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January 17, 2020

**ELECTRONIC MAIL**  
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Aida Camacho-Welch  
Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**RE:** New Jersey Energy Efficiency Transition  
Comments of Atlantic City Electric Company on Filing Requirements

Dear Secretary Camacho-Welch:

On behalf of Atlantic City Electric Company (“ACE” or the “Company”), please accept these comments in connection with, and as a complement to, the Stakeholder Meeting on Filing Requirements that took place December 18, 2019. The stakeholder meeting continued engagement on the energy efficiency transition and included discussion regarding “how programs will be selected for inclusion in the portfolio of new and existing State and utility-run programs, how energy savings will be determined in each program, and how reported savings will be verified to be counted towards meeting the goals of the Clean Energy Act and assessing any associated returns, rewards, or penalties, as well as determining programs’ continued inclusion in subsequent program year portfolios.”<sup>1</sup> ACE appreciated the opportunity to participate in that stakeholder meeting and provides these additional comments for consideration.

### **Background**

The Clean Energy Act (the “Act”) states that “[e]ach electric public utility shall be required to achieve annual reductions in the use of electricity of two percent of the average annual usage in the prior three years within five years of implementation of its electric energy efficiency program. Each natural gas public utility shall be required to achieve annual reductions in the use of natural gas of 0.75 percent of the average annual usage in the prior three years within five years of implementation of its gas energy efficiency program. The amount of reduction mandated by the [New Jersey Board of Public Utilities (the “Board” or “BPU”)] that exceeds two percent of the average annual usage for electricity

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<sup>1</sup> BPU Notice dated November 26, 2019.

and 0.75 percent of the average annual usage for natural gas for the prior three years shall be determined pursuant to the study conducted pursuant to subsection b. of this section until the reduction in energy usage reaches the full economic, cost-effective potential in each service territory, as determined by the [B]oard.”<sup>2</sup>

### **Overview**

The Company recognizes the importance of filing accurate, timely, and transparent energy efficient program plans and results to comply with the Act. As has been demonstrated in other states, transparency and consistency of program plans and performance reporting provides states with useful data that can be aggregated at a statewide level. In this light, the Company’s answers to the BPU-asked questions regarding Filing Requirements are below.

### **Filing Requirements**

#### **III. Minimum Filing Requirements**

##### **a. Current minimum filing requirements for proposed new or modified programs**

##### **i. Examples: market segment/efficiency targeted, delivery method, estimated participants, total project energy savings, marketing, market barriers, impact on employment and competition in the marketplace**

Utilities will file petitions requesting approval of new or modified programs as part of the energy efficiency plans for the upcoming program cycle. The goal of these filings is to provide sufficient information to support effective decision-making and stakeholder input and demonstrate compliance with applicable policies and laws. The information should describe what the program is designed to achieve, how it plans to achieve it, and what resources are required to successfully implement the program. Petitions should include all relevant workpapers, ideally in a standardized format.

ACE respectfully suggests filing the following information in sections for each program in a portfolio for a program cycle:

- Program Overview
- Target Market
- Eligible Measures/Services
- Customer Incentives
- Implementation Plan
- Marketing and Promotion Plan
- Estimated Energy and Demand Savings (annual)
- Estimated Participation
- Program Budget
- Evaluation, Measurement, and Verification Plan

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<sup>2</sup> N.J.S.A. 48:3-87.9

Additionally, the following information should be provided for the portfolio:

- Total Expected Energy and Demand Savings
- Total Budget
- Portfolio Cost-Effectiveness
- Total Annual Estimated Bill Impacts (surcharges)

**b. Discussion**

**i. How are the current filing requirements working, including regarding required information and process?**

ACE has no comment on this question at this time as it does not currently offer programs and does not have first-hand experience with the existing procedures, however, the Company reserves the right to comment at a future point in the proceeding.

**ii. What are best practices for filing requirements?**

As noted above, filing requirements should be designed to elicit sufficient information to understand the proposed program and support the assumptions being made. To preserve program flexibility, the information should be sufficiently detailed to address major questions and concerns, but not so detailed as to limit the utility's ability to adapt and innovate as the program progresses. Additional best practices include:

- Transparency and Accessibility – Program documentation filed with the State should be retrievable and publicly available for all interested parties to review. For instance, each entity filing documents should have an associated case number specific to its program plan, where interested parties can find all related documents.
- Consistency – All program and report filings should be uniformly formatted to assist in comparing information across programs and over time. Any data reports should use the same template so data points can be easily referenced.
- Inclusivity – Some programs are cyclical in nature, performing better in the winter or summer. Therefore, it is important to show annual and program cycle expectations and results to smooth out the seasonal or cyclical nature of some programs. For example, a program might require significant ramp-up time to build awareness and participation, and therefore not show strong results in the first year but realize greater energy savings later in the program cycle.

**IV. Reporting Requirements**

**a. Current reporting requirements**

Reporting requirements refer to information submitted for purposes of evaluating program progress and performance relative to established targets. Thus, the reporting requirements should be designed to collect sufficient information to evaluate the utility's performance against the defined performance indicators and metrics. The information collected should have clear value to regulators and stakeholders and be useful in evaluation performance.

For consistency, reporting should follow the basic format as outlined above for the Minimum Filing Requirements, but focus on program results, program processes and impacts, and any program adjustments that need to be made to improve procedures or results for the next reporting period. A sample reporting format could be:

- Program Performance Overview
- Customer Participation and Engagement
- Customer Incentives Paid
- Results:
  - Annualized Energy Savings
  - Coincident Peak Demand Reductions
  - Participants/Projects completed (the exact metric is dependent on the program)
  - Program Expenditures

ACE recommends a minimum of 75 days following the end of a program year to submit its progress report. This allows sufficient time to close out the previous year, clean up and verify program data, and run the analysis and reports necessary to meet the reporting requirements, as well as prepare the actual filing.

#### **b. Data quality control/verification**

Wherever possible, the data inputs and outputs should be based on established protocols, accepted resources (such as Technical Resource Manual), and industry best practices. The reports should define key terms and abbreviations to support consistent interpretation and include references and citations to data sources, where relevant. Additionally, the reports should explicitly state assumptions used in program reporting.

The quality of the data provided through reports would be the responsibility of the program administrator. Any verification of program results would be confirmed through the Evaluation, Measurement and Verification process previously discussed and incorporated into future program design. Retroactive changes to reported savings should be avoided.

#### **c. Potential new data requirements**

- i. Examples: committed and actual dollars spent per program by sector and category, projected and actual participants by program, projects in progress and completed, projected and actual energy saved per program by fuel source and sector, projected and actual cost of measures, projected and actual benefit-cost analysis of programs, actual energy sales by sector, rate and bill impacts, greenhouse gas emission reductions, jobs created and retained, payment times for contractors**

As noted above, ACE recommends that program petitions and program reports include information on program participation, program energy savings, and program spend. This information can be provided at the program, residential or non-residential level, and total portfolio levels.

**d. Frequency, formats, and types of reporting**

ACE recommends annual progress reports that include the information discussed in response IV (a) above. As previously noted, some programs are seasonal or cyclical in nature, resulting in great variation from month to month. As such, more frequent reports may not be indicative of the overall success of the program. For this reason, most states require annual progress or status reports.

Should Board Staff prefer more frequent updates, ACE recommends semi-annual progress updates based on a simple standardized template, easily completed using readily available data.

**e. Discussion**

**i. Feedback about current reporting requirements regarding data and process**

As noted above, consistency in reporting is a best practice. All program administrators should be required to follow consistent formatting and frequency for reporting program results.

**ii. What is needed from a reporting system to meet Clean Energy Act goals?**

Program reporting should be designed to demonstrate compliance with the goals of the Act. The results should be publicly available, easy to locate and interpret, and useful in articulating progress toward the public policy goals.

**iii. What is a successful reporting program?**

A successful reporting program is clear in its purpose, concise in its requirements, and timely in providing useful results. The data collected should have clear value to regulators and stakeholders, such as measuring compliance with stated goals, evaluating appropriateness of performance incentives, and adjusting budgets to reflect market conditions. Reporting formats should be consistent across programs, over time, and between program administrators, and responsive to stakeholder needs. Ideally, a successful reporting program streamlines the regulatory review process by better ensuring that all information needed to reach a conclusion about program performance is provided as part of the initial filing, thus minimizing discovery requests and focusing the discussion on program results.

**iv. Access: What data from the utilities and State should be tracked?**

*See the response to IV (a) above that lists proposed reporting requirements.*

**v. Use: How should data be used?**

The purpose of tracking data is to measure program and portfolio performance relative to established goals and metrics and make that data available to stakeholders.

**vi. What are barriers to a successful reporting program?**

Programs should be designed to collect the data that is necessary to accurately and completely report on program results. As with all data, however, there can be errors and anomalies introduced through the input process. Allowing sufficient time to review and clean data before reporting will minimize data inaccuracies.

Additionally, if data inputs and outputs are not clearly defined and consistent between program administrators, there can be variances in reporting, which limit direct comparison between portfolios. Providing a standardized reporting template or format can reduce the risk of inconsistent reporting.

**vii. What are best practices and lessons learned?**

See the response to IV.E.iii above. Additionally, it is important to have a mechanism to submit proposed changes during a portfolio cycle. For instance, if a national code or standard change goes into effect, the program administrator should be able to modify the program to reflect the change.

**V. Tracking System**

**a. Current practices by utilities and the State – features and utilization**

ACE is not familiar with what the other New Jersey utilities report to the BPU for their programs. As noted above, however, the Company recommends annual reporting as the preferred frequency.

**b. Discussion**

**i. Advantages and disadvantages of current tracking systems**

**1. What are utilities using in New Jersey (legacy systems) and other states to track information about energy efficiency programs?**

- ACE, along with its sister utilities (Pepco and Delmarva Power & Light Company), uses several internal data repository systems for reporting. These include: customer databases, implementation databases, eTrack (a proprietary invoice and incentive payment system), and Excel spreadsheets. These sources are referenced to track progress and compile reports.

**ii. Desired outcomes of the next tracking system**

**1. What is needed from a tracking system to meet Clean Energy Act goals?**

ACE respectfully submits that a searchable online database of regulatory filings, similar to what is available in Maryland<sup>3</sup> and several other states, would be sufficient to make the standardized reports that utilities will file for their program portfolios publicly available and easily accessible.

**2. What is a successful tracking system?**

ACE does not support implementation of a central, statewide tracking system for program data due to the potential for customer and vendor privacy issues, system integration expenses and issues, and cybersecurity concerns. ACE is comfortable tracking data in its Customer Resource Management (“CRM”) system, e-track, and other tools for program implementation and reporting purposes.

**3. What are best practices and lessons learned?**

Most states rely on utilities as the program administrator to develop the internal data tracking systems necessary to effectively implement their programs. This can be accomplished through Excel spreadsheets, Access databases, CRM systems or other methods. The appropriate tool or combination of tools may depend on the utility’s unique needs, capabilities, and IT configurations.

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<sup>3</sup> <https://www.psc.state.md.us/search-case-files/>

**4. Ideal features / capabilities / utilization?**

**a. How and when should advanced M&V (automated data processing/increased data granulation) be integrated?**

ACE suggests revisiting this question after it has installed an Advanced Metering Infrastructure (AMI) is installed and additional program experience is gained and specific gaps and needs have been identified.

**b. Is a dynamic/automated platform needed for it to be useful? For example, could there be a monthly data dashboard?**

See the response to V.b.ii.4. above. Additionally, it is unclear what value a monthly data dashboard would provide.

**c. Should it be a statewide system?**

As noted above, ACE does not support implementation of a central, statewide tracking system for program data.

**d. What level of detail should it hold? For example, should it be able to hold demographic and tax data?**

If any data is made available through an online tracking system, it should be limited to standardized technical assumptions and aggregated and anonymous program results and not include any individual customer participation data, including personally identifiable information or trade secret or sensitive data on vendor pricing or business practices.

**e. Should it be able to hold downloaded utility records and data provided by contractors?**

No. See the response to V.b.ii.4.d above.

**f. Should it be able to work/connect/cross-reference with other (e.g., utility, State) systems?**

No. Integration with other utility or state systems could introduce vulnerabilities and cybersecurity concerns.

**5. Ownership and transparency of data**

**a. Who should own the system and data?**

ACE does not support implementation of a central, statewide data tracking system. Developing and maintaining a new IT system such as is contemplated here is likely to be a major undertaking requiring significant financial resources, as well as personnel.

**b. How accessible to the public vs. the utilities and State should it be?**

If the State moves forward with a statewide tracking system, access should be limited to program administrators and BPU Staff responsible for overseeing the programs. It should not be publicly available. However, all utility and Clean Energy annual reports and the program data contained within should be available to any interested party.

**6. What are barriers to a successful tracking system?**

Trying to establish a common tracking system that effectively integrates with existing utility systems is likely to be problematic and costly. Moreover, it is not clear that it would be able to replace the internal tools, resulting in duplicative cost and effort.

Aida Camacho-Welch

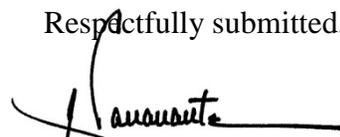
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Data privacy concerns for participating customers and vendors are another barrier to a successful tracking system. ACE takes customer privacy very seriously and has specific protocols in place for safeguarding customer data. Releasing customer or vendor data into an external system represents a significant risk to the Company's responsibility to protect customer and business sensitive data. Similarly, creating a link between internal utility systems and an external interface introduces cybersecurity risks. Common Excel formatting of annual utility and Clean Energy program reports should be submitted and made publicly available. Using a common format will allow for easy aggregation of program results on a statewide basis.

ACE appreciates the opportunity to comment on this important matter and looks forward to its continued participation in this proceeding.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Passanante", written over a horizontal line.

Philip J. Passanante  
An Attorney at Law of the  
State of New Jersey

**From:** Barbara Cuthbert [<mailto:bwestcuth@gmail.com>]

**Sent:** Friday, January 10, 2020 4:27 PM

**To:** [publiccomments@njcleanenergy.com](mailto:publiccomments@njcleanenergy.com)

**Subject:** [EXTERNAL] Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Re: Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Dear NJ Clean Energy:

New Jersey is tasked with a massive challenge to shift 100% from fossil fuels to renewable clean energy by 2050. To truly have evaluation, measurement and verification (EM&V), methods for collection and public availability of all data measurements from energy sourcing, distributing, supplying and consuming, there needs to be need scrutiny and oversight of agencies, businesses and organizations working collaboratively toward a common goal.

It appears that references to energy measurements on websites of NJ agencies and utilities use EIA which, by their own admission, uses gross estimates rather than actual data at endpoints of suppliers, distributors and consumers. With meters read every month by utility companies, and bills providing comparisons to last year's usage, the data certainly exists.

It is absurd to see NJ EMP, IEP, energy forecasts and sales all point to EIA.gov estimate data - which is always several years out of date - as the basis of determining current policy.

- There is no way to accurately evaluate losses, inefficiencies or issues with this type of false enumeration.
- There is no way to truly complete a cost-benefit assessment without actual data.
- Cost projections also need to incorporate the constantly-changing threat from climate change such that it is considered and updated on an annual basis.
- There is a need to assess future health and environment costs as well as market, public and governmental resistance to change.

Utilities are deemed as a public service and granted markets where competition is not practical, in other words, there are no competitors. That privilege must also be associated with the responsibility for providing all data of utility energy related infrastructure to be publicly available. Please do not take this as something disparaging against current utilities. I highly regard and value the utility that serves me.

It is critical that New Jersey provides and uses open data transparency for energy measurement at the sourcing, gathering, supplying, sales and consumption – at all levels that are available in New Jersey. This data should be required to be provided and publicly available on a website (suggesting NJ Clean Energy) and updated at least monthly since current data is already collected on a monthly basis. Personal identifying information must, of course, be protected.

It appears that there is a lot of data not currently available to state agencies that could help in planning New Jersey's transition from fossil fuels to clean energy. It also appears that the electric infrastructure needs to continue to reinvent itself in adjusting to accommodate distributed energy generation and usage model (such as microgrids) to more effectively integrate distributed renewable energy generation. This also, by default, will reduce inherent loss in the current grid that without data, agencies are not aware of.

The state agencies, working with the utilities, need to identify loss areas in the grid and use those as opportunities for creating micro grid sections that eliminate the loss. Hydrogen is currently being considered as a viable storage facility for enabling micro grid enablement in other countries and the 7 other states that NJ Governor just signed an initiative with for zero emission vehicles. We need to push harder on adjusting how NJ does business in energy. Status quo will only ensure that the transformation from fossil fuels to renewables will fail.

Communities around the world are actively integrating hydrogen now and reshaping their energy economy (California, UK, many countries in EU, China, South Korea and even Australia despite its PM's discouragement), and NJ agencies need to heighten their awareness and pursuit of this technology.

Another commenter to you (Kirk Frost) already submitted the following, but it bears copying and repetition. Did you know that:

- UK has started successfully pumping hydrogen into natural pipes.
- Nikola will start rolling out locally sourced hydrogen gas stations this year.
- There are 3 new methods of hydrogenation becoming publically available.
  1. Photoelectrochemical PEC - Hypersolar and Israel University both competitively building separately.
  2. Nickel nano plated electrodes for electrolysis increasing efficiency up to 70% for hydrogen generation.
  3. UK company developed electromagnetic hydrogen generation.
- Swedish company is designing and building locally generated hydrogen gas stations and microgrids.
- South Korea will fully convert 3 cities to hydrogen in next several years.
- China and California will implement 1MM hydrogen fuel-cell vehicles by 2030.
- South Korea will manufacture 6.2MM hydrogen fuel-cell vehicles by 2040 (3MM for export).
- 500 Watt wind mills (5' total diameter) cost \$250 and are excellent to deploy in microgrids. This enables homes to cost effectively generate electricity round the clock.

I very much appreciate your consideration of this comment and hope you act on the urgency of collecting real data and monitoring efforts to quickly and efficiently move toward 100% clean, renewable energy sourcing.

Sincerely,  
Dr. Barbara Cuthbert  
Princeton, NJ 08540



**January 17, 2020**

Aida Camacho-Welch  
New Jersey Board of Public Utilities  
44 South Clinton Avenue, 9th Floor  
Post Office Box 350  
Trenton, NJ 08625-0350

**Re: December 18, 2019 Energy Efficiency Transition Filing & Reporting Requirements Stakeholder Meeting, Docket No. QO19010040.**

### **Introduction**

The Energy Efficiency Alliance of New Jersey (“EEA-NJ”) is a trade association dedicated to expanding the market for energy efficiency in the Garden State. Together with its sister organization, the Keystone Energy Efficiency Alliance (“KEEA”), EEA-NJ has more than 60 business members who provide energy efficiency products and services across the state, and support an industry that accounts for more than 30,000 New Jersey jobs. Our membership is large and diverse, with experience designing and implementing a variety of demand-side management solutions and energy efficiency programs across the globe. Simply stated, our members understand what works and what does not when it comes to successful demand-side reduction programs.

EEA-NJ appreciates the opportunity to engage with the New Jersey Board of Public Utilities (“BPU” or “Board”) on Filing and Reporting Requirements under the Clean Energy Act (“CEA”). With these comments and the individual comments of our member companies and partners, EEA-NJ hopes to provide the BPU with the information required to create a thriving market for energy efficiency in New Jersey. Over the course of this proceeding, EEA-NJ has submitted numerous comments that discuss Filing and Reporting best practices and incorporates those comments by reference herein.

### **Clean Energy Act and Evaluation, Measurement, and Verification**

The Clean Energy Act mandates that New Jersey’s electric and gas utilities reduce energy usage. Specifically, the CEA requires that each electric utility achieve a minimum 2% reduction in energy usage per year, while each natural gas utility must achieve a minimum .75% reduction per year.<sup>1</sup> The CEA requires:

Each electric and gas public utility shall file implementation and reporting plans, as well as evaluation, measurement, and verification strategies, to determine the energy usage and peak demand reductions achieved by the programs. The filings shall include details of expenditures made by the utility and the resultant reduction in energy usage and peak demand.<sup>2</sup>

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<sup>1</sup> The Clean Energy Act, N.J.S.A. §48:3-87.9(a).

<sup>2</sup> §87.9(d)(3).

Additionally, that:

Each electric and gas public utility shall file an annual petition to demonstrate compliance with the energy efficiency and peak demand programs, compliance with the targets established pursuant to the QPIs, and for cost recovery of the programs.<sup>3</sup>

### **EEA-NJ Filing and Reporting Requirements Principles**

**The Filing and Reporting system should include an online database to allow for public and stakeholder engagement, as well as prioritize regulations and efficient data management.**

An online database allows for stakeholders to better interact with other parties involved in the utility filings, and ultimately leads to a more transparent process. It will ensure that the BPU and the public are able to review utility progress towards meeting the savings targets in the CEA and a clear picture of how these savings were achieved.

A successful online system will be easy to access and search. Potential models to follow are the Pennsylvania Utility Commission's online portal and the Federal Energy Regulatory Commission's Docketing System. Additionally, all energy filings should be accessible (to the extent the material is not confidential) to the public, including, but not limited to, access to all regulatory documents associated with the energy efficiency programs, such as:

- Board implementation orders
- Secretarial letters
- Baseline and potential studies
- Cost-effectiveness tests
- Utility and State evaluation reports
- Interim utility reports
- Technical reference manual or similar documents
- Proposed and final utility plans including portfolio and program budgets
- Plan Change Information
- Advisory council reports and minutes

**BPU should provide clear reporting requirements and deadlines with uniform processes and forms to the extent possible** (depending on various program goals and methods of execution).

- EEA-NJ recommends that utilities be required to file public reports to the state on a semi-annual, annual and (to the extent programs operate in either three- or five-year phases) final phase basis. Regardless of the reporting timeline that BPU selects, all final and interim reporting deadlines should be announced at the outset of each program phase.

**A key goal of reporting under the CEA should be to provide dependable, understandable, accurate, and accessible information for each utility's energy efficiency programs and progress towards meeting targets set by the BPU.**

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<sup>3</sup> §87.9(e)(1).

- Reports should provide all information necessary to determine whether utility targets were met, whether the portfolio of programs is cost effective, and whether the utility qualifies or is on track to qualify for any cost recovery or performance incentives.
- The BPU should consider whether reports should include additional metrics that are used in determining cost-effectiveness, quantitative performance incentives (QPIs), or other policy goals of the state. These metrics may include, but not be limited to: non-energy benefits, carbon reduction, economic development, customer satisfaction, and performance in low- and-moderate income communities. The BPU should be informed by the stakeholder process for evaluation of programs to determine what metrics are relevant for reporting.
- Reports should be public, easy to understand, and frequent enough that stakeholders can be informed and engaged during key decision-making processes.

### **Conclusion**

EEA-NJ thanks the BPU for this opportunity to comment on the important topic of Filing & Reporting Requirements for energy efficiency programs. EEA-NJ believes that these recommendations will assist the BPU, utilities, and stakeholders in creating programs that will make the Garden State a leader in energy efficiency and ensure the maximum efficiency investment and expenditures savings from energy efficiency development in New Jersey. EEA-NJ looks forward to continued opportunities for stakeholder input as New Jersey designs and implements the Clean Energy Act.

Sincerely,

*Erin Cosgrove*

Erin Cosgrove, Esq.  
Policy Counsel  
Energy Efficiency Alliance of New Jersey

Kurt E. Turosky  
330-384-5847

January 17, 2020

**VIA ELECTRONIC MAIL ONLY**

Aida Camacho-Welch, Secretary  
New Jersey Board of Public Utilities  
44 South Clinton Ave., 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, New Jersey 08625-0350  
EnergyEfficiency@bpu.nj.gov

**Re: Jersey Central Power & Light Company's Comments in Response to the  
Energy Efficiency Transition Stakeholder Meeting Notice  
Dated November 27, 2019 and Updated January 9, 2020 on**

- **EM&V,**
- **Filing; and**
- **Reporting**

Dear Secretary Camacho-Welch:

On November 27, 2019, the Staff of the New Jersey Board of Public Utilities (the "Board") issued notice of a December 18, 2019 stakeholder meeting (the "Stakeholder Meeting") regarding implementation of the energy efficiency requirements of P.L. 2018, c. 17 (the "Clean Energy Act," or "CEA," codified in relevant part as N.J.S.A. 48:3-87.9). Subsequently, Board Staff issued an agenda for the Stakeholder Meeting, clarifying that the meeting was to address evaluation, measurement, and verification ("EM&V") as well as filing and reporting requirements for energy efficiency ("EE") and peak demand reduction ("PDR") programs.

Jersey Central Power & Light Company ("JCP&L" or "the Company") thanks the Board for the opportunity to provide feedback on these important issues. As set forth below, JCP&L believes that EM&V, tracking and reporting as well as filing requirements will be a crucial element of the State's success in meeting the Clean Energy Act's goals.

JCP&L believes that the wide-ranging experiences of its affiliated utilities in implementing comprehensive energy efficiency ("EE") and peak demand reduction ("PDR") program portfolios in other jurisdictions will prove helpful to the Board as it develops the policy necessary to support New Jersey's Energy Efficiency Transition. The program portfolios implemented by JCP&L affiliates in other jurisdictions have been successful, in part, because of the sound policy decisions and efficient practices established in those jurisdictions, including those practices related to EM&V and program reporting.

This extensive multi-state experience means that JCP&L has access to already established best practices and proven EM&V frameworks, tracking and reporting procedures and systems, plan filing policies, and a staff with experience in successfully managing all facets of EE and PDR programs across multiple states. JCP&L's comments offer insights on successful practices seen in other jurisdictions and examples of cautionary experiences in order to suggest policies New Jersey can adopt to avoid such pitfalls. The Company believes adoption of these suggestions will lead to the development of policies and practices that capture cost savings and best support New Jersey's energy efficiency transition. Further, JCP&L anticipates continuing its efforts to utilize cross-jurisdictional efficiencies and industry best practices, as its affiliates have done in Ohio, Pennsylvania, and Maryland, where appropriate. This includes leveraging relationships with third-party vendors and consultants that have nationwide EM&V and reporting experience.

## **Evaluation, Measurement, and Verification**

### **Establish EM&V Framework**

Establishing an EM&V framework in advance of the program filings, with clearly defined requirements, is essential for effective EM&V to occur. The EM&V framework is the guidebook upon which all EM&V is built. This is a necessary first step in determining EM&V requirements in New Jersey while reducing ambiguity. Ideally, items that should be part of a comprehensive framework include, but are not be limited to, roles and responsibilities, policy requirements, technical guidance, statewide evaluation methods, resources, workgroup meeting format, and measure-specific evaluation protocols. The framework established by Pennsylvania when implementing Act 129 is an excellent model for a comprehensive EM&V framework.<sup>1</sup>

The EM&V framework sets the course for EM&V activities during a plan phase. Roles and responsibilities must be clearly defined in the framework. Based upon experience, JCP&L would recommend the Board adopt an EM&V structure where the Board oversees a statewide evaluator and each utility engages with an independent third party to perform the needed utility-specific EM&V work. Each independent utility evaluator is responsible for developing a utility-specific evaluation plan, conducting reviews of the utility's tracking system, impact and process evaluations, net to gross analysis (if required), and determining program cost-effectiveness with audit and approval from the statewide evaluator. In addition, independent utility evaluators should participate in EM&V working group meetings to collect best practices and lessons learned across the state. The statewide evaluator is responsible for developing the evaluation framework, performing, reviewing and validating the accuracy of utility savings and cost-effectiveness data reported by the utilities and their independent evaluators, advising the Board on the status of compliance activities and program performance, performing statewide studies and developing statewide reports, and making periodic updates to the EM&V Protocols.

### **New Jersey Protocol (Technical Resource Manual or "TRM") Review**

Concurrent with the development of the EM&V framework, the New Jersey Protocols should undergo a comprehensive review and update to ensure savings estimates are current and

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<sup>1</sup> [http://www.puc.state.pa.us/Electric/pdf/Act129/SWE\\_PhaseIII-Evaluation\\_Framework050818.pdf](http://www.puc.state.pa.us/Electric/pdf/Act129/SWE_PhaseIII-Evaluation_Framework050818.pdf)

the Protocols include all applicable efficient measures and technologies. While it is prudent to undergo a thorough review to aid in program modeling and development well before the plan filing, it is essential that, once approved, the Protocols remain unchanged during a plan cycle. This aligns the savings assumptions included in the development, approval, and implementation of programs, and provides certainty to all stakeholders on how measures will be counted and evaluated. The methods of measuring savings should be determined prior to the design of each program and reviewed with those responsible for EM&V to ensure agreement on the methods to be used. Additional measures may, however, become available during a plan cycle as new technologies are developed and become viable. Accordingly, a process should be developed in the EM&V framework that allows for the addition of new measures.

The Protocols will determine which measures can rely on deemed savings, and which measures will require more rigorous EM&V. In general, deemed savings should be applied to common high efficiency equipment replacement measures, many of which are included in residential or small commercial programs. It is advantageous to have a robust set of Protocols with deemed savings for as many measures as practical, as evaluation costs are typically lower for these measure types.

Partially deemed measures utilize savings measurement protocols that include customer-specific information for each variable, resulting in a variety of savings values for the same measure. This method is commonly used when well-understood variables affect the savings and will be collected from the applicant. Ideally, a robust set of protocols will include default values to use when the open variable is not able to be measured.

In situations where deemed or partially deemed savings cannot be reasonably established, such as for programs that encourage more custom measures, including complex upgrades or replacement of highly variable energy consuming equipment and systems, best practices typically require more direct measurement, in some instances with pre-determined algorithms (which should be included in the Protocols) to determine energy savings. These types of measurements are typically required only for larger, commercial or industrial projects. The Protocols can help inform the measurement methods for these projects, while leaving the flexibility for unique projects and systems that may require project-specific detailed engineering analysis to accurately assess the energy savings.

### **Gross vs. Net Savings**

Gross savings figures should be used to evaluate programs and measure program savings. Gross savings measure the actual energy and demand savings that were realized by the state. Further, gross savings reflect what program administrators can control, *i.e.* the participation in their programs driven by their efforts, whereas net savings (which attempt to adjust savings measurements for things like “free ridership”) introduce ambiguity and the potential for survey bias into the determination of estimated savings achieved by the programs. Moreover, as net savings determinations require potentially extensive and lengthy research, net savings results are often not known until well after a program year is complete (years afterwards, in some jurisdictions), thus, potentially requiring the application of retroactive adjustments to historic results. Additionally, N.J.S.A. 48:3-87.9(c) states that the savings targets can be met not only from

efficiency programs, but from improvements in other codes and standards. As such, the CEA contemplates that the targets defined in the legislation are based on gross savings. To the extent the Board requires information about net savings to be determined, they should only be used for program planning purposes and to determine the cost-effectiveness of program portfolios.

### **Cost-Effectiveness Guidelines**

JCP&L supports the need to review the approach to be used for cost-benefit analysis screening. To best support New Jersey's energy efficiency transition in a cost-effective manner for all customers, the Board should consider the cost-benefit analysis tests to be performed, the estimates embedded in the programs' costs and benefits, as well as the customer bill impacts that will result.

The goal of a cost-benefit analysis is to monetize the perceived benefits of a program and compare them to the program's costs. To ensure that customers get the most value from implemented programs, it is important for the benefits-side of the calculation to be based on avoided costs or benefits that are fully vetted, determined to be reasonable, and readily quantifiable with a sufficient degree of certainty. While the Act contemplates the consideration of certain non-energy benefits when performing cost-effectiveness testing, JCP&L believes it is important for the Board to keep in mind that many non-energy benefits are speculative in nature and difficult to quantify or highly variable. As a result, the Board should exercise caution when designing cost-benefit analyses of utility EE programs.

JCP&L recommends that the Board utilize cost-benefit analysis tests that are based on standard industry practice and rely on fair and reasonable estimates of the programs' costs and benefits. More specifically, JCP&L recommends that the Board only require the Societal Cost Test ("SCT") and the Total Resource Cost ("TRC") Test as these most closely align with the Clean Energy Act and are common tests used in the industry to assess program cost-effectiveness. Further, the Company recommends that the avoided cost methodology, including the calculations and sources, to be developed on a statewide basis for use by all program administrators in their program filings, with utility-specific input factors where appropriate. This is an industry best practice and is performed in other states, such as Maryland<sup>2</sup> and Pennsylvania<sup>3</sup>. This practice ensures avoided costs are developed to align with state policies, are appropriately valued or monetized, are fully transparent, and utilize the same consistent methodology among all program administrators. In addition, developing the avoided cost and benefits using a consistent methodology on a statewide basis best supports the efficient review of the cost/benefit analysis

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<sup>2</sup> The Maryland Energy Administration lead a process to develop the avoided costs methodology, including the calculations, sources and resulting values, that were used by the utilities submitting program plans under EmPOWER Maryland for their 2015-2017 program plans. The avoided costs were updated by the statewide utility evaluator for the 2018-2020 program cycle and are currently being updated by the statewide utility evaluator for the 2021-2023 program cycle.

<sup>3</sup> The Pennsylvania Public Utility Commission issues an Order prior to each phase of Act 129 that establishes the cost-effectiveness testing and the avoided costs and benefits methodology to be followed by the utilities in their program filings and annual reports. The most recent Order, issued December 18, 2019 under docket M-2019-3006868, is for a potential Phase IV of Act 129 which begins June 1, 2021 and includes an avoided cost calculator that was developed by the Statewide Evaluator. See [http://www.puc.pa.gov/filing\\_resources/issues\\_laws\\_regulations/act\\_129\\_information/total\\_resource\\_cost\\_test.aspx](http://www.puc.pa.gov/filing_resources/issues_laws_regulations/act_129_information/total_resource_cost_test.aspx).

provided by all program administrators in their program filings by Board Staff and all other stakeholders.

### **Timing of Activities**

EM&V processes and methods should be determined well before program filings and not after the programs are already implemented, so that planned results are achieved with more certainty and future results can be improved upon. Effective EM&V should set guidelines for measure assumptions and savings in order to determine program performance against those set guidelines. Further, EM&V must be an iterative process, providing frequent feedback on program operation and performance to allow for mid-course program improvements.

Timing of evaluation activities is dependent upon the evaluation type. Both cost-effectiveness calculations and impact evaluations to validate savings should be completed on annual cycles with results presented by program year. Process evaluations which investigate ways to improve the programs should be completed at least once during an approved plan cycle and potentially more frequently based on program specifics. Beyond these basics, additional EM&V research should be considered on a topic by topic basis. These parameters should all be included in the EM&V framework.

### **Reporting**

#### **Reporting Purpose and Guidance**

JCP&L affiliates in four other states have run and provided extensive reporting for comprehensive EE and demand response portfolios for over a decade. During this time, the affiliated companies have seen jurisdictions take many approaches to reporting standards—some straightforward with meaningful key data indicators, and others that initially created voluminous requirements that produced thousands of pages of information on an annual, semi-annual, or even quarterly basis. Many states that initially established exhaustive reporting requirements subsequently reduced the frequency and breadth of reporting requirements after realizing much of the data was not useful to provide thorough oversight of program operations. Additionally, these states realized that the overly extensive reporting requirements often lead to confusion among stakeholders and unnecessarily increased ratepayer costs in order to support the additional administration, business and quality processes, and information technology infrastructure of vendors, program administrators, and evaluators. Said simply, just because something can be reported doesn't mean that it should. Thus, JCP&L recommends that New Jersey reporting requirements benefit from these lessons learned and initially focus on the most valuable reporting elements to ensure meaningful dialogue on program performance.

#### **Reporting Elements**

An overarching principle in establishing reporting standards should be to provide straightforward and essential data and information so that stakeholders can gauge effectiveness of programs and progress towards CEA goals. In support of this objective, reporting standards should tie to key metrics and goals evidenced in the CEA framework or other BPU directives, and other

information essential to monitoring portfolio-level performance. Many of the program data outlined at the December 18, 2019 public comment meeting fit within that description, while others—specifically those involving in-progress applications or *projections* of participation, energy savings, costs, and cost-effectiveness analysis—should be rejected to minimize conjecture and inconsistent application of assumptions that may skew projected results. Other data elements discussed during that meeting, such as greenhouse gas emission reductions or jobs created/retained, fall outside of the utilities’ quantitative objectives in the CEA. However, due to the importance of such information in furthering New Jersey goals, such information may be appropriately reported by the program administrators if the State provides guidance on how to derive the information from data already collected by the utilities. The United States Environmental Protection Agency’s Greenhouse Gas Equivalencies Calculator might assist in this effort.

In addition to defining what information needs to be collected, JCP&L strongly encourages a consistent reporting framework be established for all utilities to ensure reporting uniformity and comparability of results. JCP&L affiliates in other jurisdictions have found that straightforward reporting templates limited to key elements drive all parties to focus on meaningful data rather than being mired in granularity. As such, JCP&L has included, as Appendix A, a proposed portfolio and program reporting template adopted from Maryland’s highly successful EmPOWER EE and PDR initiatives. The level of detail presented therein balances elements necessary to judge compliance with CEA goals as well as additional metrics that are indicative of overall program performance.

### **Timeliness of reporting elements**

Based on the experiences of affiliated utilities in other jurisdictions, JCP&L encourages decisions on required reporting elements to be made on a timely basis and well in advance of the anticipated filing dates for utility EE and PDR program plans. JCP&L and its implementation vendors will spend considerable time during contracting, program launch, and IT system integrations to define customer, measure, financial, and programmatic information that will be tracked and reported. It is necessary for data requirements to be known upfront to ensure that such IT infrastructure and business processes can be developed in an efficient and cost-conscious manner. Should preliminary or incremental data requirements be introduced subsequent to initial vendor contracting and IT system scoping, the timely launch of programs may be significantly impacted, data integrity or quality processes may be compromised, and/or ratepayers may be exposed to avoidable incremental costs.

### **Frequency of reporting**

JCP&L supports annual reporting as envisioned in the BPU’s December 20, 2019 straw proposal. Based on experience from affiliated utilities in other jurisdictions, the Company believes annual reporting appropriately provides information necessary to gauge program performance, effectiveness, and progress towards CEA goals. JCP&L has found that more frequent reporting can lead to unintended confusion among stakeholders based on limited data sets, seasonality of participation, or other factors that do not provide meaningful insights into likely full-year program impacts.

## **Tracking systems**

A statewide database may be an extremely costly undertaking with significant administrative burden that may not be justified by its benefits. JCP&L strongly suggests that program administrators utilize existing databases. Establishing standard reporting templates will support uniform data inputs, and consistent reporting and evaluation across all program administrators making the effort to design, develop, implement and maintain a statewide database unnecessary.

However, JPC&L recognizes the potential need for a limited state-wide aggregated database to support the successful implementation of state-led initiatives where direct access to operational information is needed to manage program performance. As such, the additional administrative and IT infrastructure costs for such a limited purpose may be justified.

In the event the State requires a coordinated database for all programs, JCP&L recommends that it include only high-level aggregated, programmatic information necessary to monitor progress that is divorced from customer records due to the need to protect confidential customer information, cyber security related concerns, and unverified information that has not gone through utility-initiated quality processes or evaluation.

## **Workgroup**

Due to the importance of tracking and reporting as well as the cost of the system used to store data, support programs and providing the details necessary for internal, external and regulatory reports, JCP&L suggests that BPU Staff establish and lead a working group to discuss requisite details of tracking and reporting to meet the needs of all stakeholders.

## **Filing Requirements**

In the agenda attached to the public notice for the Filing and Reporting Stakeholder Meeting, the Board requested comments on Minimum Filing Requirements. Specifically, the Board asked, “What are best practices for filing requirements?”

JCP&L offers a couple best practice ideas for the consideration of the Board. First, a best practice in the industry involves the development of a standard filing template to be used by all program administrators. Not only does this ensure that the filings meet the minimum requirements established by the Board, this also ensures that the information is provided in an entirely consistent manner which supports the efficient review of the filings by all stakeholders. Secondly, it is a best practice for the minimum filing requirements to require only the information necessary to support the consideration of the filing by the Board and other stakeholders, while not being overly broad or requiring unnecessary or speculative information. The Clean Energy Act sets extremely ambitious savings targets that will require extensive program offerings, with program filings being completed and reviewed concurrently on a statewide basis by all parties. Given this, the minimum filing requirements should consider this overarching justification and timeline to ensure that the

requirements only require the necessary information for the Board to review the program filings as required by the Clean Energy Act and that the requirements are not overly broad or require unnecessary or speculative information. This will support the most efficient development of program filings as well as the most efficient review of the filings by the Board and other stakeholders.

Also, as discussed above, it is a best practice for the avoided costs used to test the cost-effectiveness of plans to be developed on a statewide basis for use by all program administrators in program filings. This ensures avoided costs are developed to fully align with state policies, are appropriately valued or monetized, are fully transparent and use the same consistent methodology (including calculations, sources and inputs values where appropriate).

JCP&L appreciates the Board and Board Staff's efforts throughout this ongoing EE stakeholder process and the opportunity to provide these comments. Establishing sound policies and efficient practices is critical to support New Jersey's energy efficiency transition in an administratively efficient and cost-conscious manner for all parties. The Board's guidance on these topics, following stakeholder input, is necessary for the utilities to develop and implement their EE and PDR programs in the most successful and cost-effective manner possible. As such, JCP&L encourages the Board to carefully consider these comments and provide sufficient time for utilities to develop and file plans after decisions on this and other important issues have been made.

If you have any questions about JCP&L's above comments, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink that reads "Kurt E. Turosky". The signature is written in a cursive, flowing style.

Kurt E. Turosky  
Director, Energy Efficiency Compliance & Reporting



From Kirk Frost via [kirkafrost@yahoo.com](mailto:kirkafrost@yahoo.com)

To be sent to [publiccomments@njcleanenergy.com](mailto:publiccomments@njcleanenergy.com)

1/9/2020 Comment #1: Dec 18, 2019 Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Dear NJ Clean Energy,

When I search on New Jersey Agency websites or utility websites, all references to energy measurements point towards EIA. EIA clearly states that their numbers are gross estimates based on assumptions and numerous factors, but no actual reading data at endpoints (whether supplier, distributor or consumer). From my understanding, it appears as though the entire energy infrastructure is built off of gross estimates and generalizations without live actual data updated for the public or New Jersey Agencies to process. The irony is, that data exists. At the end user consumer, meters are read every month, I am sure this process occurs both at the supplier and distributor levels. I saw a comment to Governor Murphy where the utility revealed (selective) internal data in attempt to discourage shutting down nuclear plants.

If this is an accurate picture of the current state, then EM&V needs to radically change methods, collection and public availability of all data measurements from energy sourcing, distributing, supplying and consuming. Utilities may provide sales and consumption on annual basis, but that gives little data to the actual data and doesn't provide any insight to the added renewable sources in New Jersey neighborhoods.

With the Governor's Executive Order 28, GWRA Bill signed, Draft EMP and IEP becoming finalized, new alliance formed with 7 other states to pursue zero emission vehicles and more bills in the pipeline to push New Jersey to convert from fossil fuels to renewable sources;

***it is critical that New Jersey equally pushes for open data transparency for energy measurement at the sourcing, gathering, supplying, sales and consumption – at all levels that are available in New Jersey. This data should be enforced to be provided and publicly available on a website (suggesting NJ Clean Energy) and updated at least monthly since current data is already collected on a monthly basis.***

Simply put:

- **Mandate all utilities under NJ oversight must start publishing all data in energy (sourcing, gathering, supplying, sales, consumption) on a monthly basis start by March 1, 2020.**

Utilities are deemed as a public service and granted markets where competition is not practical, in other words, there are no competitors. That privilege must also be associated with the responsibility for providing all data of utility energy related infrastructure to be publicly available. Please do not take this as something disparaging against current utilities, I highly regard and value the utility that serves me.

It is absurd to see NJ EMP, IEP, energy forecasts and sales all point to EIA.gov estimate data and always several years out of date as the basis of determining current policy. New Jersey is tasked with a massive challenge to shift 100% from fossil fuels to renewable clean energy by 2050. Without live energy measurement and reporting, we are shooting blind and allowing the few active voices to shape policy without actual data to assess. In this regard, EM&V would be a misnomer.

From Kirk Frost via [kirkafrost@yahoo.com](mailto:kirkafrost@yahoo.com)

To be sent to [publiccomments@njcleanenergy.com](mailto:publiccomments@njcleanenergy.com)

1/9/2020 Comment #2: Dec 18, 2019 Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Dear NJ Clean Energy,

Please accept the following added comment/responses for the recent EM&V Energy Efficiency Transition.

Question Set 1:

- What types of evaluations and studies (BCA (benefits cost analysis), baseline, process, impact) are necessary, in what cadence and frequency?
  - Evaluations should be made after utilities provide comprehensive monthly data updates to NJ Clean Energy regarding all energy activities (which should be mandated by March 1, 2020).
  - Frequency is such a relative term. If the data is 2 years out of date, the frequency becomes irrelevant. Ideally, frequency should be a daily practice of verifying utility data transmission, validation of independent NJ state collectors and identification/escalation of any data abnormalities or discrepancies.
  - Cadence should actively collect every articulation of energy traversal data available to utilities governed by New Jersey. Meaning, all data of sourcing, gathering, distributing, supplying, sales and consumption on an active oversight review to (1) Ensure data is being provided at scheduled times; (2) Data integrity review; and (3) verification all activities take place.
- What models do we see for who conducts, reviews, and approves each of those?
  - Current models do not work. This has to be completely overseen by NJ Clean Energy.
  - Highly doubt this function can be outsourced. There needs to be a governmental agency that drives towards actual data aggregation for both the state evaluation and public transparency.
  - In order for New Jersey to oversee a massive transition from fossil fuels, it is not realistic to outsource reviews and approval of data updates. Between 2020 and 2050, the state needs to be on top of the data updates, data public availability and data integrity assessment.
- How can stakeholders provide technical or on-the-ground expertise into the process?
  - Unrealistic question unless taken in through a Data Integrity Team. NJ Clean Energy must form a data integrity team in order to vet stakeholder input.
  - Current situation is severely limited with the input form on NJBPU for stakeholders with no Data Integrity Team validation. Analysis becomes ad-hoc and measurement is anecdotal.
  - Process anomalies can only be truly assessed when there is a process that fully measures, quantizes and analyzes technical/expertise postings.
- What model(s) for program evaluators should New Jersey consider?
  - 1. Require utilities to provide monthly measurements of all data utility has by March 1, 2020.
  - 2. Form a Data Integrity Team that focuses on enabling data being public, validating data has no integrity issues and pursue all data anomalies.
  - This should be owned by NJ Clean Energy if NJ Clean Energy is to be responsible for the data program, which I believe is integrally required in order to meet 2050 energy goals.

Question Set 2:

- How should the EM&V Evaluation, measurement, and verification process intersect with filing requirements? What types of information are needed when, and from whom?
  - Set March 15 as the cutoff date for all new application/filing events from utilities if monthly data is not provided by utility.

- Establish fines to incur to all utilities who have not met the March 1, 2020 data requirements by May 1, 2020 and increase fines every month until the data is provided.
- Enforce that all data is required by May 1 from utilities.
- What is needed in this transition period (through launch of new programs) and the long term (~5-year goal and beyond)?
  - NJ Clean Energy needs to transform their organization to enable massive transition of NJ from fossil fuels to clean renewable energy.
  - NJ Clean Energy needs to form a **Data Integrity Team** who are solely focused on data acquisition, integrity and publishing of data from utilities.
  - Within 5 years, New Jersey must have all data, granular to the street level, updated on a daily basis. Ideal if it is in real time.
  - If NJ agencies are not the recipients of actual data, then how could we ever trust the data is real? We are migrating from a passive, at least 2 years out of date, data estimate of bulk potential that has no real bearing of actual data from source to end. How could we ever evaluate losses, inefficiencies or issues with this type of false enumeration?
- Should New Jersey evolve towards a unified framework for all distributed energy resources?
  - NJ should evolve towards a comprehensive energy framework that tracks energy from source to end user. Anything less introduces masquerade or misrepresentation of energy measurement.

#### Question Set 3:

- Should New Jersey develop a primary cost test associated with key policy initiatives, e.g., following the Resource Value Framework (National Standard Practice Manual), designate one of the five standard tests as the primary test, or employ another approach? What approach is recommended?
  - National Standard Practice Manual currently allows for non-measurement input. Without measurement, this becomes irrelevant when attempting to shift a state energy from fossil fuel to clean energy using renewable sources.
  - New Jersey needs to institutionalize actual data measurements provisioned by all utilities authorized in New Jersey to operate, where all data is provided to NJ Clean Energy.
  - New Jersey needs to abolish policies and procedures that advocate aggregation of estimates (false data) from other sources and take charge of being the authoritative reliable source for all data of energy traversal within NJ energy grids.
  - To move beyond fossil fuel requires a real mapping of actual data for energy traversal within New Jersey to accurately assess, advise and enforce a transition from fossil fuel to clean energy sourced from renewable sources.
- What are the costs and benefits that you would recommend for consideration in a single benefit-cost test? This question has no bearing when there currently exists no actual data for assessing benefit cost. I would recommend that NJ take a hard stance and require actual daily data updates from utilities where an actual Clean Energy Data Integrity Team could fully evaluate and assess energy traversal integrity with benefit cost methods.
  - Are there indirect or non-energy related costs or benefits that should be considered?
    - How to quantify long term Health Impact (at least out to 2050)?
    - Long term environmental impact (2040 complete flooding of some regions of New Jersey).
    - What are the real costs? What are the real measurements of actual energy traversal in the energy grid? What are the actual energy loss focus points currently in the state? What opportunities do new innovations in the hydrogen economy pose?
    - Sustainability of human health and environment in New Jersey are the fundamental components for assessing cost benefit cost analysis. Currently, many resources project substantial adverse human and environmental impact to NJ by 2040. NJ Clean Energy needs to incorporate long term with actual measures of today in defining a massive shift from toxic fossil

fuel usage towards clean energy (totally renewably sourced). Without this, NJ Clean Energy Fails its responsibility to New Jersey.

- If so, how can they be estimated?
  - First let's:
    1. Get real data from utilities and enforce data is provided monthly at first, then real time.
    2. Work with the other states that Governor Murphy agreed to collaborate with in fully assessing cost benefit analysis.
    3. Ensure that cost projections incorporate the constantly-changing threat from climate change such that it is considered and updated on an annual basis.
    4. Assess future health and environment costs as well as market, public and governmental resistance to change.
    5. Build a Risk Mitigant Strategy that incorporates costs, long term impacts, current impacts and costs for not pursuing continued migration to 100% clean energy migration.The focus needs to incorporate all changes and impacts from now until 2050 with continued updates based off of actual data added into the forecast analysis.

#### Question Set 4:

- What are the most important factors to address in measurement and verification of energy savings?
  - Should programs be evaluated based on gross or net savings?
    - Neither, it should be based off of actual data and savings. This is a fundamental requirement if NJ Clean Energy is to truly oversee actual migration to clean energy. Fake data doesn't cut it.
  - For which measures are the use of deemed (assumed) savings appropriate, and which measures should be tested to verify actual savings?
    - This is complicated. Savings needs to incorporate reduced health costs and environmental damage. If people are suffering from increased sea levels in 2040 that completely ruin many neighborhoods of NJ, do those costs get incorporated? Do increased pathogen migration from southern states that afflict residents of NJ health costs get incorporated? Do increased toxic residual in air, water and ground from continued fossil fuel use factor into the equation?
    - NJ Clean Energy cannot solve all of these questions, but by instituting a Data Integrity Team, NJ Clean Energy can start to quantify and provide guidance to an overall cost to New Jersey.
- How should advanced M&V (measurement and verification) (automated data processing/increased data granulation) be integrated into EM&V?
  1. First, NJ should require all utilities to provide monthly data of all energy traversal within their grid including from sourcing, gathering, distributing, supplying, sales and consumption.
  2. NJ Clean Energy needs to create a Data Integrity Team that actively pursues, validates and assess data provisioned by NJ utilities.
  3. Only then can NJ start to advertise that it has advanced M & V.
  - When should it be incorporated? **AS SOON AS POSSIBLE**
  - What are best practices related to accuracy/confidence/reporting?
    - Identify source, mandate source to provide data
    - Review data and aggregate and analyze data against other outside data points
    - Establish ad-hoc inspections of data at all the points in the energy transversal grid to validate what is provided matches what is reported
    - Trend energy traversal attributes, history and reported issues to create a data integrity readout grade for each utility.

From Kirk Frost via [kirkafrost@yahoo.com](mailto:kirkafrost@yahoo.com)

To be sent to [publiccomments@njcleanenergy.com](mailto:publiccomments@njcleanenergy.com)

1/10/2020 Comment #3: Dec 18, 2019 Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Dear NJ Clean Energy,

In November of 2014, I noticed on several occasions that my solar inverters were in alarm mode. After several attempts to escalate at PSEG, contacting the manufacture of the inverter, I discovered that the grid voltage was out of the specification range and the inverters were shutting down. Initially the issue was sporadic, but from 11/29/2014 to 12/04/2014, the condition was constant and no energy from my solar panels was being fed back to the grid. I purchased a special communications tool to adjust the thresholds on my inverters and made the change on 12/05/2014. The issue continued for quite some time into mid-December and I had updated PSEG. A PSEG engineer visited and acknowledged they were having an issue with a nearby capacitor bank and working to get it fixed. I also purchased the monitoring upgrade modules for each inverter along with the cable and device that captured data from inverters. Since I was able to change the configuration, my solar panels generated energy to the grid even while the issue continued.

Notes:

1. PSEG wasn't able to detect the issue and for several weeks were initially adamant it was an issue due to my solar panels (which it wasn't and I had to spend money to prove that).
2. High voltage issue was sustained for quite a period of time (I think beyond 1 month).
3. This issue affected other homes in the neighborhood with solar panels.

Please note, this is not to disparage PSEG. I have high regards for the company and appreciate their continued drive towards quality, low rates and sustaining a grid that was never designed for the renewable revolution that started around 2010.

What do we need for Evaluation, Measurement and Verification?

1. All energy Data sourcing from NJ Utilities provided monthly to NJ Clean Energy  
Preferably under a real time Energy Performance website on NJ Clean Energy website.
  - a. Phase 1 – due by March 1, 2020 – Utility monthly data provided to NJ Clean Energy at the township level summary (not average or estimate – real aggregated data)
  - b. Phase 2 (parallel project track to Phase 1) due by June 2020 – NJ Clean Energy build energy performance website site on NJ Clean Energy that enables summaries of energy sourcing, generation, distribution, and consumption website available to the public. Data is does not reveal any information deeper than township level for units of electricity generated, units of electricity sold and units of electricity provisioned to town from large scale generation plants.
  - c. Other sources of endpoints such as supplier energy output and energy measurements at distribution sites and any other data that is available between supplier and home endpoints.
  - d. Phase 3 Utility to provide all endpoints monthly data by March 1, 2021  
Such as supplier energy output, energy measurements at distribution sites and any other measurement data that is available between supplier up to and including home endpoint measurements (which are available). This data to not be visible to the public at the endpoint detailed level, but rather aggregated into township/regional areas and identifying sourcing generated and actual distributed to end points.  
Ensure that all security and confidentiality criteria are met and in compliance with keeping NJ safe.

2. Actual Measurements of all electricity generation (renewable, fossil fuel, nuclear and imports)
  - a. Due by March 1, 2022 – all new renewable installations that tie into the grid must include monitoring where data is published to NJ Clean Energy at least on a daily output. Since all monitoring options provide data output at least to the minute level, I would encourage this since it would help in diagnostics of any issues in the grid.
  - b. All power generation plants to publish their actual energy generation to NJ Clean Energy by March 1, 2021.
3. NJ Clean Energy initiate a Data Integrity team by January 1, 2021 (or as soon as possible even if initially allocated current employees to the function on a part time basis. Mission of Data Integrity Team:
  - a. Ensure that all energy supply, traversal measurement points and end use points are full provided by Utilities on a monthly basis.
  - b. Implement NJ Clean Energy Performance website and data summary analytics are available on a monthly basis at first and then to a real time basis incorporating monitoring integrations.
  - c. Responsible for reviewing and validating monitoring data with energy measurements provided by utilities.
  - d. Data Analytics – develop algorithms to detect issues, anomalies and forecasts of usage.
  - e. Monitor and provide monthly reports on NJ Energy supply and demand to Energy Master Plan commission.

What it appears to me, and I could be wrong, is that there is a lot of data not currently available that could help in planning New Jersey's transition from fossil fuels to clean energy. It also appears that the electric infrastructure needs to continue to reinvent itself in adjusting to accommodate distributed energy generation and usage model (such as microgrids) to more effectively integrate distributed renewable energy generation. This also, by default, will reduce inherent loss in the current grid that without data, agencies are not aware of.

The state agencies, working with the utilities, need to identify loss areas in the grid and use those as opportunities for creating micro grid sections that eliminate the loss. Hydrogen is currently being considered as a viable storage facility for enabling micro grid enablement in other countries and the 7 other states that NJ Governor just signed an initiative with for zero emission vehicles. We need to push harder on adjusting how NJ does business in energy. Status quo will only ensure that the transformation from fossil fuels to renewables will fail.

The Dutch report in this link: <http://futuregrid.emrp.eu/wp-content/uploads/2016/09/12-Rietveld-Transformer-load-loss-measurement.pdf> captures very similar issue that I experienced. The integrity of energy is dependent on what can be measured and verified. The utilities already measure energy traversal on their grids from all endpoints. This needs to be provided as soon as possible and NJ needs to implement monitoring to enable verification and analysis of energy traversal.

The utility companies are partners and have the experienced know how on energy. We also need to remove any barriers of 'proprietary data' that might exist so the state can work with utilities, other states and even other countries if useful. The world has moved much further ahead than New Jersey in terms of renewable and hydrogen, we need to catch up and become experts in this field.

Do you realize that micro wind mills generating 500 watts cost \$250? This is another area of microgrids that needs to be considered and enabled at homes. In the microgrid scenario, loss is minimized and every watt generated is utilized.

I very much appreciate your consideration of this comment and hope you move up the urgency of data and monitoring.



From Kirk Frost via [kirkafrost@yahoo.com](mailto:kirkafrost@yahoo.com)

To be sent to [publiccomments@njcleanenergy.com](mailto:publiccomments@njcleanenergy.com)

1/10/2020 Comment #4: Dec 18, 2019 Energy Efficiency Transition – EM&V and Filing/Reporting (issued on 12/18/2019)

Dear NJ Clean Energy,

NJ Energy Master Plan and the Integrated Energy Plan require actual monthly energy metrics, monitoring and reporting on an ongoing basis. This enables NJ Agencies contributing to the transitioning from fossil fuels to clean energy.

In order to enable this transition, a substantial transformation must occur within New Jersey's energy infrastructure and monthly measurements and verification via monitoring are critical underpinnings to be reported actively on a monthly basis. Not numbers thrown into a budget proposal and labeled as KPIs. Real KPIs are monthly measures reported monthly, analyzed and acted upon in real time. At least that is what companies must do to maintain their productivity, services, products and integrity.

I recommend creating a **Data Integrity, Compliance and Reporting group (DICR)**

Responsible for:

- Central data warehouse and analytics for NJ Agencies for measuring, monitoring, compliance and reporting
- Overseeing the instrumentation of performance, quality and progress measures of all agencies contributing to the transition from fossil fuels to clean energy
- Incident Management of data anomalies and monitoring alerts
- Compliance and integrations with partners (initially utilities)
- Data Analysis, forecast, trends and energy efficiency learning algorithms
- Publishing monthly executive insights and reporting
- Independent from any specific agency focused on integrity and publishing of monthly meaningful data

The group initially starts with energy data and expands and grows to include all data measurements for transitioning from fossil fuels to clean energy. That is the reason why EM&V is even being discussed and should become the overall long term objective of DICR.

New Jersey cannot continue depending on federal agencies generating estimates for New Jersey. New Jersey should be collecting and evaluating KPIs, energy data points and providing real time visibility into New Jersey's energy status.

I very much appreciate your consideration of this comment and hope you move up the urgency of data and monitoring.



VIA ELECTRONIC MAIL ([energyefficiency@bpu.nj.gov](mailto:energyefficiency@bpu.nj.gov))

January 17, 2020

Honorable Aida Camacho-Welch, Secretary  
New Jersey Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, NJ 08625-0350

**Re: IN THE MATTER OF THE IMPLEMENTATION OF P.L. 2018, c. 17  
REGARDING THE ESTABLISHMENT OF ENERGY EFFICIENCY  
AND PEAK DEMAND REDUCTION PROGRAMS  
BPU DOCKET No. QO19010040**

**Comments regarding EM&V, Filing and Reporting**

Dear Secretary Camacho-Welch:

New Jersey Natural Gas Company (“NJNG” or “Company”) looks forward to working with the Board of Public Utilities’ (“BPU”) on the implementation of P.L. 2018, c. 17 regarding the establishment of energy efficiency and peak demand reduction programs (“Clean Energy Act”). NJNG participated in the December 18, 2019 Stakeholder Meetings on Evaluation, Measurement and Verification (“EM&V”) and the Filing and Reporting Requirements and shared our perspective on many of the questions posed on the published agenda. It is challenging to provide detailed recommendations for some of the discussions points due to the uncertainty regarding the administration of the programs. NJNG appreciates Board Staff’s efforts to provide some preliminary directional information through their release of the December 21, 2019 Energy Efficiency and Peak Demand Program Administration Straw Proposal (Straw Proposal) but recognizes that information is likely to evolve as input from a broad range of stakeholders is considered. NJNG recognizes that our comments from the Stakeholder meeting are already part of the record so we are only sharing a few high-level thoughts on these topics for consideration in the Second Straw Proposal that is intended to be more comprehensive.

## **General Comment**

After the concepts of the Straw Proposal get refined and programs are identified, the Board should secure stakeholder input to gain a better understanding of what information will be helpful to assess overall efforts to advance energy efficiency and meet policy objectives and the performance of the programs, both individually and as part of a program portfolio. This effort should apply to the utilities, as well as the Board for the programs they retain. Through this effort and to identify the questions that State and stakeholders want answered, both groups can consider which of these questions are answered by routine reporting and which can be better answered by evaluations, and an appropriate frequency for each. The Company recognizes the Board's interest in getting feedback for the questions posed in Question Set 1 and 2 from the December 18, 2019 meeting but NJNG believes the answers to many of those questions may be program specific. As part of this sorting of information the Board, with input from the Energy Efficiency Advisory Committee and the utilities, can consider:

- the potential cost for collecting such information vs. the value of knowing the answer at the desired frequency
- concerns regarding any potential transfer of Personally Identifiable Information ("PII")
- formats for sharing final reports and studies with other stakeholders and opportunities to discuss the results.

## **EM&V Comments**

- Utilities must be directly involved in all evaluations and studies, regardless of which entity is administering a program. Through our routine interactions with customers, knowledge of customer usage patterns, and insights unique to our service territory, NJNG has specific knowledge and experience that can support and validate the evaluation. Many stakeholders expressed significant concerns about both the process and the findings of the Market Potential Study that the Board accepted in May 2019. There are still unanswered questions and concerns regarding stakeholder input on that effort. NJNG recognizes that this was an unusual situation where the Board was faced with meeting legislative deadlines but efforts should be made to ensure that utility input is considered for all evaluations that are managed by the Board.
- Regarding general models for evaluation, NJNG believes that the utilities should have the primary role for securing independent evaluators for all programs they administer. As entities running the programs and with the ultimate responsibility to successfully implement these programs to meet the energy saving targets and related regulatory priorities, we need to be as close to the process as possible to ensure the information the evaluator is assessing is accurately captured and to permit the Company to take actions

on process improvement suggestions as soon as possible or to research for more significant program design changes. The State could consider retaining a separate general evaluation consultant to help them monitor current and pending evaluations and reports and advise them as needed. NJNG appreciates the suggestions that other stakeholders made at the December 18, 2019 meeting regarding their experiences in other states that have similar models with this dual evaluator approach, especially their observation about the value that the diversity of perspectives and expertise that it brought to the discussions. NJNG suggests this model may be a good approach for New Jersey, especially if the state will be retaining the responsibility for some programs.

- Preliminary EM&V plans should be included within filings for both utilities and any programs retained by the state. The utilities would need a clear understanding of any efforts that the State may be pursuing for statewide insights and must have the opportunity to provide input into the scope. As noted above, it is problematic when utilities are not involved. The Straw Proposal currently references a pending baseline study but to-date the utilities have been excluded. Understanding statewide efforts can help avoid duplication for planned utility EM&V efforts. Utilities should collaborate on a common scope of work for evaluations on core programs. Programs that fall in the Utility Led Initiatives category should include a description of planned evaluation work as part of the utility filing. NJNG notes that the current Minimum Filing Requirements (“MFRs”) require an Evaluation Plan to be included with the filing.
- Regarding to non-energy benefits, both the American Council for an Energy Efficient Economy and Lawrence Berkeley National Labs have done a lot of work on this topic. It includes a broad range of benefits, from health and safety on the residential side, to employee productivity and resiliency on the commercial side. New Jersey can learn from other jurisdictions that have addressed these benefits in their programs. NJNG would encourage the state to go beyond just capturing non-energy benefits and use the National Efficiency Screening Project’s Resource Value Framework to test whether the approach to Cost Benefit testing that New Jersey intends to use is balanced and aligned with policy objectives. Traditionally, it is much easier to capture all the costs of energy efficiency programs and much more challenging to capture all the benefits of the programs. In states where there isn’t a specific energy saving target, an unbalanced approach to screening the cost effectiveness of programs will lead to fewer energy-efficiency measures or programs being approved. Given the legislative mandate to achieve energy reduction targets, it is critical for Benefit-Cost Screening to capture all the benefits of the program to ensure that the structure does not create artificial barriers that inhibit the ability to achieve the goal. Ensuring all benefits are captured may be even more important for gas programs. From participation in national energy efficiency

organizations and conferences, NJNG knows that some natural gas programs face significant challenges because of the low cost of natural gas.

- NJNG believes that the Societal Cost Test is the most appropriate test to apply, especially in consideration of the Clean Energy Act's ("CEA") language stating that benefit cost test should consider economic and environmental factors. Further, the Company believes the language within the CEA also supports gross savings being used as the metric by which the programs are evaluated.

### **Reporting and Filing Comments**

- It is appropriate to consider the MFRs in parallel with the evolving Straw Proposal.
  - To the extent that there is an expectation that some elements of the Core Programs are pre-negotiated through stakeholder discussions in advance of the required utility filings, it is worth considering whether some of the existing MFRs can be deleted/waived for those programs.
  - Once the Quality Performance Indicators ("QPIs) have been finalized, it is reasonable to request the utilities provide an overall assessment of how the programs within the filing relate to the established QPIs. This will require clarity regarding the expectation of the utility's expected performance with consideration of the expected contributions for any programs retained by the State.
- NJNG is supportive of using standardized templates for utility reporting with clear, consistent definitions for fields within the template. This should provide an easy way for the State to accumulate an aggregate view of activity throughout the State. Any templates that are developed should include separate fields to track funds distributed for on-bill repayment programs and other forms of financing to ensure parties can identify which forms of incentives will be repaid by customers over time, especially since on-bill repayment solutions may be an important part of the solution for ensuring equitable participation for moderate income customers. This clear distinction on types of funds can also mitigate the potential for some stakeholders to infer incorrect conclusions if they are making comparisons against programs that don't include a financing component.
- Referring to the point made in the general comments section, it is important to avoid requiring routine reporting for things that may be better assessed through an evaluation. The state should avoid requesting that excessive information be reported on a routine basis when it may be sufficient to just request the information be stored in a manner that will support future evaluation. The slides presented at the December 18, 2019 meeting

listed potential future data requirements for consideration. One bullet suggested the “Projects in progress and completed, including zip code, cost, program incentive, savings”. It would not be advisable to try to routinely report this type of data at the project level. Excessive amounts of data being reported could tie up key resources and potentially divert attention from bigger program and portfolio level views of performance. Further, the State has prior experience trying to accept and reconcile account level data submission and ultimately decided that there was not sufficient value in trying to collect that data through their Information Management System (IMS).

- NJNG currently uses a vendor software solution to track individual program participants, as well as to communicate directly with participants and their respective contractors. Utilities should be encouraged to use systems like that to support data needs and improve the customer and contractor experience but should not be forced to transfer to a single statewide system. This should allow multi-state utilities to leverage synergies with platforms used in other jurisdictions and allow in-state utilities to continue to select systems that best integrate with their other information systems.

NJNG appreciates the opportunity to provide comments on these topics and looks forward to working with the Board and other stakeholders as the State considers how to restructure the approach to energy efficiency as to enable the utilities to reach the aggressive clean energy goals established by Governor Murphy’s administration. Please feel free to contact me if you need any additional information regarding these issues.

Respectfully submitted,



Anne-Marie Peracchio  
Director- Conservation and Clean Energy

Joseph F. Accardo Jr.  
Vice President Regulatory &  
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January 17, 2020

Via E-mail ([EnergyEfficiency@bpu.nj.gov](mailto:EnergyEfficiency@bpu.nj.gov))  
Aida Camacho-Welch, Secretary of the Board  
Board of Public Utilities  
44 S. Clinton Ave., 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, NJ 08625-0350

Re: Energy Efficiency Transition, Evaluation, Measurement & Verification and Filing and Reporting

Dear Secretary Camacho-Welch:

Please accept these comments on behalf of Public Service Electric and Gas Company (“PSE&G” or “Company”) in connection with the above-referenced matter. PSE&G thanks the New Jersey Board of Public Utilities (“BPU” or “Board”) for its initiation of the energy efficiency transition stakeholder process and the opportunity to provide these comments.

These comments will generally follow the structure of questions in the EM&V section of the agenda, and the agenda categories for the Filing and Reporting section.

#### Evaluation, Measurement & Verification

Question set 1:

- What types of evaluations and studies (BCA, baseline, process, impact) are necessary, in what cadence and frequency?
- What models do we see for who conducts, reviews, and approves each of those?
- How can stakeholders provide technical or on-the-ground expertise into the process?
- What model(s) for program evaluators should New Jersey consider?

PSE&G suggests that impact studies and benefit cost assessments (BCA) be conducted annually to measure actual performance against goals and to ensure that the portfolio remains cost effective. This is a best practice among the leading states and utilities. Process studies may be done less frequently, and may be more dependent on the details of the program. For example, a new program may require a process study soon after launch to gain initial feedback on the program design and customer response, but a mature, successful program may not require a process study on an annual basis. Utilities should work with staff and other stakeholders to determine the optimum sequencing of process studies.

All EM&V work should be performed by an independent third party with expertise in the field of EM&V. These EM&V vendors should be selected through a competitive bidding process conducted by the utilities. The utilities should directly contract with the vendors so that they can work closely together. EM&V vendors will require close interaction with EE program management and implementation teams and their contractors to effectively perform their work, and will need direct access to the data collected by the utilities on program participants, savings, etc.

While impact, process, and cost effectiveness studies are essential elements of a sound EM&V program, EM&V should not be limited to these three study categories. EM&V should also include other needed research related to energy efficiency. Research could include baseline studies to determine future savings targets, benchmarking studies to review comparative program element and results, local and statewide economic impacts from EE programs, or research into specific types of equipment that may be undergoing technological or market changes to ensure savings are being captured accurately (particularly for programs with deemed savings measures). EM&V research should be utilized to help inform updates to technical resource manuals, and can be used to inform new program design. A robust EM&V plan should include an assessment of all other areas of research needed to ensure long term success of the portfolio.

Finally, PSE&G recommends that BPU staff and Rate Counsel contract with their own EM&V vendors to oversee the EM&V plans and results of the utilities. These vendors should not seek to replicate the work of the utilities' EM&V vendor, but rather work as Staff and Rate Counsel's subject matter experts in ensuring that the EM&V work done is accurate and consistent with the plan. These vendors can also provide input into the overall EM&V plan, particularly in deciding what additional research should be conducted.

#### Question set 2:

- How should the EM&V process intersect with filing requirements? What types of information are needed when, and from whom?
- What is needed in this transition period (through launch of new programs) and the long term (~5-year goal and beyond)?
- Should New Jersey evolve towards a unified framework for all distributed energy resources?

The results of the EM&V process should help inform upcoming EE programs and filings by providing insight on how program designs, incentives, or performance may impact the future of the overall EE portfolio. Utilities should follow a strategic best practice approach to Energy Efficiency and utilize the recommendations and feedback from the process and impact studies as essential elements of the continuous improvement cycle, formalizing an action plan to implement the recommendations provided by the third party evaluator to improve the future results of the existing EE programs or develop new programs.

In its CEF-EE filing, PSE&G has proposed an initial EM&V structure that undertakes impact, process and cost effectiveness studies as a starting point, with available funds to perform additional EM&V tasks over time. This approach can be transitioned to the state-wide approach discussed over time, following the continuous improvement cycle described above.

Question set 3:

- Should New Jersey develop a primary cost test associated with key policy initiatives, e.g., following the Resource Value Framework (National Standard Practice Manual), designate one of the five standard tests as the primary test, or employ another approach?
- What approach is recommended?
- What are the costs and benefits that you would recommend for consideration in a single benefit-cost test?
- Are there indirect or non-energy related costs or benefits that should be considered?
- If so, how can they be estimated?

For near term EE programs to move forward, such as PSE&G’s CEF-EE filing, PSE&G recommends that the Board use the Societal Cost Test as the primary cost effectiveness test. This is the only test currently allowed by the Board that is consistent with the Clean Energy Act’s mandate to evaluate both the economic and environmental impacts of EE programs.

In the longer-term, we suggest the Board follow the National Standard Practice Model (NSPM) model, which provides a framework to determine the cost effectiveness for not only EE resources, but other distributed energy resources (DERs) as well.

The NSPM presents the Resource Value Framework (RVF) as the approach to determine cost effectiveness. This approach allows each jurisdiction to determine the scope of benefits and costs to include in its cost effectiveness test; the Resource Value Test (RVT). It provides for the ability to include environmental impacts, public health impacts, non-energy impacts, impacts on low income customers, as well as others parameters. As a starting point, we recommend that all environmental and economic benefits be included, as these benefits are clearly mandated to be included by the Clean Energy Act, and that the EEAC consider other New Jersey policy goals and how they can be incorporated into the test, including, but not limited to, non-energy impacts and impacts on low income customers. Proposed benefits and costs to be considered in New Jersey’s cost-benefit include:

<b><u>BENEFIT</u></b>	<b><u>Method to Estimate</u></b>
<b>Lifetime Avoided Electric Supply Costs</b>	<i>PV of electric energy reduction at wholesale</i>
<b>Lifetime Avoided Electric Capacity Costs</b>	<i>PV of peak electric capacity cost</i>
<b>Lifetime Avoided Natural Gas Supply Costs</b>	<i>PV of natural gas reduction at wholesale</i>
<b>Lifetime Merit Order (DRIPE) Benefits</b>	<i>PV of merit order electric market benefits</i>
<b>Lifetime REC Avoided Purchases</b>	<i>PV of reduction of REC purchases</i>
<b>Lifetime Wholesale Volatility Value</b>	<i>PV of market hedge value</i>
<b>Lifetime Avoided Replacement</b>	<i>PV of avoided replacement Costs</i>
<b>Lifetime Avoided T&amp;D Costs</b>	<i>PV of avoided T&amp;D</i>
<b>Lifetime Emission Savings</b>	<i>PV of CO<sub>2</sub> + Nox + SO<sub>2</sub> emissions savings</i>
<b>Lifetime Economic Multiplier Benefits</b>	<i>PV of economic multiplier benefits</i>
<b>Low Income Customer Benefits</b>	<i>TBD</i>

<b>Small Business Customer Benefits</b>	<i>TBD</i>	
<b><u>COST</u></b>	<b><u>Method to Estimate</u></b>	
<b>Lifetime Participant Costs</b>	<i>PV of initial costs &amp; repayments by participants</i>	
<b>Lifetime Administration Costs</b>	<i>PV of administrative costs</i>	
<b>Lifetime Program Investment Costs</b>	<i>PV of incentives</i>	

PSE&G suggests that difficult-to-quantify elements such as low income customer benefits be assessed by stakeholders with a goal to determine an optimum approach, and ensure appropriate recognition of the benefits and costs to New Jersey’s most vulnerable residents. Other states have used EM&V research to assess such values in aggregate and recommend reasonable estimations of their value.

Question set 4:

- What are the most important factors to address in measurement and verification of energy savings?
- Should programs be evaluated based on gross or net savings? For which measures are the use of deemed (assumed) savings appropriate, and which measures should be tested to verify actual savings?
- How should advanced M&V (automated data processing/increased data granulation) be integrated into EM&V?
- When should it be incorporated?

The most important elements to address in EM&V are the targets, methodologies and protocols that will be used to measure savings for each program. Gross savings should be the metric by which the programs are evaluated. The CEA states that the savings targets can be met from not only efficiency programs, but from improvements in other codes and standards. As such, the CEA targets defined in the legislation should be seen as gross savings. Additionally, the methodology used by Optimal in determining the maximum achievable potential also provided a view of the gross savings potential in the State. Measuring savings on a net basis would minimize the impact of codes and standards on achievement of goals, which may cause these valuable tools to be deprioritized, and become a missed opportunity for savings. Therefore, the savings targets should be based on gross energy savings, consistent with the language of the CEA and the study methodology.

In general, deemed savings should be applied to simple high efficiency equipment replacement programs, many of which are residential or small commercial programs. Because of the number of assumptions that go into these values, these deemed values should be validated from time to time with primary research, depending on the pace of change in technology or other market factors.

Programs that encourage more complex upgrades or replacement of energy consuming equipment and systems typically require more direct measurement, in some instances with pre-determined formulas, to determine energy savings. These are typically larger, commercial or industrial projects. Technical Resource Manuals can help inform the measurement methods for these projects, while leaving flexibility for unique projects and systems that may require project-specific

detailed engineering analysis. In cases such as this, it is appropriate to ensure that all savings calculations follow established professional protocols for measuring energy savings, and all calculations be validated by other engineering professionals. Program-specific methods should be used for unique programs, such as behavioral programs, in which savings accrue over time and control groups are used to net out non-program savings.

Advanced M&V can also be utilized to improve EM&V accuracy in impact and cost effectiveness studies, but requires Advanced Metering Infrastructure (AMI) and the more detailed usage data it provides. In this regard, PSE&G's CEF-Energy Cloud filing seeks to provide all of its 2.2 million electric customers with the advanced meters that would allow for these benefits.

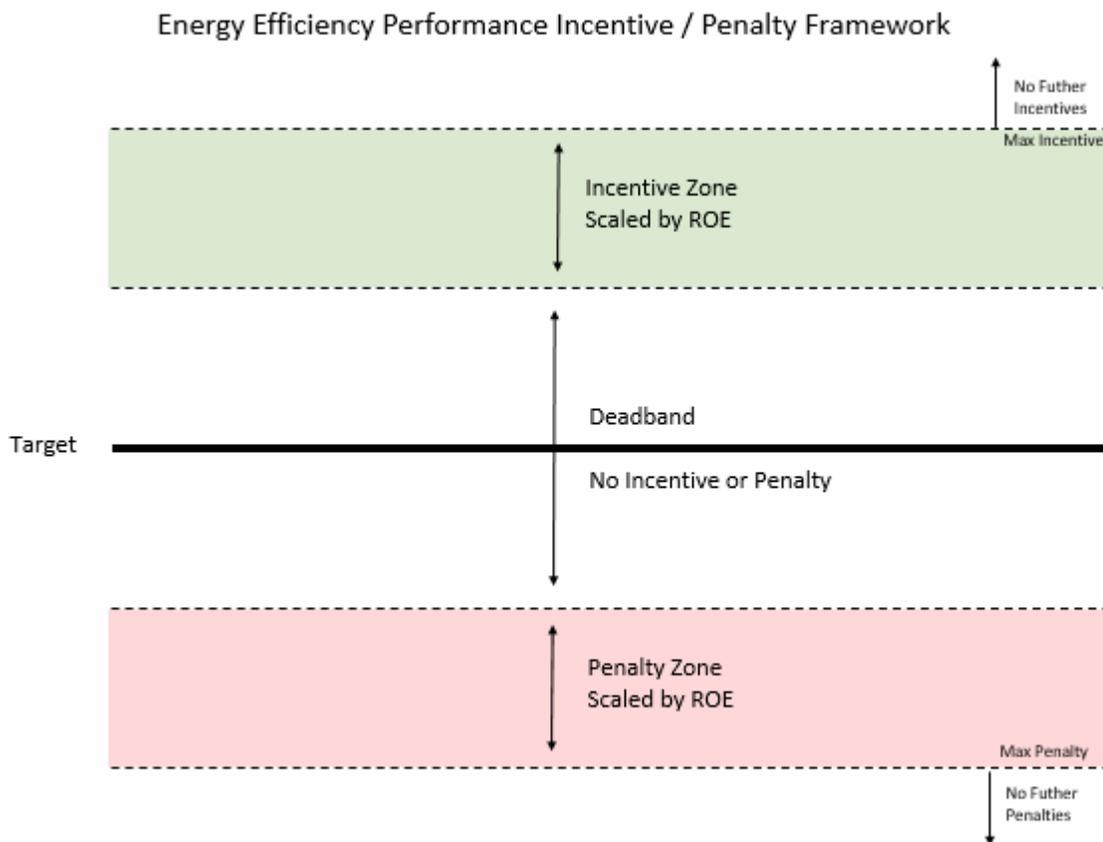
With these general guidelines, the method(s) of measuring savings should be determined during program design of each program, and reviewed with those responsible with EM&V to ensure agreement of the methods to be used.

Following review of the methods by which EM&V will take place, it is critical to consider how the results of the EM&V process will feed into the utilities' Quantifiable Performance Indicators (QPIs), and used to assess incentives and penalties through the Performance Incentive Mechanism (PIM). As PSE&G has previously proposed in the January 3<sup>rd</sup>, 2020 comments titled *Re: Energy Efficiency Transition, Cost Recovery Scenarios*, PSE&G proposed the following mechanism.

PSE&G supports the use of performance incentives and penalties to promote State policy goals and reach the targets outlined in the Clean Energy Act. Performance should be determined based on the results of the Quantitative Performance Indicators ("QPI"). In relating performance to the award of an incentive or payment of a penalty, PSE&G recommends following best-practice elements, which are illustrated in Figure 1 below:

- **Simple and transparent.** The mechanism must be as simple as possible, to translate performance on QPIs into incentives and penalties.
- **Dead band.** There should be a dead band around the targets in which no incentive or penalty is incurred.
- **Cap and floor.** The existence of a cap and floor serves to limit exposure by both customers and utilities in the event of significant under- or over-performance.
- **Linear scaling.** The incentives and penalties should scale linearly between the floor and the dead band, as well as between the dead band and the cap.
- **Recovered over time.** This approach aligns the incentive or penalty with the time over which customers receive the benefit from EE investment. It will also minimize the rate volatility that could flow from awarding the entire incentive or imposing the entire penalty in a single year.

Figure 1



To satisfy these guiding principles, PSE&G recommends that the incentive or penalty be awarded through an adjustment, up or down, to the return on equity (“ROE”) earned on the energy efficiency investment at issue. This approach will naturally satisfy the principle to recover the incentive/penalty over time, and will keep the mechanism simple and transparent by tying it to the utility’s existing ROE. This aligns with practices in both Illinois and New York, leading EE states that have both rate-of-return on EE investment and performance incentives.

### Filing and Reporting

**Minimum Filing Requirements** - PSE&G suggests that some of the current minimum filing requirements (MFRs) be removed, namely the MFRs that look for program comparisons with other in-state or out of state programs, program barriers, and impacts on employment and economic development. These MFRs are highly subjective. As such, each utility has addressed these MFRs in their own way, producing varied responses that may not provide meaningful information to assist the Board in assessing whether EE programs should be approved or not. While the Company believes the issues addressed by these MFRs are important and necessary in the assessment of these EE programs, it believes that this information—instead of being provided

at the outset with the filing—should be addressed separately at a statewide level by the utilities collaboratively. These issues would be evaluated and assessed as part of the utilities’ overall EM&V plan referenced earlier, in which vendors with the proper expertise perform the research on these topics and present the results in a comprehensive manner. Alternatively, statewide EM&V research will produce a more robust assessment of program comparisons through benchmarking program designs and results, can assess program participation barriers, and can analyze job creation & economic impacts of EE portfolios. This research, done as part of the utilities’ EM&V plan, can be done on a regular schedule to keep Board staff informed on these issues. This effort would be similar in structure to the demographic study currently being undertaken by the utilities on a collaborative basis.

To the extent that the Board implements Quantitative Performance Indicators that are not already part of existing MFRs, they should be added.

**Reporting Requirements** – During the performance year, PSE&G recommends that the Board limit the data requirements to those elements that are essential to understanding the performance of the portfolio and programs over the year against the targets established and can be reported easily: expenditures, first year and lifetime savings, the number of participants all fall into this category. Other suggested data categories such as bill impacts, jobs created, benefit cost analysis are not items that can or should be reported at interim periods over a year, but are better assessed after the performance year is completed as part of the EM&V plan and reported separately.

PSE&G suggests a standard reporting format, common to all utilities, to provide the Board with consistent data, and further suggests that the reporting be no more than four times per year.

**Tracking System** - PSE&G suggests that the tracking and reporting needs of the BPU and the utilities are separate and should be viewed as two distinct needs. The BPU requires a reporting system for use by the Board and its staff, which would be capable of integrating the results from all of the utilities into a statewide data set. It would also be capable of compiling the data provided to create standard and ad hoc reports for the Board and its staff, and be able to synthesize data to provide dashboard information as well. Finally, it should be capable of presenting the statewide results into a viewable set of tables and graphs that would support a publically available statewide report on the results of all EE programs.

The utilities, as program administrators, require a “system of record” for each of the utilities, which would be the data repository of all EE-related information for that utility, and would include reporting capabilities. This system of record would also include all the capabilities to operate a 21<sup>st</sup> century EE portfolio, such as: the exchange of information with the utility’s customer information system; the operation as a work management system for EE programs that have long sales cycles; interaction with customers, trade allies, and other contractors to exchange data; tracking of sales; and many other functions. It will need to interface with utility billing systems for on-bill repayments, and financial systems to accurately track and record all program expenditures, repayments, and incentive payments. PSE&G suggests further discussions with our Information Technology (IT) professionals to gain a better understanding of the IT systems needs for effectively operating a robust portfolio of EE programs.

This discussion highlights the need for investments in IT systems, for both the Board and the state's utilities, to successfully operate a portfolio of EE programs in the 21<sup>st</sup> century. Customers, vendors, and trade allies expect interactions with program administrators to be simple, flexible and seamless, taking full advantage of the digital technologies available in the marketplace today.

Conclusion

PSE&G trusts these comments and recommendations are useful to Board staff in its deliberation on these topics, and appreciates the opportunity to provide them.

Respectfully Submitted,

A handwritten signature in blue ink, reading "Joseph F. Accardo Jr.", written in a cursive style.

Joseph F. Accardo Jr.



State of New Jersey  
DIVISION OF RATE COUNSEL  
140 EAST FRONT STREET, 4<sup>TH</sup> FL  
P.O. Box 003  
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PHIL MURPHY  
Governor

SHEILA OLIVER  
Lt. Governor

STEFANIE A. BRAND  
Director

January 17, 2020

**By Hand Delivery and Electronic Mail**

Honorable Aida Camacho-Welch, Secretary  
NJ Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, NJ 08625-0350

**Re: New Jersey Energy Efficiency Transition  
Stakeholder Comments – Filing and Reporting Requirements**

Dear Secretary Camacho-Welch:

Please accept for filing the enclosed original and ten (10) copies of comments being submitted on behalf of the New Jersey Division of Rate Counsel ("Rate Counsel") in connection with the above-referenced matter. Copies of Rate Counsel's comments are being provided to all parties on the service list by electronic mail and hard copies will be provided upon request to our office.

We are enclosing one additional copy of the comments. **Please stamp and date the extra copy as "filed" and return to our courier.**

Honorable Aida Camacho-Welch, Secretary

January 17, 2020

Page 2

Thank you for our consideration and attention to this matter.

Respectfully submitted,

STEFANIE A. BRAND  
Director, Division of Rate Counsel

By:

  
Kurt S. Lewandowski, Esq.  
Assistant Deputy Rate Counsel

Enclosure

cc: [EnergyEfficiency@bpu.nj.gov](mailto:EnergyEfficiency@bpu.nj.gov)  
Paul E. Flanagan, BPU  
Sara Bluhm, BPU  
Kelly Mooij, BPU  
Sherri Jones, BPU  
Scott Hunter, BPU  
Abe Silverman, BPU  
Rachel Boylan, BPU  
Pamela Owen, DAG, ASC

**Clean Energy Act**

**New Jersey Energy Efficiency Transition**

**Stakeholder Process**

**Energy Efficiency Stakeholder Meeting – Filing and Reporting Requirements**

**BPU Docket No.: Undocketed Matter**

**Comments of the Division of Rate Counsel**

**January 17, 2020**

**Introduction**

As part of the process to implement the Clean Energy Act,<sup>1</sup> the Staff (“Staff”) of the Board of Public Utilities (“Board”, “BPU”) convened a Stakeholder Meeting on December 18, 2019 and invited stakeholders to comment on the subject of Filing and Reporting Requirements for energy efficiency (“EE”) and demand response (“DR”) programs in New Jersey.

The within comments are being submitted by the New Jersey Division of Rate Counsel (“Rate Counsel”) pursuant to the revised Notice circulated by Staff (“Notice”) seeking comments on Filing and Reporting Requirements for utility CEA programs. Rate Counsel’s comments, where appropriate, also reference the overhead slide set entitled “Filing and Reporting Requirements” (“December 2019 Slides”) presented at the stakeholder meeting on December 18, 2019. Rate Counsel reserves its rights to further amend and augment these comments based on any future proposals and other developments in the stakeholder process.

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<sup>1</sup> P.L. 2018, c. 16 (C.48:3-87.3-87.7) (“Clean Energy Act” or “CEA”).

## General Comments

Many material components of the CEA implementation process have yet to be decided, such as Quantitative Performance Indicators (“QPIs”), Program Administration, and Cost Recovery. Absent any consensus or guidance for many material aspects of the implementation of the CEA, it is impossible to comment on Filing and Reporting requirements in any significant detail at this juncture. Therefore, at this time, Rate Counsel will limit its submission to general comments on three aspects of filing and reporting which were addressed at the December 18 stakeholder meeting: Minimum Filing Requirements (“MFRs”); Reporting Requirements; and Tracking Systems.

### Minimum Filing Requirements

In addition to setting energy savings and demand reduction targets, the CEA sets forth a number of other requirements for utilities. The CEA requires electric and gas utilities to establish EE and DR programs.<sup>2</sup> In addition, the CEA also requires the submission of implementation and reporting plans.

Each electric public utility and gas public utility shall file with the board Implementation and reporting plans as well as evaluation, measurement, and verification [“E M&V”] strategies to determine the energy usage reductions and peak demand reductions achieved by the energy efficiency programs and peak demand reduction programs approved pursuant to this section.<sup>3</sup>

The filings shall include details of expenditures made by the public utility and the resultant reduction in energy usage and peak demand.<sup>4</sup> Furthermore, the CEA requires annual filings to demonstrate compliance with the CEA as well as the basis for any cost recovery claims:

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<sup>2</sup> N.J.S.A. 48:3-87.9(d)(1).

<sup>3</sup> N.J.S.A. 48:3-87.9(d)(3).

<sup>4</sup> N.J.S.A. 48:3-87.9(d)(3).

Each electric public utility and gas public utility shall file an annual petition with the board to demonstrate [1] compliance with the energy efficiency and peak demand reduction programs, [2] compliance with the targets established pursuant to the quantitative performance indicators, and [3] for cost recovery of the programs, including any performance incentives or penalties, pursuant to section 13 of P.L.2007, c.340 (C.48:3-98.1).<sup>5</sup>

The frequent (annual) filing requirement, the complexity of the issues to be decided, and the number of electric and gas utilities operating in the State require a comprehensive set of MFRs to expedite review by the Board and other parties. While the MFRs set forth in the December 2019 Slides are a good start, the MFRs for CEA filings need to be more comprehensive than those currently required under N.J.S.A. 48:3-98.1. Furthermore, the MFRs must include information on participation rates and bill impacts. Utility CEA filings must also include supporting testimony. In sum, the CEA MFRs need to be developed further once other material parameters of CEA implementation are set, with adequate opportunity for comment by stakeholders.

### **Reporting Requirements**

The essence of the CEA is a plan to reduce energy use and peak demands through EE and DR programs, with the intent that all customers will be able to participate fully in implementing EE measures.<sup>6</sup> Therefore, utilities and the Clean Energy Program (“CEP”) should be required to provide the Board and stakeholders with periodic public reports on the performance of their programs, perhaps on a quarterly basis.

As an example, the periodic reports should include, by sub-program, both program and participant costs, the number of projects completed or in progress, energy savings and participation rates, as well as program budget data. In addition, low-income customer program performance and participation rate data should be included. The reporting items listed in the

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<sup>5</sup> N.J.S.A. 48:3-87.9(e)(1) emphasis added.

<sup>6</sup> See N.J.S.A. 48:3-87.9(f)(2).

December 2019 Slides provide a good starting point, but need to be refined and augmented as further details about CEA implementation are developed, such as QPI's, energy savings targets, and program administration.

### **Tracking System**

The CEA also requires a review of utility energy savings targets every three years:

The energy savings targets for each electric public utility and gas public utility shall be reviewed every three years to determine if the targets should be adjusted. The board, in conducting the study, shall accept comments and suggestions from interested parties.<sup>7</sup>

Therefore, the triennial review will require an analysis of the performance of the EE and DR programs and incentive mechanisms, among other items. This will require tracking data associated with the development of the QPIs and utility targets, as well as other items which provide information about the efficacy of the existing program and incentive structures. In addition to energy savings data, program expenditures, and take rates, utilities should track demographic and class participation data. This will enable the Board and stakeholders to not only evaluate the savings targets, but the ability of all customers to participate in the EE and DR programs. Once the initial QPIs and savings targets are set, a determination of what particular data should be tracked may be developed, for use in future reports, filings, and the triennial review.

Furthermore, sufficient activity and cost data should be tracked to support future benefit cost analyses ("BCAs"). Such BCA analyses, based on actual data, will facilitate a review of current programs as well as inform the design of future programs or modifications to existing programs.

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<sup>7</sup> N.J.S.A. 48:3-87.9(b).

BPU Notice November 26, 2020  
Evaluation, Measurement & Verification, and Filing and Reporting  
Rockland Electric Comments January 17, 2020

As requested by the New Jersey Board of Public Utilities (“BPU”), Rockland Electric Company (“RECO” or the “Company”) offers the following comments regarding the evaluation, measurement and verification (“EM&V”) and filing and reporting issues relating to the utilities’ energy efficiency (“EE”) and distributed energy resource (“DER”) programs. RECO has responded to the specific EM&V Discussion Questions attached to the Notice of the December 18, 2019 Stakeholder Meeting (“Notice”), as well as the questions implicit in the Filing and Reporting Agenda contained in the Notice.

**COMMENTS**

**I. Evaluation, Measurement & Verification**

Question Set 1:

- **What types of evaluations and studies (BCA, baseline, process, impact) are necessary, in what cadence and frequency?**

Each utility should perform an annual benefit cost analysis (“BCA”) to validate that its portfolio of electric and gas EE and DER programs are cost-effective. Process and impact evaluations should be conducted once the programs have launched and are fully operational so that there is a significant population of participants to survey and sufficient historical usage data to verify the impact of the measures installed. These studies should be repeated if the program design changes significantly with new measures and technologies incorporated, and at least before the end of a program cycle to inform the program design for the next program cycle. As a general rule, a utility should perform a baseline study prior to designing programs to determine the potential savings that may be achieved by the portfolio. Thereafter, another baseline study should be performed at the end of the current five year program cycle as defined in the legislation to inform the next period to incorporate changes in technology and equipment baselines, lessons learned, and best practices.

- **What models do we see for who conducts, reviews, and approves each of those?**

The Company recommends that the evaluation studies noted in its response to the previous question be performed by independent third parties. This approach has been accepted nationally and will serve to enhance the objectivity of and confidence in such evaluation studies. The Company advises that EM&V work should comply with the International Performance Measurement and Verification Protocol (“IPMVP”) standards. The protocol selected within IPMVP will depend on the measures included within

the project and the historical performance of the measures. These standards have been adopted in New York and have proven to be beneficial for providing consistent evaluation results.

- **How can stakeholders provide technical or on-the-ground expertise into the process?**

To bolster confidence in the EM&V process, the Company agrees that stakeholders should be afforded an opportunity to provide their technical or on-the-ground expertise. In order to streamline the EM&V process, the BPU should convene a proceeding to engage with interested stakeholders to provide their experience to enhance EM&V procedures for EE and DER programs.<sup>1</sup> As part of this statewide proceeding, interested stakeholders will be able to comment on proposed EM&V policies and procedures. For example, New York employs a joint committee comprised of utilities, New York State Energy and Research Authority (“NYSERDA”), relevant parties, and Department of Public Service (“DPS”) Staff.

- **What model(s) for program evaluators should New Jersey consider?**

As noted above, the Company recommends that third parties performing EM&V studies should follow the IPMVP standards.

#### Question Set 2:

- **How should the EM&V process intersect with filing requirements? What types of information are needed when, and from whom?**

The Clean Energy Act (“CEA”)<sup>2</sup> at section e (3) requires that utilities file an annual petition as follows:

Each electric public utility and gas public utility shall file with the board implementation and reporting plans as well as evaluation, measurement, and verification strategies to determine the energy usage reductions and peak demand reductions achieved by the energy efficiency programs and peak demand reduction programs approved pursuant to this section. The filings shall include details of expenditures made by the public utility and the resultant reduction in energy usage and peak demand. The board shall determine the appropriate level of reasonable and prudent costs for each energy efficiency program and peak demand reduction program.

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<sup>1</sup> Given the diversity among the utilities and their service territories, these general protocols and procedures should allow for local variation.

<sup>2</sup> P.L. 2018, Chapter 17. The EE portion of the CEA is codified at *N.J.S.A.* 48:3-87.9.

Accordingly, the CEA envisions that utilities will file petitions prior to implementing their EE and DER programs. Such petitions will project reductions in energy usage and peak demand, as well as perform benefit-cost tests on forecasted program achievement. These projections will be based primarily on best practices and industry knowledge with energy and demand savings forecast based on technical resource manuals and industry guided principals, participation assumptions and forecast expenditures. Subsequent annual filings will compare actual results to projections and reflect any recommendations provided by process and impact evaluations if they were performed during that year. The first impact evaluations should be performed after enough heating and/or cooling cycle energy usage data is captured to determine the impact of the measures installed that are affected by weather. Once EM&V studies are completed, their evaluation findings should inform the next program design cycle.

- **What is needed in this transition period (through launch of new programs) and the long term (~5-year goal and beyond)?**

Please see the Company's comments above. After the initial five-year term, the frequency of studies will depend on the nature of the program(s) implemented.

- **Should New Jersey evolve towards a unified framework for all distributed energy resources?**

Rockland supports a unified framework approach for DER and recommends that development of such frameworks be addressed in a separate proceeding. Unified frameworks provide a method for comparing the benefits of various technologies, thereby creating certainty for utilities and other third parties seeking to implement these technologies and approaches. New York State's Reforming the Energy Vision ("REV") Proceeding supports a unified framework for analyzing the costs and benefits of distributed energy resources on a societal, customer and utility basis. REV is a platform for EE, EV, demand response, demand reduction, and storage technologies that may help alleviate grid constraints, expand customer program offerings, and increase customer satisfaction. This framework allows these resources to be compared in a consistent manner using common factors to determine which resource best solves the grid issue at the least cost. For example, Non-Wire Solution ("NWS") projects incorporate energy efficiency as a least-cost solution when the potential exists to resolve a system constraint, often providing long-term demand reduction. Demand response and EE programs are co-marketed as these technologies often provide both energy and demand savings. On O&R's Marketplace, smart thermostat rebates are now bundled for both EE and demand response to streamline the customer experience to provide a point of sale

rebate that reduces the upfront cost and facilitates energy savings, targets demand reduction, and increases customer satisfaction. These thermostats are pre-provisioned so that customers are automatically enrolled in the Company's demand response program once the thermostat is installed. By integrating EE and demand response, program spending is minimized to achieve maximum benefits.

Question Set 3:

- **Should New Jersey develop a primary cost test associated with key policy initiatives, e.g., following the Resource Value Framework (National Standard Practice Manual), designate one of the five standard tests as the primary test, or employ another approach? What approach is recommended?**

The Company agrees that New Jersey and the BPU should develop a primary cost test. The Company supports the Societal Cost Test which incorporates the value of benefits associated with environmental externalities. This test may also incorporate other external benefits realized through program evaluation studies. The societal test has been adopted in New York and has proven successful in measuring cost-effectiveness.

- **What are the costs and benefits that you would recommend for consideration in a single benefit-cost test?**

The utilities previously submitted their joint position on benefits and costs associated with BCA and the Company supports these variables. A copy of the joint position is set forth as Attachment A to these comments.

- **Are there indirect or non-energy related costs or benefits that should be considered?**

Yes, there indirect or non-energy related costs or benefits that should be considered. For example, low income EE programs generally have a BCA ratio less than one. While additional benefits are realized by participants, such as enhanced health and safety, the value of a lower energy bill, and reduced subsidies needed to support credit programs, these are not easily quantified. The efforts necessary to quantify these non-energy benefits are considerable, and argue against the quantification of such benefits. As a result, low income programs are implemented despite a BCA less than one while realizing that these benefits if quantified would produce a BCA ratio above one.

- **If so, how can they be estimated?**

The Center for Energy, Environment and Economic Policy (“CEEEP”) has quantified the value for avoided energy and capacity costs and environmental externalities for New Jersey EE programs. CEEEP may assist in the estimation of additional external benefits identified through program evaluations, program experience, and the introduction of new technologies that may be incorporated into BCA.

Question Set 4:

- **What are the most important factors to address in measurement and verification of energy savings?**

The most important factors to address in measurement and verification are the impact of the programs on the utilities’ system. These include the impact of energy and demand reductions and the associated environmental benefits realized through the installation of EE and DER measures. These measures and processes should not only reduce energy consumption but also result in participant bill reduction and should have a positive impact on future supply costs. In addition, in areas of significant growth or constraint, demand reductions resulting from EE and DER programs, will defer or eliminate the need for future capital investment.

- **Should programs be evaluated based on gross or net savings?**

The Company supports program evaluation based on gross savings. Calculating net savings is time consuming and introduces an unnecessary level of complication and expense (*e.g.*, the methodology for calculating free ridership and spillover effects) and corresponding potential for disagreement. In addition, gross benefits represent the true impact of programs in the State.

- **For which measures are the use of deemed (assumed) savings appropriate, and which measures should be tested to verify actual savings?**

It is critical that EM&V activities strike a balance between the level of rigor and accuracy, and the cost, timeliness and usefulness of the information measured in a rapidly evolving market environment. As a general matter, deemed savings should be used for those measures for which there is extensive historical operational experience and are prescriptive in nature. For example, lighting used in a specific facility can be estimated using traditional engineering formulae. However, equipment used in various processing or industrial applications may require the use of custom formulae. Custom projects may require pre- and post-metering or billing analysis to determine savings to address specific customer circumstances.

- **How should advanced M&V (automated data processing/increased data granulation) be integrated into EM&V?**

Advanced M&V should be integrated into EM&V to the extent that it is cost effective to do so. For example, the implementation of advanced metering infrastructure (“AMI”) should allow for the measurement and verification of increasingly granular data. This effort will be enhanced by the development of new software/technology for data processing, the incorporation of building and energy management systems, and new advancements in EM&V protocols.

- **When should it be incorporated?**

Advanced M&V should be incorporated when enough AMI data is accumulated to inform savings from the installation of measures, and estimates from new software/technology are available at a reasonable cost. As new methods are validated and proven to be accurate, they should be incorporated in advanced M&V.

- **What are best practices related to accuracy/confidence/reporting?**

In New York, utilities incorporate a 90/10 confidence interval for impact evaluation studies whenever possible. However, in certain circumstances it may be cost prohibitive to incorporate this level of accuracy, and a lower confidence interval is used. If the costs to determine a 90/10 confidence interval exceed evaluation budgets, then a lower confidence interval should be considered.

## **II. Filing Requirements**

As stated above, the Notice did not contain specific questions regarding filing requirements. In the comments below, the Company addresses several filing related issues.

### **Minimum Filing Requirements**

#### **a. Current minimum filing requirements for proposed new or modified programs**

**Examples: market segment/efficiency targeted, delivery method, estimated participants, total project energy savings, marketing, market barriers, impact on employment and competition in the marketplace**

#### **b. Discussion**

**i) How are the current filing requirements working, including regarding required information and process?**

The current Regional Greenhouse Gas Initiative (“RGGI”) filing requirements exceed what is necessary to determine the effectiveness of EE programs. For example, determining a program’s impact on job creation is far too speculative to be meaningful in the determination of program effectiveness. Moreover, a comparison to programs in other states is often irrelevant based on varying service territories and demographic profiles. These are not core components needed to determine the effectiveness of an EE program; moreover, they can be subjective and costly to determine. It is difficult to determine employment levels as many programs are implemented by third parties. The accuracy of data reported may be subjective or inaccurate and the resources and systems needed to update and maintain this data are costly while providing no benefit toward the effectiveness of the EE program. The Company would note that in New York, the annual filing requirements include the following components: program design, program delivery method, target market and customer eligibility, anticipated participation levels, quality assurance plans, budget and plan summaries, EM&V plans, and BCA summaries.

**ii) What are best practices for filing requirements?**

While program reporting requirements vary by state, filing requirements in New York, as noted above, provide the information necessary for DPS Staff to determine the effectiveness and impacts of a utility’s EE programs. Overall budgets and targets are approved for the electric and gas portfolio and provide the utility the flexibility to achieve these goals while maintaining the portfolio’s budget. This flexibility allows the utility to shift funds from under-performing programs to other programs with greater customer interest resulting from market drivers.

**Reporting Requirements**

**a. Current reporting requirements**

Currently, pursuant to the Stipulation of Settlement in its Low Income Direct Install III Program<sup>3</sup>, the Company submits an annual report to BPU Staff and Rate Counsel that includes the number of participants, kWh and kW savings, program expenditures by task, survey results, and outreach activities. The Company believes that these reporting requirements are sufficient.

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<sup>3</sup> RECO’s Low Income Direct Install Program was authorized by the Regional Greenhouse Gas Initiative (“RGGI”) legislation. See L.2007, c. 340, § 13 codified at N.J.S.A. 48:3-98.1.

**b. Data quality control / verification**

The Company will establish financial tracking by program and task to monitor expenditures and progress in achieving program targets. In addition, in New York, the Company currently uses a demand-side management software tool for the purpose of tracking energy and demand reduction resulting from the installation of EE measures. Measure savings are calculated using engineering formulas built directly into the software as described in a Technical Resource Manual that is vetted by the utilities and DPS Staff. The Company also inspects at least 10% of all rebate applications to verify that measures are installed and meet the eligibility requirements of each program.

**c. Potential new data requirements**

**Examples: committed and actual dollars spent per program by sector and category, projected and actual participants by program, projects in progress and completed, projected and actual energy saved per program by fuel source and sector, projected and actual cost of measures, projected and actual benefit-cost analysis of programs, actual energy sales by sector, rate and bill impacts, greenhouse gas emission reductions, jobs created and retained, payment times for contractors**

Many of the data requirements that are listed above are needed to track the effectiveness of programs. However, with respect to actual measure costs, job creation and retention, and payment times for contractors, these data requirements may be overly burdensome to track and may add unnecessary costs to the program, while providing little incremental value.

**d. Frequency, formats, and types of reporting**

Reporting should be done annually in order to track the expenses and performance of each program.

**e. Discussion**

- **Feedback about current reporting requirements regarding data and process**

Utilities should maintain a tracking tool that can provide the data for reporting in an aggregated fashion. To determine what data should be provided, the BPU should establish a working group to evaluate and determine program reporting requirements - the frequency, format and level of detail.

- **What is needed from a reporting system to meet Clean Energy Act goals?** Please see the Company's response to subsection d above.
- **What is a successful reporting program?** Providing the BPU with data described above.

- **Access: What data from the utilities and State should be tracked?** Please see the Company's response to subsection c above.
- **Use: How should data be used?** Data should be used to track and monitor performance and report within 90 days of close of quarter. Data should be presented in an aggregated fashion, so as to protect customer confidentiality interests.
- **What are barriers to a successful reporting program?** Customer compliance, *e.g.*, customers providing complete applications.
- **What are best practices and lessons learned?** Utilities should submit reports within 90 days after a program closes, only claim energy and demand savings when rebates are paid, – not from contractor report – do not use committed savings – only actual

## Tracking System

### a. Current practices by utilities and the State - features and utilization

Rockland only has one EE programs, which is the Low Income Direct Install Program noted above. The Stipulation in that program requires that Rockland provide an annual report to BPU Staff and NJ Rate Counsel that includes the number of participants, kWh and kW savings, program expenditures, survey results, and outreach activities. The Rockland vendor, Honeywell, uploads tracking data about energy savings to the Office of Clean Energy.

### b. Discussion

- **Advantages and disadvantages of current tracking systems**
  - **What are utilities using in New Jersey (legacy systems) and other states to track information about energy efficiency programs**  
RECO's parent O&R implements EE programs in NY and based on the amount of data required to determine the programs performance, a database tracking tool is utilized. This minimized the potential for human error and provides a repository for all historical program performance and project and measure level data.
- **Desired outcomes of the next tracking system**
  - **What is needed from a tracking system to meet Clean Energy Act goals?**  
A tracking system at the state level must have the capability to upload individual utilities aggregated program performance data including, annual and lifetime energy and demand reductions, environmental impacts, rebates paid, number of projects completed, program

expenditures all by program. As long as the data above is provided by program in aggregate as opposed to by customer, PII should not be of concern.

○ **What is a successful tracking system?**

A successful tracking system provides for ease of use, quick access to real time information, and easily integrates with other software systems.

○ **What are best practices and lessons learned?**

Tracking system should be flexible to evolve over time and incorporate the latest TRM formulas to calculate energy and demand savings. Reporting of tracking data should be easily customizable to demonstrate the overall effectiveness of the program.

○ **Ideal features / capabilities / utilization?**

▪ **How and when should advanced M&V (automated data processing increased data granulation) be integrated?**

Once the tracking system is tested and proven effective, advanced features including more granular data can be incorporated.

▪ **Is a dynamic I automated platform needed for it to be useful? For example, could there be a monthly data dashboard?**

Depending on the reporting cadence, a dashboard feature is helpful and can demonstrate the state's progress toward anticipated goals.

▪ **Should it be a statewide system?**

Yes, a statewide system is needed to aggregate each utilities tracking data in order for the state to track overall program performance towards the state energy goals.

▪ **What level of detail should it hold? For example, should it be able to hold demographic and tax data?**

No, demographic and tax data is not necessary, however, energy and demand as discussed above are critical components.

▪ **Should it be able to hold downloaded utility records and data provided by contractors?**

Contractors should provide data by customer to the utility, while the utility provided aggregate data to be uploaded into the statewide tracking system.

▪ **Should it be able to work / connect / cross-reference with other (e.g., utility, State) systems?**

Utilities should be able to connect to the statewide system but the statewide system does not need to connect to the utilities tracking software. This will ensure that PII is maintained and not improperly compromised.

- **Ownership and transparency of data**

- **Who should own the system and data?**

- The statewide system which will contain aggregated utility data by program should be owned by the state. The utility tracking systems which will contain measure level data and PII should be owned by each utility.

- **How accessible to the public vs. the utilities and State should it be?**

- The statewide system should be accessible to the public and a dashboard may work well, however, various functions like read and write access should only be available to selected users. Utilities tracking systems should not be accessible by the public as they will contain individual customer specific information and PII must be secured.

- **What are barriers to a successful tracking system?**

- Barriers to a successful statewide tracking system include complex and inflexible rules. Setting the goals of the system prior to development will increase the likelihood of developing a useful tool. All parties that will provide data, including the utilities and OCE, should be part of the development of the tracking system. The system should be easy to use and provide dashboards to monitor performance by program and utility.

Attachment A – Utilities’ Submission to BPU Staff on Cost-benefit

# Utilities Response to EEAG Homework on EM&V and Cost-Benefit

**What are the costs and benefits that you would recommend for consideration in a single benefit-cost test? Are there indirect or non-energy related costs or benefits that should be considered and if so, how can they be estimated?**

We suggest the Board follow the National Standard Practice Model (NSPM) model, which provides a framework to determine the cost effectiveness for not only EE resources, but other distributed energy resources (DERs) as well.

The NSPM presents the Resource Value Framework (RVF) as the approach to determine cost effectiveness. This approach allows each jurisdiction to determine the scope of benefits and costs to include in its cost effectiveness test; the Resource Value Test (RVT). It provides for the ability to include environmental impacts, public health impacts, non-energy impacts, impacts on low income customers, as well as other parameters. As a starting point, we would recommend that environmental and economic benefits be included, as these benefits are recognized by the Clean Energy Act, and that the EEAC consider other New Jersey policy goals and how they can be incorporated into the test, including, but not limited to, non-energy impacts and impacts on low income customers. Proposed benefits and costs to be considered in New Jersey’s cost-benefit should be reasonably quantifiable and include:

**BENEFIT**

Lifetime Avoided Electric Supply Costs  
Lifetime Avoided Electric Capacity Costs  
Lifetime Avoided Natural Gas Supply Costs  
Lifetime Merit Order (DRIPE) Benefits  
Lifetime REC Avoided Purchases  
Lifetime Wholesale Volatility Value  
Lifetime Avoided Replacement  
Lifetime Avoided T&D Costs  
Lifetime Emission Savings  
Lifetime Economic Multiplier Benefits  
Low Income Customer Benefits  
Small Business Customer Benefits  
Lifetime Water Savings

**Method to Estimate**

*PV of electric energy reduction at wholesale*  
*PV of peak electric capacity cost*  
*PV of natural gas reduction at wholesale*  
*PV of merit order electric market benefits*  
*PV of reduction of REC purchases*  
*PV of market hedge value*  
*PV of avoided replacement Costs*  
*PV of avoided T&D*  
*PV of CO<sub>2</sub> + Nox + SO<sub>2</sub> emissions savings*  
*PV of economic multiplier benefits*  
*TBD*  
*TBD*  
*PV of avoided water usage*

**COST**

Lifetime Participant Costs

**Method to Estimate**

*PV of initial costs & repayments by participants*

Lifetime Administration Costs

*PV of administrative costs*

Lifetime Program Investment Costs

*PV of incentives*

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**What are the most important factors to address in measurement and verification of energy savings? Should programs be evaluated on gross or net savings? (net savings are the gross energy savings less the amount that would have occurred without an incentive, e.g., manufacturing codes requiring energy efficiency in appliances, or with a smaller incentive)**

The most important elements to address in EM&V are the targets, methodologies and protocols that will be used to measure savings for each program. There should be agreement on these elements before the programs are designed so that all parties have clarity on how savings will be measured.

Additionally, best practice in EM&V is for each utility (either separately or jointly) to engage with an independent third party to perform the needed EM&V work, and to have that work done on a regular basis. This includes annual work such as an impact evaluation to validate savings, and cost effectiveness calculations based on validated savings and actual costs. A process evaluation to investigate ways to improve the programs should be completed at least once during an approved plan cycle. Beyond these basics, additional EM&V research should be considered on a topic by topic basis, such as updating savings protocols for use in future program cycles.

Process and impact studies are essential elements of the continuous improvement cycle. A best practice approach includes formalizing an action plan to implement the recommendations provided by the third party evaluator to improve the future results of the existing EE programs or develop new programs. All entities delivering programs must report savings, costs, and evaluation data following the same requirements to facilitate transparency and oversight, in line with best practices.

Gross savings should be the metric by which the programs are evaluated. Gross savings measure the impact of the program based on the full savings that were realized. Further, gross savings reflect what utilities can control, whereas net savings introduce ambiguity and the potential of survey bias into estimated savings achieved by the utilities' programs. Additionally, the CEA states that the savings targets can be met from not only efficiency programs, but from improvements in other codes and standards. As such, the CEA targets defined in the legislation should be gross savings. Additionally, the methodology used by Optimal in determining the maximum achievable potential also provided a view of the gross savings potential in the State. Measuring savings on a net basis would minimize the impact of codes and standards on achievement of goals, which may cause these valuable tools to be deprioritized, and become a missed opportunity for savings. Therefore, the savings targets should be based on gross energy savings, consistent with the language of the CEA and the study methodology.

**For which measures are deemed (assumed) savings appropriate and what measures should be tested to verify actual savings?**

Generally speaking, deemed savings should be applied to simple high efficiency equipment replacement programs, many of which are residential or small commercial programs. Because of the number of assumptions that go into these values, these deemed values should be validated prior to each program

cycle with primary research and updated protocols, depending on the pace of change in technology or other market factors. It is advantageous to have a robust Technical Reference Manual (TRM) with deemed savings for as many measures as practical, as evaluation costs are typically lower for these measure types.

Programs that encourage more complex upgrades or replacement of energy consuming equipment and systems typically require more direct measurement, in some instances with pre-determined algorithms, to determine energy savings. These are typically larger, commercial or industrial projects. TRMs can help inform the measurement methods for these projects, while leaving flexibility for unique projects and systems that may require project-specific detailed engineering analysis. In cases such as this, it is appropriate to ensure that all savings calculations follow established professional protocols for measuring energy savings, and all calculations be validated by an independent third party.

Additionally, TRMs should be updated prior to the beginning of each program cycle and remain unchanged for the duration of the phase to provide consistency between program development, plan approval and implementation of those programs. With these general guidelines, the method(s) of measuring savings should be determined prior to program design of each program and reviewed with those responsible with EM&V to ensure agreement of the methods to be used.

Aida Camacho-Welch, Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 9th Floor  
Post Office Box 350  
Trenton, NJ 08625-0350

## **Re: December 18, 2019 Energy Efficiency Transition Filing & Reporting Requirements**

Recurve appreciates the opportunity to comment on the topic of evaluation, measurement, and verification (EM&V) and reporting within the New Jersey energy efficiency processes. We applaud New Jersey BPU for taking the time to create a public process for soliciting input on best practices and capabilities in the market to meet the State's needs.

Recurve is an industry leader in meter-based demand flexibility. Based on the open-source [OpenEEmeter](#), our advanced M&V platform tracks changes in consumption due to program interventions for both individual buildings and in aggregate in order to support resource planning and facilitate performance-based transactions. We encourage and support market-based solutions for decarbonization.<sup>1</sup>

EM&V offers the most value when it creates and sustains a meaningful feedback loop for continuous improvement. Reporting requirements also support this loop by building trust and maintaining accountability as all parties track performance toward state goals. Both the Climate Action Plan and energy efficiency programs call on multiple parties to engage and take action. A consistent, transparent, and accessible infrastructure for performance feedback is essential for the success of these initiatives. Many states have an EM&V framework for this purpose.

However, many of these same states are limited by historic precedent and therefore miss out on the new opportunities to shore up that feedback loop. The conventional methods used for EM&V have seen incremental improvements over time, but the real opportunity for EM&V to support scaling efficiency and demand flexibility lies in the application of meter-based quantification in course of program deployment to optimize cost-effectiveness and prioritize the next investment.

Standardized methods and [open-source software solutions](#) provide the consistency, transparency, and repeatability that has been elusive with only evaluation protocols to lean on. Measured approaches have historically been considered the "high rigor" option, but to use them evaluators have had to rely on data requests and sample plans to review a

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<sup>1</sup> *Decarbonization of Electricity Requires Market-based Demand Flexibility*, September 2019, <https://www.recurve.com/blog/the-secret-plan-for-decarbonization-how-demand-flexibility-can-save-our-grid>

statistically significant portion of the portfolio. Now, however, they can process and analyze consumption data for the entire population. This robust data set can be the foundation for targeting analytics, comparison groups and understanding the net impacts of interventions to the grid. When most states' EM&V frameworks were devised this was only a dream.

New Jersey has a unique opportunity to leap-frog toward new best practices in EM&V that will support the integration of energy efficiency and demand flexibility and spur market-based decarbonization through enhanced accountability.

Today New Jersey can adopt the following three principles in its EM&V and Reporting process to set itself up for success now and in the future:

1. **Meter everything for resource planning.** Naturally occurring changes in monthly consumption as well as changes resulting from a broad swath of interventions can be tracked for each utility geographically and be used to enhance planning, targeting, and tracking. Sample-based evaluation results do not have to be the default -- census analysis can be the default without increasing costs.
2. **Track outcomes consistently and transparently for enhanced management.** Standardized quantification at the meter (for monthly data) is available and accessible to all stakeholders in New Jersey today. The [CalTRACK](#) methods and the [OpenEEmeter](#) code base have been operationalized at scale for millions of meters across the US. These methods and code are built on industry standard practice for whole building analysis and can be used across distributed energy resources.
3. **Build a secure and accessible data exchange infrastructure.** Everyone has a stake in the outcomes of the Clean Energy Act. Tracking the progress toward those goals means that stakeholders, including the public, will need role-based secure access to data and information. This should be designed into the system from the start.

We look forward to continued conversations with all stakeholders in New Jersey to act on these principles and support market-based decarbonization efforts in the state.

Respectfully,



Carmen Best

Director of Policy & Emerging Markets - RECURVE

Email: [carmen@recurve](mailto:carmen@recurve); [LinkedIn](#)

*RECURVE Responses to Questions From the December 18, 2019 Workshop:*

Question Set 1:

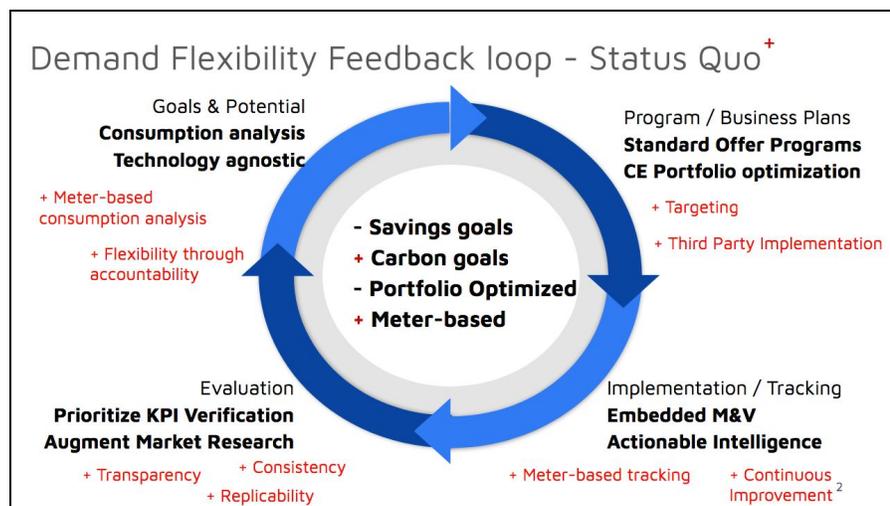
- What types of evaluations and studies (BCA, baseline, process, impact) are necessary, in what cadence and frequency?

**Evaluation Measurement & Verification must deliver answers, not just studies.**

*The BPU and other parties should start by identifying the suite of questions that need to be answered and how they will be used. Priority questions should be relevant to all stakeholders and support a meaningful feedback loop for continuous improvement and supporting oversight processes. A range of studies or discrete analyses may emerge from this review to create an evaluation framework.*

**Impact analysis will be essential to track progress on outcomes** from the energy efficiency investments. This can most efficiently be accomplished with an EM&V framework that considers meter-based analysis as part of the full system of program implementation and resource planning. Meter-based (monthly) consumption analysis provides a foundation for New Jersey to monitor trends in consumption and clearly identify which changes are coming from the interventions of specific actors as well as the collective actions supporting the whole state.

The illustration represents a **feedback loop** that is similar to the status quo process used in most energy efficiency program portfolios. For each phase, we have called out some of the new opportunities (shown in red text) that adoption of a meter-based evaluation framework can provide.



**Improvements are not confined to the typical "evaluation step" in the process, but rather provide benefits throughout the system.**

The **cadence and frequency of this feedback is continuous**, with stop points determined by whichever program administrative process is ultimately adopted by the NJBPU, which may be on an annual, three, or five year cycle.

*Let's walk through each step of the process and see how meter-based M&V supports each stage:*

### ***Program and Business Plans***

*As each program administrator (utility or state program) develops plans for programs, they should also be looking at the consumption trends that the program is intended to influence. Aligning the expected outcomes can allow the utilities to design programs that will maximize cost effectiveness by targeting customer segments that will benefit most from the programs while also helping to achieve grid goals. Plans submitted to the BPU for review will be backed by analytics and as such can allow program administrators maximum flexibility in achieving the desired outcomes, while eliminating the need for the BPU to micromanage specific technology deployments.*

### ***Implementation and Tracking***

*For the proposed programs, administrators and implementers should establish M&V infrastructure that provides quick feedback in order to leverage and optimize ongoing targeting and support third party implementation in close to real time. Embedded M&V provides actionable intelligence, letting administrators know which customer segments are responding, which interventions are succeeding and which contractors are delivering the greatest value (and which ones may need support). All of this supports the state's decarbonization goals while delivering cost effective savings to the utility and customers.*

*In contrast, relying on deemed savings as the primary means of tracking installations of technologies creates a trap by incentivizing minimal performance rather than promoting and encouraging the best results. With a deemed approach, outcomes that exceed the fixed estimate and achievements that fall short are all treated the same. Improving these estimates with sample based field checks in the evaluation phase is useful, but does little to motivate improved implementation or mitigate surprises at the end of an evaluation that may happen several years later.*

### ***Evaluation***

*The "Evaluation" step in a meter-based system would have a **particular focus on reviewing performance**. This would likely involve a review of Key Performance Indicators, cost-effectiveness for the full portfolio, or other "deeper dive" questions that inform broader market-transforming impacts. This review can use the same base of consumption analysis as program tracking and resource planning.*

***Analysis used to inform performance, in particular, should be accessible to all parties** on a regular, predictable cadence and based on pre-established criteria (methods and open-source calculations). Without clarity of methods and calculations, the process can*

*quickly devolve into debates over moving goal posts and lose sight of the common goal of decarbonization and grid optimization.<sup>2</sup>*

***Other research can also be conducted to augment the core impact analysis** as part of this phase of the process. Reliable M&V can confidently answer the “what” and these studies can tackle the “why”. These studies may need a longer timeframe, but would still benefit from a consistent stream of basic information on program impacts. Process or market studies can provide useful feedback prospectively, to modify and adapt programs or policies over time or assess broader market transformations resulting from the programs.*

### **Potential and Goals**

*Today, many goals and potential studies are **limited to a fixed list of technologies** (with their prescribed savings listed in a technical reference manual). While this construct has historically been useful, it limits the range of approaches available to programs. Adding the option to assess the meter-based potential for decarbonization objectives allows for greater flexibility in program design and offers the ability to achieve or exceed goals through improved implementation.*

*In a meter-based regime, **potential should be defined by the opportunity to reduce consumption or decarbonize** - not just improve incremental efficiency. This frame creates a pathway for the integration of DER solutions to drive decarbonization. As programs are deployed, the actuarial analysis of past performance is critical to calibrate the potential and serve as the foundation of goals and targets for program administrators.<sup>3</sup>*

- What models do we see for who conducts, reviews, and approves each of those?

***Actionability and objectivity** are the main considerations when deciding who conducts reviews and approves EM&V work when creating the continuous feedback loop described above.*

*Using a **third-party whose financial interests are not tied to outcomes helps maintain objectivity in the analysis**. Utilities, state agencies, or other stakeholders can contract with third parties to get technical support in answering the questions relevant to their role in the system. Peer review and collaborative input can also support objectivity. Transparency, consistency and replicability should be required of whomever is conducting the analysis. These parties must be accountable for using appropriate methods and ensuring stakeholders can validate their answers. This will enable administrators to conduct evaluation measurement and verification that is actionable and maintain objectivity in the process.*

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<sup>2</sup> The Promise of Performance, June 2018, <http://zondits.com/article/15763/the-promise-of-performance>

<sup>3</sup> For more detail on a proposed approach, Recurve’s detailed comments on goals and potential updates for the California Public Utilities Commission. <https://www.cpuc.ca.gov/General.aspx?id=6442461220>

**Case Study: California's Evolving Evaluation Framework**

A rather one-sided evaluation framework, that has needed to evolve, comes from the California Public Utilities Commission. Commission staff manage all of the impact evaluations to inform the performance incentive mechanism and cost effectiveness review. Evaluation plans, budgets and results are subject to stakeholder review.

In this construct, program administrators struggle to optimize programs and can do little to track their actual performance. With new legislation, calling for meter-based quantification, they have since been allowed to embed measurement and verification into these programs to help them optimize. If administrators use open source methods for M&V they can bypass certain regulatory review steps.

With this evolution, the Commission benefits by having increased confidence that the savings are real (but still subject to verification) and that administrators can innovate to meet cost effectiveness targets. Staff and consultants have a robust stream of data and information from which to verify impacts as well as conduct in-depth evaluation.

- How can stakeholders provide technical or on-the-ground expertise into the process?

*Stakeholders' most important contribution is **defining the questions that need to be answered and setting priorities** for analysis as part of the system's EM&V framework.*

*Third-party evaluators that conduct analysis should **present results with consistency and transparency and meet a standard of peer review**. Methods and results should be accessible to stakeholders and presented in a public forum to support comments and questions prior to finalizing. While stakeholders may have a range of capabilities to engage in this process, creating the opportunity to comment will build trust and awareness as well as accountability for the quality of the evaluations.*

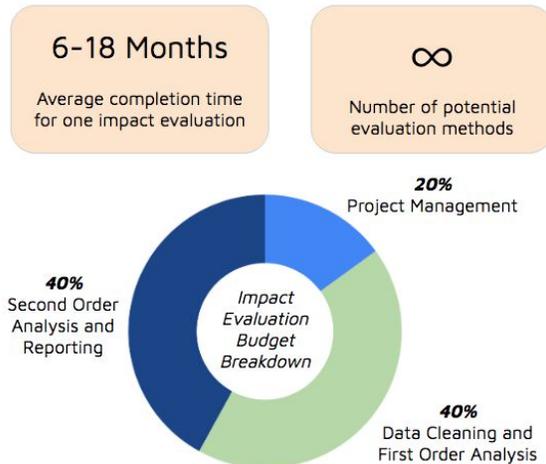
*Using **consistent methods for quantification developed through collaborative processes** -- such as CalTRACK and the OpenEEmeter -- helps stakeholders to quickly process results and understand the impacts because the methods are laid out in advance with pathways to contribute and continually improve the approaches.*

- What model(s) for program evaluators should New Jersey consider?

*We recommend a model where in evaluators can add value across the system as described in earlier responses. We recommend New Jersey **adopt a construct that supports and encourages program administrators to use embedded evaluation measurement and verification** to optimize their programs and report impacts.*

***Program evaluators should use standardized methods for impact analysis where feasible**. Standardized pre-post billing and hourly analysis methods, like those found in CalTRACK (operationalized with open source code - OpenEEmeter), will significantly support transparency of impact analyses across program types and for the full portfolio to ensure it*

*is meeting the Clean Energy carbon reduction goals. It will also ensure that impact analyses will generate comparable and consistent results across the portfolio from evaluators, and cut costs for ex post evaluation. Most impact analysis can be automated and tracked for the entire portfolio and comparison groups can be established to provide additional insight. Evaluation reports can be automated and standardized to deliver consistent information in a digestible digital format.<sup>4</sup>*



*Program evaluators can also **dive deeper on questions of issues driving customer behavior, market adoption, and processes** that may affect future program design. Historically these analyses have gotten short shrift as evaluators' budgets and time have been used up by data cleaning and redoing straightforward impact analyses (see illustration of typical impact evaluation budget challenges).*

#### Question Set 2:

- How should the EM&V process intersect with filing requirements? What types of information are needed when, and from whom?

***The EM&V processes should directly inform the filing requirements.*** *In a meter-based evaluation regime, the savings or carbon impacts that are achieved and the costs to achieve them are the core element of the reporting requirement filings. Other criteria, like how detailed strategies or targets are defined, should be established by the BPU in collaboration with program administrators and stakeholders to match with the obligations of the Clean Energy Plan and the energy efficiency portfolios.*

***A portfolio or business plan should be filed on a three to five year basis and have the flexibility to adjust annually.*** *The plans should be informed by population analysis of opportunities to reduce consumption, improve efficiency and reduce carbon, and the success of existing programs in doing so. Program administrators should describe how the plans are a cost effective investment and how they synchronize with their overall system planning needs.*

<sup>4</sup> OpenEE Technical Report: Comparison Group Identification for Impact Evaluation, for Energy Trust of Oregon, 2018  
<https://www.energytrust.org/wp-content/uploads/2018/11/OpenEE-Technical-Report-Comparison-group-identification-methods-FINAL-wSR.pdf>

- What is needed in this transition period (through launch of new programs) and the long term (~5-year goal and beyond)?

*Stakeholders closer to the process have more intimate knowledge of the status of current programs and how they synchronize with longer term plans. We offer suggestions based on generalized best practice for feedback and continuous improvement.*

**Business or Program Plans** from the program administrators should include:

- *Market Sector Opportunities and Strategies*
  - *identified potential,*
  - *general strategy, and*
  - *proposed targets*
- *Key Performance Indicators (pending definition and criteria for tracking)*
  - *Sector level carbon reductions*
  - *Sector level consumption reductions (kWh and Therms) and peak impacts (kW)*
  - *Cost Effectiveness*

*In later years, grid integration strategies can be included to synchronize with market sector opportunities and augment KPIs.*

*For illustrative purposes, consider the following five year stepwise path for evolution of the EM&V process and the evolution of programs to integration with DERS.*

<b>Phase</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
<i>Program Planning</i>	<i>Deploy status quo programs</i>	<i>Target programs based on metered results</i>	<i>Target programs based on metered results</i>	<i>File Plan with Revised Programs (integrate DERS)</i>	<i>Targeted program to geographic/discrete grid needs</i>
<i>Implementation / Tracking</i>	<ul style="list-style-type: none"> <li>• <i>Track programs at the meter</i></li> <li>• <i>Target customers based on meter analysis to improve CE</i></li> <li>• <i>Report results on a metered basis</i></li> </ul>				
<i>Evaluation</i>	<i>Prioritize Research questions</i>		<i>Validate results, conduct long term studies</i>		
<i>Potential / Goals</i>			<i>Include actuarial consumption analysis to define decarbonization potential.</i>		

- Should New Jersey evolve towards a unified framework for all distributed energy resources?

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New Jersey should **absolutely evolve towards a unified framework for all distributed energy resources**. A consistent valuation framework across DER resources is essential to this evolution. Meter-based quantification supports a unified approach to track reductions in carbon intensity and enable grid optimization.

A unified framework will be **enhanced with the deployment of advanced metering infrastructure**, but using monthly consumption analysis augmented with carbon intensity metrics is a no-regrets first step for a flexible evaluation framework that can adapt to this future.

#### Question Set 3:

- Should New Jersey develop a primary cost test associated with key policy initiatives, e.g., following the Resource Value Framework (National Standard Practice Manual), designate one of the five standard tests as the primary test, or employ another approach? What approach is recommended?

We recommend that, as part of system planning, the **marginal cost of any given resource should be the basis of comparison for the next investment**. In this structure, resources can be consistently valued and chosen based on their ability to meet system needs (carbon intensity included as a factor). This is most readily employed in competitive procurement processes for all source procurements.<sup>5</sup>

In lieu of direct cost comparisons, **we support the use of the Resource Value Framework** in the National Standard Practice Manual. In particular, we support the process described in the NSPM to develop a cost test that is consistent with New Jersey's policy goals. In the interim, we find that the Program Administrator Costs test is a manageable metric to use as programs are launching to track the value of demand-side investments for the grid.

**We strongly advise against adopting the Total Resource Cost test as applied in California**, which penalizes programs that leverage non-ratepayer funding, including that from willing participants. More detail is provided in this [white paper](#).<sup>6</sup>

#### Question Set 4:

- What are the most important factors to address in measurement and verification of energy savings?

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<sup>5</sup> The Economics of Clean Energy Portfolios, Rocky Mountain Institute 2018.  
<https://rmi.org/insight/the-economics-of-clean-energy-portfolios/>

<sup>6</sup> *Evolving Cost-Effectiveness Policy and Tools to Enable Modern Energy Efficiency and Demand-Side Management*, November 2019  
<https://www.recurve.com/blog/rethinking-cost-effectiveness-to-meet-the-needs-of-the-modern-grid>

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*The most important factor to address in measurement and verification is the **actual impact of the interventions at the meter** compared to an existing conditions/usage baseline. This is the representation of the avoided energy usage by the customer and what the grid “sees.”*

*Having a **consistent, transparent and reproducible calculation** of the resulting change in consumption creates the “weights and measures” necessary to build market confidence and transactional accountability for continued investment in demand-side resources for the grid optimization and carbon reduction.*

o Should programs be evaluated based on gross or net savings?

*The **net impact of programs to the grid** should be the end goal of measurement and verification (not the net of program influence derived from customer surveys) to inform system planning.<sup>7</sup> Meter-based consumption analytics enable this type of net analysis. The natural trends of changes in consumption in the population can be used to understand the relative contributions of specific programs with control or comparison group analysis.<sup>8</sup> This type of analysis is akin to economic and demographic factors used in consumption modeling and forecasting.*

*The **gross impacts of an intervention for any given project or portfolio should still be monitored as part of evaluation activities**. Gross impacts reflect the avoided energy use achieved by individuals, through their interventions. They are real bill savings, and real impacts to the bottom line.*

o For which measures are the use of deemed (assumed) savings appropriate, and which measures should be tested to verify actual savings?

*New Jersey should **track actual savings in every situation for which it is feasible**. Interventions may include a wide range of measures and behavioral components that can together drive carbon reductions. Tracking meter-based impacts enables technology agnostic program flexibility across DERs and enhanced program flexibility.*

***Meter-based analysis is feasible for the majority of building type /sector situations and program interventions**. Instead of tracking impacts by measure, whole building*

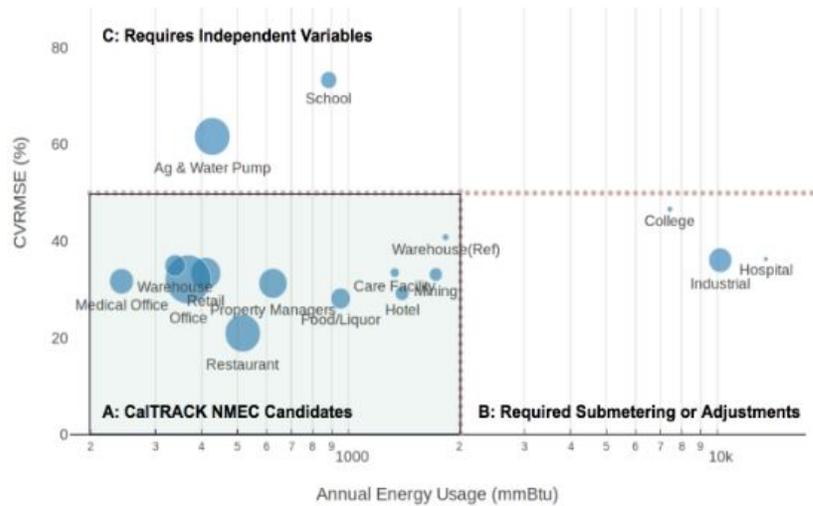
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<sup>7</sup> Chapter 21: Estimating Net Savings – Common Practices The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. National Renewable Energy Laboratory (NREL) Department of Energy. 2017, <https://www.nrel.gov/docs/fy17osti/68578.pdf>

<sup>8</sup> OpenEE Technical Report: Comparison Group Identification for Impact Evaluation, for Energy Trust of Oregon, 2018  
<https://www.energytrust.org/wp-content/uploads/2018/11/OpenEE-Technical-Report-Comparison-group-identification-methods-FINAL-wSR.pdf>

meter-based tracking can be applied to sector and building type combinations. There are limits, but as illustrated in the following graphic, CalTRACK whole building methods<sup>9</sup> can provide statistical reliability for most sector-building combinations. Large industrial projects (C) need other site specific measurement and verification techniques; and upstream interventions (where the meter being impacted and time of intervention is not known) may be exceptions.

As illustrated in the graphic: **the CalTRACK methods will be most effective for buildings in region A**, which have relatively low energy consumption and low CV(RMSE). Buildings in region B are high energy consumers. These buildings often have a single meter tracking consumption for various sub-buildings with mixed uses, which make it difficult to quantify the effect of an energy-efficiency intervention on overall consumption. These buildings will likely require custom M&V and would not qualify for CalTRACK. The buildings in region C have a high CV(RMSE). The high CV(RMSE) is likely due to correlation in energy usage that is not specified in the model, such as seasonality or weather. These models should not qualify for CalTRACK.<sup>10</sup>



\*Based on out of sample test on 50 Million IOU meters in California through the CEC using 2014 and 2015 data.

- How should advanced M&V (automated data processing/increased data granulation) be integrated into EM&V?

**Automated M&V should be foundational to the feedback system.** Cloud computing and open-source standardized methods make it possible to track the consumption trends of the entire population. The incremental costs for tracking everything up front are recouped through improved targeting and cost-effective program delivery, reduced costs of conducting third party evaluations (data requests, custom method development, and

<sup>9</sup> [insert definition of wholebuilding methods from Adam in APS proposal]

<sup>10</sup> Building Qualifications Test Reveals Wide Applicability of CalTRACK Method for Portfolio Analysis, CalTRACK project updates March 2018, <https://www.caltrack.org/project-updates/week-eight-caltrack-update>

*customized reporting), and the cost of stakeholder review of highly customized evaluation end products.*

*Some evaluations will need to be adapted to program specifics, but a large portion of the evaluation task (impact evaluation in particular) can be much more efficiently conducted with advanced M&V solutions, which democratize the value across the system.*

o When should it be incorporated?

***Metering everything for resource planning should be incorporated prior to program launch.*** *Including this step will enable targeting to optimize cost effectiveness, inform competitive solicitations for third party implementation, and set the baseline for monitoring progress on the Clean Energy Plan goals.*

***Ongoing tracking will provide actionable intelligence, inform oversight and enable calibration of potential throughout the portfolio deployment.*** *Ongoing tracking derived from a common pool of data and commonly understood pre-post intervention consumption analysis builds a bridge for communication among stakeholders and sows the seed of trust necessary to enable scale in the future.*

o What are best practices related to accuracy/confidence/reporting?

*There are several ways to address the question of accuracy and confidence in reporting. One way to describe best practices is by outlining the difference between deemed savings claims and meter-based savings claims. Each has trade offs and benefits described below:*

***Deemed savings claims fix the output for consistency - and serve as the bar for accuracy in evaluation.*** *Technical reference manuals typically outline a method for a specific technology or intervention and the values are adopted or updated on a regular basis. When these deemed values are used as the basis for reporting and tracking process two main problems emerge due to their static/fixed nature:*

*1.) They do not motivate or incent action beyond the minimum*

*2.) They almost never come with a measure of confidence beyond sample statistics from a field analysis.*

*Deemed values are assumed to be true at least for their period of application. Realization rates (the ratio of the evaluated result to the deemed result) are treated as the equivalent of a "confidence" metric -- illustrating how close the evaluated result is to the assumed value. In a reporting context, deemed values do provide consistency and can carry with them lots of other assumptions about persistence. Evaluations provide limited support to deemed*

*values by providing updates to the specific parameters based on sample based field assessment.*

***Meter based claims fix the method for consistency - and statistics around model fit serve as the metric for accuracy in evaluation.*** *Meter-based consumption analytics are fixed in the method, but offer a "read" of the actual outcomes at the meter because they are not just a count of the technology installed but rather an assessment of the change in consumption at the meter. As such they:*

*1.) Do motivate and incent implementers and others to drive the greatest value to customers beyond the minimum;*

*2.) Can provide uncertainty statistics (CVRMSE) that are reflective of the accuracy of the model to assess changes in consumption, which is a proxy for the effect on the grid.*

*The trade off is in confidence in the upfront savings claims estimates; adaptations are necessary to accommodate early estimates while actual metered results materialize.*

*The added value of meter-based tracking to inform the system, motivate maximal performance and provide a more realistic view of the grid impacts, supports its importance in scaling demand-side investments.*

*Recurve Responses to Questions on Reporting Requirements and Tracking System in December 18, 2019 Workshop.*

*Recurve supports the high-level description of reporting priorities in the New Jersey Energy Efficiency Program Administration Straw Proposal:*

## Reporting

All entities responsible for program delivery, including the DCE, will be required to report savings, costs, and evaluation data following a consistent set of requirements to ensure that all savings and expenditures are accurately tracked, accounted for, and attributed to the proper entity. While the time constraints, format, and specific metrics for reporting are still being developed and will be shaped by additional stakeholder engagement, accurate and timely reporting is crucial in ensuring that the savings targets are met and to evaluate program performance. As mentioned above, a coordinated database to track and store program data must be developed to make the reporting process easier and the evaluation process more timely and accurate. This will not only facilitate cost recovery but also ensure sufficient information for the State to regularly evaluate the effectiveness of the overall portfolio of programs and make appropriate modifications. p 31

*The following comments are intended to augment this vision as stakeholders fill in specifics for operationalizing a tracking system.*

## Reporting Requirements

*The **reporting requirements should be kept as straightforward and simple as possible**. However, keeping it simple does not mean asking for Excel spreadsheets with summary numbers. Reporting should be consistent (allowing infrastructure to be built around delivering them efficiently and using them in day to day operations) and designed to inform or answer specific questions relevant to oversight.*

***Frequency, formats and types of reporting should be driven by the questions that needed to be answered and applicable oversight processes.** Consideration should also be given to the burden of customized reporting requirements and standardization across program administrators and programs should be the goal.*

***Carbon reductions achieved is the core element that needs to be included to track impacts for the Clean Energy Act.** In addition to the ultimate impact, what was done to achieve the impact, how much it cost and where it happened are all essential components for public accountability and prioritizing the next best investment.*

***New Jersey should track:** State-wide energy consumption data, the changes in consumption resulting from program interventions, budgets, spending where the*

*intervention happened (related to the grid impacts) and when the intervention and resulting impacts happened (related to the carbon impacts). This information can be augmented with other datasets that add dimension to demographic characteristics or other factors that may be relevant for informing future investments.*

**Best practice for reporting requirements is to ensure the data can answer the questions required for oversight.** *This is not the same as asking for questions to be answered via reporting requirements. A standardized reporting requirement can be granular and straightforward. Data filed should support BPU in conducting analysis to answer their own questions enhancing transparency, and potentially cutting down on follow up data requests. Automate the filing processes to ease the burden of reporting to allow everyone to stay primarily focused on implementation and have confidence that the reported numbers are reliable.*

#### Tracking System

**A successful tracking system enhances transparency and communication across stakeholders and supports market growth through accountability.** *New Jersey has an incredible opportunity to step beyond the status quo on siloed tracking systems and adopt a tracking system that can provide secure nodal access to a range of stakeholders. It is possible today, with current technology, to monitor consumption and the impacts of interventions for the entire state of New Jersey. Program administrators, stakeholders and the BPU should settle for nothing less.*

**Tracking changes in consumption opens up a wide range of opportunities for resource planning, targeting, and monitoring impacts,** *as described in our comments on evaluation measurement and verification. [This video](#) illustrates the power of straightforward segmentation analysis with monthly consumption data from 5 million meters in California.<sup>11</sup>*

*The project shown in the video was completed for the California Energy Commission with investor owned utility data that was shared via the California Public Utilities Commission. Two years of consumption data were run through the OpenEEmeter to compare changes in consumption between the two years for non-program participants. The results represent the naturally-occurring savings and offer a proxy for potential at the macro analysis level (i.e. whole building consumption by sector, zip code, or other geographic factors).*

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<sup>11</sup> Meter Everything, OpenEE 2018 Project with California Energy Commission, Video: [https://www.dropbox.com/s/kuvft95uvxut04u/openee\\_meter\\_everything.mp4?dl=0](https://www.dropbox.com/s/kuvft95uvxut04u/openee_meter_everything.mp4?dl=0)

*The California Energy Commission provides a great example of how meter-based analysis can be leveraged as strategic policy. In its statewide Energy Efficiency Action Plan, energy data is a core strategy for supporting market growth of demand side strategies.*

*Meter-based program tracking is also happening in Oregon, New York, Massachusetts, and Connecticut. It is being used to track a wide variety of programs including residential retrofits, HVAC, behavioral, on-bill-financing, strategic energy management, and C-PACE.*

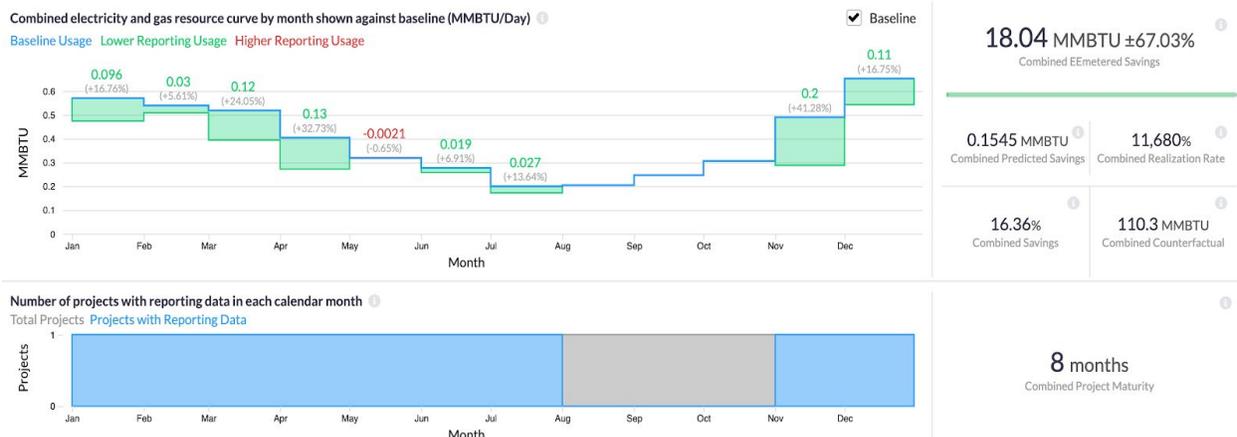
## 2019 Energy Efficiency Plan - Doubling Efficiency

- "Develop hourly and locational aggregated energy consumption **datasets**"
- "Develop hourly energy efficiency savings estimates from interval meter data to **verify and forecast SB350** targets."
- "State agencies should **collaborate**...data analytics, warehouses, modeling methods, etc."
- "develop ability to incorporate **aggregations** of energy efficiency and demand response programs into **long term planning**"
- "incorporate **meter-based analysis** into potential studies to identify cost effective savings potential."



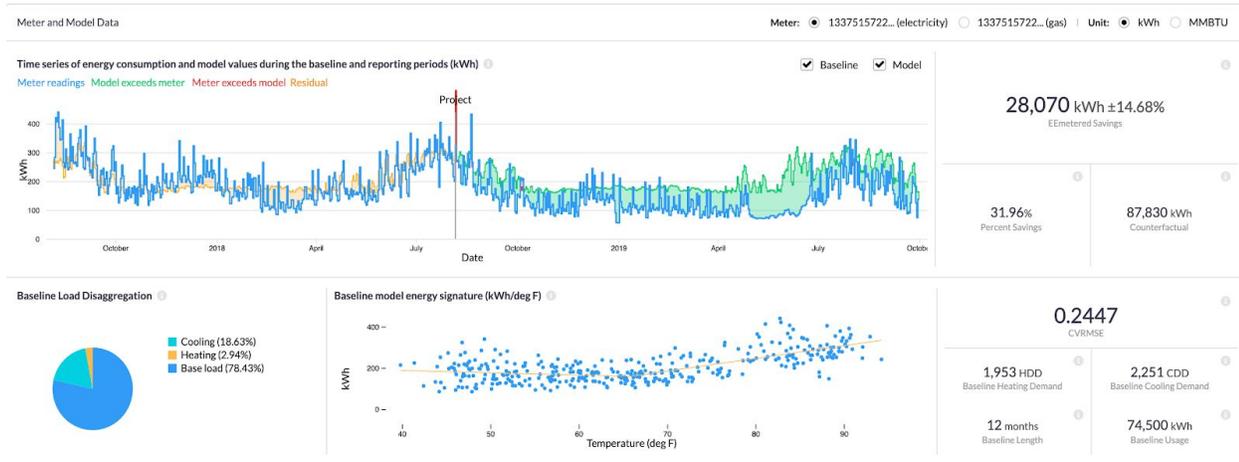
[https://www2.energy.ca.gov/2019\\_energyplan/documents/a08272019](https://www2.energy.ca.gov/2019_energyplan/documents/a08272019)

**Automated M&V can deliver on New Jersey's tracking needs today.** Once program deployment begins, utilities, program administrators, and implementers can all benefit from ongoing meter-based tracking to monitor progress month to month as illustrated below. Site-level tracking is at the base of the analysis; aggregation or comparison within or across programs is based on other characteristics of participants or programs. Administrators and implementers can manage risk across the portfolio as they see savings unfold. Real-time tracking provides actionable intelligence for their decision on the next cost-effective investment and enables seamless reporting of impacts with audit capabilities down to the project level.

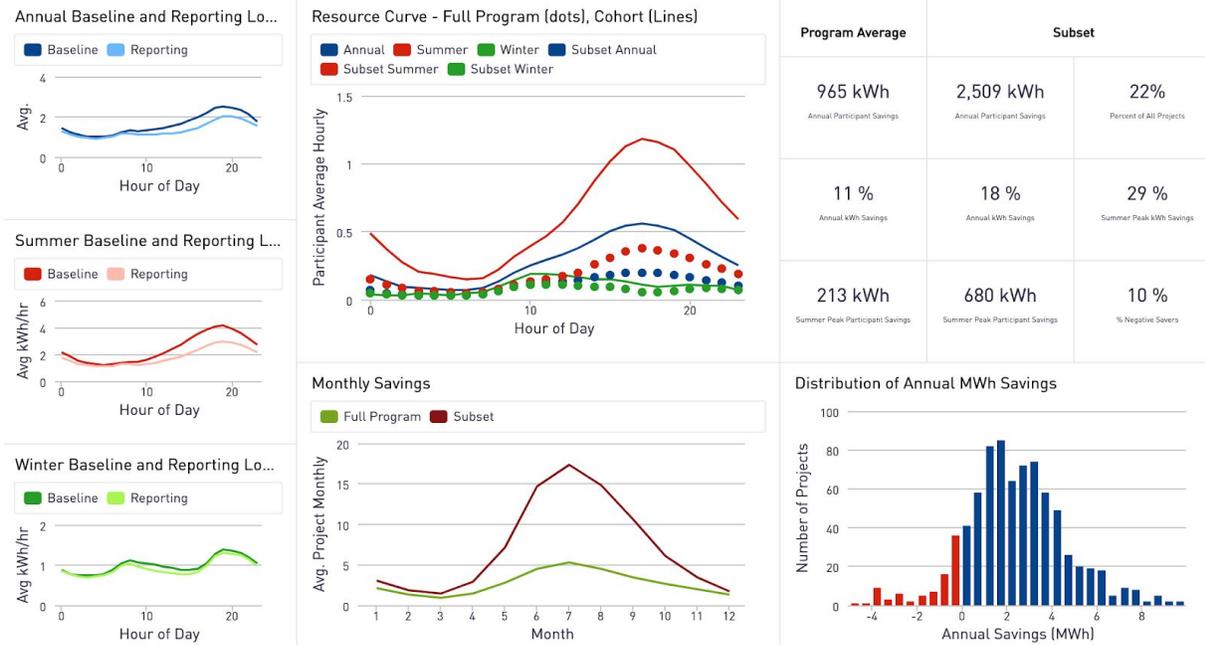


Example - Recurve Monthly Tracking Platform

As advanced metering infrastructure is adopted, the **hourly impacts can be visualized, enabling a new dimension for program design** that can target peak or carbon intensive times of the day and contribute more directly to decarbonization and grid optimization.



## Example - Recurve Hourly Tracking Platform



## Example - Recurve Portfolio Analytics Platform

These **tools are designed to be interoperable with existing systems to animate the underlying consumption data to understand impacts and drive decisions.** Other data sets can be merged to the consumption data so the system does not have to house every conceivable

*data set that may need to be included at the start but rather have the flexibility to augment based on the various end users, or based on evolving needs for a particular organization.*

*Access to the system is an important consideration and can be managed based on roles to ensure security.*

- *The utilities have primary access to customer consumption data. They are also responsible for and should be empowered to use customer data alongside third party implementers to optimize the grid and the programs that support the grid and decarbonization. The utilities should have a fully accessible system to track their own contributions to the clean energy goals and maintain accountability.*
- *State agencies like the BPU that are responsible for oversight should also have access to consumption data, but may not need to have personally identifiable information within the data. The state should demonstrate its contributions to the goals, as well as be responsible for tracking progress toward the overall goals across the state.*
- *A public-facing system (that does not reveal personal information) to track progress on clean energy goals is an important means of accountability for public investment. This can be accommodated by presenting anonymized and aggregated data on specific metrics of relevance.*

***Data Security is a serious consideration.*** *Access rules must be devised, if not already in place, to balance the interests of protecting privacy and supporting ambitious goals for climate change. Privacy budgets and other strategies enabled through differential privacy can support these procedures and regulations.*

*Establishing a meter-based tracking system means overcoming some key barriers -- but have successfully been overcome in other jurisdictions. The first task is establishing data flow at the utilities into a common platform. Infrastructure for managing large data systems would be necessary to do this either internally or via vendor. These tasks have been completed in weeks to months depending on the status of the data infrastructure at the utility. Devising a centralized meter-based tracking system includes developing data flow from the utilities, introduces another layer of data exchange, but is being successfully executed in other jurisdictions.*

Attention Aida Camacho-Welch [EnergyEfficiency@bpu.nj.gov](mailto:EnergyEfficiency@bpu.nj.gov)

To the Secretary of the Board of Public Utilities

44 South Clinton Avenue, 9<sup>th</sup> Floor

Post Office Box 350

Trenton, New Jersey 08625-0350

Dear BPU Directors,

The following are comments in response to the New Jersey Board of Public Utilities, addressing their inquiry in the evaluation, measurement and verification (EM&V) of energy efficiency and peak demand reduction programs, as well as the filing and reporting requirements.

As a group, we cannot discuss these issues of EM&V without discussing New Jersey's negligence in promoting Geothermal as a choice and actually the solution for many of our infrastructure, carbon reduction and economic issues and shortfalls.

If we as a society are truly looking for solutions in reductions in energy demand, we as a collective group need to look into providing systems that significantly reduce energy demand consistently and continuously. Geothermal heat pumps reduce electrical demand significantly, providing up to six times the energy reduction. Geothermal heat pumps reduce carbon emissions by burning no combustible fuel at the source and reducing the amount consumed at the electrical source generation. Geothermal reduces the need for enlarging infrastructure through reduction in actual amount of electric demand not just during peak hours.

If we as a society are seeking to switch to electrification, aggressively, while seeking "Environmentally Beneficial Electrification" we need to blend it with "Environmental Beneficial" usage and reductions. To be clear this is very germane to this discussion as we switch homes, business and government entities to electric heat sources. It is imperative that one state program benefit other state energy goals, or at least does not diminish the effects. Reduction in peak demand usage can quickly be offset by increases in customer demand through changes to conventional electric heat pumps. Geothermal heat pumps prevent the negative offset or increase in electrical demand, whether peak or non-peak usage.

New Jersey needs to move to the front of the line of energy reduction. New York has eclipsed us in championing Geothermal conversion. WaterFurnace has already created a system for energy monitoring adding this type of monitoring to new conversions would answer the first question, measurement and verification, as well as part of the second question, reporting. Once the data sets are collected, then filing and evaluation of the reductions can take place. True electrical reduction and true green technology are possible, available and the path is easily followed.

I would welcome the opportunity to be involved in further discussions on this topic.

All the best

Roger R Locandro MPA, IGSPA cert. NJMHVAC1018, RMC, QPA, CPWM

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Deborah M. Franco, Esq.  
Director, Regulatory Affairs Counsel

January 17, 2020

***VIA UNITED PARCEL SERVICE AND ELECTRONIC MAIL***

**EnergyEfficiency@bpu.nj.gov**  
Honorable Aida Camacho-Welch, Secretary of the Board  
Board of Public Utilities  
44 S. Clinton Ave., 9th Floor  
P.O. Box 350  
Trenton, NJ 08625-0350

**Re: New Jersey Energy Efficiency Transition – December 18, 2019 Stakeholder Meeting  
Regarding Evaluation, Measurement & Verification and Filing and Reporting**

Dear Secretary Camacho-Welch:

On December 18, 2019, New Jersey Board of Public Utilities (“Board”) Staff (“Staff”) held a stakeholder meeting regarding the New Jersey energy efficiency transition and, in the Notice of that meeting, provided for the submission of written comments concerning Evaluation, Measurement & Verification (“EM&V”) and Filing and Reporting. These comments are being submitted on behalf of South Jersey Gas Company (“SJG”) and Elizabethtown Gas Company (“ETG”) (collectively, the “Companies”) in accordance with the Notice.

As the Companies have represented in prior submissions on this topic, SJG and ETG appreciate the dedication of the Board and Board Staff to fulfill the requirements of the Clean Energy Act of 2018 (the “Act”) and to advance the State’s clean energy goals. SJG and ETG commend Board Staff’s facilitation of the stakeholder meetings that are being held to further the State’s objectives and note the particularly productive format followed by Board Staff at the December 18 Meeting. SJG and ETG remain committed to supporting the State’s objectives and the Companies fully understand their responsibilities as reflected in the Act to ensure that the mandated energy reductions are met. *See N.J.S.A. 48:3-87.9.*

Under the Act, New Jersey gas and electric utilities are required to reduce the use of electricity and natural gas. *N.J.S.A. 48:3-87.9(a).* Each natural gas public utility must achieve

annual reductions of 0.75% average annual natural gas usage in the prior three years within five years of implementation of programs. Each electric public utility must achieve annual reductions of 2% of average annual usage in the prior three years within five years of implementation of programs.

In furtherance of the Act's consumption reduction requirements, Board Staff is required to establish a stakeholder process to evaluate, *inter alia*, the process for evaluating, measuring, and verifying energy usage reductions and peak demand reductions. N.J.S.A. 48:3-87.9(f). The Act also requires the establishment of an independent advisory group to study the evaluation, measurement, and verification process for the reduction programs and provide recommendations to the Board for improvements to the programs. N.J.S.A. 48:387.9(g). Relatedly, the Act requires each electric and gas public utility to file with the Board implementation and reporting plans, as well as evaluation, measurement, and verification strategies.

In connection with these requirements, discussions held at the December 18 meeting included, *inter alia*, how energy savings will be measured, what methods will be utilized to verify reported energy savings and the filing and reporting requirements that will apply to energy efficiency programs. SJG and ETG appreciate the perspectives offered by the panelists at the December 18 Meeting on these topics, including those of Rutgers Center for Green Building, ACEEE, Energy Futures Group, FirstEnergy and the New Jersey Division of Rate Counsel. Like all stakeholders, SJG and ETG agree that EM&V is critical to be able to demonstrate that the benefits of energy efficiency programs are realized. The Companies emphasize consideration of the following in the establishment of an EM&V framework to ensure criteria that advance the goals of the Act:

- All entities delivering programs must report savings, costs, and evaluation data following the same requirements to facilitate transparency and oversight. Of important note, to support setting future targets, it is necessary for the Office of Clean Energy ("OCE") to report utility-specific savings and other critical information for historical and current programs in a timely fashion;
- OCE is positioned to promote the adoption of energy efficiency and market transformation as New Jersey transitions into new energy efficiency programs. Providing regulatory oversight and review of programs, establishing evaluation, measurement and verification criteria and processes, assisting with the quantification of savings occurring outside of utility-administered programs, promoting energy efficiency, and facilitating stakeholder meetings are all important roles the OCE can play as NJ transitions to new EE programs;
- The ultimate framework developed should ensure that the information provided in the EM&V process not duplicate that provided through the reporting process. This will facilitate an efficient process that ensures full transparency of information without resulting in unduly burdensome requirements; and

- Currently, there is insufficient information available regarding the quantitative performance indicators (QPIs) related to electric and natural gas usage reduction targets. The number of QPIs should be limited and focused on energy impact. Creating a more limited set of targets creates clear objectives and minimizes distractions otherwise associated with defining and measuring success on a long list of metrics. Consistent with the Act, QPIs can be reassessed in year 3 after programs are established. It is critical when defining QPIs for utilities that the development, implementation, and administration of energy efficiency programs be within their control.

Thank you again for the opportunity to provide these comments. We look forward to continued collaboration with all stakeholders.

Respectfully yours,



Deborah M. Franco

/DMF



January 17, 2020

Secretary of the Board of Public Utilities

Attn: Aida Camacho-Welch

44 South Clinton Avenue, 9th Floor

Post Office Box 350

Trenton, New Jersey 08625-0350

**Re: Response Comments to NJ BPU Staff Questions from the Energy Efficiency EM&V and Filing & Reporting Stakeholders Meetings December 18, 2019**

Uplight is a nationwide software-as-a-service (“SaaS”) company that helps utilities engage their residential and business customers in a decarbonized energy future that is efficient, equitable, and resilient. Our 400 employees serve our 93 energy provider clients, including PSE&G, Exelon, First Energy, Orange & Rockland, New Jersey Natural Gas, and South Jersey Gas / Elizabethtown Gas, to provide connected customer journeys to over 100 million energy customers in North America and Europe. [As a certified B-Corp](#), we share the NJ BPU’s commitment to providing energy consumer savings while reducing energy and associated greenhouse gas emissions to build a more sustainable future.

We appreciate the opportunity to share our perspective and expertise with the New Jersey Board of Public Utilities (“BPU”) on demand side management (“DSM”) program evaluation, measurement, and verification (“EM&V”) for implementation of the Clean Energy Act (“CEA”) through both in-person participation and follow up through these written comments. Herein we share our perspective and insights on several topics, including guiding principles for DSM EM&V as a supplement to those of our trade association, the Energy Efficiency Alliance of New Jersey (“EEA-NJ”) specific recommendations for EM&V of the two programs Uplight currently

provides in New Jersey, behavioral energy efficiency (“BEE”) through home energy reports (“HERs”) and retail products through utility (or state agency) branded online marketplaces, as well as some comments on the EM&V on potential demand response (“DR”) investments.

### **EM&V Guiding Principles**

Uplight has contributed to and supports the comments of our trade association, EEA-NJ. As a supplement to those comments, we wish to reiterate the importance designing EM&V using innovative approaches designed to reflect the State’s (and BPU’s) stated policy goals of carbon reduction, equity, and reducing energy cost burden, while also leveraging advances in technology, data analytics, and economy-wide marketing, to create a superior consumer experience.

#### *Recommendations for EM&V Application*

The purpose of EM&V is multifold - to determine program and investment performance for oversight and performance evaluation by regulators and policymakers, but also to provide real-time feedback to program administrators, implementers, and technology providers so they can work to improve performance in real-time. Therefore performance metrics must reflect the full set of objectives, be measured on a regular cadence, and be transparent to all parties.

#### *Recommendations for EM&V Metrics and Calculations*

Traditionally EM&V has neglected to incorporate consumer experience (“CX”) as a primary evaluation metric, which dismisses the inherent value of positive consumer experience, fails to recognize the synergies that CX can provide in terms of reduced participant acquisition costs, and effectively settles for a defeatist perspectives on “achievable” potential. Additionally, a fear of double-counting benefits from investments has created the concept, and negative perception, of uplift, a deduction of the savings benefits from one program that results in customers’ participating in other programs or investments. Of course, rather than a bug, this cross-participation should be considered a feature.

To remedy this misalignment a measure of consumer engagement, such as Net Promoter Score (“NPS,”) should be included in EM&V measurements. Uplift should be continued to be calculated, but not automatically deducted from the benefits calculation; instead it should be considered in comparison to other participant acquisition costs.

#### *Recommendations on Evaluation Cost Tests*

Traditional approaches often favored by incumbent program evaluators and administrators have failed to provide an optimized experience or realization of the full energy efficiency potential by devaluing ancillary benefits of comfort, health, safety, and resilience, and have consistently failed to leverage technology synergies between energy efficiency, demand response, and broader distributed energy resources (DER).

In order to address these shortcomings and align the evaluation costs tests for programs in New Jersey, we support the recommendations expressed by many stakeholders that the BPU implement the Resource Value Test (RVT) outlined in the National Standard Practice Manual ([NSPM](#)) In the interim, the BPU may consider modifying existing costs tests, such as the Utility Cost Test (UCT) to incorporate societal benefits (such as pollution, jobs, and undervalued consumer energy savings) for programs launched before at RVT framework can be established for New Jersey.

#### **EM&V for BEE**

Our experience as a leading provider of BEE has provided significant insights specific to the EM&V of those programs, and we recommend the following approaches:

1. Follow the guidance listed in Chapter 17 of the U.S. Department of Energy Uniform Methods Project ([www.nrel.gov/docs/fy17osti/68573.pdf](http://www.nrel.gov/docs/fy17osti/68573.pdf))
2. EM&V for BEE must be based on measured savings, not on deemed savings.
  - a. Given the dynamic nature of BEE programs and consumer behaviors, and variations on the performance of solutions providers, measured savings are vastly superior to deemed savings, well worth the incremental costs.

- b. Measuring energy savings by comparing treatment groups to control groups in a randomized control trial (RCT) leads to higher-quality outcomes. Deemed savings approaches can favor cheaper approaches that are, in fact, less effective at engaging customers.<sup>1</sup> Additionally, with measured savings hypothetical net-to-gross ratios need not be applied.
    - c. It is critical to gather real-time feedback from the evaluators to program administrators and implementers so real time adjustments can be made in the treatment protocols and content.
3. Measure life for BEE should be set at one year. While savings persistence is in fact a real benefit, accounting for this is often not worth the cost.
  - a. Solutions to managing complexity e.g. “crop rotation” require loss of treatment, less benefits, including a detriment to the consumer experience, including frustration, confusion, and significant opportunity costs.
  - b. Assuming a persistence value of 1 year also addresses the issues of annual vs. cumulative savings for BEE, providing significant simplicity while erring on the side of more investment in DSM.
4. Uplift should be measured but not deducted from the benefits attributed to BEE.
  - a. The deduction for uplift is typically much less than the value of the associated participant acquisition for other programs, i.e. market transformation benefits of consumer education and engagement.
  - b. Until a more precise acquisition valuation methodology is developed for measuring this benefit, inclusion of the uplift savings works as a proxy value.
5. Performance measuring and reporting must be frequent and timely. Third party evaluators should report annually, with no more than one quarter delay in reporting from the end of the evaluation period. Implementers should also deliver ex-ante performance results to minimize surprises and maximize opportunities for improvement.

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<sup>1</sup> Several examples from BEE programs across the country have demonstrated underperformance of programs utilizing deemed savings approaches. In Ameren Missouri’s 2018 M&V report ([www.efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=936232335](http://www.efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=936232335)) Page 50 shows the 2017 and 2018 evaluated kWh numbers per customer of 39.1 and 82.4kWh, far short of the deemed value of 150 kWhs.

6. EM&V for BEE should account for, accept, and optimize around differences, such as consumer segments potential and propensity to save, paper vs. digital only delivery, content variations, etc. to allow implementers to optimize costs and benefits to equitably serve all consumer segments, manage trade-off between individual policy and regulatory objectives, realize synergies with other programs (such as retail products) and optimize for overall savings.<sup>2</sup>
7. As mentioned above, CX must be measured, both as an “ends” (i.e. happy energy consumers are an inherent good) and as a “means” (happy customers are more likely to constructively engage and participate in programs.)

### **EM&V for Retail Products and Online Marketplaces**

Utility-branded online marketplaces should be evaluated not as direct DSM resources but instead as core market transformation infrastructure, with significant participant acquisition benefits. Experience has shown dedicated online marketplaces offer both lower “free ridership” and higher velocity, and in turn net savings, than traditional channels.<sup>3</sup> At the same time, it is important to support other channels as well, as a true “multi-channel” approach, and “be where the customers are” is critical to optimizing deployment of DSM technologies.

Utility branded and run online marketplaces offer additional value in their modularity as a consumer engagement channel, with the potential to expand from retail product delivery to infrastructure for other services, such as enrollment in rate plans, demand response programs, installation services, consumer information and education, utility financing, and services not yet developed.

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<sup>2</sup> The scope and scale of BEE programs is often limited due to a focus on aggregate savings, but given the engagement synergies HERs provide and low cost of digital-only programs, it is important to measure them on a kWh per \$ - not just aggregate kWh basis - to drive maximum investment in this cost-effective approach.

<sup>3</sup> A 2017 Xcel EM&V study showed a 5x higher net kWh savings for smart thermostats through online marketplaces compared to than traditional retail channels, with a 26% lower free ridership calculation. In New Jersey, the PSE&G online marketplace pilot program far exceeded expectations for moving thermostats in program years 2018 and 2019, suggesting that higher deployment rates are possible with even lower rebate amounts.

The performance of this channel as a central transactional hub can be evaluated a number of ways, but perhaps most straightforward is through the use of consumer experience metrics, of which the use of Net Promoter Score (NPS) is becoming the industry standard. Other tracking metrics, such as transaction velocity, percentage of utility consumer site visits, click-through rates, and the like may also prove useful in evaluating marketplace performance.

### **EM&V for Demand Response**

Demand response (DR), while not currently widespread in New Jersey, will likely serve as a critical resource for the future low-carbon energy system in the state. As such, the BPU should ensure DR EM&V metrics and methodology are optimized to meet the state's objectives. The traditional approach of apply a Ratepayer Impact Test (RIM) on a program by program basis fails to adequately evaluate and promote DR; Uplight recommends the following considerations when developing a superior EM&V approach:

1. Ensure carbon reduction objectives are accounted for in cost tests. Recent work in California has shown that simply increasing demand flexibility may not reduce carbon intensity of the grid. Development of a RVT can address this, but in the interim the addition of a carbon price adder to the RIM or UCT calculation can address this.
2. DR can be complex, with a number of factors<sup>4</sup> impacting the depth, frequency, and cost effectiveness of a program in any given DR season. Optimizing DR portfolios must recognize this, and as such, success should be measured not only in realized peak shaving in a particular season, but in ways that optimize the availability of the resource, analogously to energy and capacity markets for wholesale power generation. One approach is to set targets and measure performance against both enrolled and dispatched DR.
3. DR programs and technologies serve optimally when integrated and synergized with other programs - e.g. when smart thermostats are deployed for both efficiency and DR

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<sup>4</sup> These may include weather, wholesale market design and operations, power plant availability, or fuel price fluctuations.

benefits, or when DR technologies empower consumers to respond under time-of-use (TOU) or demand rates. As such, EM&V practices must incorporate the sharing of costs and benefits across these multiple values.

4. As mentioned above, CX must be measured, both as an “ends” (i.e. happy energy consumers are an inherent good) and as a “means” (happy customers are more likely to constructively engage and participate in programs.) This is especially useful to understand how to optimize the frequency, depth, communication channels and content, and technology deployment for meeting the state’s DR resource objectives.

Thank you once again for the opportunity to share our insights and perspectives. We look forward to continuing these conversations as part of the BPU’s continued efforts to develop a sustainable and cost-effective energy system for the people and businesses of New Jersey.

Sincerely,

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