of equipment and/or products as opposed to larger projects, systems improvements, or other activities. This may result in savings opportunities being “left on the table,” if activities that contribute to a larger complementary system of savings are not included. Custom incentives can achieve deeper savings through such a complementary system of improvements, but they require more pre-engineering, M&V, and reporting. They rely on detailed engineering analysis and proof of implementation, which must be verified either by the program administrator, implementation consultant, or by another third party, making them more resource intensive. The added complexity of custom incentives also requires more technical outreach such as workshops, webinars, informal technical materials, and best practice sharing.

3.1.2 Request for Proposals

An RFP is a widely-used method for procuring products, project proposals from customers or market actors, and services from market actors (including administration of efficiency programs where other procurement methods, such as a standard offer, are used). The procuring entity develops a description of the desired products or services and solicits proposals, or bids, from interested parties. The level of detail in the requirements of RFPs varies widely, and one or more respondents may win contracts depending on the needs of the procuring entity.

RFPs can be expensive, time-consuming, and limiting to some market actors. The market actors that are able to respond to RFPs typically have to build large overhead costs into their business to ensure that they are responding appropriately, and have the company infrastructure to meet what are often extensive requirements. Also, some potential benefits of RFPs may not result if they are written incorrectly. If an RFP is written in a restrictive manner, or if the likely respondents favor standard approaches, then the RFP process will result in less transparency and potentially additional work for utilities and market actors. While any procurement method requires advance planning and administration by the utility, RFPs can require a great deal of effort to prepare. The utility must develop content and parameters for the RFP, conduct Q&A for potential respondents, read and evaluate responses (possibly with an outside evaluation panel), develop and sign contracts with awardees, and oversee implementation.

When qualitative factors are important, RFPs may be appropriate. Unlike auctions, where the selection of winning bids is done based on a pre-formulated set of criteria (often principally price), RFPs can solicit a range of potential solution types, with selection being made based on qualitative judgments. The selection process in an RFP could, for example, require proof of experience without specifying the exact requirements, in contrast to auctions and standard offer programs, which would both necessitate specific requirements given the nature in which market actors pre-qualify for those programs. In addition,

RFPs allow for more customized terms and conditions. While the basic terms need to be outlined in the RFP and supporting documents, because final legal contracts are signed after an award is made, more specific terms can be negotiated after. RFPs can potentially spur innovation, depending on how they are written and conducted. If an RFP is sufficiently non-prescriptive, it may facilitate new business models. If structured correctly, RFPs can lead to competitive and cost effective EE acquisition, opportunities for new business models, and confidence in delivered energy savings.

As mentioned above, an RFP can result in less transparency than other procurement methods. Often, the actual award amount, or at least the details of the payment structure for delivery of products and services, is not completely public. The specific nature of the selection process and time-consuming and resource-intensive nature of the application process can result in fewer awardees/winners, each delivering more efficiency resource units, as compared to auction or standard offer approaches. This can result in the slower development of vibrant markets. The lack of transparent pricing and the potential limited number of awards mean that many respondents spend considerable resources on unsuccessful submissions. This can drive away potential respondents and/or drive up cost proposals.

During the 2017-2019 program cycle, some utilities are using an RFP to seek innovative models and REV-like programs developed by third-party vendors to acquire energy savings for any customer sector (i.e. residential, small business, commercial). For example, Non-Wires Alternatives (NWAs) typically use an RFP procurement method whereby vendors are invited to submit proposed DERs, including energy efficiency, which can mitigate constraints on a localized section of the electric grid. Utility ETIP solicitations also typically use RFPs.

3.1.3 Auction

In this report, auctions are defined here as a selection process designed to procure (or allocate) goods and services competitively, where the award is made to a pre-qualified bidder, or bidders, and is based on a financial offer underpinned by a standardized contract.¹⁸ Auction award criteria are clearly defined in advance, and for the most part made known to participants. The auction mechanisms discussed here are typically conducted in real-time on a web-based platform over a predetermined duration.

Most electricity industry auction experience addresses regional capacity, energy, ancillary, and renewable energy products, with limited cases of energy efficiency procurement. Capacity auctions typically utilize a standard auction structure, where pre-qualified bidders offer to sell resources at increasing price levels to meet a total capacity need at some time in the future. Renewable energy and energy efficiency auctions often utilize a reverse auction structure, where pre-qualified bidders begin the auction at a predetermined starting or ceiling price, then competitively offer to sell or deliver resources at decreasing price levels and quantities to meet a total kW delivered or reduced, or kWh saved. Awardees are typically determined through a combination of lowest cost bid(s), kW or kWh need, and total auction funding.

¹⁸ Maurer, Luiz T.A; Barroso, Luiz A.. 2011. Electricity Auctions : An Overview of Efficient Practices, Energy Sector Management Assistance Program, World Bank (<http://documents.worldbank.org/curated/en/150091468137983434/Electricity-auctions-an-overview-of-efficient-practices>).

This section of the report focuses on procuring energy efficiency through reverse auctions mechanisms. Reverse auctions can be designed with subtle variations and combined with other procurement methods. Some auction designs and variations include, but are not limited to:¹⁹

- Uniform price - the clearing price is awarded to all participants and associated quantity bid below that price.
- Pay-as-bid or hybrid auction - all participants that bid below the clearing price are awarded their associated quantity at their submitted bid price.
- Multi-round or sequential auctions - can allow for increased levels of price discovery through multiple bidding rounds or auction opportunities.
- Simultaneous auctions - can allow for participants to balance bids across different technologies, sectors, or some combination of simultaneously offered products.

If designed with transparency and ease of execution in mind, reverse auctions can be an efficient mechanism for procuring products in a price-efficient manner. The following key elements help lead to a successful auction:

Transparency: The auction design, including product details, prequalification, financial requirements, privacy, bidding, clearing, and delivery must be clearly communicated to potential bidders well-before the auction. Rules can be created in a collaborative manner with potential auction participants, but this may not always be feasible or necessary.

Product definition: The auction product must be well-defined and coupled with a clear contractual commitment for auction winners. Energy efficiency products can include kWh across service territory or specific location(s), all or specific technologies, individual projects or portfolios, among others. The awarded products must also have a temporal constraint (i.e. procurement window or implementation deadline).

Competition: The auction procurement method depends on market competition. Without sufficient competition, an efficient product price outcome might not be achieved, and collusion potential is increased. Sufficient competition can be determined through bidder count and ability to exercise market power.²⁰

Enforcement: Rule enforcement is essential to attract willing auction participants and producing desired results. Strict rule enforcement is required to ensure reliable product procurement, market confidence, and prevent market abuse and other negative outcomes.

¹⁹ One potential auction design is the “sealed bid” approach, whereby participants simultaneously submit bids without knowledge of one another’s submissions. This structure is similar to RFPs, so the conclusions in that section are more applicable to that type of auction than those contained within this section.

²⁰ The Three Pivotal Supplier Test is utilized in the PJM markets and generally tests market structure, bidder behavior, and market impact by analyzing the degree to which three bidders can meet the market demand (<http://www.monitoringanalytics.com/reports/Presentations/2007/20070727-tps.pdf>).

In addition to the above considerations, regulatory and funding mechanism stability can help establish an efficient auction market. Regulatory and funding mechanism stability that supports regularly-occurring auctions helps participants invest in products and services in anticipation of auction market participation. This persistent auction occurrence can help further support price efficiency. Finally, energy efficiency technologies and projects have different associated costs. To facilitate growth of a vibrant market for many types of efficiency improvements in all customer sectors (which will be necessary for the state to achieve its policy goals), auctions may be conducted for specific energy efficiency technologies, customer classes, locations, or a combination of each. Without this design feature, market actors may engage in “cream skimming,” the practice of serving only the lowest-cost customer segments with the lowest-cost technologies.

Depending on the market, once the auction structure is set up, auctions may be held in a rapid manner that takes less time than other methods to go from program design to procurement, and lead to lengthy and expensive regulatory and legal disagreements. Despite requiring more up-front design and potential costs, auction execution and award contracting can be very time-efficient. Auction contract execution often occurs the day-of or within days of auction completion, which can provide more time for product procurement. When compared to sometimes exclusive or stringent RFP processes, auctions can lower program barriers-to-entry. Less stringent prequalification requirements and an open bidder permission process can allow new entrants to compete, and be judged more on price than other enterprise factors. Any procurement risk that may arise from this process can be mitigated through contract design.

Furthermore, auction programs, if designed to award funding to specific projects or targeted needs, can encourage the installation of multi-measure projects and emerging technologies, since less-cost-effective measures can be paired with highly cost-effective measures. Or, for highly ubiquitous single technologies, auctions can help set lower prices. This scenario can also be favorable over project-based auctions or procurement methods because it may not require the customer or service provider to disclose proprietary business or technology details.

Auction Case Studies

While there are limited examples of utilizing reverse auctions to procure energy efficiency in the United States, the Missouri Department of Natural Resources and AEP Ohio have shown that energy efficiency price discovery can be achieved through reverse auctions. On July 28, 2010, the Missouri Department of Natural Resources held one of the first reverse auctions for energy efficiency.²¹ The auction, held under its Energize Missouri Industries program, offered \$3 million in total incentives and was funded by the American Recovery and Reinvestment Act (ARRA). Bids were evaluated on a lowest-cost \$/kWh basis, and awarded up to \$500,000 per pre-qualified bidder.²² The auction had a ceiling price of \$0.25/kWh, and winning bid prices ranged from \$0.0275 to \$0.11/kWh. Awardees were provided approximately two

²¹Missouri DNR holds first ever energy-efficiency reverse auction. Accessed 2/20/2017 (www.wgem.com/story/12893344/missouri-dnr-holds-first-ever-energy-efficiency-reverse-auction).

²²Energize Missouri Industries, Best Price Efficiency Program. Accessed 2/20/2017 (www.energy.mo.gov/energy/stay-informed/energize-missouri/energize-missouri-industries).

years to identify and implement projects with commercial and industrial customers, and those projects saved approximately 64 million kWh.²³

In October 2014, AEP Ohio launched its Bid4efficiency Program, which utilizes reverse auctions to offer kW and/or kWh (depending on technology) contract awards ranging from \$25,000 to \$1,000,000.²⁴ AEP Ohio conducts auctions for different technologies, customer segments, and provider (direct non-residential customers that use 200,000kWh/year or qualified solution provider).²⁵ In its initial auctions, AEP Ohio was able to achieve an average incentive rate of \$0.034/kWh for delivered energy efficiency projects; a level well below its custom and prescriptive incentive programs.²⁶ Despite this incentive rate not being directly relatable to New York market incentive rates, what's important is that price discovery was achieved at lower levels than alternate incentives.

Although different auction designs may lower barriers to entry and achieve improved price discovery in contrast to RFPs, complex auctions can increase transaction costs. Complex auctions may produce non-optimal outcomes if the design is not clear and fully understood by all participants. Additionally, despite being a valid mechanism to competitively procure products, auctions may not always deliver energy efficiency at a cost lower than other procurement mechanisms. This can occur if one or more of the auction design elements is missing or designed improperly, or if the energy efficiency product being offered is supply-constrained. In a supply-constrained scenario, which can occur due to locational or other broad market factors, auction participants may demand a higher price due to higher product procurement risk.²⁷ Accordingly, the desire to prevent cream skimming based on product and customer type must be balanced against the need for a competitive pool of resource suppliers.

There also are certain situations in which auctions are not an optimal energy efficiency procurement mechanism. These situations include, but are not limited to, where there is little competition, or when the award cannot be based on price alone.²⁸ In a nascent market or a market with limited competition, high transaction costs can erect barriers to entry, forcing smaller bidders out of the market. High transaction costs can lead participants to vie for the large commercial projects, which can further increase project risk and push small businesses out of the market. Ultimately, a low volume of participants can increase costs that will be passed on to the utility customer.

Other auction drawbacks include a learning curve for all participants, and high upfront costs to establish a new platform and process. Some more sophisticated auctions, such as multi-round hybrid

²³ Id.

²⁴ Bid4efficiency Program. Accessed 2/20/2017 (www.aepohio.com/save/business/programs/EnergyEfficiencyAuction).

²⁵ Id.

²⁶ Midwest Energy Efficiency Alliance. Accessed 2/20/2017 (mwalliance.org/conference/inspiring-efficiency-awards/2016-innovation-aep-ohio).

²⁷ One example is Con Edison's Brooklyn-Queens Demand Management Program - Demand Response Auctions, where, due to potential procurement risk and other factors, clearing prices settled at levels higher than Con Edison's administratively-established demand response incentive levels.

²⁸ Maurer, Luiz T.A; Barroso, Luiz A.. 2011. Electricity auctions: an overview of efficient practices. Energy Sector Management Assistance Program (ESMAP). Washington, DC: World Bank (<http://documents.worldbank.org/curated/en/150091468137983434/Electricity-auctions-an-overview-of-efficient-practices>)

auctions, may have higher initial transaction costs related to auction design, software procurement, and stakeholder training. However, the benefits achieved from competition can often outweigh high setup costs. Furthermore, many of those initial setup costs will be diluted in subsequent auctions, since most of the processes and systems will already be in place and only some fine-tuning will be necessary.²⁹

While the New York Independent System Operator (NYISO) has many of years of experience running economic-based demand response programs, New York State utilities are just starting to test procuring energy efficiency through auctions. Brief descriptions of the NYISO demand response and Con Edison demand management program follow.

The NYISO market pays Special Case Resources (SCR) program participants to curtail electric load to reduce stress on the electric grid. Participants may offer their capacity to curtail electric load into Installed Capacity (ICAP) auctions, or may sell capacity in bilateral contracts. If participants are awarded capacity in ICAP auctions or sell bilateral contracts, participants can receive Monthly Capacity payments. Participants can also receive Energy payments based on performance in events and tests, and the applicable Location-Based Marginal Price (LBMP).³⁰

In 2018, the Con Edison Demand Management Program (DMP) will offer enhanced incentives for energy efficient technologies that help improve building operational performance and reduce electric demand. The goal of the Demand Management Program is to achieve electric demand reduction in facilities through financial incentives for qualifying technologies. Auction applications are due in the Spring and Summer of 2017, and Con Edison intends to conduct two auctions. Incentives will be set via the Demand Management Auction Mechanism (DMAM). Unlike prior programs that set incentives by technology type, the auction format will enable customers and technology solution providers to bid for the exact incentive amount needed for individual projects.

3.2 Market Models

In addition to the variety of procurements already being used to secure energy savings, a number of market constructs allow for energy efficiency participation, including capacity markets, energy efficiency credits (EEC), and certain REV demonstrations. While market models overlap to some degree with procurements – which routinely rely on existing market actors for competition purposes – the key distinction between procurement models and market models is that program administrators usually direct procurements, whereas with a market model the system operator, regulator, and increasingly program administrators, will set the rules of engagement that then allows supply and demand to more freely interact within the boundaries of that market construct. As program administrators experiment more with auctions and other more advanced market procurements, this distinction may become less important.

²⁹ Id.

³⁰ www.nyiso.com/public/webdocs/markets_operations/market_data/demand_response/Demand_Response/Reports_to_FERC_/2017/NYISO%202016%20Annual%20Report%20on%20Demand%20Response%20Programs_Final.pdf

3.2.1 Efficiency in Capacity Markets

Allowing efficiency resources to compete in capacity markets has the benefit of increasing revenues to these resources, although such revenues generally account for a relatively small percentage of a developer's total cash flow from an energy efficiency improvement. Energy efficiency is allowed to bid into the capacity markets in ISO New England (ISO-NE) and in the Pennsylvania, New Jersey, Maryland Interconnection (PJM) under certain circumstances. Capacity markets are intended to purchase sufficient capacity for reliable system operations and are focused on a resource's effect on coincident peak. In New England, ISO-NE conducts a capacity market called the Forward Capacity Market (FCM), while in PJM, the capacity market is known as the Reliability Pricing Model (RPM). The FCM began operation in 2010 and has allowed energy efficiency to bid in from the start, while PJM has allowed efficiency resources to participate beginning with the 2012 delivery year. The NYISO currently does not allow energy efficiency resources to bid into its capacity market, instead treating energy efficiency as a load modifier and therefore a reduction in the capacity obligations of a load serving entity.

ISO-NE recently completed its 11th Forward Capacity Auction (FCA), which enabled procurement of sufficient resources to meet electricity demand in 2020-2021. A total of 640 MW of new energy efficiency and demand-reduction (DR) measures cleared – an amount ISO-NE describes as the equivalent of a large power plant.³¹ Following this auction, the cumulative amount of EE and DR resources participating in the market will approximate 3,200 MW, or about 9% of the total capacity market. There is evidence that these resources helped reduce wholesale market prices for electricity customers. The clearing price for FCA 11 was the lowest price since 2013, at \$5.30 per kilowatt-month.

PJM, which serves all or parts of 13 mid-Atlantic and Midwestern states, also allows efficiency resource providers (as well as providers of other demand resources such as distributed generation and demand response) to participate in their markets and compete with electric generators. *Utility Dive* reported in May 2016, that PJM's capacity auction continued to showcase the continued importance of efficiency and demand management, contributing to price savings for customers. 1,515 MW of efficiency cleared in the 2019/2020 auction and 613.7 MW of demand response cleared as capacity performance.

Efficiency has comprised a higher percentage of resources in the FCM vs. the RPM due to various factors. The Regulatory Assistance Project (RAP) looked at the various rules and experiences of ISO-NE and PJM as they relate to demand side resources and their participation in capacity markets.³² The study found that the rules governing the markets have a significant effect on the degree of energy efficiency participation. Rules important to the ability of energy efficiency to participate include: defined peak periods; types of measures that can participate; number of years' efficiency savings can be bid into the markets; minimum size requirements for bidding; prequalification requirements, including M&V plans; how efficiency resources are paid; and penalties for non-delivery. Other conclusions of the study include:

³¹ Winter Impacts of Energy Efficiency in New England, Acadia Center (April 2015).

³² Neme, C., and Cowart, R., Energy Efficiency Participation in Electricity Capacity Markets—The U.S. Experience (2014) (www.raponline.org/document/download/id/7303).

- Energy efficiency can make significant contributions to meeting system peak demands.
- The participation of efficiency and other demand resources in capacity markets can lower market clearing prices, with potentially large economic benefits to customers.
- Participation in capacity markets has given previously skeptical supply planners confidence that efficiency resources are “real” and can be relied upon to meet system needs.
- Participation in capacity markets has resulted in much more detailed understanding of the characteristics of savings.
- Capacity markets alone will not lead to substantial investments in efficiency.

3.2.2 Energy Efficiency Credits

A market-based mechanism called an Energy Efficiency Credit (EEC) has been utilized in a handful of countries and states in the U.S. to encourage third parties and end-users to provide energy efficiency savings. An EEC (or White Tag, White Certificate, or Energy Savings Certificate) is a document certifying that a specific amount of energy savings – usually 1 MWh – has been measured and verified. Eligible measures vary from program to program but generally include commercial and industrial lighting upgrades, cogeneration or combined heat and power (CHP), insulation, and heating, ventilation, and air conditioning (HVAC) improvements. The time frame of the savings can be the estimated savings over the expected lifetime of the measure or the annual energy savings. EECs allow for the trading of the attributes of these energy savings, making it more easily comparable to a Renewable Energy Credit (REC) and with New York’s energy efficiency policies that generally focus on electricity savings.

The use of EECs is usually paired with an obligation on electric suppliers, producers, or distributors (collectively, obligated entities) to have a certain absolute amount or percentage of their load (or load growth) met with efficiency.³³ For example, a utility with annual sales of one million MWh may be required to provide one percent of this load through energy savings—10,000 MWh or the equivalent 10,000 EECs. If an obligated entity fails to self-supply the savings or purchase the corresponding EECs, an alternative compliance payment (ACP) or other penalty may be imposed. In Connecticut, for example, an ACP of \$31 per EEC is charged to obligated entities that fail to meet their targets.

Like RECs used in the CES to incentivize renewable energy development, each certificate provides an additional revenue stream to developers to improve the economics of a project. In some programs, obligated entities may purchase EECs from other obligated entities or third parties, thus allowing a wider array of market actors to provide energy efficiency measures and subsequently the ability to trade to the obligated entity the resultant savings. Trading of EECs allows obligated entities that may have high compliance costs to purchase efficiency savings from low cost suppliers, thus potentially lowering the overall cost of meeting the target. Under this construct, the obligated entity can decide whether it wants to self-supply the energy efficiency savings (either directly in-house or through a subcontractor), or alternatively purchase EECs to satisfy its obligation. This allows obligated entities a flexible means of achieving energy efficiency targets.

³³ EECs can be used in both compliance markets as well as in voluntary markets, although this discussion addresses the much wider-enacted compliance markets only. Some commercial and industrial companies participate in voluntary EEC markets, where companies buy and sell EECs from voluntary energy efficiency projects.

In programs allowing for EEC trading, several methods are used in establishing the price of an EEC, although most allow market forces bounded by an ACP or other penalty for non-compliance to determine the price. EEC prices vary depending on the program, with prices ranging generally from \$10 to \$70 per EEC. Connecticut's current price is approximately \$27 per EEC, close to the New York REC price. Some programs, like in the United Kingdom (UK), provide only a limited opportunity or incentive for trading and therefore the obligated entities usually self-supply the energy efficiency savings through in-house or sub-contracted measures installation. Few programs in fact allow or incentivize significant trading due to the difficulty and expense of verifying energy savings by third parties, among other reasons, as explained below. Consequently, in many jurisdictions, obligated entities tend to produce most of the energy efficiency efforts, either directly through in-house staff or indirectly through subcontractors.

European Experience

In Europe, several countries have implemented a variant of an EEC program, often called White Tags, although the design of these programs across Europe varies considerably. For example, the U.K., which launched its program in 2002, imposes an obligation on suppliers to improve the energy efficiency of the residential sector and grants points for each measure installed, with limited opportunity to trade the efficiency savings. In Italy, which enacted its program in 2005, and France, which started in 2007, suppliers may self-supply or purchase certificates to meet their targets similar to a more traditional REC program. A number of smaller countries in Europe have established or are considering implementing variations of an EEC program with varying levels of certificate tradability.

The UK has a unique system that uses a points-based metric in the pursuit of goals that are applicable only to the residential sector and do not specifically include load reductions.³⁴ Each measure installed receives a predetermined number of points that are added together in furtherance of complying with an obligated entity's target. The target points are determined according to the supplier's market share to meet the overall national targets of a carbon emissions reduction of 20.9 million lifetime tons, a carbon emissions "community" reduction of 6.8 million lifetime tons, and a home heating cost reduction of £4.2bn in cost savings. The carbon emissions goal focuses on hard-to-treat homes, including free solid wall insulation and hard-to-treat cavity wall insulation measures. The community savings goal focuses on the provision of insulation measures and connections to district heating systems to domestic energy users that live within an area of low income. The home heating cost reduction goal emphasizes measures that improve the ability of low income and vulnerable households to affordably heat their homes.

Suppliers have the obligations if they have more than 250,000 domestic customers, provide more than 400 gigawatt hours of electricity, or provide more than 2,000 gigawatt hours of gas. The penalty for not complying with the mandate can be as high as 10% of the supplier's revenue. Obligated suppliers have the option to trade their obligations with other obligated suppliers, although no formal certification of attained savings occurs, and no other party besides obligated entities can trade. While trading in obligations and of measures is permitted, little actual trading has occurred due to a lack of formal certification of

³⁴ The Energy Company Obligation, Briefing Paper, House of Commons Library, No. CBP 06814 (March 29, 2017).

savings, supplier's preference for preferred sub-contractors to perform the work, and the fact that suppliers can only trade once they meet their own targets.³⁵

In France and Italy, the programs are more analogous to traditional REC programs that require load reductions and allow for trading of certificates, although there are a number of differences between the two.³⁶ In France, obligated parties are suppliers delivering electricity, gas, domestic heating fuel, and cooling and heating for stationary applications, with a threshold for the imposition of a savings target set at 0.4 TWh/year (or 5,000 liters in case of domestic fuel) and market share the dominant mechanism for distributing obligations. In Italy, electricity and gas distributors – not suppliers – with at least 50,000 customers are subject to the obligation, with market share the dominate means to distribute obligations. The total national target for France from 2015-2018 is 660 TWh cumulated over the life of the energy efficiency improvements,³⁷ while in Italy the target for 2017-2020 is approximately 7.8-9.7 TWh per year.³⁸ Unlike in the UK, Italy and France applies the obligation to not only residential load, but also commercial and industrial demand as well. The penalty for noncompliance is 0.02 Euro/kWh in France, while in Italy the penalty is determined *ad hoc* by the regulator, taking into account the actual possibility to meet the target, the magnitude of the non-compliance, and the state of affairs of the non-compliant party. In both France and Italy, certificates trade in either over-the-counter (OTC) or organized spot markets.

New South Wales, Australia

New South Wales (NSW), Australia operates an energy efficiency crediting system known as the New South Wales Energy Savings Scheme. It set targets for the state's load serving entities (i.e., suppliers) per the amount of electricity purchased by each such entity.³⁹ Targets have gradually increased from 1% in 2009 to 5% in 2015, with certain exemptions covering certain emissions-intensive trade-exposed industries.⁴⁰ It will increase to 7% in 2016, rise to 8.5% in 2019, and remain steady thereafter until 2025. The regulator estimates that annual incremental savings were 1.8 million MWh in 2015, or around 2.8% of sales to end-users in NSW in 2015.

Project developers can get credit for multiple years of savings upfront for some projects, subject to limitations and discounting, so target levels do not translate directly into annual incremental savings. This feature of the market enables “apples to apples” comparisons of energy savings from different measures, as opposed to encouraging measures with high annual energy savings but shorter estimated useful lives (e.g. lighting versus insulation).

Early on, a significant portion of the savings obligations were met through payment of penalties. More recently, however, load serving entities have met virtually all their obligations through surrendering credits. Moreover, the system was initially slow to react to a glut of credits from commercial lighting

³⁵ Assessment of White Certificate Schemes in Europe, Paolo Bertoldi and Silvia Rezessy, European Commission, DG JRC, Institute for Energy (2008).

³⁶ Id.

³⁷ Energy Efficiency Action Plan for France – 2014, Directorate General for Energy and Climate, Climate and Energy Efficiency Service (2014).

³⁸ Italian Energy Efficiency Action Plan, EEAP 2014 (July 2014).

³⁹ Compliance and Operation of the NSW Energy Savings Scheme During 2009 (July 2010), at pg. 3.

⁴⁰ NSW Energy Savings Scheme Compliance and Operation in 2015 (July 2016), at pg. 2.

projects. The NSW regulator now strictly monitors participants to ensure that credits are not created where savings are not actually realized. It does this by “monitor[ing] their energy savings activities and us[ing] third-party audits to verify savings.”⁴¹ It also uses set-aside deeds to commit credit providers to withhold from trade a percentage of the certificates they create until an audit of those certificates has satisfactorily been completed. Through these methods, the regulator has identified a small but significant portion of the credits as being improperly created. In 2015, for example, 7.3% of the credits were deemed to have been artificially created, and the companies responsible for their creation agreed to forfeit them.

Connecticut

As one of its three classes of eligible resources, Connecticut’s Renewable Portfolio Standard (RPS) includes an energy efficiency credit trading system, which requires electric suppliers to obtain a specified percentage or amount of the energy they generate, save, or sell from certain distributed energy resources (DER) (defined by statute as “Class III” sources). Owners of electricity generation projects that qualify under any of the three classes of Connecticut’s RPS receive one REC for every megawatt-hour (MWh) of electricity they produce; energy efficiency projects eligible under Class III likewise receive one REC for every MWh of electricity saved. RECs have a dollar value attached to them as power suppliers must reconcile each year the electricity they supply to the marketplace with the RECs they have purchased.⁴²

In 2006, Connecticut created a market for Class III RECs, defined as energy efficiency, CHP, and waste heat recovery projects. Under the RPS, suppliers are required to obtain at least 4% of their retail load through Class III resources. The requirement started at 1% of retail load in 2007, and increased by 1% each year until reaching 4% in 2010, at which point it remains constant through 2020. If suppliers do not purchase enough RECs to meet their mandate, they are required to pay an ACP on a per MWh basis.¹ Connecticut contributes 25% of ACP revenues to the state’s Clean Energy Fund (CEF), while the remaining 75% of funds are divided between the electricity distribution companies’ (EDC) Conservation and Load Management (C&LM) Funds (devoted to energy efficiency and demand response programs) in proportion to the load served in each EDC’s territory.⁴³

Until 2013, the utilities could include their C&LM programs in the Class III REC market. This led to a flooding of the market, with REC prices dropping to the price floor of \$10/MWh. Low REC prices made it challenging for third-party providers to secure sufficient Class III REC revenues to complete projects.⁴⁴ After 2013, Connecticut modified the program by making Class III incentives no longer available to utility-administered and ratepayer-funded programs.

Class III REC prices have been volatile, although in recent years a more stable price range has developed. In 2013, after the program was modified to reduce arbitrage, the price more than doubled in one

⁴¹ Id., at pg. 5.

⁴² PURA: Renewable Portfolio Standards Overview, The Connecticut Department of Energy and Environmental Protection, <http://www.ct.gov/pura/cwp/view.asp?a=3354&q=415186>.

⁴³ Annual Review of Connecticut Electric Suppliers’ and Electric Distribution Companies’ Compliance with Connecticut’s Renewable Energy Portfolio Standards in the Year 2014, Docket No. 15-09-18, State of Connecticut Public Utilities Regulatory Authority, Sept. 28, 2016.

⁴⁴ Restructuring Connecticut’s Renewable Portfolio Standard, Connecticut Department of Energy and Environmental Protection, April 26, 2013.

year and therefore increased the marketability and opportunity for private investors and third-parties to pursue projects.⁴⁵ Class III REC prices continued to rise to \$27/MWh in 2017, which is just short of the current ACP of \$31/MWh. The ACP has been set as the average cost of obtaining energy savings from C&LM programs to date. Connecticut's market relies on RPS cost estimates reported directly by utilities or regulators within annual compliance reports or other regulatory filings and translate those estimates into a set of common metrics for comparison.⁴⁶

The Annual Reviews of Connecticut's Electric Suppliers' and EDC Companies' Compliance with Connecticut's RPS verify an increasing trend of Class III RECs purchased from 2010-2014.⁴⁷ In addition, the 2014 report shows that relatively few Class III ACPs were paid, indicating that there is adequate REC supply at the current required percentage (4% of load per year).⁴⁸ However, most of the Class III RECs have been generated by CHP, particularly after the C&LM programs were no longer eligible to participate.⁴⁹ It is therefore unclear what the clearing price would be if only energy efficiency was eligible under the Class III market.

Energy Efficiency Credits – Lessons Learned

While the use of energy efficiency credits has only been adopted in a few jurisdictions, experience from these programs gives policy makers valuable insight into the benefits and challenges of administering these types of constructs. Typically, these programs require five key elements for their proper design, with various sub-elements included within each: 1. Obligation; 2. Administration; 3. Cost recovery; 4. Sanctions; and 5. Tradability.⁵⁰ The lessons learned analysis will look at each of these elements in turn in order to give a fuller appreciation of the breadth and variety that these programs allow, and the consequent need for more nuanced policy recommendations for each if implementation is contemplated.

Obligation

An EEC program requires an obligation on an entity to acquire a certain absolute amount or percentage of their load (or load growth) be met with efficiency. The load reduction obligation is usually expressed as a percentage of load (e.g., Connecticut), an absolute amount of energy savings (e.g., France), or carbon reductions (e.g., UK). In establishing the stringency of the obligation, the degree of aggressiveness in the overall goal may have a substantial impact on its success: "The transaction costs of establishing and overseeing these markets seem tolerable only if the underlying energy savings target is substantial, representing a steep gain over business-as-usual improvements in energy efficiency."⁵¹

⁴⁵ See footnote 42.

⁴⁶ A Survey of State-Level Cost and Benefit Estimates of Renewable Portfolio Standards, NREL, LBNL (May 2014).

⁴⁷ See footnote 42; Annual Review of Connecticut Electric Suppliers' and Electric Distribution Companies' Compliance with Connecticut's Renewable Energy Portfolio Standards in the Year 2010, Docket No. 15-09-18, State of Connecticut Public Utilities Regulatory Authority, Nov. 21, 2013.

⁴⁸ See footnote 42.

⁴⁹ Id.

⁵⁰ Energy Supplier Obligations and White Certificate Schemes: Comparative Analysis of Results in the European Union, Silvia Rezessy and Paolo Bertoldi, European Commission, Institute for Energy Joint Research Centre (2010), pg. 8-301.

⁵¹ Should the United States Create Trading Markets for Energy Efficiency? Noah M. Sachs, University of Richmond Law School (2016).

In defining the obligation, the activities and measures eligible to generate verified savings must be established, as well as a process for updating these measures as baseline efficiency changes. A number of best practices is recommended: (1) adopting a definition of energy efficiency that properly credits beyond business-as-usual activities; (2) establishing (or retaining) other energy efficiency programs that target opportunities that may be cost-effective and desirable for other societal objective (e.g., for certain low income energy efficiency opportunities), but unlikely to be the least-cost measures and hence unlikely to be developed under a market-based system; and (3) explicit definition of sectors and/or measures qualified in each market.

The obligation must then be apportioned to electric suppliers (e.g., Connecticut, UK, France, NSW), producers, or distributors (Italy), generally in proportion to the load that they serve for the applicable sectors. As is the case with New York's CES, Connecticut, France, and the UK have chosen to impose the obligation on suppliers, while Italy applied the requirement on distributors. A number of rationales are usually cited for imposing the obligation on suppliers, including their link to retail customers, the effect efficiency has on supply costs, suppliers' motivation to market value-added services, and regulators desire to transform suppliers' business models away from pure commodity sales. For imposing the obligation on distributors, the rationales include the greater stability of the entities in contrast to suppliers who may go out of business, and their stronger trust relationships with retail customers.

In the UK and France, suppliers are moving in the direction of positioning themselves as energy efficiency providers.⁵² Obligated entities in the UK have formed partnerships with energy efficiency companies, and use their brand on the delivery of energy efficiency measures via contractors. In France, obligated entities have partnered with retailers, installers, manufacturers, and banks, to offer services such as audits, low interest rate loans, and upfront subsidies. The supplier obligation has also fostered the use of standardized energy efficiency actions in the residential sector, including lighting upgrades, insulation additions, and shell measures, to minimize measurement and verification (M&V) and other transaction costs. These standardized measures will likely be accessed first because they yield the lowest-cost credits. Higher cost measures such as those targeted to low-income sectors need to be explicitly required or supported by ancillary programs.

The Connecticut example shows the importance of defining the obligation sufficiently so that resources are competing on a level playing field. Having new energy efficiency compete against mature and already subsidized CHP, as it does in Connecticut's Class III RPS tier, can distort the market signal for new resources. Energy efficiency has little to chance to compete against these resources as a result.

Active Administration

Perhaps the most difficult work associated with an EEC construct is establishing the technical processes needed to support the program, including M&V protocols for determining the amount of credits generated by each measure, a process for certifying claimed energy savings, and a trading platform, if applicable, for certificate transfers. A number of best practices in this area can be derived from other programs, including:

⁵² See footnote 50 at pg. 8-308.

- Transparent and consistent M&V;
- Pre-approval of measures;
- Accreditation of third parties able to implement measures; and
- Regular auditing

The M&V process starts with the establishment of a baseline of energy consumption, which can be a moving target. Unlike RECs, where the production of renewable generation is routinely measured by the NYISO, and therefore the commodity that the REC represents is easily certified, the baseline energy use needed to measure energy efficiency savings for purposes of creating an EEC can be complicated to measure.

The existing programs have relied on two approaches for M&V: (1) *ex ante* “deemed savings”; or (2) *ex post* evaluations. Most existing programs are dominated by deemed savings measures with standardized saving factors like CFL deployment. In France, for example, suppliers can choose from a menu of over 100 projects with deemed savings. The transaction costs for *ex post* measurement may be too high to make the program worthwhile. Nevertheless, criticism of deemed savings measures is also common, including unreliability of claimed savings and lack of ingenuity in providing efficiency products.

Regarding the former, the NSW provides an example of the need to monitor participants to ensure that credits are not created where savings are not actually realized. It does this by monitoring claimed energy savings activities through third-party audits. The regulator identified a small but significant portion of the credits as being improperly created. In 2015, for example, 7.3% of the credits were deemed to have been artificially created, and the companies responsible for their creation agreed to forfeit them. The UK has had similar problems with the mass mailing of CFLs to potential customers with very little certainty of their effect on load even though the savings were claimed.

Accreditation is another issue in existing programs. In Connecticut, third-party energy efficiency developers can be subject to significant market access issues under Connecticut’s current RPS regulations. Any energy efficiency project not explicitly defined as an eligible Class III resource in relevant statute or regulation must pursue a declaratory ruling from the Connecticut Public Utility Regulatory Authority (PURA). This can be a lengthy and/or time-consuming process, particularly if the developer is proposing an EM&V methodology outside of those used by the existing energy efficiency programs resource manual.⁵³ Per the head of the Connecticut Green Bank, Bryan Garcia, using a meter-based M&V standard could significantly reduce friction around Declaratory Rulings for anything outside of the TRM and build credibility in the energy savings, thereby enabling more participants, more liquidity, and lower prices.

Cost Recovery

The determination of who the obligated entity is will usually indicate the method of cost recovery, with suppliers recovering their costs through minimally regulated supply rates, and distribution utilities recovering their costs through regulated rates or surcharges. How costs are recovered may also determine the most popular measures. Suppliers will theoretically look for the most efficient method to acquire its

⁵³ PURA: Renewable Portfolio Standards Overview, The Connecticut Department of Energy and Environmental Protection (www.ct.gov/pura/cwp/view.asp?a=3354&q=415186).

required savings since competition with other suppliers will limit the amount of flow through its allowed through rates, whereas regulated distribution companies will likely be allowed by regulators to flow through the prudently incurred costs for the measures in their regulated rates. In France, which regulates its supplier rates, the dominant measures – boilers, heat pumps, insulation and efficient windows – are also the ones eligible for tax credits since the entities cannot flow through the costs for its required savings, so they look to find the cheapest measures possible.

Sanctions

If an obligated entity fails to self-supply the savings or purchase the corresponding EECs, an ACP or other penalty may be imposed. In Connecticut, for example, an ACP of \$31 per EEC is charged to obligated entities that fail to meet their targets. The ACP was set as the average cost of obtaining energy savings from Connecticut's C&LM programs to date. Generally, the ACPs are set just above the costs of a comparable basket of energy efficiency measures to give the obligated entities an incentive to innovate to reduce costs and therefore increase its profits, instead of paying the ACP.

Tradability

For those programs with tradable certificates, a system to register credits and the rules for issuing and trading needs to be developed. Trading of EECs allows obligated entities who may have high compliance costs to purchase efficiency savings from low cost suppliers, thus lowering the overall cost of meeting the target. Obligated entities can decide whether it wants to self-supply the energy efficiency savings (either directly in-house or through a sub-contractor), or alternatively purchase EECs to satisfy its obligation. The obligated entity will purchase EECs only if they are less expensive than providing the measures itself. This allows obligated entities a flexible means of achieving energy efficiency targets at the lowest cost, and also rewards third parties and end users with an additional revenue stream that may improve the economics of an energy efficiency improvement.

Trading appears beneficial in a system with a strong target, wide sectoral scope, large array of eligible measures, and where non-obligated parties can participate.⁵⁴ The role of trading in a limited program such as the UK, which only applies to the residential sector, is less certain due to the additional administration cost of establishing and operating a trading platform and program. The more liquidity that is allowed in a system (e.g. allowing non-obligated parties to participate), the higher the transaction costs of the program due to the administrative burden of overseeing and certifying multiple market participants.⁵⁵ “Provided that administrative and monitoring costs are not disproportionate, as many parties should be allowed to trade in the scheme as possible, since this enhances the prospects of diversity in marginal abatement costs and lowers the risk of excessive market power. A key benefit of allowing many parties in the scheme is that new entrants may have the incentive to innovate and deliver energy efficiency solutions, which have a lower marginal cost.”⁵⁶

⁵⁴ Energy Supplier Obligations and White Certificate Schemes: Comparative Analysis of Results in the European Union, Silvia Rezessy and Paolo Bertoldi, European Commission, Institute for Energy Joint Research Centre (2010).

⁵⁵ *Id.*

⁵⁶ Assessment and Experience of White Certificate Schemes in the European Union, Paolo Bertoldi, European Commission, Directorate General JRC (December 2011) at pg. 5-27.

Five states (Connecticut, Massachusetts, Michigan, Nevada, and Pennsylvania) have authorized trading, but only in Connecticut is trading active. “EEPS in most states are not aggressive, representing small increments in energy savings beyond business as usual. As a result, utilities have been able to achieve their targets on their own initiative, without resorting to a trading mechanism.”⁵⁷ In Europe, most programs provide only a limited opportunity or incentive for trading and, therefore, the obligated entities usually self-supply the energy efficiency savings through in-house or sub-contracted measures installation. There is limited trading in France and the UK because suppliers prefer to implement the projects themselves for a variety of reasons. Suppliers in the UK and France partner with equipment suppliers and installers and use their brand to market beyond commodity service. Trading is a key feature of the Italian program though, where distribution companies rely on third parties to implement projects because they have little incentive or expertise to expand their business beyond regulated service.

The existing infrastructure developed for RECs in New York – the New York General Attributes Tracking System, or NYGATS – could likely be modified to accommodate EEC trading, although the issues regarding M&V are not solved by using such a platform. REC markets are much simpler to administer because the NYISO routinely measures the generation of power, including renewables, through onsite production meters, and therefore such data can be easily transferred to NYGATS for certification. An energy efficiency developer, on the other hand, would still need to traverse the M&V issues discussed above before certification of the savings occurs. As discussed in other parts of this paper, a meter-based M&V standard for energy efficiency projects could likewise build credibility in the expected energy savings, thereby enabling more participants, more liquidity, and lower prices in an EEC program.⁵⁸

Lessons learned from other EEC and REC programs provides the following best practices for the development of a trading platform: “Appoint an independent body that is responsible for issuing of certificates; Provide a clear definition of a certificate in terms of resource eligibility, validity, size, etc.; Formulate the ‘rules of the game’: what are the rules to trading, who is responsible for what; Establish a registration system where each certificate and each trade is registered; Establish independent monitoring and verification system; and Organize that each certificate consumed is redeemed, i.e. taken out of the system.”⁵⁹

3.2.3 Applicable REV Demonstration Projects

In the REV Track 1 Order, the Commission directed the six investor-owned electric utilities to develop and file demonstration projects, consistent with the guidelines adopted by the REV Track 1 Order. The REV demonstration projects are intended to exhibit new business models that are expected to provide new revenue stream opportunities for third parties and the electric utilities. It is anticipated the demonstration projects will inform decision makers with respect to developing Distributed System Platform (DSP) functionalities, measuring customer response to programs and prices associated with REV markets, determining the most effective implementation of DER, and promoting the delivery and deployment of

⁵⁷ See footnote 19.

⁵⁸ The National Energy Efficiency Registry (NEER) is a web-based platform being developed with Federal assistance that may also provide infrastructure assistance for an EEC program (<http://www.theclimateregistry.org>).

⁵⁹ Energy Savings Credits: Are Potential Benefits Being Realized? Joe Loper, Steve Capanna, Rodney Sobin and Tom Simchak, Alliance to Save Energy (2010).

energy efficient and renewable energy technologies across the State. The current REV demonstration projects focusing on the continued development of energy efficiency markets, customer engagement and distributed energy resources (DER) are presented as follows:⁶⁰

National Grid has implemented two demonstration projects testing the potential for scalability and supporting different customer needs. *The Clifton Park Demand Reduction Demonstration Project* focuses on engaging and informing customers about their energy use so they can better manage their consumption. National Grid provides residential customers near real-time energy consumption data with a focus on establishing price signals to incent reductions in usage with an emphasis on system peak. It is hoped that customers will look to third-party vendors to help manage consumption as they become more aware of their energy use. With the Phase I Pre-Advanced Metering Functionality installation work underway, National Grid believes it is possible to create more responsive relationships by leveraging infrastructure, customer outreach, price signals, and DER products and services which incentivize customers to reduce peak load and energy use. *The Fruit Belt Neighborhood Solar Demonstration Project* provides LMI income customers within this Buffalo, New York neighborhood access to solar energy resources, solar bill credits, and energy efficiency offerings to further drive energy bill savings and improved energy efficiency. Learnings from this demonstration project will clarify the extent to which clean energy can be provided to underserved customer groups. In addition, utilities may learn how they can issue RFPs to third-party vendors to market energy efficiency, PV and installation services that benefit the residential property owner. This demonstration project supports multiple REV goals and progress continues to be made in the areas of customer engagement, marketing material development, and solar PV host selection.

Con Edison's *CONnectED Homes Platform* and *Building Efficiency Marketplace* focus on educating customers and streamlining the connections between customers and energy efficiency market partners. The primary goals of these two demonstration projects are to dramatically increase the volume of efficiency related market activity, enable customers to more quickly realize the benefits of energy efficiency and demand management, and deliver enhanced customer engagement with data-driven insights. *CONnectED Homes* seeks to provide targeted residential customers with a set of tools designed to proactively connect them with cost-effective energy efficiency products and services and distributed generation offering. It is expected that this demonstration project will help remove the barriers to residential adoption of DERs and connect customers with third-party vendors for assistance and implementation.

To that end, Con Ed's customers are receiving information on targeted offerings, high usage alerts, direct small product purchases, Wi-Fi thermostats and Sealed Home Services. *Building Efficiency Marketplace* is designed to examine how interval meter data analytics can be leveraged to enable targeting and multi-channel engagement of commercial customers with high energy efficiency savings and demand reduction potential. The Project has developed a web-based portal to engage customers with details about how their buildings consume energy today, their potential energy savings and demand reduction opportunities, as well as the Marketplace to streamline connections between customers and energy efficiency market partners. Virtual, automated savings measurement and verification will be provided to

⁶⁰ REV demonstration projects can be found on the NYS Department of Public Service website (www3.dps.ny.gov/W/PSCWeb.nsf/All/B2D9D834B0D307C685257F3F006FF1D9?).

customers, giving them visibility into achieved savings and maximizing the likelihood that implemented projects continue to perform over time.

Orange & Rockland's (O&R) *Customer Engagement Marketplace Platform (CEMP)* is a marketplace providing customers with DER and energy efficiency offerings, targeted incentives, easy to use interactive tools, and access to recommended third-party suppliers. The *CEMP* leverages residential customer data and analytics to educate the customer and deliver specific DER and energy efficiency solutions. The platform enhances O&R's engagement with customers by providing useful tools and information to help make informed energy choices. The platform is designed to encourage customer participation in DER and energy efficiency offerings and generate new utility revenue opportunities through the engagement third-party suppliers. O&R launched the MY ORU Store as one of the first components of *CEMP* and residential customers are now able to purchase a wide range of energy efficiency products including Wi-Fi thermostats, LED lighting, advanced power stripes, and other energy and water saving devices.

Central Hudson has implemented a seamless customer engagement platform, *CenHub Marketplace*. *CenHub* is an energy advisory platform providing insight into energy usage for all residential customers. The platform informs customers about energy and cost savings programs in addition to information on how to better manage their consumption. Customers can purchase products and services through the online marketplace and automatically apply rebates at checkout. The convenient and streamlined process is intended to accelerate customers' adoption of energy efficiency and lower third-party customer acquisition and transaction costs. It is expected that *CenHub* will also lower third-party customer acquisition and transaction costs, and potentially provide new revenue streams. In the last quarter of 2016, the website had over 12,000 hits with 48% of the traffic coming from first time visitors to the online store, and over 3,800 energy efficiency products were sold.

Rochester Gas and Electric Corporation (RG&E) has implemented an online platform, *Energy Marketplace*, to test energy-related online transactions, customer satisfaction and the delivery of more comprehensive energy solutions for customers. The *Energy Marketplace* specifically supports the development of retail markets by providing a platform for third-party providers to market products to customers. RG&E also named the *Energy Marketplace*, the RG&E Your Energy Saving Store "YES Store" where customers are now able to shop for and compare energy-related products to better manage their energy use. The platform provides customer engagement and awareness through targeted messaging and information, as well as the ability to connect with a DER provider to implement solutions.

New York State Electric and Gas (NYSEG) has implemented the *Community Energy Coordination (CEC)* Demonstration Project to reduce customer barriers to the adoption of DER's. Under the CEC demonstration project, NYSEG will facilitate the marketing of three DER's: residential solar, community solar and energy efficiency services, directly to its customers. NYSEG's customers will be encouraged to go to the online service marketplace to gather information and connect with third-party service providers.

4 Factors Influencing Energy Efficiency Investments

A number of issues affect the degree to which energy efficiency investments occur, including financing, the valuing of energy efficiency investments within the existing regulatory construct, and utility incentives regarding the use of these resources. Barriers to more energy efficiency investments can result from lack of financing, the utility not being encouraged to consider energy efficiency in the same light as other resources, or from difficulties in measuring energy efficiency resources to the same extent as more traditional grid architecture. Consideration of these issues contributes to a more fundamental understanding of the present limitations on energy efficiency procurements and markets, and allows policy makers insight into needed reforms that should lead to more sustainable markets in this area. Various regulatory reforms are attempting to address these barriers, as discussed below.

4.1 Financing

Many efficiency projects require significant upfront capital, so limitations on access to these resources can have a significant impact on energy efficiency deployment. Although a project sponsor may have access to sufficient capital resources, an efficiency investment may not meet internal return hurdles nor win resource allocation decisions, as it is often not a core investment. In some cases (and particularly in LMI sectors), capital resources are not available for efficiency projects, especially for the more capital-intensive efficiency investments. Thus, third-party capital providers, either through the banking system, capital markets or private investment capital, are important partners in creating a well-functioning efficiency market.

The impact of financing costs can be high, particularly for companies that leverage energy service agreements that tie payments to energy savings. For example, a corporation may have a 30% Internal Rate of Return (IRR) hurdle rate, in which case a dollar of annual energy savings over 20 years may only justify \$3.50 of upfront investment. Leveraging third party finance, if a company has a 15% (IRR) hurdle rate from the banks, a dollar of annual energy savings over 20 years may only justify \$7 of upfront investment. On the other hand, a lower cost of capital with a 5% hurdle rate would enable over \$16 of upfront investment with that same dollar of annual energy savings.

The cost of capital is therefore an important leverage point in private sector financing. The fastest way to replace ratepayer funds with private capital, therefore, is to lower the cost of financing. In doing this, there is a chicken-and-egg factor at play. Efficiency advocates point to the lack of financing capital to help scale the market, while finance professionals point to the lack of demand for efficiency project financing, thought to be indicative of a low level of efficiency investment activity. Any additional utility procurement investment to capture the grid and externality value of energy savings can therefore be used to reduce the cost of capital in the short term. In the long term, however, the cost of capital will be lowered by the fundamental market forces of higher volume, longer repayment history, and more sophisticated risk analysis.

Energy efficiency finance is an emerging field, one with a few notable success stories (for example, residential Property Assessed Clean Energy (PACE) financing in California, and financing of Energy

Performance Contracts), and a considerable amount of frustration. The following issues are prevalent in this market:

- The concept of financing negawatts is new and untested.
- Creditworthiness must be established. Typically, the credit of the existing borrower or building must be understood and vetted. In the single family residential sector, this can be addressed through customer credit analysis or FICO scores. However, in the commercial, multifamily and institutional sectors, real estate analysis (or institutional credit analysis) is required. It is difficult to divorce the efficiency cash flows from the credit of the host property.
- Traditional loans have not proven popular in the energy efficiency sector compared to PACE financing or Energy Savings Agreements (ESA, e.g. pay with your savings agreements). However, these financing alternatives do not have as much repayment data as traditional consumer loans.
- Lenders are looking for a high degree of predictability in the cash flow analysis. Efficiency cash flows can be impacted by energy prices, weather, equipment and operator performance. If price stability on individual transactions can be established through a stable efficiency unit pricing mechanism, this will support greater predictability of cash flows, but will not eliminate all cash flow variability.
- Absent the potential of more sophisticated measurement methodologies (i.e., a standardized EE meter), it is difficult to isolate, quantify and value efficiency cash flows. This makes it challenging for lenders to ascribe value to efficiency cash flows in a manner that is conducive to credit underwriting methods. Most lenders today do not “underwrite savings” although progress is being made in socializing lenders to this approach.
- There is a lack of data supporting the predictability and longevity of efficiency cash flows. Generalized data sets allow lenders to better understand the ranges of performance, thus helping to better quantify credit risk. Absent such data, risk premiums tend to increase, and underwriting will tend to be more conservative.
- Efficiency project returns are subject to equipment and operator performance risk, which is poorly understood by lenders. Most lenders do not have staff qualified to assess these risks and returns. Absent more robust and lengthy data sets on performance, insurance products and guarantees from specialized institutions (e.g., New York Green Bank) can mitigate this barrier.
- Efficiency is not one thing; it is an extensive list of various measures which must be individually and collectively understood by lenders. Most lenders lack engineering expertise, or even basic familiarity with these measures.
- Much efficiency equipment does not have hard asset or collateral value. Thus, unless there is a lien on the underlying property (as in the case of PACE financing or a “green mortgage”) collateral value is weak and the financing transactions are generally viewed as unsecured (or minimally

secured). This is complicated by the fact that efficiency projects often have relatively high soft costs and labor costs in relation to equipment costs.

- Existing financing arrangements (mortgages and other forms of financing) on real property often bar or limit the opportunity for incremental or supplement loans, secured or in some cases unsecured. Thus, lender consent is often required from an existing lender, complicating the financing transaction and rendering it costlier. Efficiency finance products that do not require lender consent (for example, certain ESAs or unsecured loans) can mitigate this issue.
- Because of the relatively low cost of energy and high labor, design intensity, and transactional costs in relation to capital expenditure, many efficiency projects have long payback periods. Thus, low cost, long-term financing is key, and that is often difficult to achieve on an unsecured basis. PACE and green mortgage products can mitigate this barrier.
- Volumes are low, and the market is fragmented. Fragmentation is a result of multiple building sectors and subsectors, with a wide range of credit attributes, and a wide range of technologies and technology providers. Thus, it is difficult to come up with a standardized financing product offering that appeals to a wide swath of customers.
- There is currently no established secondary market for efficiency loans, although efforts are underway to encourage this through PACE programs and entities like the New York Green Bank. Without established secondary markets, lenders must plan to hold loans to term on the balance sheet which limits the overall availability of capital to the sector.

This long list of issues illustrates financing energy efficiency is a complicated undertaking with average (at best) returns for lenders in today's market. That said, efficiency investments are sound economic investments, with numerous co-benefits for project sponsors and increasing regulatory drivers (e.g., NYC's Greener Greater Buildings laws). New York has an opportunity to improve the bankability of the sector, by advancing structures and market principles that will allow utilities to compensate project sponsors and market actors for the values of a negawatt that they are not currently able to capture. It is also important to emphasize the role of specialized and mission-based financiers and the opportunities for product innovation to help address barriers.

Fortunately, New York has the benefit of many engaged lending organizations and a full suite of efficiency products (though not always available in all areas of the State). The State has PACE enabling legislation, paving the way for individual jurisdictions to establish PACE programs. Energize New York is running a nascent but promising C-PACE program based in the Hudson Valley and active in several localities. On-bill repayment has been successfully utilized in the State in support of the residential efficiency market. Specialized lenders such as NYCEEC, M-Core Credit, Barret Capital and others are actively lending to efficiency projects.

New York also has the benefit of a well-capitalized Green Bank that is eager to participate in the development of efficiency markets. The Green Bank has made numerous efforts to engage with efficiency borrowers and small-scale lenders, and although quite a small percentage of their current portfolio

represents efficiency investments, they stand ready to supply capital to the sector. Several community development finance institutions (CDFIs) and specialized lenders to the affordable housing sector have made significant commitments to efficiency, notably CPC, Enterprise, NYC's Department of Housing Preservation and Development, NYC's Housing Development Corporation, and NYS's Housing and Community Renewal, as well as several community development groups within major money center banks. Community banks and credit unions are also engaged.

Especially in the early stages of efficiency market development, lenders with a mission focus (organizational objectives beyond pure investment return) will be key to ensuring adequate access to financing resources. NYCEEC, operating primarily in the NYC market, exclusively finances energy efficiency and clean energy projects. NYCEEC's experience suggests that there are many building sectors and efficiency projects and technologies for which highly flexible, attractively priced, fixed-rate, generally unsecured debt financing – with features typically unavailable today through traditional finance institutions – is necessary to complete projects. Once greater scale in market activity is achieved, then more traditional lenders can be expected to enter the field, providing additional liquidity to economically sound investments.

Cost of capital is of course an important consideration to any borrower, although the experience in the field suggests that cost of capital itself is often not a constraining factor (the LMI sector is a notable exception). We are still in a historically low interest rate environment, though that may not remain the case in the coming years. Considerations that may be equally if not more important to project sponsors are:

- Meaningful positive cash flow after financing costs
- Longer financing terms (that help to create positive cash flows)
- Fixed rate versus floating rate financing, with fixed rate being preferred
- Risk premiums (although most current financing arrangements are driven more by underlying real estate and collateral analysis)

Banks and other debt capital resources generally require that financeable investments demonstrate creditworthiness (the ability and willingness to repay), cash flow predictability (which is enhanced by price certainty), and appropriate legal contractual protections before they feel comfortable financing new kinds of projects. Any market structure should therefore keep in mind bankability of cash flows from sales of efficiency resource units, and specifically seek to address the barriers identified above.

Another important element in attracting capital partners to support a new market is volume and standardization. Efficiency investments tend to be small in scale (as compared with energy generation projects, or real estate investments). Amongst specialized efficiency lenders, transaction size ranges from \$50,000 (or less in some cases) to \$3-5 million. From a capital markets perspective, aggregate volumes of less than \$100 million annually are difficult to serve. Thus, achieving sufficient scale that makes it worthwhile for a financier to invest in the analysis, development of credit parameters and the professional expertise required to evaluate the credit and bankability of a new asset class is important. Without a reliable indication of volume, bankability cannot be assured.

Capital solutions cannot flourish without sufficient demand. As New York invests in advancing efficiency markets by following a set of policies designed to create a greater level of efficiency transactions

between building owners and market actors (less reliant on traditional efficiency programming), opportunities for both specialized and traditional financiers to enter this market will increase. To facilitate this transition, efforts should be made to support predictability in cash flow analysis, to make generalized data sets available, and uniformly standardize measurement of savings to ascribe value to EE.

4.2 Valuing Energy Efficiency

Barriers to more energy efficiency investments can result from the utility not being encouraged to consider energy efficiency in the same light as other resources, or from difficulties in measuring energy efficiency resources to the same extent as more traditional grid architecture. Various regulatory reforms are attempting to address the first barrier, including changing the way that utilities consider energy efficiency resources in their internal evaluation of resource options, as explained in Section 4.2.1 below, and modifying cost recovery policies and performance incentives, as discussed in Section 4.3. Potential solutions to the second barrier may include smart metering deployment and advanced M&V, as discussed in Section 4.2.2.

4.2.1 BCA Framework

Under the BCA Framework Order, the PSC directed utilities to develop BCA handbooks to provide a common methodology for calculating benefits and costs of projects and investments, including energy efficiency. EE has several potential benefits, many of which are currently quantifiable and some which are not. The BCA Framework requires utilities to calculate the monetary value of some of these BCA components in their evaluation of competing resource needs. Where energy efficiency is evaluated alongside traditional utility resources, the BCA is applied to both, and the same cost recovery framework is used for both types of resources. In many cases, however, such a side-by-side comparison is difficult, because energy efficiency may provide many benefits at once, reducing the need for a variety of different types of resources, which in turn may provide some benefits that energy efficiency does not provide. Utilities engage in some form of BCA continuously for all manner of decisions and analyses, at different levels of complexity depending on the significance and time-frame of the action.

The Commission adopted the Societal Costs Test (SCT) as the primary measure of cost effectiveness under the BCA Framework. The chart below details the various values that are included within the SCT. These values will be continuously refined and updated by the utilities through a BCA Handbook. The value of different resource types is to be explicitly included in the Handbook, as well as examples of how all benefit and cost components will be applied to an illustrative portfolio of alternative resources and a description of the sensitivity analysis on key assumptions that will be applied to the BCA.

	BCA TEST PERSPECTIVE
BENEFITS	Societal (SCT)
Bulk System	
Avoided Generation Capacity (ICAP), including Reserve Margin	√
Avoided Energy (LBMP)	√
Avoided Transmission Capacity Infrastructure and related O&M	√
Avoided Transmission Losses	√
Avoided Ancillary Services (e.g. operating reserves, regulation, etc.)	√
Wholesale Market Price Impacts	--
Distribution System	
Avoided Distribution Capacity Infrastructure	√
Avoided O&M	√
Avoided Distribution Losses	√
Reliability / Resiliency	
Net Avoided Restoration Costs	√
Net Avoided Outage Costs	√
External	
Net Avoided Green House Gases	√
Net Avoided Criteria Air Pollutants	√
Avoided Water Impacts	√
Avoided Land Impacts	√
Net Non-Energy Benefits relate to utility or grid operations (e.g. avoided service terminations, avoided uncollectible bills, avoided noise and odor impacts, to the extent not already included above)	√
COSTS	
Program Administration Costs (including rebates, costs of market interventions, and measurement & verification Costs)	√
Added Ancillary Service Costs	√
Incremental Transmission & Distribution and DSP Costs (including incremental metering and communications)	√
Participant DER Cost (reduced by rebates, if included above)	√
Lost Utility Revenue	--
Shareholder Incentives	--
Net Non-Energy Costs (e.g. indoor emissions, noise disturbance)	√

Some members of the Working Group think the Order has undervalued energy efficiency measures that have significant non-energy benefits. The SCT includes “Participant DER Cost (reduced by rebates)” in the “cost” side of the equation. The SCT also includes “Net Non-Energy Benefits,” which do not include societal benefits that are difficult to quantify at this time. Given the fact that customers are often motivated by non-energy benefits (e.g. comfort, health, productivity, property value, etc.), several group members believe that currently unquantified non-energy benefits are by definition equal to customer cost. For example, if a single-family homeowner has comfort issues (e.g. drafty rooms, etc.), and the customer cost (after rebates) of the insulation project they purchase is \$5,000, then they are defining the non-energy benefits as at least \$5,000. Without this interpretation, many energy efficiency measures, particularly deep

retrofit measures that are more expensive and have a large non-energy impact, may result in low BCA values, leading to their exclusion in portfolios for which the BCA is applied, thus potentially reducing a large source of potential energy savings. The bottom line is that customers' spending decisions should not be penalized as long as the ratepayer or utility investment is creating net benefits within the remaining BCA framework.

4.2.2 Advanced M&V

While this report does not focus on M&V, it is an important prerequisite for markets and procurement. Without a standard accounting of energy savings, market actors and other stakeholders cannot exchange value related to energy savings. Traditionally, M&V has been determined by deemed savings or calculations of energy saved based on engineering analysis that may incorporate field measurements (also referred to here as M&V 1.0). M&V 1.0 has been deployed for decades to evaluate the performance and effectiveness of energy efficiency investments, and while M&V 1.0 provides a standardized approach, it does not necessarily provide flexibility, accuracy, or uniformity (e.g. different engineers may arrive at different energy savings results). For example, M&V 1.0 has historically been inaccurate compared to weather-normalized billing analyses, and can also be inconsistent across jurisdictions depending on key assumptions⁶¹.

Because of the limitations of M&V 1.0, many industry stakeholders have been studying new M&V models that rely on meter data. As discussed in a recent Lawrence Berkeley National Laboratory report,⁶² advances in data granularity in terms of frequency, volume, and end-use detail, and automated analytics that provide ongoing, near real-time savings estimates have led to advanced measurement and verification or M&V 2.0. M&V 2.0 can provide stakeholders with more timely and detailed information, allowing for more actionable insights on energy efficiency programs and projects.

New information and communications technologies (ICTs) providing hourly or even greater granular energy usage data are enabling the reporting of energy use in buildings in near real-time. The increasing prevalence of ICTs including high-resolution smart meters, communicating smart thermostats, and nonintrusive load sub-metering devices are changing the way energy efficiency projects and programs are measured.⁶³ AMI software enhances reliability and timeliness by enabling the frequent collection and measurement of detailed, time-based, and consistent data. Automated analysis through the deployment of emerging software can use improved data access and advanced analytics to automate and accelerate the M&V process. These tools are advancing M&V by enabling ongoing monitoring and estimating of energy savings in near real-time, both for individual premises and for portfolios of homes or businesses.

Together with higher resolution data and multi-parameter models, these methods and technologies can capture the impact of efficiency on building load shape more accurately. These approaches are intended

⁶¹ Greentech Media, "Lies, Damned Lies and Modeling: Energy Efficiency's Problem with Tracking Savings," June 3, 2015, www.greentechmedia.com/articles/read/Overcoming-Energy-Efficiencys-Problem-With-Tracking-Savings

⁶² Lawrence Berkeley National Laboratory (LBL), "The Status and Promise of Advanced M&V; An Overview of "M&V 2.0" Methods, Tools, and Applications", February 2017, <https://buildings.lbl.gov/sites/all/files/lbnl-1007125.pdf>

⁶³ Id.

to be conducted more quickly, more accurately, at a lower cost, and with greater value than non-automated methods. The ability of such tools to deliver these benefits is still being explored and evaluated; however, such benefits would accrue to various stakeholders across the commercial, industrial, and residential sectors.⁶⁴ With accelerated program feedback and enhanced granularity in savings estimates, program administrators, evaluators, regulators, grid planners, the investment community, and energy customers will be provided a wide range benefits including quicker realization of the performance of programs and installed measures, providing more certainty when making investments in energy efficiency, adjusting programs more rapidly, better targeting and delivering of locational and temporal confirmation of energy efficiency impacts, and enhancing the engagement of energy customers.⁶⁵

These new advances in data analytics, availability and collection hold great promise for facilitating deeper energy savings through better customer engagement, program optimization, and increased accuracy and certainty in the measurement of energy savings. Wide implementation of M&V 2.0 has the ability to enhance energy efficiency activity through individual building initiatives, new markets and procurement models, which will emerge under REV.

4.3 Energy Efficiency Rate Recovery and Utility Incentives

Each of the procurement methods discussed in Section 3 of this report require a funding mechanism.⁶⁶ The manner in which a funding mechanism is designed influences utility investment in energy efficiency, and subsequently market confidence. Importantly, a funding mechanism is required whether utilities procure energy efficiency directly or source from market actors. As discussed above, the existence of the BCA framework alone does not provide clarity regarding funding of efficiency investments, even though it could be used to develop a framework that would provide such clarity.⁶⁷

Potential funding mechanisms are distinguished by the following factors: i) component of customer bills through which energy efficiency investments are recovered; ii) whether a return on capital or other utility incentive is permitted as part of that recovery; and iii) whether costs avoided through energy efficiency are specifically accounted for as part of the recovery mechanism. With any funding mechanism, it is important that utilities and market actors retain value from energy efficiency only to the extent that it produces ratepayer benefits. Given this principle, utilities and market actors need clear investment parameters so energy efficiency shifts from an obligation to a real investment.

4.3.1 Types of Recovery Mechanisms

A utility can recover energy efficiency investments in a variety of ways, including through its O&M and capital budgets (via rate cases), through a surcharge that is set each year in the ETIPS proceeding,

⁶⁴ Id.

⁶⁵ Id.

⁶⁶ We note that some activities may meaningfully advance some energy efficiency without additional funding. Better data access could help customers and developers identify energy efficiency opportunities, and utilities may be able to help developers generate customer leads in return for platform services revenues. Finally, rate design could advance energy efficiency that better responds to network and system constraints.

⁶⁷ For example, the Commission could conceivably articulate a rule that utilities may recover costs for any portfolio of efficiency investments that passes the BCA.

through supply rates, or any mix of the above. Currently, New York utilities recover most of their energy efficiency investments through a surcharge, although increasingly some of these costs are being included within O&M or capital budgets, and therefore, are recovered in distribution rates set by the PSC in periodic rate cases. Where these energy efficiency costs are recovered can have an impact on both a utility's perception of energy efficiency as a grid resource, and on market actors' expectations of risk in participating in energy efficiency procurements or markets.

Surcharge

Utility-administered energy efficiency budgets for 2016-2018 are funded through the System Benefit Charge, a surcharge on customers' bills.⁶⁸ Surcharges generally provide more flexibility to modify funding levels or programmatic attributes, and therefore has been used extensively on a variety of utility programs and budget categories. However, because surcharge-based funding may encourage utilities to treat energy efficiency spending separately from more routine O&M and capital budget expenses, it is unlikely that surcharges will be the cost recovery mechanism employed to recover incremental energy efficiency procurement costs in the future. As the Commission stated in the ETIPS Order, "energy efficiency efforts funded through a surcharge should remain capped."⁶⁹

Distribution rates

Utility energy efficiency investments may also be funded through distribution rates. The recent Con Edison Joint Proposal is an example of this method, where incremental energy efficiency costs are recovered in delivery rates rather than via a surcharge.⁷⁰ The PSC believes that incorporating these costs in distribution rates encourages utilities to treat energy efficiency investments more like traditional utility assets and works toward integrating energy efficiency into core utility operations.

Once energy efficiency costs are transferred from a surcharge to inclusion in the basic computation of a utility's revenue requirement, the costs are collected through the base rates established for various customer service classifications. There are two main options for collecting those costs in base rates: (a) inclusion of costs in rate base and (b) current recovery of costs. Including costs in rate base requires the utility to record the costs on its books as a regulatory asset. This asset is then amortized (depreciated) over a specific period of time. Costs that are amortized in any year are included in base rates for that year. Costs yet to be collected in rates (unamortized costs) are financed by the utility, like other utility capital investments. The utility is compensated for the costs of financing the unamortized amount when the pre-tax rate of return is multiplied against the unamortized amount. This amount is then included in base rates with the annual amortization. Allowing a return on the unamortized expense places energy efficiency investments on an equal footing with traditional capital infrastructure investments and works toward integrating energy efficiency into core utility operations. The approved joint settlement in the Con Edison rate case follows this model.⁷¹ Some utilities with cash flow challenges may not support such an approach because it requires the utility to finance unamortized costs.

⁶⁸ ETIPS Order, at pg. 28.

⁶⁹ Id.

⁷⁰ Case 16-E-0060, Order Approving Electric and Gas Rate Plans (issued January 25, 2017), p. 39, stating that "[T]he Company's base rates reflect the costs of its System Peak Reduction and Electric Vehicle Programs and an Energy Efficiency Program incremental to its Efficiency Transition Implementation Plan (ETIP)."

⁷¹ Id. p.39-40.

An alternative approach is to only permit recovery of costs for energy efficiency investments, without allowing a return on capital. Under such a model, utilities can be incented to carry out investments in energy efficiency through shareholder performance incentives (either Earnings Adjustment Mechanisms (EAMs) or shared savings), but incentives need to be at meaningful levels for success. Cost recovery coupled with performance incentives rather than permitting a return on capital spent can align utility incentives only with achievement rather than with capital spent, eliminating the incentive to spend more capital to achieve the same results.

Supply rates

Energy and capacity supply rates provide another potential option to fund energy efficiency investments. Were the Commission to adopt an obligation for LSEs to procure a specific amount of energy efficiency annually, the costs of such procurement could be reflected in supply rates in the same manner that CES procurement obligation costs may be passed through in supply rates. Supply rates could also be used to fund energy efficiency investments even absent a structure relying upon an LSE obligation. For example, utilities could explicitly account for the extent to which energy efficiency investments help meet a portion each year's NYISO installed reserve margin requirements, and fund a portion of their energy efficiency investments through supply rates in accordance with the capacity savings from those programs. This could have the effect of incentivizing utilities to seek out or encourage efficiency investments that more precisely decrease their capacity and energy costs.

Shared Savings

Shared savings is a rate recovery model that relies specifically on accounting for costs avoided by energy efficiency through estimating the costs that would otherwise be incurred. This approach can be employed for any energy efficiency expenditure, but has recently manifested itself in the development of non-wires alternatives (NWAs) that reduce the need for traditional transmission and distribution infrastructure.

Under this approach, energy efficiency is part of a portfolio of alternatives that replace a more traditional infrastructure alternative and result in an overall lower cost to customers than would have occurred otherwise. Energy efficiency costs are collected in rates and incented by providing a portion of the savings produced by the efficiency relative to the traditional investments that would have otherwise been necessary. Thus, while utility rates reflect energy efficiency costs and an incentive, the shared savings approach assures the total benefits to the public outweigh the costs.

While the shared savings incentive approach could be applied other energy efficiency incentives, it appears best suited to NWAs, because NWAs facilitate an easy side-by-side comparison of alternatives. At the same time, NWAs represent a relatively narrow class of energy efficiency opportunities because they entail valuing only the avoided transmission and distribution value of energy efficiency. In theory, the approach could be expanded to attempt to account for all of the different savings that efficiency provides. Existing sources of savings from energy efficiency include avoided capacity, avoided ZEC and REC purchase obligations, and avoided transmission value. In practice, however, this would likely prove to be quite complex, because different types of utility avoided costs are reflected in different portions of customer bills.

Presently, New York utilities fund energy efficiency through a combination of mechanisms, including surcharges, distribution rates, and a shared savings construct. Some of these recovery mechanisms are finalized through rate cases, which often take place over a three-year cycle. The working group has concluded that this can create market uncertainty beyond the rate case horizon, making it difficult for utilities to develop procurement mechanisms. A utility may be disincented from engaging in the high amount of upfront work required to develop a new program or procurement mechanism, for example, since it is unclear whether it will be granted a sufficient amount of funding through subsequent rate cases to continue with the new approach in future years.

Further, the de-centralized nature of rate cases can make it difficult for market actors to follow the overall development of New York's energy efficiency market and access procurement opportunities. In addition, it is more challenging for advocates to participate to ensure that the full potential value of energy efficiency investments in each service territory is being realized. These issues could be mitigated through the development of a central framework that establishes rules for funding efficiency procurement mechanisms and specifies how and when any deviations to that framework may be made in the context of individual rate cases.

4.3.2 Utility Energy Efficiency Performance Incentives

While utilities in New York have developed and implemented energy efficiency programs for many years, they have not been integrated into the core business operations. With the development of the REV proceeding and subsequent rate cases, New York is at the forefront of figuring out how to integrate energy efficiency alongside other capital investments that are recovered through rates. At the same time, new REV policies are aiming to motivate utilities to execute on additional objectives through such mechanisms as return-on-equity adders and shared savings.

New York utilities have been effectively held to performance standards for many years. However, these performance standards are typically negative adjustments tied to basic service and reliability.⁷² Positive performance incentives for energy efficiency and broader outcomes were recently introduced by the Commission in the form of earnings adjustment mechanisms (EAMs). The Commission established that “[i]ncentive opportunities should be financially meaningful and structured such that they encourage enterprise-wide attention at the utility and encourage strategic, portfolio-level approaches beyond narrow programs.”⁷³ Earnings resulting from total EAMs are to be initially limited to a maximum of 100 basis points of utility average annual rate base. The State is at an early stage in understanding the impact or effectiveness of such incentive mechanisms, but the next few years will likely provide useful lessons.

The issue of utilities' achievement of 'enterprise-wide attention' and 'financially meaningful' performance on energy efficiency savings is beginning to gain attention across the country. A recent paper from CLEAResult explored the subject in some detail. In its *Lower Spending, Higher Returns* White

⁷² See Track 2 Order.

⁷³ Id., at pg. 68.

Paper⁷⁴, authors surveyed Wall Street analysts, who suggested that a 10% performance incentive on, for example, a current 10% rate of return on equity (ROE) would positively impact shareholder value. This would increase ROE roughly 1 percentage point overall, to 11%. Current performance incentives in many states are important but insufficient to motivate boards of directors and utility executives to drive the shift in culture, behavior, and motivation to pursue energy efficiency investments, which ultimately lower spending.

Pathway to a 21st Century Electric Utility, a report commissioned by Ceres, found that “California has been proactive in providing incentives for utilities for encouraging energy efficiency, [but] the incentives reported in 2014 were less than 1.25% of pre-tax operating income for the largest utilities, or less than 0.1% in additional earned ROE.⁷⁵” The *Lower Spending, Higher Returns* survey of the broader group of utilities shows that performance incentive mechanism (PIM) awards in the study year 2013 averaged less than 1% of pre-tax operating income. That level of incentive, the authors conclude, is insufficient to encourage utilities to prioritize potentially lower cost EE/DERs solutions over higher cost infrastructure. The survey indicated that analysts sought a 10% or greater long-term, potential impact from performance incentives to give valuation weight to PIMs or EAMs in their assessment. Other factors they cited that would impact their weight of PIMs in their valuations included sustainability, transparency, and timeliness. The paper concludes that changes can be phased in to co-exist with traditional cost of service regulation, but performance incentives need to be robust enough to change utilities’ priorities⁷⁶.

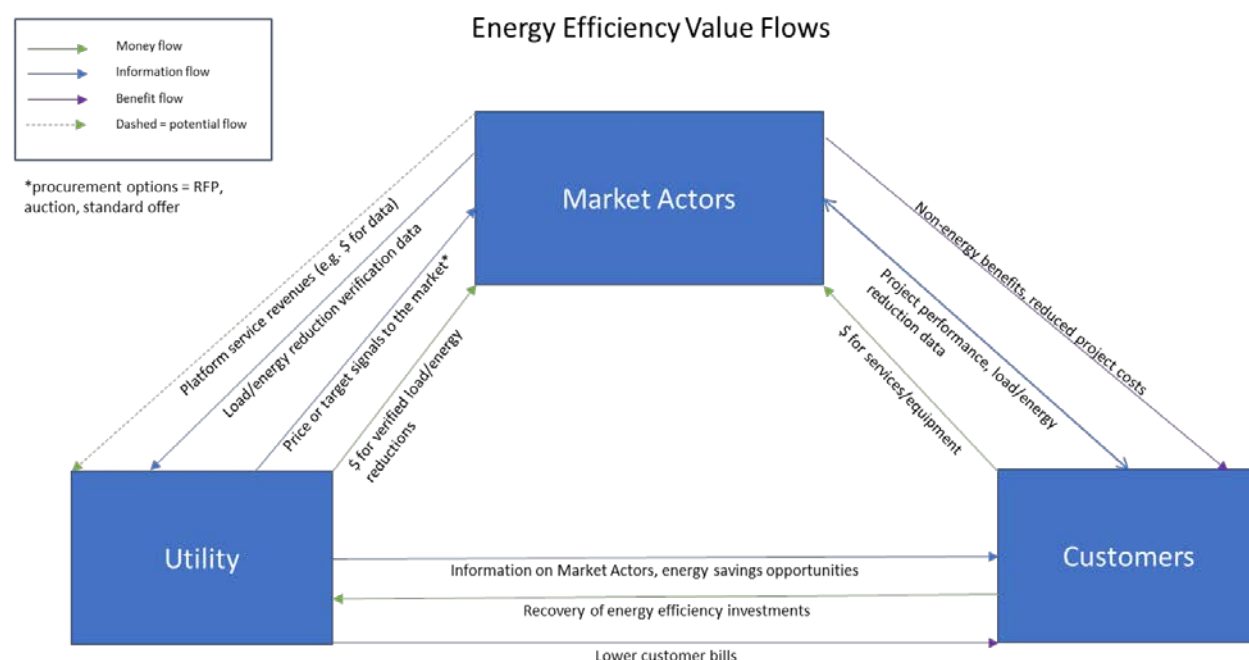
⁷⁴ Lower Spending, Higher Returns, Aligning Performance Incentives to Accelerate a 21st Century Utility Model, CLEAResult, Peter Kind, Doug Lewin (January 2017).

⁷⁵ Pathway to a 21st Century Utility, Ceres (2015).

⁷⁶ Lower Spending, Higher Returns, Aligning Performance Incentives to Accelerate a 21st Century Utility Model, CLEAResult, Peter Kind, Doug Lewin (January 2017).

5 Pay for Performance and New Business Models

The Working Group sought to understand how funds, information, and benefits would flow between utilities, market actors, and customers with market-based approaches, and developed the following graphic to illustrate these flows. Pay for Performance program structures and new business models that reflect opportunities for advancing market-based approaches are discussed below.



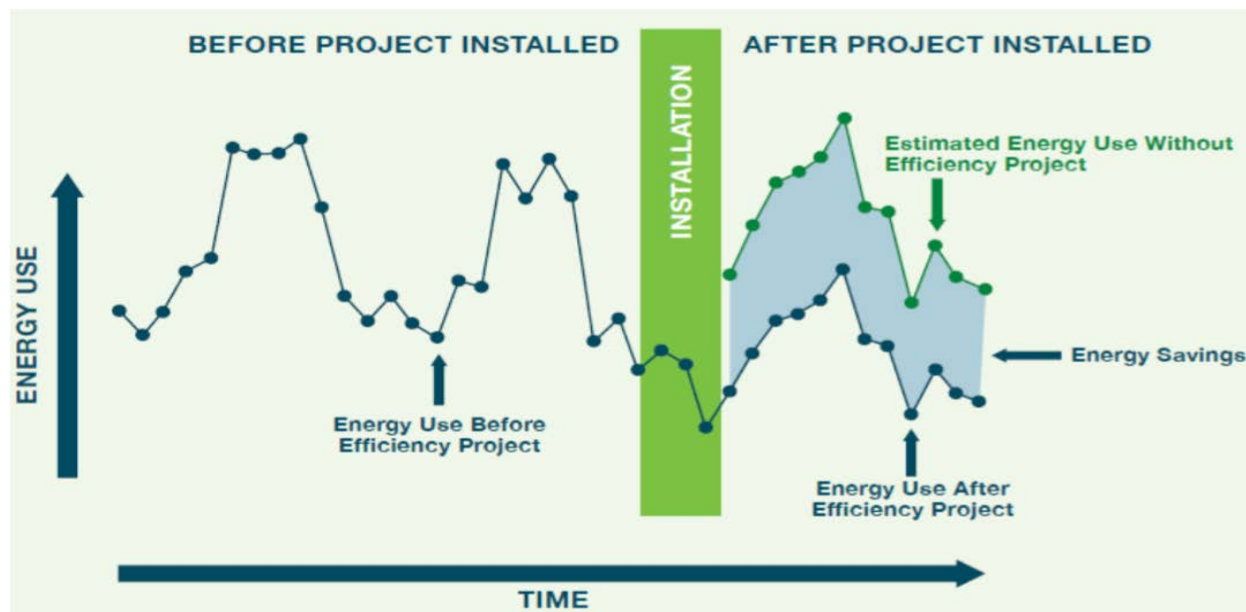
5.1 Pay for Performance Program Approaches

The concept of Pay for Performance (P4P) has been in existence for some time, and is well-chronicled in *Putting Your Money Where Your Meter Is: A Study of Pay-for-Performance Energy Efficiency Programs in the United States*.⁷⁷ As discussed in the report, “Overall motivation for the P4P examples falls into five general areas: meeting EE or broader demand-side management (DSM) goals for energy savings, using EE as a resource on the grid, financing EE investments using cash flow from the energy savings, targeting specific sectors for EE savings, and developing an EE services market.” A P4P program buys actual efficiency savings on an ongoing basis from market actors and aggregators. Previously, P4P relied on lengthy M&V processes to measure the impact of energy efficiency, which increased costs, thereby limiting the effectiveness for this approach. While market actors, utilities, and regulators are still gaining comfort with advanced M&V techniques (see section 4.2.2), this innovation has caused there to be renewed interest in P4P programs and the potential to unlock new benefits of this approach.

Energy efficiency savings cannot be directly measured, because it is not possible to measure how much energy would have been used if the efficiency improvements had not been installed. Advanced M&V

⁷⁷ Putting Your Money Where Your Meter Is: A study of pay-for-performance energy efficiency programs in the United States. NRDC. January 2017 (www.nrdc.org/sites/default/files/pay-for-performance-efficiency-report.pdf).

techniques leveraged at the portfolio level with an open source EE Meter can now streamline the calculation of baseline estimates and therefore ongoing savings.



Energy Use Before and After Project Implementation with Counterfactual⁷⁸

Competitive markets can animate industry when private companies can align potential profits with acceptable levels of risk. This is more difficult for regulated utilities who are investing ratepayer dollars, because they must ensure their investments are as cost-effective as possible. This dynamic forces programs to try to limit risk via heavy-handed upfront quality assurance, often limiting the potential of market animation by lengthening sales cycles and restricting deal flow. When states and utilities only pay for the value of realized energy efficiency, it frees the market to experiment with new models of delivering energy efficiency. P4P programs shift the risks and rewards for participants, utilities, aggregators, and regulators. They shift responsibility for obtaining energy savings from utilities and program administrators to market actors. This is effective for motivating persistent savings when the entity bearing the performance risk is responsible for installing and maintaining the energy-saving measures. This shifting of performance risk is critical because it aligns the market actor and aggregator profit potential with its realized savings over time, encouraging an ongoing relationship between participants and those parties to drive as much actual savings as possible.

The procurement method is a key component that will affect the impact of a P4P approach. Standard offer programs can be used in conjunction with P4P, and may be useful for initial implementation when pricing and risks are less understood, but auctions should ultimately result in more competitive pricing and innovation. A benefit of P4P with advanced M&V is that it does not force participants to focus on specific energy efficiency measures that are defined by the program administrator. Rather, market actors are free to experiment with different approaches to maximize their profit potential. As certain strategies show their effectiveness at creating profit, other companies will copy and augment those approaches to make them

⁷⁸ Putting Your Money Where Your Meter Is: A study of pay-for-performance energy efficiency programs in the United States. NRDC. January 2017 (www.nrdc.org/sites/default/files/pay-for-performance-efficiency-report.pdf).

more effective, and drive costs down. Thus, in implementing a new P4P program, it makes sense to procure at regular intervals and to potentially change the procurement method once more data is available. This will facilitate the participation of new companies and competitive pricing. In addition, procuring at regular intervals allows for prices to reflect changing geographic and temporal needs.

Another benefit of P4P with advanced M&V is it can increase confidence in the achievement of energy savings, unlocking the potential for energy efficiency to be employed more widely as a capacity resource for the electric power system. This new value stream would facilitate the creation of cash flows over time for third party aggregators, a critical component for market animation because it impacts bankability, as discussed in section 4.1. However, if a proprietary instead of an open source EE Meter is used, the goal of creating more uniform and standardized results that increase confidence may not be achieved. P4P programs with advanced M&V can be targeted to address particular types of savings (such as comprehensive retrofit projects with multiple energy efficiency measures and projects focused on behavioral and operational efficiency), specific locations, and/or system peaks with increased reliability. The accuracy of the baseline gets better over time with larger data sets and smart grids tracking electrons from creation to use, allowing administrators to continually improve programs, adjust portfolios based on evolving goals or market needs, and pilot innovative approaches.

P4P, with advanced M&V, may be a promising market mechanism that can enable scale and innovation while de-risking and minimizing the cost of acquiring energy efficiency over time for states and utilities. Traditional program implementers can continue to participate, but will have to compete with other aggregators in the market on a continual basis. Open competition drives innovation and cost reduction in a way traditional RFPs cannot. Transition to a flexible market driven approach will increase customer demand, reward innovation, and drive significant private capital investment to energy efficiency.

5.2 Sealed

Sealed is a start-up company based in New York that helps homeowners pay for home efficiency upgrades with their energy savings. With Sealed's HomeAdvance program, customers pay little to nothing out of pocket, and pay Sealed based on the amount of energy they save. Similar to a Power Purchase Agreement ("PPA"), Sealed is aligning financial reward with energy savings performance. Sealed calculates energy savings leveraging proprietary data, analytics, and software, which enables Sealed to effectively "guarantee" savings to customers and/or third parties (e.g. banks). While Sealed does not know how much an individual home will save, it guarantees a portfolio of energy savings using an actuarial approach.

Sealed works with local contractors that provide home energy consultations and construction services related to major efficiency retrofits (insulation, air sealing, HVAC, etc.). Contractors give customers the option to pay with their energy savings via the HomeAdvance program and work with Sealed to calculate the energy savings. Sealed customers receive a bill each month based on the energy they save, which is calculated based on past energy usage patterns and weather. Customers also have the option to consolidate their energy bills, with Sealed acting as a billing agent to pay the customers' utility bills on their behalf. If customers install additional efficiency improvements, Sealed invests additional capital in the home.

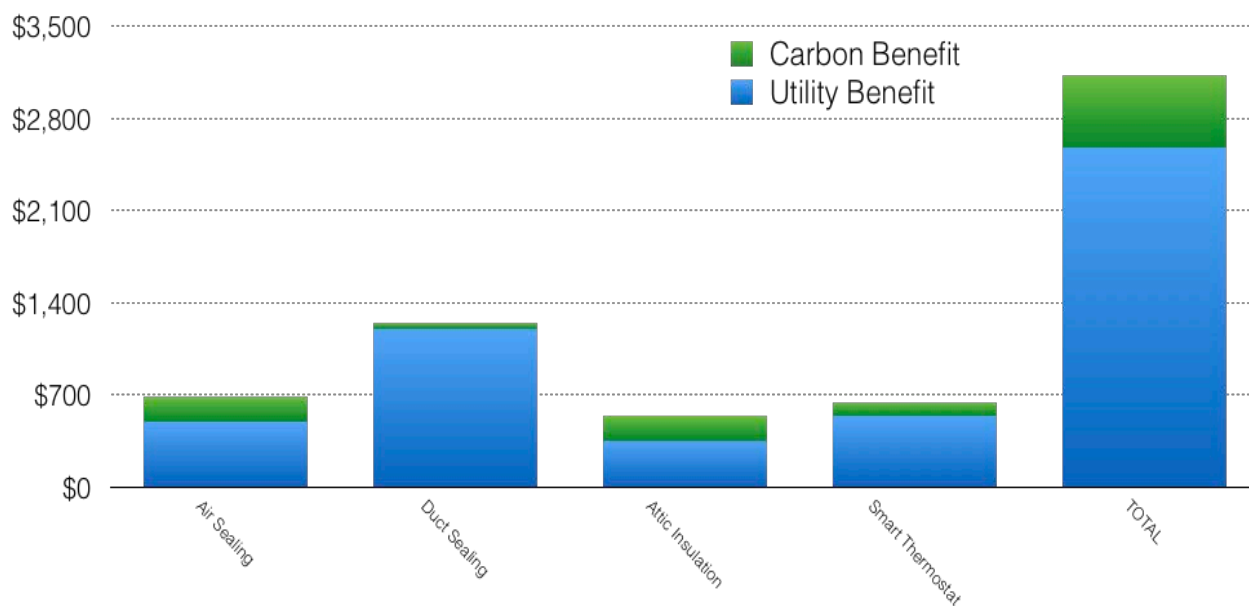
In 2016, Sealed partnered with the New York Green Bank to provide the upfront capital to customers. The Green Bank advances capital based on the expected energy savings, and is then paid back by customer energy savings payments. The Green Bank is therefore helping Sealed to animate the market by demonstrating the reliability of energy savings cash flows. In 2016, Sealed also partnered with several New York utilities, including two as part of REV Demonstrations (ConEdison Connected Homes Demonstration and Orange & Rockland Utilities Marketplace Demonstration). As part of these REV Demonstrations, Sealed is connecting with utility customers, and helping them solve comfort problems in their home that can be paid with their energy savings. Sealed pays the utilities (or their market partners) for these marketing services, providing a new revenue stream.

In 2017, Sealed received the first ever residential energy savings insurance policy from Hartford Steam Boiler, a large property insurance company owned by Munich Re. This policy enables Sealed to further reduce the risk of energy savings calculations to third parties, which should lower the cost of capital. Sealed is therefore demonstrating a private business model that requires no utility or ratepayer investments; however, participating in utility energy efficiency procurements would add another revenue stream and improve this business model. In the context of REV, Sealed's challenges are four-fold:

- Sealed's business is aligned with actual energy savings, but current rebates and incentives received by customers are based on project cost, not actual performance or price signals. Sealed is therefore not always able to reduce the cost sufficiently for customers, even if they are expected to save a lot of energy. This is especially true right now, as Sealed's cost of capital is higher due to the company's early stage.
- Sealed and their contractor partners have to deal with unpredictable program funding cycles rather than transparent pricing of negawatts based on the value of energy efficiency. This means there are unclear price signals being sent by utilities and NYSERDA regarding the value of energy savings, making it harder to target customers appropriately.
- Sealed's calculations rely on accurate historical energy usage information, which can be challenging for contractors to access easily. In addition, the Green Button protocol currently does not require actual versus estimate usage tags, thus forcing Sealed to create workarounds for each utility to obtain accurate energy usage data.
- Sealed's actuarial approach requires high quality data sets to accurately calculate energy savings. While Sealed has this data for many measures, it is difficult to obtain data on newer technologies (e.g. heat pumps) and non-traditional fuels (e.g. propane).

Sealed's business model is not dependent on utilities or efficiency procurement. In addition, the impact of efficiency procurement on a company like Sealed can be significant. The total utility value per standard BCA assumptions for a typical retrofit of a single-family home that heats with natural gas (e.g. air

sealing, duct sealing, attic insulation, and smart thermostat) is approximately \$3,000⁷⁹, or about half the cost of many retrofits. Even if that amount is reduced based on transaction costs and risk, utilities should be able to cost-effectively invest \$1500-\$2,000 per typical home retrofit. Combined with Sealed's HomeAdvance program (\$3000-\$4,000 contribution per home), that means that most New York homeowners could receive a no or very low cost retrofit. Currently, that is only possible with homeowners that heat with oil, have very high energy usage, and/or receive low-income subsidies.



Carbon and Utility Benefits Resulting from Home Retrofits

Sealed is planning to expand within New York and beyond, creating jobs both at the company and with many contractors. Sealed's model also demonstrates the potential for the market to take on energy savings risk, thus potentially removing the need for ratepayers (current state of affairs) or utilities to bear this risk.

5.3 Lime Energy

Lime Energy a national leader in providing utility clients with small-business-focused, pay-for-performance energy efficiency programs. Since 2009, through operation of small business direct install energy efficiency programs, Lime has provided NY State's investor-owned utilities with a reliable source of energy efficiency savings from an underserved market. Lime focuses on customer service excellence and have sought reductions in both project incentives and implementation costs for utility clients. Lime delivers energy savings through a customer-focused and technology-enabled program management platform with a dedicated regional management and operations teams in Western NY, Central NY, and in the Hudson Valley. Lime brings a deep established ecosystem that includes the world's largest manufacturers and distributors of smart building products, along with a network of 100 installation contractors in NY. Lime's extensive body of work has enabled investment in the technology and processes needed to cost-effectively

⁷⁹ Electric capacity value based on Appendix C to the BCA Framework Order. Electric distribution savings based on the DPS spreadsheet, "LRACs for Electric-Gas for 2013-Inflation". Carbon value assumption is \$27 per ton. Energy savings estimates based on the (upstate) TRM assumptions and typical retrofits performed by Sealed contractor partners. Discount rate is based on 5.5% utility discount rate and 3% societal discount rate, per the BCA Order.

serve this challenging market, and has yielded over 15,000 small- and medium-sized business (SMB) energy efficiency projects per year.



Current State: Utility Pay for Performance Model

Lime's use of a *Utility Pays for Performance* (UP4P) compensation structure is at the heart of its operation. UP4P model mitigates the utility's risk associated with paying for program administration and implementation functions while not receiving directly proportional energy savings results. The utility is only invoiced for kWh (and DTH) delivered. Lime does not charge separate fees for administration, staff time, material, or customer energy assessments (audits). The utility procures system-wide energy efficiency for a maximum fixed price from this difficult to serve customer segment. Other utility programs in NY, operated by Lime competitors, have also adopted the UP4P approach.

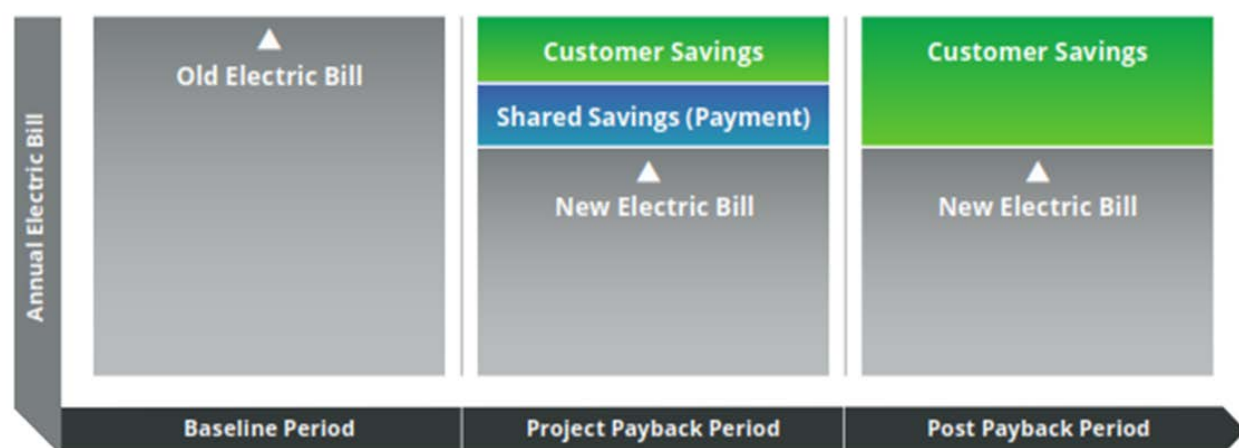
Benefits of this approach include:

- **Cost Efficiency.** Over the last two years, Lime's rate-payer-cost efficiency gains with the SMB sector have been tremendous. Lime has reduced the incentive levels in NY State utility programs by over 25% over the course of 2016, and the company continues to reduce rebate levels while adding project financing options.
- **Deeper Market Penetration.** Under this model, Lime is fully financially motivated to exceed the energy savings targets provided. Lime manages the budget on a cents-per-kWh basis, so as many customers as possible are served.
- **Customer Satisfaction.** Lime makes certain the customer is pleased all the way through project completion and acceptance. Without a customer acceptance, the energy savings cannot be accounted for and billed to the utility.
- **Embedded Quality.** Lime is only paid for installed energy savings that pass inspection.

Lime has developed some new approaches for serving SMBs that are aligned with REV goals. Lime has begun proposing a “no money down” customer offering that will rely on third-party financing in conjunction with a relatively low utility rebate. Project costs will be paid back as the customer experiences the energy savings. The customer’s “savings payment” will use advanced M&V based upon a pre-installation measured baseline and on-going post installation measurements using state-of-the-art, low-cost circuit level sub-metering. The use of sub-metering circuits with installed efficiency measures will not only determine the customer’s savings payment but will also provide the utility with ongoing M&V analysis.

Under the standard small business direct install program arrangement, Lime contracts with customers on a fixed-price basis, applying utility incentives to lower the overall amount payable by the customer for the project. Estimated energy savings and simple paybacks are presented to the customer in the project proposal for informational purposes -- to persuade the customer of the economic value -- but this information has no bearing on the project price. Lime is now testing a Customer Pay for Performance (CP4P) contract targeting small commercial customers. The energy savings presented in the customer proposal will be contractually guaranteed by Lime. Lime will market, scope, sell, finance, and perform the project, apply any utility buy-down funds. The customer will not be required to pay for any portion of the retrofit on an upfront basis, nor will they need to sign a project financing agreement. Instead – following the retrofit – the customer will be billed for measured, actual energy savings achieved based, making monthly payments during the term of the CP4P contract. Beyond the CP4P contract term, they will own the equipment free and clear and benefit from the ongoing savings of the installation.

Customer Experience Over Time



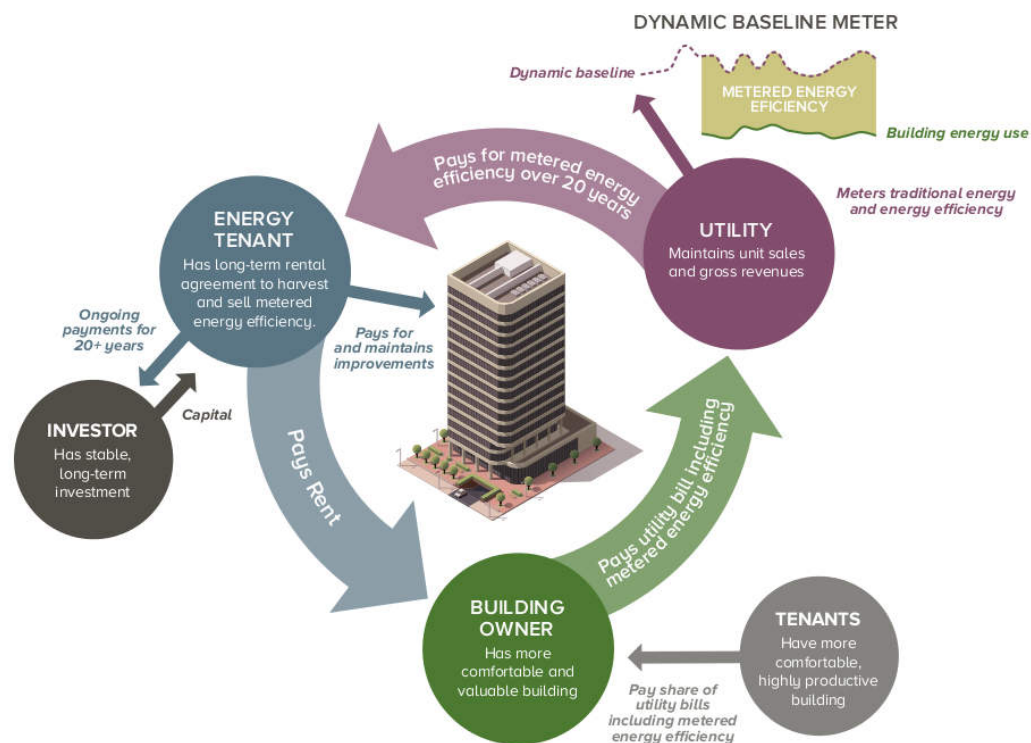
Pay-for-Performance/ Pay-through-Savings for the Customer

Lime has worked with a technology partner to develop a low-cost integrated package of circuit level sub-meters, data acquisition devices, and a cloud-based software solution -- in combination with a smartphone application for customer use. The solution is easy to install and minimizes disruptions for the customer’s business. Lime has been testing the solution in partnership with utility clients in commercial facilities in New York and Ohio, and it is ready to be installed at scale. This advanced M&V technology solution would have two major potential impacts: 1) The data collected can be used to verify savings,

compute a customer project performance report, and generate a bill for the payable portion of the savings; and 2) this process would eliminate the need for third-party consultants to perform complex sampling and modeling for M&V. The data collected through the solution can be used to verify savings on an empirical basis, particularly if the introduction of smart meters among these customers is going to take some time.

5.4 Metered Energy Efficiency Transaction Structure (MEETS)

Metered Energy Efficiency Transaction Structure (MEETS) is an innovative approach to aligning the incentives of all stakeholders for energy efficiency projects in commercial buildings. Retrofits in commercial buildings can generate significant energy savings over the life of the building (or the retrofitted equipment) and provide good returns on the initial investment. However, without opportunities for building owners, tenants, and utilities to benefit sufficiently from those savings, there is little incentive to drive the investment. Building owners only benefit from efficiency improvements while they own the building. If the payback is not within their planning horizon, they can simply pass on the energy costs to tenants, who often do not occupy a building long enough to realize the full value of savings.



How MEETS Works⁸⁰

⁸⁰ <http://www.meetscoalition.org/wp-content/uploads/HowMEETSWorks.jpg>

As illustrated above, a MEETS transaction aligns incentives for these parties in a structure in which outside financiers can invest. At the center of the structure is the EnergyTenant™, which could be the building owner, utility, or a third-party entity that holds an energy tenancy or equivalent rights.⁸¹ The EnergyTenant is financed by an investor to pay for and maintain energy efficiency retrofits to the building.⁸² The investor also pays rental fees via the EnergyTenant to the building owner for using the facility as a vehicle to harvest energy efficiency savings. The utility bills the facility at retail rates for both the energy consumed, as well as the metered energy efficiency yield. In effect, the utility bills the facility for energy that would have been consumed without retrofits. The utility then makes monthly payments to the EnergyTenant for actual energy savings based on a long-term PPA. This payment then goes to the investor in return for the upfront investment.

The savings achieved are measured and tracked using DeltaMeter software, an advanced M&V approach. Based on a simulation model derived from monthly billing data and local temperatures over a year, it creates a “dynamic baseline” of what the energy consumption would have been without efficiency upgrades to calculate energy savings at future temperatures and occupancy conditions. The long-term PPA circumvents the principal-agent problem by enabling the value of energy efficiency to pass on if the facility’s ownership or occupancy changes. It also provides additional benefits to the stakeholders in the following ways:

- **Utilities**

The payment they make for savings under the PPA become progressively cheaper as retail rates rise. They only pay for savings that are delivered, and acquire a reliable, large-scale, location-specific resources for planning. In addition, if utilities themselves function as the EnergyTenant, they have opportunity to earn a regulated rate of return from the retrofit investments.

- **Investors**

The investment produces a cash-flow that is long-term and reliable using well understood instruments like PPAs, or utility bonds and equities when utilities function as the EnergyTenant. They can also aggregate these investments into a portfolio for increased liquidity.

- **Building Owners**

Building owners see the value of their asset rise without risking their own capital through outside investment and with no need to be involved in the energy business. They also earn additional revenue through the rental payments from EnergyTenant.

- **Regulators and ISOs**

They can align the incentives between utilities, ratepayer advocates, environmental advocates, ESCOs, etc. and gain a long-term, reliable, location-specific, plannable, quantifiable resource.

⁸¹ MEETS: The Metered Energy Efficiency Transaction Structure. April 2016 (www.meetscoalition.org/wp-content/uploads/MEETS-AC-Description.pdf).

⁸² Putting Your Money Where Your Meter Is: A study of pay-for-performance energy efficiency programs in the United States. NRDC. January 2017 (www.nrdc.org/sites/default/files/pay-for-performance-efficiency-report.pdf).

5.5 Joule Assets

Joule Assets has created an investment fund to target an often-overlooked gap in the EE market: small-to-medium-sized commercial retrofit projects, from \$50,000 to \$500,000. Joule manages the Joule Energy Reduction Asset (ERA) Fund, a \$100m private equity fund that finances energy efficiency and demand response projects like HVAC, lighting, or energy management controls. Joule finances the contractors' energy efficiency installations, so that customers bear no upfront costs and are guaranteed savings. In addition, Joule also secures operations and management services from the contractor for their equipment, and provides ongoing management of the efficiency project including measurement and verification of performance. Depending on the contractor and customer, Joule offers multiple financing options, such as:

- Loan with fixed payment
- Service agreement with fixed payment
- Service agreement with guaranteed savings
- Service agreement with shared savings⁸³

Joule Assets works with contractors that implement energy efficiency upgrades in small-to-medium commercial buildings. Joule's financing helps energy efficiency contractors support a pipeline of customers and allows them to scale up. Joule also provides guidance to contractors unfamiliar with the array of incentives and market credits, thus helping to monetize untapped revenue streams beyond just energy savings. These include:

- DR rebates and market payments
- Dynamic pricing tariffs
- Peak demand management

The financing contract is typically 3-5 years.⁸⁴ During this period, Joule and the contractor share energy savings and demand response revenue generated by each facility, above and beyond the guaranteed energy savings to the customer. If the estimated savings are not realized, ERA Fund is covered by a cash collateral account and the loss reserve that the contractor puts up. Joule retains title to the installed equipment as well as the right to replace a non-performing contractor. The ERA Funds expected base returns are 8-10%⁸⁵.

⁸³ Joule Assets, Integrated Utility Services Model, available at twitter.com/JouleAssets/status/583980531970347011/photo/1.

⁸⁴ Joule Assets, "Frequently Asked Questions" (www.jouleassets.com/faq).

⁸⁵ Joule Assets, "ERA Fund Overview" (era.jouleassets.com/erafund-overview/).

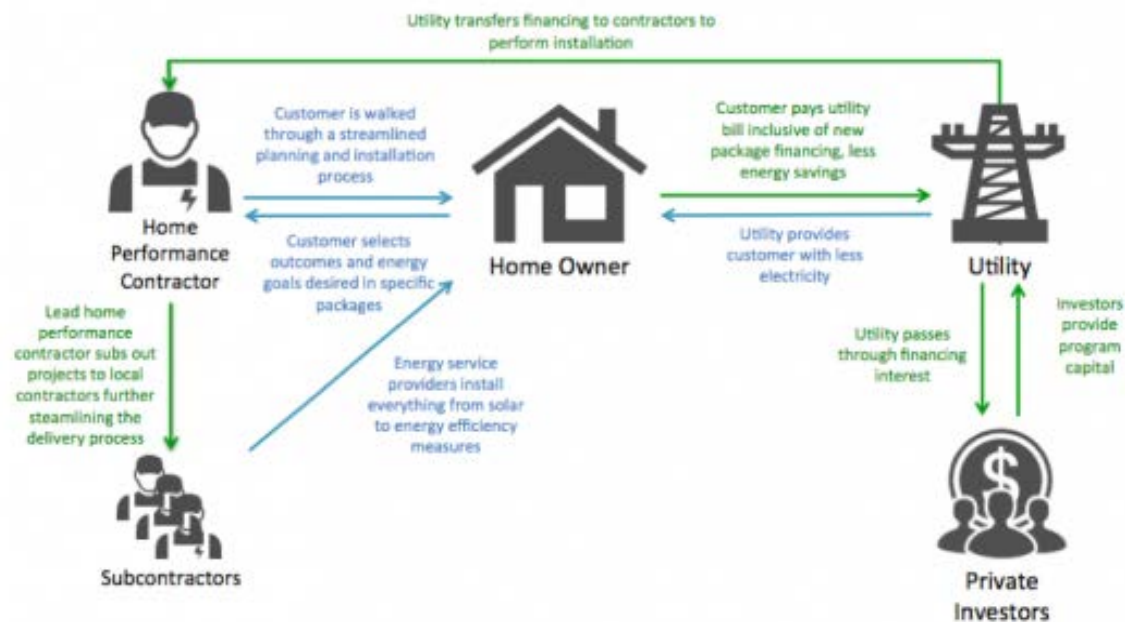


Diagram of an Integrated Utility Service Model: Joule Assets both acts as the private investor and secures funding for operations and management services from the home performance contractor or subcontractors.⁸⁶

⁸⁶ Joule Assets, Integrated Utility Services Model, available at <https://twitter.com/JouleAssets/status/583980531970347011/photo/1>.

6 Energy Efficiency Procurement and Markets Recommendations

The CEAC EEPM Working Group has identified a set of recommendations that include principles that should underlie the implementation of any energy efficiency procurement mechanism and/or market approach, and specific actionable decisions that the Commission can make to move energy efficiency procurement and markets forward.

As explained more fully below, the Working Group recommends general principles that should help guide the Commission, including: the prioritization of simplicity where appropriate and innovation when possible, particularly at the early stages of any new market; retaining existing market actors while attracting new ones; and additional complexity should be added over time to ensure a high-functioning and more competitive market that may more accurately estimate the quantity of energy efficiency resources delivered as well as leverage more dynamic and other real-time pricing mechanisms.

MARKET PRINCIPLES

1. **Efforts should lead to decreases in energy consumption, improved system utilization, and reduced carbon emissions, relative to business as usual**

Ultimately, the measure of success for market-based procurement is if it aids in the achievement of state policy goals, noted above. The working group believes that an action-oriented approach is critical to laying the foundation for potential energy efficiency market. In practice, this requires a willingness to proceed both quickly and incrementally. Our examinations of new procurement mechanisms and discussions with experts revealed that these approaches can be implemented side-by-side with existing energy efficiency portfolios. Further, given the need to advance in many areas at once, there was widespread agreement that the perfect should not be the enemy of the good in implementing new approaches. A deeper understanding of approaches that pair Pay for Performance (P4P) with meter-based measurement and verification and the applicability of different procurement methods is needed. This will come from experimentation, access to consumption and other relevant data, and coordinated efforts on the part of NYSERDA and the utilities.

2. **Acquisition should be competitive and cost-effective, relative to the value created**

Efficiency resource units should be acquired in a competitive and cost-effective manner relative to the value (system or societal) of the efficiency resource. This may mean that in certain applications, such as Non-Wires Alternatives projects, efficiency resource units acquired from certain sectors, locations, or time periods may be more expensive, but should receive increased levels of compensation if they provide more value to the system. In addition, the level of risk undertaken by parties should be accounted for in assessing costs and benefits. This will require effective oversight and an evolving price structure as more granular system data becomes available.

3. **Procurement should minimize barriers for qualified market actors and new business models**

A key goal of market-based procurement is to animate new business models that will increase innovation, and allow for more cost-effective efficiency resource generation in the long term. During initial development of market-based approaches, simplicity should be prioritized. Efforts should be made to minimize measure-level restrictions to enhance participation and the creation of new business models, while maintaining boundaries to prevent duplicative incentives. This approach has some risks and requires

effective oversight to balance simplicity with minimum performance standards that will ensure the disqualification of market actors that manipulate the system and/or have consistently poor results. As lessons are learned, additional competitive dynamics can be added to achieve other goals.

4. Measurement of delivered efficiency resource units should be standardized to create market confidence

Confidence in delivered efficiency resource units is critical to delivering value to customers. Deemed savings, modeled savings, and M&V savings serve many sectors well. Nevertheless, they do not guarantee the same calculated savings result and may not optimally incent delivered efficiency as compared to a more performance-oriented approach. This creates uncertainty in the results of energy efficiency projects results, causing energy efficiency to be considered separately from other DERs, limiting confidence in energy efficiency as a grid resource, and limiting interest from capital markets. A promising innovation for some contexts (particularly where customers can be aggregated and averaged), is the use of meter-based data and standardized normalization mechanisms (advanced M&V). A deeper understanding of its applicability to various sectors and effective methods of regulation are critical to market development.

5. Procurement of efficiency resource units should aim for stability and consistency, so market actors can understand and manage risk

Market actors need transparent and reliable price signals to leverage private capital and generate efficiency resource units. Certainty is valuable at the macro level to signal to market actors to enter the New York market and/or hire employees with confidence that future jobs will not need to be cut after investments in the New York market are made. It is also valuable at the more granular project level to ensure that investors can raise capital for specific projects. Improvements can be made at both levels. Currently, while efficiency program budgets and goals are set as part of the regulatory process, program design can change drastically from year-to-year, creating uncertain and unreliable price signals to market actors with regard to the overall size of the market. At the project level, procurement mechanisms should provide enough certainty to make projects “bankable,” meaning that they are able to provide a sufficient collateral, future cash flow, and probability of success to be acceptable to institutional lenders for financing. The goal of market-based approaches should be to remove uncertainty as much as possible at both levels, while providing data and structures that allow market actors to take on and manage risk, and maintaining the ability to innovate in designing particular procurement approaches.

ACTIONABLE RECOMMENDATIONS

In examining various existing and new potential procurement mechanisms (including standard offer, RFPs, and auctions), the Working Group determined that each mechanism has pros and cons that make particular mechanisms better suited to different types of energy efficiency investments in different sectors. However, the group agrees that newer procurement mechanisms, particularly auctions, hold significant promise. We recommend that as utilities continue to implement more traditional approaches, they move quickly to test and establish auction mechanisms, utilizing assistance from NYSERDA. We recommend a pilot/demonstration project framework to carry this out, with coordination between utilities to simplify the process for market actors (as described below). Following the recommendations is a chart that shows how the recommendations align with the established principles.

- The PSC should recognize the costs of inaction to society and the grid and consider directing utilities and NYSERDA to err on the side of action in moving to an efficiency procurement model based on robust third-party involvement and market prices based on the true value of the resource.
- To help ensure the achievement of New York’s clean energy policy goals, the PSC should consider directing utilities and NYSERDA to implement new approaches in tandem with existing models that have proven successful to prevent backsliding.
- To facilitate action, utilities should initially develop their own rules for market actor participation in procurements and procurement design, while sharing best practices across utilities on a regular basis. As markets develop, however, the utilities should work with the PSC to develop common rules wherever possible for market actor participation in procurements and procurement design, while allowing for enough flexibility to account for service territory differences. For example, pre-screening of market actors to qualify them for the bidding process could be done in a unified manner across service territories, and procurement schedules could be posted for all utilities on a single website where utilities also post non-wires alternative procurement information.
- The PSC should consider directing utilities and NYSERDA to coordinate efforts to test Pay for Performance (P4P)-type program structures that use advanced M&V techniques in a variety of sectors. Due to the counterfactual nature of measuring delivered energy efficiency, it is imperative that market actors have access to an open source EE Meter to determine ongoing efficiency savings in these piloted efforts. Pilots should also employ various procurement methods with minimal subjective requirements and provide payment for an extended term (beyond first year savings). Pilots should strive to include a robust variety of market actors and encourage private sector investment.⁸⁷
- The PSC should consider strengthening contractual and price signal certainty with respect to efficiency resource unit cash flows. Regulatory treatment of the value of energy efficiency should reflect the measure life of various installations (e.g. 20 years for a new boiler) vs. first-year savings calculations, which better match long-term system needs. Capturing the long-term value of each efficiency resource unit can improve economics, stimulate more aggregation, unlock a greater level of efficiency investment, help to stabilize the market, and mitigate barriers to increased financing.
- Given the central importance of verifying savings under energy efficiency credit markets and the ability for program loopholes to develop without robust regulatory oversight and proven M&V, the working group recommends that it is not prudent to attempt to simultaneously create an energy efficiency credit market while piloting advanced M&V techniques.
- Because access to data can support market development, the PSC should consider developing a rule to guide anonymization of building energy usage data, so it can be made available to NYSERDA, DPS, and market actors, while protecting customers.
- Some members of the Working Group emphasize the importance of sending price signals to the market, and recommend that the PSC consider establishing a “baseline” value of EE based on the BCA, existing studies, and expected CES cost reductions for the State of New York. This “baseline”

⁸⁷ Late in the editing process, there was discussion regarding whether application of the BCA Framework, particularly with regard to accounting for customer costs, would cause difficulties in creating an energy efficiency measure agnostic program structure. The group plans to further discuss this potential conflict prior to finalizing the report.

value should be considered a price signal "cap" to the market for statewide negawatt reductions, with utilities setting the "cap" value potentially higher in the future based on locational and/or temporal factors. By setting caps, the PSC will send a clear signal of value, while enabling future price discovery to minimize ratepayer costs.

- While the BCA Handbooks provide detailed insights into the various computations ultimately used to determine EE portfolio cost-effectiveness, it is not currently a transparent process. Some members of the Working Group stress the need for BCA calculation transparency to help guide market actors on whether a utility will accept or deny a proposal/bid. These members request that the PSC consider development of a public BCA calculation tool.⁸⁸
- Business models that rely heavily on non-energy benefits to create value for customers are at a disadvantage with the current BCA Framework, because the full costs of improvements are included while non-energy benefits are not quantified. This could discourage innovation, both by discouraging the inclusion of measures with high customer costs and potentially imposing a significant administrative burden on market actors to determine customer costs. The PSC should review this issue and consider making changes or clarifications to the BCA Framework. Some members of the Working Group believe the PSC could resolve this issue by either removing customer costs from the BCA Framework or setting non-energy benefits at the same level as customer costs.
- Certainty of funding is important to develop market confidence in any procurement or market construct chosen, and we recommend that the PSC consider developing a clear framework for funding efficiency procurement that recognizes its value as an operational resource. Specifically, we recommend that it articulate general rules for cost recovery or value monetization in base rates, with clear direction as to when any deviations from this framework may take place in individual rate cases (i.e. a funding structure not dependent on specific rate cases). In addition, the PSC should send clearer market signals by establishing a centralized and unified process to decide energy efficiency procurement funding rules, targets, and performance incentives out to 2030. Such a unified process would be easier for market actors to follow, creating a simpler and clearer structure that would lower costs and enhance the success of all the procurement mechanisms we examined.
- Some members of the Working Group stress that in addition to certainty, size of funding is extremely important if New York wishes to cultivate a large and growing energy efficiency market. To that end, these members recommend that the PSC not provide any caps on energy efficiency spending, as long as all spending lowers customer bills on average.

⁸⁸ The Working Group is still debating this recommendation, as other members note that this tool may in fact be limited in its usefulness, as utilities developing portfolios of EE and DERs, develop BCAs on a portfolio basis that includes multiple solutions in order to evaluate cost-effectiveness. Further, development of a program portfolio can be based on a variety of factors, including but not limited, to benefit cost analysis results.

EE Procurement and Markets Working Group Recommendations					
Recommended Actions	Procurement and Markets Principles				
	Decrease energy consumption & emissions and improve system utilization	Competitive and cost-effective, relative to the value created	Minimize barriers for qualified market actors and new business models	Measurement is standardized to create market confidence	Stability and consistency, so market actors can understand and manage risk
The PSC should consider directing utilities and NYSERDA to move to an efficiency procurement model based on robust third-party involvement and value-based market prices.	*	*	*		*
The PSC should consider directing utilities and NYSERDA to implement new approaches in tandem with existing models that have proven successful.	*	*			*
Utilities should coordinate and develop common rules wherever possible for market actor participation in procurements and procurement design, while allowing for enough flexibility to account for service territory differences.			*	*	*
The PSC should consider directing utilities and NYSERDA to coordinate efforts to test Pay for Performance (P4P)-type program structures that use advanced M&V techniques with an open source EE Meter in a variety of sectors.	*	*	*	*	*
Contractual and price signal certainty with respect to efficiency resource unit cash flows should be prioritized. Regulatory treatment of the value of energy efficiency needs to reflect the long measure life of various installations vs. first-year savings calculations currently and will better match long-term system needs.	*	*			*
The PSC should not attempt to simultaneously create an energy efficiency credit market while piloting advanced M&V techniques.				*	*
Because access to data can support market development, the PSC should consider developing a rule to guide anonymization of building energy usage data, so it can be made available to NYSERDA, DPS, and market actors, while protecting customers.	*	*	*	*	*
Some member of the group recommend that the PSC consider establishing a “baseline” value of EE based on the BCA, existing studies, and expected CES cost reductions for the State of New York. This "baseline" value should be considered a price signal "cap" to the market for statewide negawatt reductions, with utilities setting the "cap" value potentially higher in the future based on locational and/or temporal factors.	*	*	*		*
Some members of the Working Group stress the need for BCA calculation transparency to help guide market actors on whether a utility will accept or deny a proposal/bid. These members request that the PSC consider development of a public BCA calculation tool.	*	*	*		*
The PSC should consider addressing the issue that non-energy benefits currently are not quantified under the BCA Framework while the full costs of improvements are.	*		*		
Certainty of funding is important to develop market confidence in any procurement or market construct chosen, and we recommend that the PSC consider developing a clear framework for funding efficiency procurement that recognizes its value as an operational resource.	*	*		*	*
Some members of the group recommend that the PSC not provide any caps on energy efficiency spending, as long as all spending lowers customer bills on average.	*	*		*	*

*Clean Energy Advisory Council
Steering Committee Public Meeting/Call Schedule*

Calendar Year 2017:

<u>Date</u>	<u>Time</u>	<u>Location</u>
<i>Tuesday, January 10th</i>	<i>10:00 a.m. – 12:00 p.m.</i>	<i>Call / Webinar</i>
<i>Tuesday, February 7th</i>	<i>1:00 – 3:00 p.m.</i>	<i>Meeting - Albany, NY</i>
<i>Thursday, April 27th</i>	<i>12:30 – 3:30 p.m.</i>	<i>Meeting – Albany, NY</i>
<i>Thursday, June 22nd</i>	<i>12:30 – 3:30 p.m.</i>	<i>Meeting – Albany, NY</i>
~~<i>Tuesday, October 24th</i>~~	~~<i>1:00 – 3:00 p.m.</i>~~	~~<i>Meeting – Albany, NY</i>~~
<i>Friday, September 8th</i>	<i>9:30 a.m. – 12:30 p.m.</i>	<i>Meeting – Albany, NY</i>
<i>Tuesday, December 5th</i>	<i>9:30 a.m. – 12:30 p.m.</i>	<i>Meeting – Albany, NY</i>

For those unable to travel to attend the in-person meetings, the meetings will also support participation via teleconference and/or webinar.

In-person meetings occurring in Albany, NY will be held in the 3rd Floor Hearing Room or 19th Floor Board Room of the Department of Public Service office located at Three Empire State Plaza, Albany, New York. The Department will also provide video to its Buffalo and New York City offices.

In-person meetings occurring in NY, NY will be held in the Board Room of the Department of Public Service NYC office located at 90 Church Street, New York, NY. The Department will also provide video to its Albany and Buffalo offices.

Clean Energy Advisory Council Work Plan

The following is the revised Clean Energy Advisory Council (CEAC or the Council) Work Plan, which sets forth the schedule for Council and Council Working Group deliverables.

Background:

By order issued January 21, 2016 (January CEF Order),¹ the New York Public Service Commission (the Commission) established the Clean Energy Advisory Council. The Commission stated that the Council’s “primary objective is to support innovation and collaboration for an effective transition from current program offerings to post-2015 clean energy activities and on-going delivery thereafter.” The Commission directed the Council to, on an annual basis, develop a work plan identifying key areas of focus, the priorities among and within each area of focus, as well as corresponding work products and associated timelines. Currently, this Work Plan reflects those areas of focus and work products identified by the Commission in the January CEF Order and the January 22, 2016 Utility Energy Efficiency Order.² In addition to Commission directed activities, future iterations of the Council’s Work Plan may include areas of examination raised by individual Council members or Working Groups and agreed to by the Council.

¹ Case 14-M-0094 et al, Proceeding on Motion of the Commission to Consider a Clean Energy Fund, Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016).

² Case 15-M-0252, In the Matter of Utility Energy Efficiency Programs, Order Authorizing Utility-Administered Energy Efficiency Portfolio Budgets and Targets for 2016 – 2018 (issued January 22, 2016).

Clean Energy Advisory Council

Schedule:

[illegible]

Revision/Addition Process:

At a minimum, the Council's Work Plan will be revised annually. In addition, in instances where a Working Group determines that it will be unable to meet the dates reflected in the Council's Work Plan, the Working Group, through its Steering Committee Designee, may submit a request, including a proposed revised timeline, to the Council's Steering Committee to extend the due date. Once approved by the Steering Committee, the revised timeline will be incorporated into the Work Plan. In addition, the Work Plan will be revised to reflect the timelines associated with new efforts required by the Commission, assigned by the Steering Committee, or proposed by a Working Group and agreed to by the Steering Committee.

The Work Plan and all subsequent revisions will be filed in Matter 16-00561, In the Matter of the Clean Energy Advisory Council.