# Office of Clean Energy

# Comprehensive Resource Analysis - Staff Straw Proposal
# New Jersey's Clean Energy Program
# Proposed Funding Levels FY16

**May 5, 2015**

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## EXECUTIVE SUMMARY

In 1999, among other things, the Electric Discount and Energy Competition Act (EDECA or the Act) established the Societal Benefits Charge (SBC) to fund energy efficiency and renewable energy programs. Since that time, the program has increased its funding levels, increased its portfolio of program offerings, and changed administrative structure. These strides have helped to deliver billions of dollars of incentives and cost savings to New Jersey ratepayers.

This staff straw proposal for the Comprehensive Resource Analysis (CRA) establishes the SBC funding level for fiscal year 2016, highlights recent accomplishments, and describes the framework on which the New Jersey Clean Energy Program (NJCEP) will continue to deliver innovative, cost-effective programs throughout the state. The funding level will support seven funding categories, five of which support the NJCEP. The five NJCEP funding categories include: 1) Energy Efficiency; 2) Renewable Energy; 3) Economic Development Authority (EDA); 4) Combined Heat and Power and Fuel Cell; and 5) NJCEP Administration. The remaining two funding categories support the Energy Resilience Bank (ERB), and State Energy Efficiency and Utility costs.

The total recommended amount is $344,650,000. In FY2016, Staff will allocate $216,376,000 for the NJCEP programs, with the remaining $128,289,000 designated to support the ERB and other State energy initiatives and utility costs.

The CRA funding level for FY16 is consistent with the FY15 funding level. Staff anticipates providing a full suite of programs while the new NJCEP program administrator begins to implement a new strategic plan and a new marketing plan and website are rolled out. With a stable funding level, the clean energy programs will focus on delivering high-level service to program participants and increasing energy and cost savings.

Fiscal years 2014 and 2015 were a time of targeted self-assessment for the program. Office of Clean Energy (OCE) staff took an in-depth examination of its programs, process, partnerships, and incentives to identify strengths and opportunities for improvement. During the year the program hosted scores of meetings with stakeholders, academics, the utilities, Rate Counsel, and advocacy groups to capture a comprehensive view of the program. The insights gathered through those processes are incorporated into this straw proposal.

## Staff's Process:

### 1. Energy Master Plan Goals (EMP)

The 2011 EMP is the foundational document that Staff relies on to guide clean energy objectives for the NJCEP. Staff will continue to structure the NJCEP programs in a manner to advance the EMP goals.

### 2. Evaluations

Through the stakeholder process the importance of maintaining adequate data collection methods and a schedule of program evaluation was reinforced. Data and evaluations are vital to measuring the program's success and tracking progress toward achieving the EMP goal of reducing energy consumption. To this end, the NJCEP completed or started several evaluations including, for example, a benchmarking study, process study, and solar volatility study. Over the next three years, the program has outlined a schedule of evaluations to ensure regular assessment of its performance.

### 3. Energy Savings Targets

In prior years Staff set energy savings targets as a linear calculation based on participation rates and estimated savings per application. In contrast, this year, Staff conducted a regression analysis of past energy savings associated with NJCEP programs (see Section 3: Funding Levels and Goals) in order to set energy savings targets for FY16. The regression analysis enables Staff to set ambitious energy savings targets that are not directly linked to the participation levels.

### 4. Stakeholders

Finally, Staff believes it is in the interest of ratepayers and market development to continue to achieve increased transparency, consistency, and standardization across all energy efficiency programs. Coordination between the NJCEP, utility-run energy efficiency programs, projects performed through the State Energy Office (SEO) and the Energy Savings Improvement Program (ESIP) will ensure that the State's approach to increase energy efficiency savings is comprehensive and effective. Staff will continue to work with stakeholders to deliver quality programs.

## Funding Categories

### 1. Energy Efficiency (EE)

Energy efficiency is the largest funding category historically. As proposed, it will represent more than 80% of the funding dedicated to NJCEP programs. These dollars will support residential programs, commercial & industrial (C&I) programs, and low-income programs.

During FY14, Staff formed three work groups – Data, Evaluation, and Utility – to examine the EE programs' strength and potential growth areas. This CRA summarizes the objectives of each work group, the members, the process, and the recommendations.

### 2. Renewable Energy (RE)

The funding level for RE is set at approximately 5% of the total funding dedicated to NJCEP programs. This funding level is significantly smaller than EE because the NJCEP no longer offers direct rebates to NJ's thriving solar market. NJ continues to be a leader in solar. NJ ranks third, nationally for installed PV capacity. The annual installed capacity for 2014 was 240 MW. The volume of new development also continues to grow, exceeding Staff's estimates. Through March 1, 2015, the SREC Registration Program processed 8,975 registrations and anticipates processing an additional 4,800 registrations before the end of the fiscal year. The funding priorities for RE in FY16 will include biomass, energy storage, and off-shore wind.

### 3. NJ Economic Development Authority (EDA)

EDA will continue to manage two NJCEP programs: the Clean Energy Manufacturing Fund and the Edison Innovation Green Growth Fund. These programs provide incentives to attract clean energy manufacturers to the State and to assist start-up companies in commercializing new technologies.

### 4. Combined Heat and Power (CHP) and Fuel Cells (FC)

The EMP encourages increased development of CHP and FC. Unfortunately, the NJCEP has not experienced a growth in this area. In this CRA, Staff recommends that the NJCEP initiate a stakeholder process to assess market barriers to CHP/FC development, review Board and NJCEP policies, and examine the interplay between CHP/FC and the State's resiliency goals. Staff recommends that the CRA dedicate approximately 7% of funding available for NJCEP programs for CHP and FCs and that the NJCEP complete a stakeholder process before implementing any significant program changes.

### 5. Administration

Staff proposes a funding level of approximately 2.5% for administration. This allocation will support an enhanced marketing strategy, partnerships with universities, and other administrative expenses. Marketing is important because the stakeholder-driven work groups revealed a universal recommendation for increased and improved marketing of NJCEP programs. Brand awareness is critical to building customer confidence about the NJCEP and the value of energy efficient and renewable energy measures.

The university partnerships will further the NJCEP's education and outreach efforts. Key partnerships will include The College of New Jersey's Institute for Sustainability and Sustainable Jersey ('SJ'), New Jersey Institute of Technology and its Center for Building Knowledge ('CBK') and the Rutgers University's Laboratory for Energy Smart Solutions ('LESS').

### 6. State EE and Utility Costs

As per the Governor's February 2015 budget address, $118,289,000 in SBC funds will be allocated to fund the State's energy initiatives and utility bills. This funding level is approximately 34% of the total SBC collection.

### 7. Energy Resilience Bank (ERB)

On May 31, 2014, HUD approved New Jersey's proposal to establish an Energy Resilience Bank, to be capitalized with $200 million of HUD Community Development Block Grant – Disaster Relief ('CDBG-DR') funds. The ERB provides grants and low-interest loans for EE and RE projects that include resilient technologies at wastewater and water treatment facilities, schools, public housing, hospitals and other critical infrastructure.

Through a Memorandum of Understanding between BPU and EDA, in August 2014, the Board agreed to supplement the funding with up to $150 million in SBC dollars. To this end, staff proposes to allocate 3% ($10 million) of the FY16 CRA funding to the ERB.

## INTRODUCTION

On the occasion of fifteen years since New Jersey's legislature passed the Electric Discount and Energy Competition Act ('EDECA' or 'the Act') in 1999 that established the Societal Benefits Charge ('SBC') to fund demand side management programs for ratepayers, Office of Clean Energy ('OCE') Staff undertook a broad review of the history, delivery and performance of clean energy programs in the State. This two-year process involved program evaluation, targeted work groups that solicited stakeholder participation, a comprehensive review of the data being collected by both utility- and state-run programs, and an appraisal of past marketing efforts.

Since EDECA's passage, utility and state-run programs have expended approximately $2.5 billion in SBC funds and a total of $380 million in rate-recovered utility costs to develop clean energy resources within the State. [1] These funds have reduced demand for energy, provided construction jobs and strengthened the economy, and lowered harmful air emissions. More specifically, these programs have made New Jersey a national leader in the development of solar PV and in the development of a stable solar PV market; and energy efficiency programs have delivered over 47 million MWh in energy savings over the life of the installed measures, saving participants in energy efficiency programs over $500 million annually in energy costs, and have reduced emissions by over 4.5 million metric tons per year, which is the equivalent of removing almost 1 million vehicles from the road.

While providing the funding to develop clean energy resources, the EDECA legislation also "placed greater reliance on competitive markets . . . to deliver energy services to consumers in greater variety, and at lower cost than traditional, bundled public utility service" [N.J.S.A. 48:3-50 2.a.(2)and "authorized the Board of Public Utilities (BPU) to approve alternative forms of regulation in order to address changes in technology and the structure of the electric power and gas industries; to modify the regulation of competitive services, and to promote economic development." (N.J.S.A. 48:3-50 2.a.(8)).

These objectives, in tandem with the 2011 Energy Master Plan (EMP) objectives of transitioning away from reliance on the collection of SBC funds and exploring alternative administrative structures for the delivery of clean energy programs, informed the process and discussions. With a particular focus on energy efficiency programs and services, this Comprehensive Resource Analysis (CRA) straw proposal captures the findings of that process, identifies proposed funding levels for New Jersey's Clean Energy Program (NJCEP) for fiscal year 2016 and makes recommendations on how to achieve greater consistency and standardization across the energy services currently being delivered in New Jersey.

[1] This includes utility E3 filings approved by the Board prior to CY 2015. Those E3 filings recently approved by the Board or currently under review have a proposed total value of $313 million.

## 1. HISTORY/BACKGROUND

In addition to requiring the utilities to divest their generation assets while continuing to deliver electricity and gas, the Electricity Discount and Energy Competition Act empowered the Board to undertake an energy efficiency ('EE') and renewable energy ('RE') comprehensive resource analysis (CRA) to determine the appropriate level of funding for EE and Class I RE programs, now called New Jersey's Clean Energy Program. As required by the Act, the Board issued its first CRA Order in 2001, setting the first four-year cycle of funding for EE and RE programs.

The process was marked by multiple and divergent recommendations for the most cost-effective administrative structure. After adopting a partial settlement with the utilities, the National Resources Defense Council (NRDC) and others, the Board set the first years' funding at $115M, with 25% directed to RE programs, and directed the utilities to manage the programs, pending an independent analysis to be performed by the BPU.

### Utility Collaborative

From 2001-2004, the utilities formed a collaborative that included all seven electric and natural gas utilities, Board staff, the Northeast Energy Efficiency Partnership (NEEP), NRDC, and various consultants. The utilities jointly managed programs that offered consistent incentives across the State, engaged in joint procurement to reduce administrative costs, filed a single statewide plan for EE and RE programs, and submitted joint reports to the Board.

In 2003, the Board concluded its independent analysis. While consideration was given to permitting the utilities to bid on program administration (Docket #EO04030178, dated April 30, 2004), the Board ultimately determined that the utilities could not bid on the administration of statewide programs, citing that allowing the utilities to bid may create the appearance of an unfair advantage. In 2003-2004, Staff planned to transition administration of statewide EE and RE programs from the utilities to independent administrators contracted by the Board.

In 2005, the Board issued its second CRA Order, setting funding levels for another four years, through CY 2008. Over the course of the seven plus years when EE and RE programs were delivered by the utilities, SBC collections more than doubled, from $115M to $235M per year.

The following table summarizes the funding levels, expenses and energy savings for the NJCEP for the years 2001-2008:

| TABLE 1 - Utility Collaborative | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Funding, Expenses, Energy Savings and Generation for 2001-2008* | | | | | | | | |
| | *CRA1* | | | | *CRA2* | | | |
| | *CY2001* | *CY2002* | *CY2003* | *CY2004* | *CY2005* | *CY2006* | *CY2007* | *CY2008* |
| *Funding Approved* | $115,000,000.00 | $119,236,000.00 | $124,126,000.00 | $124,126,000.00 | $140,000,000.00 | $165,000,000.00 | $205,000,000.00 | $235,000,000.00 |
| | | | | | | | | |
| *Expenses:* | | | | | | | | |
| *Energy Efficiency* | $56,570,000.00 | $93,258,000.00 | $88,314,000.00 | $92,753,000.00 | $85,414,160.00 | $79,642,000.00 | $90,078,000.00 | $82,452,000.00 |
| *Renewable Energy* | $985,000.00 | $6,646,000.00 | $9,472,000.00 | $14,749,000.00 | $35,524,382.00 | $84,279,000.00 | $78,210,000.00 | $56,930,000.00 |
| *CHP* | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| *EDA* | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $36,033.34 |
| *NJCEP Oversight* | $0.00 | $0.00 | $0.00 | $0.00 | $3,654,000.00 | $7,276,000.00 | $8,523,000.00 | $8,168,000.00 |
| *TRUE Grant* | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| *Total Expenses* | *$57,555,000.00* | *$99,904,000.00* | *$97,786,000.00* | *$107,502,000.00* | *$124,592,542.00* | *$171,197,000.00* | *$176,811,000.00* | *$147,586,033.34* |
| | | | | | | | | |
| *Savings:* | | | | | | | | |
| *Electric (MWh)* | 797,595 | 2,548,628 | 3,739,163 | 4,308,771 | 3,482,554 | 1,935,790 | 2,645,703 | 3,160,279 |
| *Gas (Dtherm)* | 4,802,982 | 6,532,702 | 7,706,430 | 8,107,801 | 11,677,400 | 9,137,230 | 13,732,484 | 8,571,226 |
| *Demand Reduction (kW)* | 18,168 | 44,617 | 67,564 | 78,754 | 73,461 | 51,449 | 48,860 | 40,666 |
| *Generation (MWh)* | 173 | 56,330 | 109,981 | 82,996 | 550,417 | 562,159 | 2,191,660 | 2,104,324 |
| | | | | | | | | |
| *$/kWh Saved* | $0.0257 | $0.0209 | $0.0147 | $0.0139 | $0.0127 | $0.0180 | $0.0142 | $0.0154 |

In 2005-2006, the BPU issued RFPs to contract these administrative services, and in 2006 Honeywell was engaged to manage the RE and residential EE programs and TRC was engaged to manage the C&I EE programs. In 2007, Applied Energy Group (AEG) was engaged as the NJCEP Program Coordinator.

Over the course of 2007, administration of statewide EE and RE programs (with the exception of the Comfort Partners low-income program that is still managed by the utilities), was transitioned from the utilities to Honeywell and TRC. These contracts, with multiple extensions, remain in place today, pending the release of an RFP for a new Program Administrator.

## Utility E3 Filings

In January 2008, the Legislature enacted P.L.2007, c. 340 (the Global Warming Response Act) that found that "energy efficiency and conservation measures and increased use of renewable energy must be essential elements of the State's energy future and that greater reliance on energy efficiency, conservation and renewable energy resources will provide significant benefits to the citizens of the State." [N.J.S.A. 26:2C-45] The act also provided that "public utility involvement and competition in the renewable energy, conservation and energy efficiency industries are essential to maximize efficiencies and the use of renewable energy, and that provisions of (the act) should be implemented to further competition". [N.J.S.A. 26:2C-45]

The Global Warming Response Act provided that an electric and/or gas utility may provide and invest in energy efficiency and conservation programs, and invest in Class I renewable energy programs in its service territory on a regulated basis, and

that a utility's investment may be eligible for rate treatment approved by the Board, including a return on equity, or other incentives or rate mechanisms that decouple utility revenue from sales of electricity and gas. [N.J.S.A. 48:3-98.1-13.b]

Pursuant to N.J.S.A. 48:3-98.1, in determining the recovery of program costs, the Board "may take into account the potential for job creation from such programs, the effect on competition for such programs, existing market barriers, environmental benefits, and the availability of such programs in the marketplace".

In October 2008, in response to the looming national recession, then Governor John Corzine's "Energy Efficiency Economic Extension" (E3) program directed the State's natural gas and electric utilities to submit plans to increase investment in infrastructure and to implement EE programs intended to stimulate job growth. Over the course of 2009 and 2010, five utilities - New Jersey Natural Gas (NJNG), South Jersey Gas (SJG), Elizabethtown Gas (E'town), Public Service Electric and Gas (PSE&G) and Rockland Electric Company (RECo) - submitted filings for EE programs that were approved by the Board.

Jersey Central Power & Light (JCPL) and Atlantic City Electric (ACE) both submitted proposed E3 plans to the Board. However, neither plan received Board approval and neither utility implemented additional EE programs.

Since 2008, these utilities have delivered EE programs intended to supplement or compliment the NJCEP programs. NJNG, SJG and E'town have offered programs that provide additional incentives for participation in a NJCEP program, programs not delivered by NJCEP, and/or an incentive in the form of on-bill repayment (OBR) for the portion of a project's cost that is not covered by NJCEP rebates. Alternatively, in its territory, PSE&G has offered programs unique to a customer class (multi-family, data center and hospitals), OBR, and programs that mimic (and sometimes compete with) NJCEP programs.

As demonstrated in Table 2 on the following page, based on spending, aggregate utility investment in clean energy programs can vary significantly from year to year.

### Utility-run RE programs

In 2008 the Board began to explore opportunities to transition from rebates to market-based incentives for the development of solar systems. By Order dated August 7, 2008, Docket No. EO06100744, the Board directed the electric EDC's to "undertake renewable energy improvements by facilitating SREC-based financing of solar electric generation projects, in a manner that supports the transition to a market-based approach of delivering incentives for solar electric generation."

**TABLE 2 - Utility E3 Programs**

***Budgets, Expenses and Energy Savings 2009-2015***

| Utility | Period Approved by NJBPU | Budget | Reported Expenses (1) | Notes | Utility Savings (Annual) (2) | | Associated NJCEP Savings (Annual) (2) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Electric (MWh) | Gas (Dtherm) | Electric (MWh) | Gas (Dtherm) |
| ***Elizabethtown Gas Co.*** | 08/03/09-12/31/10 | $14,670,600.00 | $2,581,891.73 | | N/A | N/A | 2,958 | 65,355 |
| | 01/01/10-12/31/11 | $6,122,730.00 | $3,289,492.20 | | | | | |
| | 01/01/12-08/31/13 | $1,395,052.00 | $2,899,781.71 | (3) | | | | |
| | 09/01/13-08/31/15 | $1,289,536.00 | $1,031,685.53 | | | | | |
| | ***Programs:*** | Residential HVAC/WH Incentive | | | | | | |
| | | Commercial Customer Energy Efficiency | | | | | | |
| | | Customer Education and Outreach/Dashboard | | | | | | |
| ***New Jersey Natural Gas Co.*** | 07/17/09-12/31/10 | $18,520,635.00 | $17,568,174.46 | (4) | N/A | 455,437 | 5,442 | 89,197 |
| | 01/01/11-12/31/11 | $14,320,555.00 | $13,194,488.73 | (4)(5) | | | | |
| | 01/01/12-06/30/13 | $14,401,635.99 | $18,073,966.63 | (3)(5) | | | | |
| | 07/01/13-06/30/15 | $96,027,655.00 | $49,430,013.69 | | | | | |
| | ***Programs:*** | Enhanced WARMAdvantage | | | | | | |
| | | HPwES Enhancements | | | | | | |
| | | OPOWER | | | | | | |
| | | On-Bill Repayment | | | | | | |
| ***Public Service Electric & Gas Co.*** | 01/01/09-Present | $52,306,157.00 | $49,145,011.79 | | 206,015 | 649,697 | N/A | N/A |
| | 08/01/09-Present | $190,000,000.00 | $175,117,387.29 | | | | | |
| | 07/14/11-Present | $95,000,000.00 | $92,665,659.68 | | | | | |
| | ***Programs:*** | Residential Whole House | | | | | | |
| | | Residential Programmable Thermostats | | | | | | |
| | | Residential Multi-Family Housing | | | | | | |
| | | Small Business Direct Install | | | | | | |
| | | Government Direct Install | | | | | | |
| | | Hospital Efficiency | | | | | | |
| | | Data Center Efficiency | | | | | | |
| | | Building Commissioning and O&M | | | | | | |
| | | Technology Demonstration | | | | | | |
| ***Rockland Electric Co.*** | 01/01/10-03/31/14 | $990,250.00 | $880,044.07 | | 472 | N/A | 44 | N/A |
| | ***Programs:*** | Low Income Audit and Install (RECo) *(Closed Out 03-31-14)* | | | | | | |
| | | Residential Enhanced Rebate (RECo) *(Closed Out 03-31-12)* | | | | | | |
| | | On-Line Energy Audit (RECo) *(Terminated 03-12-12)* | | | | | | |
| ***South Jersey Gas Co.*** | 08/01/09-01/31/13 | $16,118,275.97 | $14,612,660.28 | (6) | N/A | N/A | 11,197 | 246,757 |
| | 02/01/13-06/30/13 | $2,522,468.91 | $2,155,689.17 | (4)(7) | | | | |
| | 07/01/13-06/30/15 | $23,999,999.50 | $8,232,592.96 | (7) | | | | |
| | ***Programs:*** | Enhanced Residential HVAC Rebate - II | | | | | | |
| | | Home Performance Finance EE - II | | | | | | |
| | | Non-Residential EE Investment - II | | | | | | |
| | | Commercial Customer Direct Install Financing | | | | | | |

*Note (1): Data reported by utilities though 2QFY15 (i.e., 12/31/14). In addition, along with the other qualifications noted below, amounts shown for "Reported Expenses" are preliminary pending completion of data quality verification.*

*Note (2): In accordance with established NJCEP policy, in general, "savings follow the incentive payment", i.e., the savings are reported by the party that paid the incentive. However, in cases where incentives were paid by both the NJCEP and a utility, when the utility application can be matched to the NJCEP application, the savings are reported as NJCEP savings. Savings are reported as utility savings only where the utility program is not associated with an NJCEP program (i.e., a "stand-alone" program) or where it is impossible to match the utility application to the NJCEP application for the same project and the utility is able to provide the savings data calculated in accordance with the approved NJCEP protocols.*

*Note (3): This reported expense overage is currently under review.*

*Note (4): Reporting of expenses outside the NJBPU-approved period is currently under review.*

*Note (5): OBRP Expenses not shown, since OBRP was not allocated a separate budget.*

*Note (6): Data incomplete; the NJCEP Program Coordinator is working to obtain the missing data from the utility.*

*Note (7): Corrections required for expenses allocated to incorrect NJBPU-approved period.*

Subsequent to the release of the Order, three electric utilities, JCP&L, ACE and RECo, received Board approval to implement SREC financing programs which enabled the utilities to select solar PV projects through a competitive solicitation and enter into long-term contracts to purchase the SRECs at a fixed cost. PSE&G received Board approval to implement a loan program by which PSE&G can provide a loan for a portion of a solar project's cost, with the loan to be repaid by the SRECs generated by the project. These utility RE programs remain in place today.

## 2011 Energy Master Plan

On December 6, 2011, Governor Christie released the Energy Master Plan with these energy goals that directly impact the delivery of energy efficiency and renewable energy programs in the State:

*1. Lead by example*

New Jersey will lead by example and continue to improve the energy efficiency of State-owned and operated buildings, through the State Energy Office (SEO) within the BPU. The newly created office will have the responsibility of implementing the program through audits of state facilities and buildings and prioritizing those facilities with the greatest potential for energy savings and thereby reducing the cost of energy to taxpayers.

*2. Redesign the delivery of State EE programs*

The BPU will evaluate several alternatives and recommend a structure that can optimize the delivery of effective EE programs to a wide array of customers. This will involve a review of past practices of State management through the Office of Clean Energy (OCE), and consideration of a new way to provide capital for EE and renewable energy programs that can eliminate the need for cost incurrence through the SBC.

*3. Reduce reliance on SBC collections; transition to alternate forms of financing*

The collection of the Societal Benefits Charge (SBC) may be reduced and/or re-directed based on an increase in the use revolving loan programs. Use of revolving loans, would eventually allow the programs they support to become self-sustaining.

*4. Investigate DR initiatives*

While EE and conservation reduce overall electricity use, only a portion of the reduction is coincident with peak demand. Thus, the goal of reducing peak demand will require substantial increased penetration rate of DR throughout NJ.[2]

*5. Foster economic development*

A strong energy efficiency program should offset other macroeconomic pressures, such as the increased costs of other goods and services. Cost effective programs can reduce the State's energy use, thereby fostering a more competitive business climate and promoting economic development through job creation and private investment in energy efficiency services.

*6. Transition away from fossil fuels toward cleaner natural gas technologies/ generation*

Although, the first fuel cells were built over 150years ago, the market is slow to emerge in NJ, due to the high cost of capital to install the resource. Despite its lackluster

[2] On May 23, 2014, the United States Court of Appeals for the District of Columbia Circuit held that FERC does not have the jurisdiction to regulate demand response. EPSA v. FERC, 753 F.3d 216 (D.C. Cir. 2014). The BPU will monitor this case in order to respond to future market adjustments that may result from this case.

economic performance, fuel cells still hold promise for DG, particularly in conjunction with CHP.

*7. Build 1500MW CHP*
The Administration set a goal of developing 1500MW of CHP generation over ten (10) years. Combined heat and power (CHP) and cogeneration resources improve system reliability and utilize fuel more efficiently, especially for commercial and industrial (C&I) customers.

*8. Develop robust, reliable and economically competitive Energy Storage technologies*
Energy storage tends to flatten the load curve, and can lower costs for all customers by reducing the need for peaking generation service.

*9. Incorporate aggressive EE through building codes*
By incorporating aggressive EE requirements into NJ's Uniform Construction Code (UCC), NJ can better achieve its goal of reducing energy consumption. Enhanced standards address numerous components of the building envelope, lighting, motors, and HVAC equipment.[3]

## State Energy Office

In order to determine where the greatest opportunities exist for state facilities to save energy and money, in 2011, Governor Christie established a State Energy Office within the Board of Public Utilities and the State Energy Savings Oversight Committee (Committee). The Committee was charged with designing a program that would take advantage of the New Jersey Energy Savings Improvement Act and would identify and implement actual projects, track costs, energy savings and environmental benefits.

The SEO has implemented a number of projects and is working with the Committee to develop a long-term plan for energy savings in many of the 300 plus state-owned/operated facilities and has leveraged Federal, state, and private-sector resources to deliver the greatest environmental and cost and energy reduction benefits to all taxpayers.

In 2012, the SEO negotiated a reduced rate for electricity and natural gas supply contract for some of the state's largest agencies, reducing the State's annual energy costs by $2.1 million in electric and $2.25 million in natural gas, for a total of $13 million to date.

[3] In January 2015, NJ Department of Community Affairs (DCA) proposed to adopt the International Energy Conservation Code (IECC) 2015, which will update ASHRAE 90.1 standards from 2007 to 2013 standards. In March 2015, the public comment period closed, and DCA is now reviewing public comments before recommending final adoption.

The SEO has also implemented a number of energy efficiency projects at State facilities, such as the installation of high efficiency boilers and building automation controls. While some of the initial projects are still under construction, the energy savings from completed projects total $5.3 million annually or $15.9 million to date.

The State has secured a $100 million line-of-credit to fund energy efficiency projects and the first project, New Jersey State Police Headquarters, is currently in progress. Due to staffing and bidding requirements, additional performance contracts will be implemented on a quarterly basis over the next three years. Future projects include the Department of Transportation headquarter, the Katzenbach School for the Deaf, the NJ State Prison in Trenton, and the Vineland Developmental Center.

### Energy Savings Improvement Program (ESIP) legislation reforms public financing mechanism

Legislation enacted in 2009 (L. 2009, c.4) and revised in 2012 (L. 2012, c.55) provides a funding mechanism for State entities (i.e., agencies and authorities, public institutions of higher education, county colleges, local boards of education, counties, and municipalities to install high efficiency systems and other energy conservation measures (ECM) to significantly reduce energy consumption and associated costs without the outlay of upfront capital. The legislation is commonly referred to as the ESIP legislation. The energy cost savings achieved through these upgrades is then used to pay for the installation of the ECMs. These ECMs include, but are not limited to, lighting, occupancy sensors, chillers, boilers, HVAC equipment, demand management controls, and renewable energy, as long as the combined payback period is less than 15 years. Some districts are incorporating distributed generation, such as CHP, focusing on a campus approach, which extends the payback period to 20 years.

Because the bonds to fund these projects are self-liquidating and not considered new debt obligations as defined by the legislation (C.18A:18A-4.6), Boards of Education (C.18A:18A-4.6) have the greatest potential for participation in an ESIP project. School districts are not required to go out for a referendum, for which it is historically difficult to obtain resident support. Without this funding mechanism, public schools struggle to maintain and fuel outdated, inefficient equipment, driving up the school's operations and maintenance (O&M) costs. Aging structures with high O&M costs can realize 20% or more in cost reductions. With the potential for over $1 billion in projects[4], the public school sector alone can produce significant reductions in energy demand and energy costs, and produce substantial jobs in the design and construction industry, still a lagging economic sector.

[4] Project potential based upon a 50% district participation rate with an average of 3 facilities per district and $3.5 million / dist. project

In July 2013, the Board approved procedures to implement elements of the ESIP law and clarified the procedures permitted by the rules. In a May 2014 stakeholder meeting, energy service companies (ESCOs) provided comments about changes to the RFP template, by which an ESCO is hired, and revised procedures under the Do-It-Yourself (DIY) method. Staff is drafting formal rules, to be presented to the Board by mid-2015, to capture the revised regulations.

To date, Board Staff has reviewed over 62 proposals, ranging in scale from $2.1 million to $50 million. Ten (10) were submitted under the DIY method. The total value of the proposed projects is almost $235,000,000, with projected lifetime energy savings costs of $327 million. The current pipeline of ESIP projects represents an additional $200 million, for a total of approximately $434 million.[5]

**TABLE 3 - ESIP Project Review by Year**

| *Year* | *ESIP's Initiated* |
|---|---|
| 2009-2011 | 19 |
| 2012 | 5 |
| 2013 | 18 |
| 2014 | 16 |
| 2015 YTD | 4 |

Staff's extensive outreach and educational efforts can be credited with 15 additional ESIP projects in the FY15 queue and the 20 projects currently in the queue for 2016. This uptake is participation is primarily accomplished through a partnership with the NJ School Business Administrators, to provide frequent workshops and technical support, and with the League of Municipalities and the New Jersey Conference of Mayors, to promote the ESIP program within their municipalities.

Additionally, the BPU's Office of the Ombudsman partners with Sustainable Jersey (SJ) to optimize outreach to school districts through SJ's recently launched sustainable certification program for schools. Both SJ's school and municipal sustainability programs incorporate multiple energy savings 'actions' in the certification process.

The ESIP financing mechanism enables New Jersey's public schools and universities, and municipal and local governments to install ECMs that substantially reduce the public entities energy and operations and maintenance costs, while improving air quality and comfort in classrooms. With a $1 billion market potential in public school districts, this financing mechanism is attracting private capital into the energy savings market and promoting the development of distributed generation,

[5] Projection based upon 31 projects that are in the process of finalizing RFP's, including Newark Board of Education, which is an approximately $50 million project.

such as CHP and solar PV. As the Energy Resilience bank (ERB) adds financing products and programs, this will produce further opportunities for ESIP projects.

### Superstorm Sandy

On October 29, 2012, Superstorm Sandy delivered devastation to New Jersey, leaving almost 70% of New Jersey's electric utility customers almost 5 million people without power, many for over two weeks. In light of the extent of the destruction, the storm required New Jersey and the BPU to prioritize the criticality of facilities, re-examine grid security, and to identify opportunities to rebuild the State's infrastructure with greater energy resilience.

In the course of applying for disaster relief funding from the US Department of Housing and Urban Development (USHUD), New Jersey detailed the damage caused by Superstorm Sandy to New Jersey's electric energy distribution system. The report documented the unmet needs of NJ's critical facilities in the absence of energy resilience technology and the State's limited ability to mitigate these impacts in the future. On May 31, 2014, HUD approved NJ's proposal to establish an Energy Resilience Bank (ERB), to be capitalized with $200 million of HUD Community Development Block Grant – Disaster Relief (CDBG-DR) funds.

The ERB was developed based on the findings of USDOE's National Renewable Energy lab report of November 2013 titled "*Alternative Energy Generation Opportunities in Critical Infrastructure*, *New Jersey*". The report included the development of micro-grids at critical facilities. To that end, the ERB will provide grants and low-interest loans for EE and RE projects that include resilient technologies at wastewater and water treatment facilities, schools, public housing, hospitals and other critical infrastructure.

In its August 18, 2014 order, the Board entered in a sub-recipient agreement (SRA) with EDA to manage and oversee the ERB and committed the BPU to endeavor to allocate up to $150 million in SBC funding between FY 2015 and FY 2018.

EE technologies such as combined heat and power (CHP) and fuel cells (FC), and renewable technologies such as solar PV with storage, are forms of distributed generation and can play a critical role in hardening the State's infrastructure and enhancing system reliability. When combined with black start capabilities, and dynamic inverters and energy storage, these clean energy technologies have the ability to island from the grid during extended power outages and to bridge the "resiliency gap".

The first ERB Program Guide and Financial Product for wastewater and water treatment was approved by the Board in its October 27, 2014 Order. The Program Guide and Financial Products for the other markets should be available in the FY 15 Q4. SBC funds for the ERB will be used primarily for incentives and costs that are eligible for funding under the NJCEP but that may not be allowable under USHUD CDBG-DR provisions, such as micro-grid feasibility studies.

Below is a summary of the ERB three-year project development plan:

**FIGURE 1: ERB Projected 3-Year Funding**

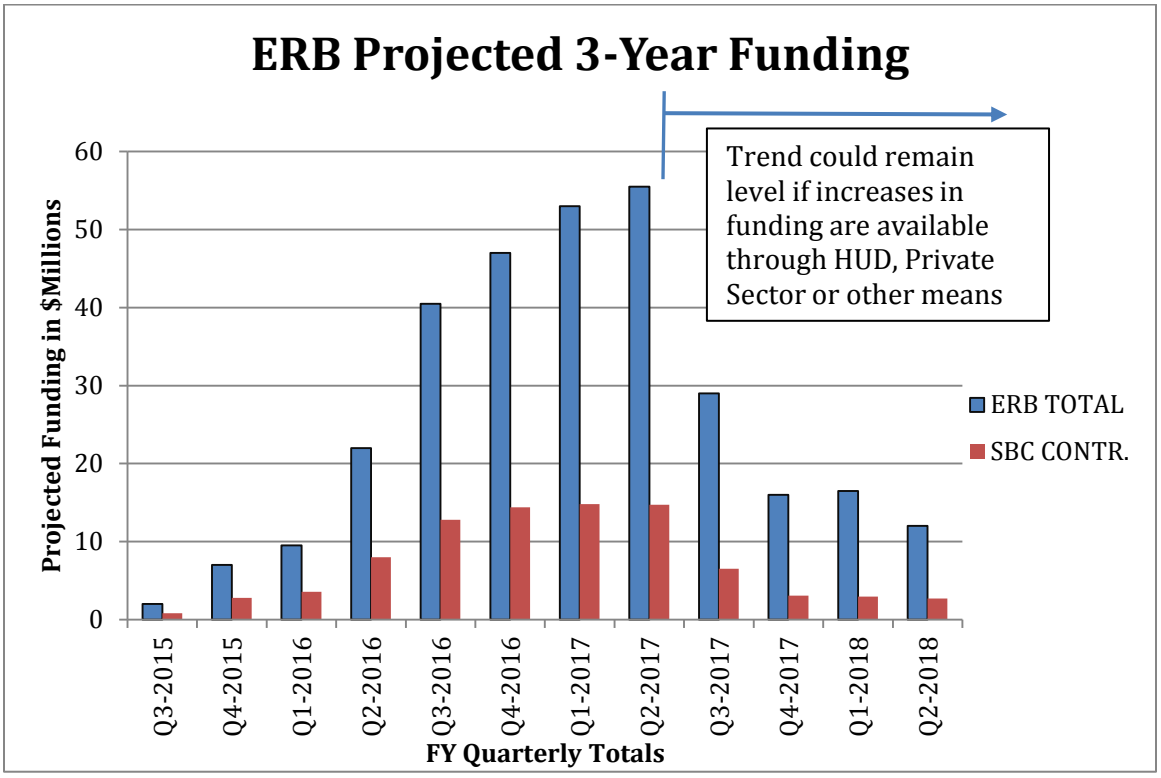



TABLE 4 - ERB Funding on a Quarterly Basis

| 07/01/15 | FY2016 | | 06/30/16 | 07/01/16 | FY2017 | | 06/30/17 | 07/01/17 | FY2018 | | 06/30/18 | ($M) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Total |
| | | | | | | | | | | | | |
| 2 | 7 | 8 | 15 | 22 | 20 | 10 | 10 | 2 | | | | 96 |
| | | | | | | | | | | | | |
| | | 1.5 | 2 | 8 | 10 | 20 | 20 | 10 | 2 | 1.5 | | 75 |
| | | | | 4 | 4 | 6 | 6 | 4 | | | | 24 |
| | | | | | 1 | 3 | 2 | | | | | 6 |
| | | | | | | 2 | 5 | 5 | 8 | 8 | 2 | 30 |
| | | | | | | | | | | | | |
| | | | | | | | 1 | 2 | 5 | 7 | 10 | 25 |
| | | | | | | | | | | | | |
| | | | | 2 | 5 | 5 | 5 | 3 | | | | 20 |
| | | | 1 | 1 | 3 | 5 | 5 | 3 | 1 | | | 19 |
| | | | | | | | | | | | | |
| | | | 1 | 1.5 | 2 | 2 | 1 | | | | | 7.5 |
| | | | 2 | 2 | 1 | | | | | | | 5 |
| | | | 1 | | 1 | | 0.5 | | | | | 2.5 |
| | | | | | | | | | | | | |
| 2 | 7 | 9.5 | 22 | 40.5 | 47 | 53 | 55.5 | 29 | 16 | 16.5 | 12 | 310 |

| TABLE 5 - ERB Proposed Sector Development 2016-2018 | | | |
|---|---|---|---|
| ***Main Group*** | ***Sector*** | ***Number of Projects*** | ***Average Cost*** |
| Traunche 1 | W/WWTP | 12 | $8M |
| | | | |
| Traunche 2 | Hospitals/Lt Care | 12 | $6.25M |
| | Education | 6 | $4M |
| | Transportation | 2 | $3M |
| | Public Housing | 15 | $2M |
| | | | |
| Traunche 3 | TBD | 5 | $5M |
| | | | |
| Microgrid | Municipal | 2 | $10M |
| | Campus | 2 | $10M |
| | | | |
| Solar Storage | Education | 15 | $500K Cap |
| | Transit | 10 | $500K Cap |
| | Other | 5 | $500K Cap |

## New Jersey's Clean Energy Program

Since 2008, the NJCEP has been administered by the Board pursuant to contracts with Honeywell as the Residential and Renewable market manager, TRC as the C&I market manager, and AEG, as the Program Coordinator and NJ's solar market has successfully transitioned from rebates toward a more market-based approach. This section will discuss delivery of NJCEP programs since 2009, with a focus on energy efficiency programs, which represent almost 80% of the total Board-approved FY15 program budget, and which have been tasked with a similar transition.

The following table shows NJCEP program results since 2009:

| TABLE 6 - New Jersey's Clean Energy Program<br>*Funding, Budgets, Commitments, Expenses, Energy Savings and Generation for 2009-2015* | | | | | | |
|---|---|---|---|---|---|---|
| | CRA 3 | | | | | |
| | CY2009 | CY2010 | CY2011 | CY2012 thru Jun 2013 | FY2014 | FY2015 (thru 12/31/14) |
| **Funding Approved** | $245,000,000.00 | $269,000,000.00 | $319,500,000.00 | $574,054,019.00 | $344,665,000.00 | $344,665,000.00 |
| **Lapse to General Fund** | $50,000,000.00 | $168,000,000.00 | $52,500,000.00 | $384,000,000.00 | $238,955,255.00 | $137,289,000.00 |
| **Funds Available for NJCEP** | $195,000,000.00 | $101,000,000.00 | $267,000,000.00 | $190,054,019.00 | $105,709,745.00 | $207,376,000.00 |
| | | | | | | |
| **Program Budgets:** | | | | | | |
| **Energy Efficiency** | $265,312,926.03 | $275,568,372.46 | $325,875,452.17 | $395,313,328.45 | $304,264,392.03 | $299,317,935.19 |
| **Renewable Energy** | $250,677,103.54 | $177,346,129.96 | $90,312,891.01 | $31,031,421.20 | $20,311,137.42 | $18,236,146.52 |
| **CHP** | $0.00 | $0.00 | $0.00 | $0.00 | $37,964,525.92 | $24,451,062.18 |
| **EDA** | $24,000,000.00 | $27,731,486.82 | $57,634,153.38 | $49,045,280.92 | $31,367,385.35 | $24,695,310.11 |
| **NJCEP Oversight** | $9,390,781.82 | $7,813,849.75 | $7,501,050.81 | $14,186,401.28 | $11,385,232.61 | $11,055,293.11 |
| **TRUE Grant** | $0.00 | $0.00 | $25,000,000.00 | $21,789,874.29 | $12,793,600.21 | $1,874,500.00 |
| **Total Budgets** | *$549,380,811.39* | *$488,459,838.99* | *$506,323,547.37* | *$511,366,306.14* | *$418,086,273.54* | *$379,630,247.11* |
| | | | | | | |
| **Commitments:** | | | | | | |
| **Energy Efficiency** | $51,113,035.80 | $62,873,145.18 | $71,002,166.00 | $106,178,396.85 | $95,187,313.75 | $109,427,521.43 |
| **Renewable Energy** | $116,574,902.00 | $78,895,209.29 | $25,322,065.30 | $8,373,817.07 | $7,755,043.27 | $7,564,124.77 |
| **CHP** | $0.00 | $0.00 | $0.00 | $0.00 | $6,050,795.10 | $8,189,295.10 |
| **EDA** | $8,582,000.00 | $5,551,000.00 | $6,475,983.00 | $8,103,589.32 | $8,106,179.38 | $13,543,211.77 |
| **NJCEP Oversight** | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| **TRUE Grant** | $0.00 | $0.00 | $21,789,874.29 | $12,793,600.21 | $1,874,500.00 | $0.00 |
| **Total Commitments** | *$176,269,937.80* | *$147,319,354.47* | *$124,590,088.59* | *$135,449,403.45* | *$118,973,831.50* | *$138,724,153.07* |
| | | | | | | |
| **Expenses:** | | | | | | |
| **Energy Efficiency** | $120,958,657.90 | $153,712,920.29 | $139,035,801.19 | $236,467,134.94 | $178,097,681.61 | $85,692,278.38 |
| **Renewable Energy** | $52,677,504.54 | $62,334,485.13 | $38,963,321.60 | $18,003,594.66 | $4,193,889.84 | $2,286,244.96 |
| **CHP** | $0.00 | $0.00 | $0.00 | $0.00 | $1,474,906.46 | $181,439.79 |
| **EDA** | $2,480,000.00 | $3,211,000.00 | $6,335,017.00 | $5,268,131.56 | $5,524,016.06 | $868,388.61 |
| **NJCEP Oversight** | $4,528,037.29 | $3,537,798.94 | $4,331,674.86 | $9,108,808.90 | $5,511,570.11 | $1,907,037.70 |
| **TRUE Grant** | $0.00 | $0.00 | $3,210,125.71 | $8,996,274.08 | $7,419,100.21 | $0.00 |
| **Total Expenses** | *$180,644,199.73* | *$222,796,204.36* | *$191,875,940.36* | *$277,843,944.14* | *$202,221,164.29* | *$90,935,389.44* |
| | | | | | | |
| **Savings:** | | | | | | |
| **Electric (MWh)** | 3,986,481 | 3,414,351 | 4,880,985 | 6,830,470 | 6,040,321 | 3,294,894 |
| **Gas (Dtherm)** | 10,524,058 | 16,475,728 | 14,493,174 | 22,443,400 | 16,657,595 | 6,874,249 |
| **Demand Reduction (kW)** | 46,349 | 62,521 | 129,666 | 118,793 | 80,245 | 73,554 |
| **Generation (MWh)** | 1,780,722 | 5,375,208 | 7,641,312 | 13,022,958 | 5,346,105 | 2,727,929 |
| | | | | | | |
| **$/kWh Saved** | $0.0176 | $0.0190 | $0.0156 | $0.0183 | $0.0168 | $0.0165 |

## CRA 2009 – 2012

During this CRA planning cycle, New Jersey felt the brunt of the economic downturn, the Christie Administration issued the 2011 Energy Master Plan, Superstorm Sandy struck, SBC collections increased by $144 million, the NJBPU received $90 million in American Recovery and Reinvestment Act (ARRA funds) to supplement NJCEP EE and RE programs, and it was time to re-procure the contracts for Program Administration.

The EE market had substantial funding, including Utility E3 funds, NJCEP funding, federal ARRA dollars and the quick spate of private investment leveraged by the public funds. In 2012, $971 million in utility, public and private dollars were

invested in New Jersey to develop clean energy technologies and construction, and to promote market development.[6]

By 2009, the programs had been transitioned to the new Market Managers (MM) and Program Coordinator (PC), and the Information Management System (IMS) was up and running. At the same time that ARRA funding was adding $96 million and 21 new programs to a full suite of NJCEP programs, and SBC collections reached their peak at $379 million, Staff was also drafting a new RFP to consolidate the (2) Market Manager and (1) Program Coordinator contracts into a single contract for Program Administrator. When the existing MM and PC contracts went into extension, it precluded the ability to modify the administration contracts, which in turn prevented the changes necessary to add new NJCEP programs and fully expend the increased funding.

With unspent SBC funds came budget lapses. The NJCEP saw unencumbered funds lapsed every year of the planning cycle, over $600 million, which in turn impacted incentive levels. Individual program offerings and incentives fluctuated widely over this CRA; they were increased considerably with the influx of ARRA dollars and then cut drastically when SBC funds were lapsed. The program's marketing and evaluation budgets were also cut. As compared to peer programs, NJCEP spends approximately 0.9% of its program budget on marketing versus an industry average of 5-7%. With regard to evaluation, NJCEP has expended less than 0.5% of its total program budget on evaluation activities over the past 4 years. In FY15, the amount has increased to almost 2%, starting to approach the annual industry average of 3-5%.

With multiple, coincident policy initiatives and administrative constraints, the NJCEP stumbled against its next four year planning horizon and without contracting flexibility, was unable to respond to changes in the market - a rapid influx of public funding and evolving financing mechanisms - and to better coordinate state and utility-run program design.

In June 2012, Treasury issued RFP 13-X-22546, Management Consulting: Program Administrator New Jersey Clean Energy Program on behalf of the Board. In January 2013, Treasury issued a Notice of Intent to award the contract to AEG, and within the 10-day protest period, Treasury received two protests to the award, from incumbents Honeywell and TRC, and the existing MM and PC contracts were granted a sixth extension.

### CRA 2012-13

This limited CRA was intended to promote increased coordination between NJCEP and State budget processes and to NJCEP program consistency. To that end, the 2009-2012 CRA was extended six months to align the NJCEP's calendar year with

[6] Draft: New Jersey's Clean Energy Economy Study

the State's fiscal year, with a funding level equivalent to the funding level for the first six months of 2012, or $194,804,000, and the NJCEP reviewed its core programs and set incentive levels. In doing so, Staff's intent was to create consistency that would provide market certainty and improve evaluation results. Unencumbered SBC funds lapsed to the general budget during this 18-month budget cycle totaled $131.5 million.

In the same CRA, Staff pledged to increase the level of evaluation and to review the program's marketing plans, included in Honeywell's and TRC's administration contracts.

### CRA FY2014-2017

By Order dated June 21, 2013, Docket No. EO11050324V, the Board approved Staff's CRA Straw proposal with a one-year funding level for FY14, with the outlier years to be determined. The Board approved a reduced funding level of $344,665,000 and maintaining a full suite of NJCEP programs and incentive levels, and SBC funds totaling $239 million were redirected to State energy efficiency projects and utility costs.

The RFP for Program Administrator remained unresolved and Staff lacked the attendant strategic plan. The NJCEP was just beginning to evaluate the impact of Superstorm Sandy on its budget and program design, and Staff was continuing its review of utility-run EE and RE programs and filing requirements. Staff recommended and the Board approved a process of stakeholder-driven work groups and program evaluations intended to inform changes to clean energy programs and funding levels for the outlier years of the CRA.

To this end, Staff formed three work groups: Data, Evaluation and Utility. Where originally conceived as a separate Recommendations Report, it is the intention of this CRA to summarize the objectives, members, process and recommendations of each of the FY14 work groups.

#### Evaluation Work Group

The Evaluation work group (EWG) was formed in response to the EMP recommendation for a higher level of program evaluation than had been conducted in previous years. Chaired by Frank Felder from the Center for Energy, Economic and Environmental Policy (CEEEP) at Rutgers and Board Staff, the group was tasked with reviewing the 2010 Evaluation Plan as a foundational process and developing an ongoing, prioritized schedule of NJCEP program evaluations to be performed through FY2016.

In addition to Staff and CEEEP, the work group included evaluation consultants to the NJCEP, the Market Managers and the Program Coordinator, utility representatives, Rate Counsel, Sustainable Jersey, and the Solar Energy Industries Association (SEIA).

The process included (4) meetings between October 2013 and February 2014, including a joint meeting with the Data work group to identify the nature and scope of the data being collected in IMS and required to administer utility-run and NJCEP programs, and to confirm its adequacy for ongoing evaluation. Appendix B of the "2014 and 2015 Evaluation and Research Plan" prepared by CEEEP details the data required for each type of evaluation study. The full Plan can be found at:

http://njcleanenergy.com/files/file/CRAFY16/2014-2015%20Evaluation%20and%20Research%20Plan%2004302014.pdf

The group discussed the types of studies that support and track the policy initiatives set out by the EMP, including its recommendation to explore alternative administrative structures for delivering clean energy programs. As an example, benchmarking and metrics studies compare savings and cost-effectiveness of different programs and process evaluations support program administration by determining the implementation, effectiveness, operational efficiency and market actor satisfaction of the current programs.

The "2014 and 2015 Evaluation and Research Plan" produced by the work group outlines the types of evaluations, their role and purpose in program planning, the evaluation studies performed since 1999, and proposes a schedule of evaluations whose results are to be integrated into longer-term program planning cycles and program design.

Table 7 below summarizes the evaluation activities planned for FY16-FY18 time period.

**TABLE 7 - Proposed 3 Year Evaluation Timeline (FY2016 thru FY2018)**

| | FY2016 | FY2017 | FY2018 |
|---|---|---|---|
| ***BPU Proceedings*** | *CRA Funding Cycle FY2016-FY2018* | | |
| EDECA | | | |
| CRA Proceeding | | | |
| EMP | | | |
| ***Major Evaluation Studies*** | *CRA Funding Cycle FY2016-FY2018* | | |
| ***1. Benchmarking Study*** | | | |
| - 1.a. Benchmarking & Metrics Study NJCEP Programs | | | EE |
| - 1.b. Benchmarking of CBA test results | EE | | |
| ***2. Baseline Study*** | | | |
| - 2.a. Residential and C&I Baseline (Appliance Saturation Survey) | EE | | |
| ***3. Cost-Benefit Analysis*** | | | |
| - 3.a. CBA - Retrospective | EE/RE | EE/RE | EE/RE |
| - 3.b. CBA - Prospective | EE/RE | EE/RE | EE/RE |
| 3.c. CBA - Incremental cost research | EE/RE | | |
| ***4. Clean Energy Economy Study*** | | | |
| - 4.a. Jobs impact | | EE/RE | |
| - 4.b. Streamlining data gathering, comparison of state results | EE/RE | | |
| 4.c. Barriers to CE, e.g. need for a policy framework on financing | EE/RE | | |
| ***5. Evaluation & Research Plan*** | EE/RE | EE/RE | EE/RE |
| ***6. Goals, Objectives & Outcomes (Report Card)*** | | | EE/RE |
| ***7. Impact Evaluation*** | | | |
| - 7.a. RE Impact Evaluation | | | |
| Small Scale Wind, Biopower, FC | | | |
| Energy Storage | | | RE |
| RPS | | RE | |
| - 7.b. EE Program Impact Evaluation | | | |
| - Programs FY2016: Res - Products, HPwES | EE | | |
| - Programs FY2016: C&I - DI, Retrofit, P4P | EE | | |
| - Programs FY2017: Impact of International Energy Conservation Code (IECC) 2015 on RNC | | | EE |
| ***8. Market Potential (follows baseline study)*** | | EE/RE | |
| ***9. Market Assessment*** | | | |
| - 9.a. Solar Volatility Study | | | RE |
| - 9.b. CHP/FC Program Incentives | EE | | |
| 9.c. Multifamily market assessment | | EE | |
| ***10. Process Evaluation*** | | | |
| - 10.a. EE Portfolio-level Process Evaluation | | | EE |
| - 10.b. RPS Process Evaluation | | RE | |
| ***11. Protocols*** | | | |
| - 11.a. Protocols Update (including storage) | EE/RE | EE/RE | EE/RE |
| - 11.b. Protocols Evaluation (third party) | EE/RE | | |
| ***12. Data Tracking System Assessment (connected to 4.b)*** | | EE/RE | |
| ***13. Evaluation Recommendations Tracking System*** | | EE/RE | |

In addition to the schedule of evaluations, the Evaluations work group recommended consistency across all EE programs, regardless of administrator, and

1. Undergo an ongoing cycle of evaluation that informs program design;
2. Standardize protocols, collect consistent data, and apply the same methodologies when evaluating program cost-effectiveness;
3. Due to the impact on assessing cost-effectiveness, clearly define metrics like "incremental cost" and "administrative cost";
4. Incorporate data collection into program design and administration so collection is simultaneous and evaluation is ongoing;
5. Collect additional data such as National American Industry Classification (NAICS) codes and "total project cost" to better ascertain the full economic impact of clean energy spending.

**Data Work Group**

(As previously noted, the following summary is intended to capture the findings and recommendations of the FY14 Data Work Group and will serve as the Recommendations Report.)

As the BPU assesses the benefits and challenges of developing alternative financing for EE, the Data work group (DWG) was created to review the full scope of data being collected in Information Management System (IMS) for all utility- and state-run programs and to better understand the role of data in energy efficiency.

In addition to Board Staff, members of the group included representatives from CEEEP, the utilities, AEG/IMS, Rate Counsel, the American Council for an Energy Efficient Economy (ACEEE), and the Environmental Defense Fund (EDF).

The DWG met six times between October 2013 and March 2014. In addition to working closely with the Evaluation work group to review the data required for ongoing evaluations, the DWG set out to verify the foundational data points/metrics collected by USDOE, peer and utility programs, and the broader clean energy industry.

At the joint meeting with the Evaluations work group, the EDF made a presentation about its initiative, the Investor's Confidence Project (ICP), and made the case for a universal language for EE data. The ICP process standardizes the EE retrofit origination and development process to create a pool of investor-ready projects. The goal of the initiative is to enable an EE asset class that will attract private financing, and ultimately, to permit securitization of that financing.

EDF reported that the three top barriers to private investment in EE projects are the lack of EE funding, uncertainty about energy savings/project performance and a project's insufficient payback/ROI. The near-term goals of ICP include increasing investor confidence in the savings achieved by EE projects, reducing the transaction costs associated with the delivery of EE projects, and a desire to streamline the

origination process. To achieve these goals, EDF advocated for widespread adoption of standardized protocols and the industry's best practices.

At the same meeting, ACEEE presented an update on its ongoing initiative to develop a standardized method for calculating job creation associated with clean energy development. The project, entitled "Verifying EE Job Creation", is focused on articulating the underlying economic argument for energy efficiency jobs creation, and on describing examples of real world job creation. ACEEE proposes that when finished, the study will (1) review current practices in verifying energy efficiency job creation, (2) evaluate their effectiveness in providing meaningful evidence of job creation, and (3) draw on best practices to develop sound, practical methodologies for energy efficiency jobs accounting.

At that meeting, the utilities presented their methods for determining job creation, a reporting requirement of their E3 filings. The methods for ascertaining jobs varied by utility, with some utilities relying on (the availability of) responses to a monthly phone survey of their implementation contractors, while another calculated the number based on dollars expended.

The final presentation of the joint Data/Evaluation work group meeting, by Michael L. Lahr from the Edward J. Bloustein School of Planning and Public Policy at Rutgers University, provided an economist's and modeler's perspective on data and data collection, on identifying the appropriate economic model for a study's intended results, and on interpreting and putting the results of economic models to use.

The DWG explored what data points, in addition to traditional data on energy savings, energy cost savings, avoided emissions, etc., should be captured by EE programs to measure and report the full benefits of clean energy programs. Discussions revealed that the data collected for NJCEP programs is entered into its database by application processors, program managers, contractors, inspectors and others, depending on the project, making data quality verification onerous and at times, impossible.

DWG discussions also revealed the many and varied issues surrounding the collection of data for the utility E3 programs. For example, E'town, NJNG, RECo, and SJG do not have automated processes or systems that can generate the CSV files needed to automatically integrate data into IMS. Instead, these four utilities must rely on manual processes and customized Excel workbooks to prepare and upload data. While some have devoted the resources and successfully worked through this procedure, others still struggle to provide complete and accurate data.

At the same time, while PSE&G has sophisticated systems to track usage and bill its customers, perform its internal accounting procedures (SAP), and track participation in its E3 programs (TrakSmart), the company has struggled to collect the required E3 application-level data and to create and upload the required CSV files into IMS. At this writing, the company is making headway in testing its

TrakSmart/IMS integration process, but before IMS contains PSE&G data that can be deemed reliable, PSE&G must complete the automated upload of a backlog of its E3 data and a process of data quality verification.

The discussions also helped to galvanize the role of IMS (or future generation IT system). The system serves as a central clean energy program 'databank' for NJCEP and utility-run programs, tracking participant and measure information, as well as financial, energy savings, and generation data. As the primary clean energy program databank, IMS is the source for data used in NJCEP and utility-run program evaluation. Additionally, with the influx of federal ARRA funds in 2011, system enhancements to IMS provided the tools necessary to record the program participants' compliance with certain federal requirements, to collect, review and archive the documents needed to demonstrate that compliance, and to restrict payment of an incentive if the compliance requirements were not met.

What is most evident from these discussions is that energy efficiency is a data-driven industry. In terms of technical performance, loan performance or program performance, the values are largely calculated, making consistency and quality of all data necessary.

From these discussions, the Data Work Group's recommendations were many:

1. All data from utility and state-run programs should be collected at the application/measure level and programs should adopt standardized protocols for determining energy savings and project costs. This streamlines and improves program reporting and evaluation, enables tracking of State's progress against EMP goals and reduces the cost to ratepayers for program administration.
2. Additional data points to be collected include:
    - Building use type and square footage
    - Manufacturer and model number of replaced equipment
    - Manufacturer and model number of new equipment
    - Total project cost, which helps determine funds leveraged
    - Incremental cost
    - NAICS (North American Industry Classification System) codes for vendors and contractors
    - Job creation data
    - Water usage and savings data
3. Adopting ICP protocols into EE programs will advance standardization across EE programs in New Jersey and the broader EE market.
4. Due to the multiple methodologies for collecting data and to improve evaluation, EE collection systems should be standardized and undergo regular process of data quality verification (DQV). An online application process will improve DQV by reducing inconsistencies in data collected, starting with correct spelling of an applicant's or contractor's name.

5 For many EE programs, savings are "deemed" based on calculations using algorithms set out in the Protocols, while other programs determine savings based on post-installation measurement and verification (M&V). Energy efficiency programs should require greater M&V to verify the actual performance of installed Energy Conservation Measures (ECMs) and the persistence of those savings.

6 EE is the foundation of demand response and a resource that can be sold into the PJM capacity market. Greater standardization will facilitate the development of these revenue streams.

7 Programs should collect not only technical performance associated with a project, but loan performance, too.

8 Programs should devise and collect data to describe the value of the collateral benefits of EE, including:

- Public health and safety benefits
- Added market value of retrofitted or new buildings built to higher energy standards
- Developing distributed forms of generation
- Improved grid security
- Increased grid reliability
- Added resilience
- Reduced capacity prices and overall energy costs
- Avoided/delayed transmission and distribution (T&D) costs
- Lower environmental compliance costs
- Economic development and a more competitive business environment
- Affordability, resulting from lower utility bills, especially for low-income households

**Reporting Task Force**

Formed as an outgrowth of the Data Work Group, the Report Task Force was established to review and evaluate current reports and reporting requirements for the NJCEP and utilities' ratepayer-funded clean energy programs. This review included NJCEP reports produced for the NJBPU (Board or Staff) and the PC, EE Committee and RE Committee meetings, used for both program management and regulatory reporting purposes, as well as reports generated to disseminate program information to the general public. The review also included utility reports required for regulatory reporting purposes.

Members included representatives of NJBPU Staff, the Market Managers (Honeywell and TRC), the utilities and AEG, who identified all current management and public reports that would be subject to review and indicating the intended purpose and intended audience of each report. The group also identified any unmet reporting requirements.

After evaluating the purpose of each report, the group developed new requirements and/or requirements modifications for the PC Management, Commitment, Quarterly and Annual Reports, resulting in four primary reports that better serve the needs of the program.

**Utility Work Group**
(As previously noted, the following summary is intended to capture the findings and recommendations of the FY14 Utility Work Group and will serve as the recommendations report.)

In Section 2.4 of Staff's "Revised CRA Straw Proposal" for the FY14-17 dated June 3, 2013, Staff identified the lack of coordination amongst utility programs and between utility and NJCEP programs. This lack of coordination results in customer and contractor confusion, the disaggregated data that has previously been discussed, and in duplicative administrative costs that burden delivery of EE programs. In these meetings, the Utility work group (UWG) reviewed the history of EE program delivery in NJ and the way EE programs are currently being designed, implemented and delivered in-state and nationwide. Finally, after identifying existing barriers to improved program performance, the UWG made several recommendations to improve program delivery.

Members of the UWG included OCE Staff, NJCEP Market Managers and Program Coordinator, Rate Counsel, utilities, the New Jersey Utility Association (NJUA), the Natural Resources Defense Council (NRDC), the Large Energy Users Coalition (LEUC), Sustainable Jersey (SJ) and the Clean Energy States Alliance (CESA).

The UWG met nine times between October 2013 and July 2014. The work group reviewed the full scope of utility- and state-run programs to compare incentive levels, eligibility requirements, and compliance filing requirements and time lines. The goal of this exercise was to identify ways to reduce customer and contractor confusion and eliminate overlap or competition between programs, and to review the planning process by which utility programs are reviewed and approved.

The UWG also discussed which programs deliver the most energy savings per dollar invested and industry best practices for statewide delivery of EE programs. A goal of this exercise was to identify ways to improve program delivery and performance, and to set clear goals for improved energy savings, to inform the outlier years of the CRA FY2014-17.

Early discussions were dominated by industry frustration with the annual lapses of SBC funds, the embroiled RFP for Program Administrator, and how the lack of contracting flexibility was preventing NJCEP programs from responding to quickly evolving market conditions and emerging technologies/IT advances. After revisiting the full history of EE program funding and administration, the group diagrammed past and proposed administrative structures for NJ and engaged in lively discussions about the pros and cons of each.

In exploring means to attract private capital to the EE market and to build competitiveness, the discussions reviewed existing means of financing EE and missed opportunities for EE revenue streams through demand response and selling EE resources into the PJM market.

Existing financing is rate- and taxpayer funded, and includes utility on-bill repayment (OBR) programs for residential, small commercial, and hospitals; the no-interest loans provided through the NJCEP for residential, whole-house projects; and the Energy Savings Improvement Program (ESIP) for local governments and schools, which relies on performance contracting and energy cost savings to repay the cost of installing ECMs. Eager to add private EE financing to the mix are Property Assessed Clean Energy (PACE) programs, which largely focus on the C&I market.

Discussions also covered the transformational impact of energy efficiency, in physically restructuring the grid (DG), on the utility business model and rate (or revenue) design, and as a foundation of the broader energy services market.

The process included presentations from Lawrence Berkeley National Labs (LBNL) which compared administrative typologies from programs nationwide and the role of performance incentives in setting energy savings targets, reducing barriers for the utilities to deliver energy efficiency, and in cost-effective program delivery. The spectrum of administrative typologies spanned from the regulated, when administered by the Public Utility Commission (PUC) or utilities, to hybrids thereof, including NJ's current structure, to increasingly deregulated when administered by an independent authority or a third party, like an EE utility. With follow up presentations by Efficiency Vermont and the Energy Trust of Oregon, the work group learned in greater detail the pros and cons of third party examples.

To further the discussion of the role of energy savings targets in cost-effective program delivery, the Sierra Club presented to the UWG on the benefits of a state energy efficiency resource standard. [7]

A presentation by the Regulatory Assistance Project (RAP) addressed alternative regulatory/ratemaking frameworks that better align ratepayer and utility interests so that utilities support investment in all cost-effective energy efficiency and it becomes a core business interest. OCE Staff also received a presentation by NJNG on the impact of its Conservation Incentive Program (CIP) on its core business model.

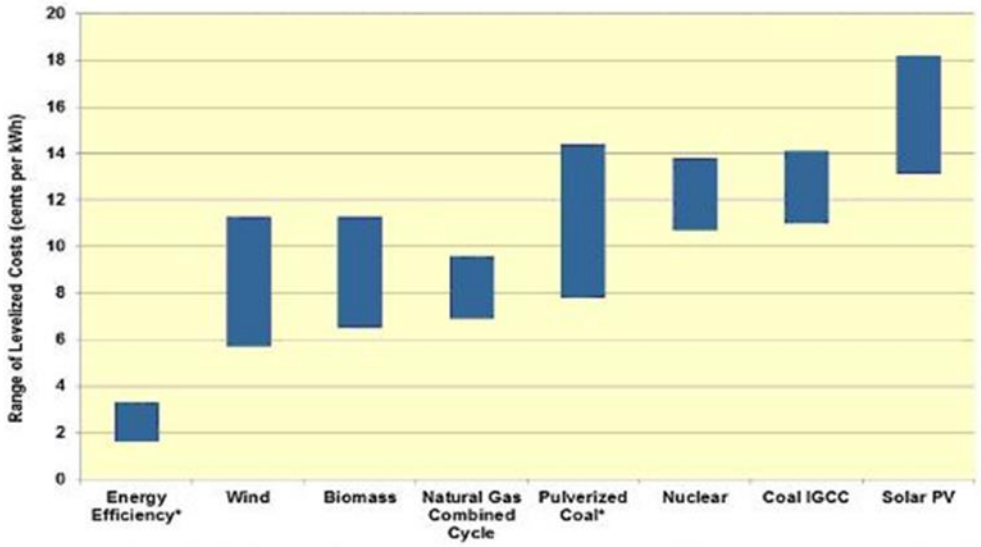
[7] In light of the ongoing work group discussions, at its May 2014 agenda meeting, the Board denied the Sierra Club's petition to open and fast-track a stakeholder process to establish an Energy Efficient Portfolio Standard in NJ. Docket No. QO14010068.

Through these presentations and discussions, the UWG found that:

1. To restore its leadership role in energy efficiency, NJ must better coordinate the design of all clean energy programs and clearly articulate the policy objectives for and performance goals of EE programs.
2. Stable, predictable funding is necessary to build demand for energy efficiency investment.
3. EE programs benefit from longer planning horizons, clear energy savings targets and the flexibility to meet these targets over the long term.
4. Contracting flexibility is critical to developing a sustainable EE market.
5. The State can deliver statewide programs in territories where a utility does not deliver EE programs and can bring a wide range of public policy goals (e.g. resilience) to the implementation of EE programs, beyond just energy resource objectives.
6. Utilities enjoy a unique relationship with customers and bring brand recognition to the delivery of energy efficiency services. Utilities should be encouraged to leverage their ample resources and unique advantages to deliver innovative programs that the State cannot.
7. Access to the data necessary to deliver and evaluate EE programs is not equal and program performance would benefit from clear policy on and a shared system for accessing usage data.
8. Performance incentives provide an opportunity to align program administration and implementation efforts with State regulatory and policy goals and are a means to motivate the administrator by providing additional earnings opportunities.
9. After a high level discussion of the pros and cons of various past and proposed administrative typologies, there was no clear consensus among work group members regarding which administrative structure would provide the most effective solution in New Jersey.

As shown in Figure 2, below, the cost per kWh saved remains well below the cost of generating a kWh, and EE is a valuable and still relatively untapped energy resource. When the collateral benefits and potential impact of EE on the broader energy services market are considered, it is clear that EE programs build demand for additional efficiency investment.

**FIGURE 2 - Cost of EE vs Generation**




Notes: Energy efficiency average program portfolio data from Friedrich et al. 2009 (ACEEE); all other data from Lazard 2009. High-end range of advanced pulverized coal includes 90% carbon capture and compression.

The UWG's desire is to improve EE program delivery and to advance a robust and competitive energy efficiency market in New Jersey. To that end, it offered the following recommendations to improve program delivery and to achieve all cost-effective energy efficiency in the State over the long term:

1. Provide stable, predictable funding to build demand for energy investment.
2. Articulate objective criteria that EE programs should meet.
3. Set energy savings spending and performance goals, and allow flexibility to meet those targets over the long term.
4. Provide contracting flexibility.
5. Provide opportunities for all customer classes to participate.
6. Streamline application and payment processes.
7. Remove the disincentives for utilities to deliver EE services.
8. Encourage utilities to deliver programs unique to their customer class, which leverage their unique relationship with customers and/or can relieve grid constraint.
9. Enable innovation.
10. Reward performance.
11. Require uniform, ongoing, third-party evaluation of individual programs and integrate results into program planning and design.

### CRA FY15

In June 2014, Staff recommended and the Board approved a second, one-year funding level, which maintained funding at $344,665,000 and the full portfolio of

programs. As per the Governor's February 2014 budget address, $98 million was redirected from the NJCEP to fund the State's energy initiatives and utility bills, and the ERB.

In April of 2014, the procurement for the new Program Administrator was cancelled and Staff was still receiving and processing the findings and recommendations of the Evaluation, Data and Utility work groups. Staff recommended and the Board approved increased Evaluation and a Work Group to review the full suite of NJCEP programs, in order to propose changes that would improve program delivery and customer and contractor participation.

In addition to the cost benefit analysis that CEEEP performs annually per EE and RE program and ongoing wind modeling studies, the Evaluations completed in FY2015 include:

**Solar Volatility Study**
As required by the Solar Act of 2012 ("the Solar Act"), on July 23, 2014 per the directive of the Board, Staff transmitted to the legislature a copy of the Board's Solar Volatility Study and a letter detailing the Board's findings and recommendations, which can be found on the NJCEP and BPU websites at:
http://nj.gov/bpu/newsroom/reports/.

Before contracting for a detailed analysis of the public record and approaches taken nationally and internationally, Staff engaged stakeholders in a public proceeding consistent with the provisions of the Solar Act, and requested input on the definition of "solar development volatility" and on approaches to its mitigation. While stakeholders provided significant input, the public proceeding could not arrive at a consensus definition of the term "solar market development volatility."

The Board engaged Rutgers' Center for Energy, Economic & Environmental Policy (CEEEP) to produce a literature review and report, based on the statutory requirements and record of the public proceeding. The CEEEP report defined solar market development volatility as "significant and rapid changes in market capacity additions over time in both aggregate capacity and within sectors" - specifically as a 40% or more change in quarter over quarter market capacity additions. The report found that the market had experienced volatility, especially prior to enactment of the Solar Act. The volatility was in response to changes in federal incentives, a substantial decline in solar module costs and SREC price fluctuations, with the grid supply market segment showing the most volatility.

The CEEEP report recognizes that "the New Jersey solar market has a number of key features that will likely mitigate future market development volatility" (pp. 3, 30, and 66). Some of these features were enacted as part of the Solar Act, including future limits on large grid-supply solar projects that have the potential to rapidly alter market supply and demand dynamics; extension of the SREC "shelf life" also known as "bankability" or "vintage" from three to five years, and the reduction of

the solar alternative compliance payment (SACP) level. The report also recognizes that Staff-led improvements to the transparency of solar market data and the Board-approved SREC-based finance programs administered by the Electric Distribution Companies (EDCs), provide protection against solar market development volatility.

The CEEEP report provides an in-depth review of the evolution of the New Jersey solar market, including the dynamics underlying passage of the Solar Act, and identifies solar market development volatility drivers and possible mitigating factors. The report also reviews policy options derived from stakeholder comments, the CEEEP literature review, and the authors' experience in other states. The four policy options reviewed in the report include the following: 1. No Substantive Policy Changes; 2. Implementation of Complementary Initiatives; 3. Supply-Responsive Demand Formula with an SREC Price Floor; and 4. A Capped-Quantity Incentive. Each policy option has costs and benefits which must be weighed based on the impacts to ratepayers, existing system owners, the solar industry, and the EDCs.

After review of the CEEEP report and the results of the stakeholder proceeding, the Board directed Staff to continue to:

- Monitor solar market development activity and associated metrics, including but not limited to capacity installation rates, SREC registration activity, EDC finance program participation, and SREC prices; and
- Work with stakeholders to identify gaps in New Jersey solar market data and improve data transparency to benefit market participants, decision makers and stakeholders.

Should "significant solar development volatility" extend for three consecutive quarters, the Board recommended the following:

- Evaluating whether the quarterly changes in the market reflect typical market cycles and/or normal variations that do not require regulatory intervention;
- Engaging stakeholders to develop proposals such as limiting EDC sales of SRECs to recover costs for their EDC-owned solar investments; the Board authorizing retail electricity suppliers and providers to cease offering net metering for large solar electric generation facilities since the aggregate net metered capacity has exceeded 2.5% of statewide peak electricity demand; or other approaches to mitigating solar development volatility, and
- Considering whether to further restrict projects which present potential and significant SREC market impacts from participating in the SREC market

**Portfolio Benchmarking Study**

The program evaluation firm Energy & Resource Solutions (ERS), under contract with Rutgers CEEEP, recently completed a review and benchmark study of the NJCEP. A key objective was to update and expand the Portfolio and Program

Benchmark Analysis conducted by AEG in September 2012. The final Benchmarking Study prepared by ERS dated February 24, 2015 is available at:

http://njcleanenergy.com/files/file/CRAFY16/ERS%20Benchmark%20and%20Program%20Review_Final.pdf

Fourteen (14) programs were benchmarked against twenty-five peer programs nationwide based on data gathered from 2010 to 2013. The programs selected for comparison were either regional neighbors (that are likely to experience similar climates and economic environments) or programs nationally recognized for excellence in the delivery of efficiency programs.

In addition to program specific findings and recommendations that are the primary outcome of this study, ERS provided findings and recommendations regarding the composition of the NJCEP portfolio and its administration:

1. *The first portfolio-wide trend of note in the data is an overall high cost per kWh relative to other programs as measured by percentile for $/kWh.* ERS provided recommendations at the program level to improve cost efficiency performance. These program-specific recommendations are the focus of ERS Benchmarking report and are being reviewed by the Market Managers who will be asked to respond and propose changes as appropriate.
2. *There were a number of recommendations that address NJCEP accounting and budgeting methodologies whereby some of the accounting practices in how costs are tracked make benchmark comparisons difficult and skew program spending.* Consistent with industry norms, ERS recommends that NJCEP account for all relevant spending at the program level in order to better understand the true and total cost of programs and to improve accountability. ERS recommends that NJCEP only count dollars that go to end users (or their vendors) as incentives to improve tracking and accountability.
3. *The Energy Efficient Products: Upstream Lighting program represents roughly half of the entire portfolio of electric savings and is facing a significant market transformation that will slash those savings in the coming years.* ERS recommends that NJCEP make long-term plans on a portfolio level to make up for the anticipated loss of savings that will result from transitioning to a CFL baseline, once market transformation has been completed.
4. *The Protocols, which include certain important assumptions for estimating savings, were found to depend on outdated research***.** ERS recommends that NJCEP perform updates to the protocols with greater regularity and consider an independent third party to review the protocols and recommend changes.
5. *The combination of programs in the commercial portfolio is atypical.* ERS recommends that NJCEP reevaluate the composition of the commercial retrofit portfolio as part of the process evaluation.
6. *ERS observes that most of the comparison programs report both gross and net savings values,* implying that they are performing regular impact evaluation that includes an assessment of free ridership. ERS Recommends that NJCEP

expand its impact evaluation activities to include net-to-gross and recommends that this be performed on a regular basis.

7. *To assist NJCEP in achieving improved performance, ERS also provided a set of recommendations for Target Metrics (performance goals*) using both the benchmarking results and the contextual understanding of the programs and marketplace. The metrics that ERS chose to target are $/savings metrics: primarily $/kWh and $/therm, but also including $/kW where appropriate (i.e., electric-only programs). The reason for choosing this sort of metric is that it best represents overall program performance, at least in terms of operational efficiency and effective use of rate payer funds. The $/savings metrics also have the most robust data sets on which to base a judgment regarding the target metric.

Table 8, below, shows the various metrics utilized by ERS in performing the benchmarking:

**TABLE 8 - Benchmarked Metrics***

| *Metric* | *Description* |
|---|---|
| *$/kWh* | The average cost for the program to acquire a unit of electric energy savings |
| *$/kW* | The average cost for the program to acquire a unit of electric demand savings |
| *$/therm* | The average cost for the program to acquire a unit of gas savings |
| *kWh/participant* | The average electric energy savings acquired per participating customer |
| *kW/participant* | The average electric demand savings acquired per participating customer |
| *therm/participant* | The average gas savings acquired per participating customer |
| *% spending on incentives* | The percentage of program spending that goes towards incentives (as opposed to administrative costs) |

**The cost portion of the $/savings metrics refers to program costs only: the incentives and the administrative costs necessary to acquire the measure savings, not the cost to the customer or other societal costs.*

**Impact Evaluation of Small-Scale Wind, Bio-Power and Fuel Cell Programs**
This report, prepared by the program evaluation firm Cadmus, documents the results from the first impact evaluation ever conducted for the small scale wind, bio-power and fuel cell projects funded through the various programs sanctioned by the Board from 2002 through 2014. The full report can be found at:

http://njcleanenergy.com/files/file/CRAFY16/NJOCE%20Wind%20Biopower%20Fuel%20Cell%20Evaluation%20Report-03202015.pdf

The goals of this study were to:

- Calculate energy (e.g., electricity) savings attributable to each technology
- Determine the operational status of projects receiving an incentive from NJCEP
- Identify key barriers, challenges, and opportunities for future NJCEP incentive programs involving small scale wind, bio-power, and fuel cells

*Small Scale Wind*: The key results from Cadmus' evaluation of the sample population of 18 small-scale wind projects (and a subset of 11 projects with minimal downtime) show that ratepayer-funded wind systems are generating 64% of their pre-installation estimated output, normalized for wind speed.

The analysis of customer reports of turbine downtime and lost generation found that half of the twenty (20) turbine owners that completed surveys reported at least some downtime due to mechanical, structural, electrical, or grid-related malfunctions.

Cadmus also reported customer satisfaction based on interviews with the 22 turbine owners willing to participate (of 39). Twenty (20) of the survey participants provided useful data, with half reporting some satisfaction and half some dissatisfaction. Eight (8) participants were extremely dissatisfied. Similar sentiments were expressed about satisfaction with energy savings.

The poor performance experienced by small wind turbines in New Jersey was attributed to a combination of equipment failures and inaccurate pre-installation estimates due to lower than expected wind speeds. Despite finding the energy performance and reliability of the small wind turbines studied "not compelling for future programs", the Evaluation Team offered recommendations for improvements to the small wind rebate program if the Board were to decide to continue the program.

*Bio-Power*: Cadmus compiled a database of information found in the applications of 17 rebate recipients and was able to conduct interviews with 7 of the 17 systems in the database.

Six (6) of the seven (7) bio-power projects interviewed were reported as operational. The Evaluation Team estimated that the seventeen (17) projects produce 81,164 MWh per year, based upon the energy production reported by the 70% sampled. Overall, these sites were producing energy on par with installer estimates.

The majority of systems are anaerobic digesters with a constant, zero-cost supply of wastewater or landfill gas, enabling host sites to pass on energy savings to their community. All sites were found to be using most or all of the produced energy on site. Customers were overwhelmingly satisfied with the bio-power installations.

Overall, customers were satisfied with the incentive process, though some customers expressed concern over the length of time necessary for processing rebates. Obtaining air permits from the DEP was a major obstacle for some systems, with one customer explicitly pointing to the process as needing improvement in future incentive programs.

Bio-power systems represent a viable technology for energy resilience; however,

several customers pointed out that their utility requires that they disconnect the bio-power system in the event of a grid outage. Another customer (Joint Meeting of Essex & Union Counties) said the utility allowed the plant to operate during Hurricane Sandy, and it was able to maintain wastewater treatment throughout the storm. This customer also said that wastewater treatment plants should make a concerted effort to look into bio-power as reliable backup power.

*Fuel Cells*: Cadmus compiled a database of information from applications for eight (8) fuel cells that took part in the EDC's customer-sited program or the CORE program between 2003 and 2010. These eight (8) fuel cells accounted for 1.5 MW. Given the age of these systems, and the relatively short economic life of fuel cells (five to eight years), some of the contact data was outdated by the time customers were interviewed.

Because most (possibly all) of the Fuel Cell's had been decommissioned, it was very difficult to track down representatives who had relevant knowledge of the fuel cells' performances. The Evaluation Team was able to contact three (3) customers that represented five (5) of the eight (8) fuel cell systems and nearly 70% of total program capacity. All five fuel cells discussed in the interviews had been decommissioned after five to eight years.

Overall, customers were highly satisfied with the rebate and incentive application process. Most said they would not have considered the technology had it not been for the resources received from the NJCEP or the New Jersey Board of Public Utilities (BPU).

Fuel cells were a leading edge technology when this program began in 2003, another draw for some of the customers that were interviewed. Four (4) of the five (5) fuel cells were installed on college campuses where an educational element was also planned in the project.

Most relevant to overall customer satisfaction were the challenges associated with system O&M. Some sites were ill-equipped to manage unforeseen maintenance issues because staff had so little experience with this new technology. Furthermore, for the size of these systems (between 200 kW and 250 kW per module), maintenance costs were relatively high—$50,000/year or higher according to the customers interviewed. This struck most as too high and contributed to their overall dissatisfaction with the technology.

Because fuel cells last only five to eight years before the stacks need to be replaced, the payback period must be quick. Given maintenance challenges, along with partnerships with relatively new manufacturers and installers, the overall costs of these systems rose well above what was anticipated. Rebates and energy savings were not adequate to cover these expenses.

**NJ Comfort Partners Low Income Program Evaluation**
From the last quarter of 2012 through October of 2014, the NJ Comfort Partners Low Income Program underwent a detailed, comprehensive evaluation, performed by the program evaluation firm Apprise Associates of Princeton, NJ. This program is funded through the NJCEP and administered by a collaborative of the State's investor owned utilities, and implemented by five (5) contractors contracted by the utilities (during the time of the evaluation). The research focused on all aspects of the program, and the evaluation covered the program's tracking system, the management and implementation processes, and program offerings. The project also included a detailed review of customer needs, an analysis of usage assessment, and evaluated the impact of the program in terms of health, safety, and energy benefits. In conjunction with that review, Apprise analyzed the current approved energy savings protocols. The full report of the evaluation of the Comfort Partners program is available at:

http://njcleanenergy.com/files/file/Final%20NJ%20CP%20Evaluation%20Report%20(2).pdf

**Residential and C&I Marketing Plan review**
While not a formal evaluation, in April 2014, Staff began a review of HW's and TRC's proposed marketing plans and the process by which they were developed in recent years. As previously noted, the NJCEP's marketing budget had been cut in 2010, from $4.7 million (1% of the total program budget) to $2.4 million (or 0.6% of the total budget) in 2011. The review began with ascertaining what research was driving the marketing strategies and tactics. It was evident that, with the budget cuts, foundational research had also been eliminated.

Staff tasked the Market Managers with a thorough re-examination of their processes for developing the marketing plans, commencing with updated market research, and clearly articulated marketing strategies to drive increased participation in NJCEP programs and generate greater energy savings. In addition to plans specific to the residential and C&I markets, Staff tasked the Market Managers with developing an umbrella campaign, intended to drive general awareness of NJCEP programs.

In response, Market Managers sent brief surveys to trade allies, past participants and to program contractors. These responses informed new, six-month marketing plans for the remainder of FY15. New tactics include expanded digital marketing campaigns, minor league baseball advertising, an increased focus on outreach within the C&I sector, increased engagement in school planning initiatives, and higher participation in conferences and sector-specific outreach.

The Market Managers also recommended that the NJCEP website be revamped, to streamline information and to improve site navigation. While it is not feasible to redesign the current website within the limited marketing budget, the Market Mangers recommended the addition of 'micro-sites' targeted to specific markets –

universities, hospitals, corporate campus, etc. - intended to improve access, functionality and aesthetics. At the completion of the six-month plan, the market managers will submit a report on the success of the new tactics, which will inform FY16 marketing activities.

Evaluations to be procured in FY15 included:

*Portfolio-level Process Evaluation*
While the FY14 and FY15 stakeholder-driven work groups addressed many aspects of a process evaluation, this is the first third-party process evaluation since SBC funds were collected for clean energy programs. The recommended process study, to be performed by ERS, will survey trade allies, contractors and NJCEP program participants to gain insight into and gauge awareness of and satisfaction with current programs. This study was successfully procured in February 2015 and preliminary results are expected by November 2015.

*Building Characteristics Baseline Study*
Like the Process Evaluation, this evaluation is a comprehensive, foundational study whose results will inform future program design and identify market potential. The study will characterize the State's building stock and existing lighting, HVAC equipment, motors and appliances in New Jersey. This baseline sets the full potential for energy savings and informs energy savings targets. The study is anticipated to take 2 years and due to the anticipated cost of the study, will be procured through Treasury. Staff is currently finalizing the draft RFP for Treasury review.

**FY15 Work Group Review of NJCEP Programs**
Staff recommended and the Board approved the creation of a Work Group to review the full suite of NJCEP programs, in order to streamline program delivery and improve customer and contractor participation. The Work Group was to review the NJCEP portfolio to recommend changes to existing programs and to propose new programs, including but not limited to Residential Renovation EE, Multi-Family EE, Retro-Commissioning (originally approved by the Board in 2012), and demand response.

Concurrent with this review and in support of the 2011 EMP objective to transition NJCEP EE programs to market-based financing, TRC and Staff worked with EDF's Investor Confidence Project to develop a straw proposal for the integration of ICP into C&I program(s).

The process was led by the Market Managers, who organized a series of stakeholder-driven subcommittee meetings, each with a specific market focus. For residential programs, Honeywell formed a Homes Subcommittee, focused on construction programs for new and existing homes and HVAC systems. Its Products Subcommittee focused on emerging technologies and energy efficient products.

TRC, the C&I Market Manager, structured its subcommittees based on key market sectors within C&I programs. These sectors were organized around current program eligibility requirements, energy usage, building type and operation (use). TRC formed six (6) subcommittees: Local Government/K-12 Schools (public and private); Small Commercial Business; Multi-Tenant Buildings & Owners/Large Commercial; Industrial/Manufacturing/Data Centers; Franchise/Chain Retail; Hospitals, Higher Education and Hotel; and partnered with HW to on Multi-Family.

The Market Managers identified and invited a broad spectrum of stakeholders to participate in the subcommittee meetings: contractors, trade organizations, utility representatives, program implementers, environmental organizations, product manufacturers, national and local retailers, NJCEP program partners, DOE and ENERGY STAR representatives, ESCOs, municipal and school board representatives, ESIP staff, LEUC, American Institute of Architects (AIA, building owners, municipal utility authorities, restaurant owners, etc.

The Market Managers prepared exhaustive evaluation templates for each NJCEP program. The templates collected a wide array of information on each program, including program goals, historic program results, results of benefit/cost analysis, comparison to peer programs, customer and contractor feedback, the impact of codes and standards on that program, a review of market changes that impact baseline energy savings calculations, and a summary of recommended program modifications. The program templates prepared by the Market Managers are available at:

http://njcleanenergy.com/supporting-links

The Market Managers conducted nine (9) separate subcommittee meetings between December 2014 and January 2015, and in February, presented their findings to the work group Planning Committee for discussion and consideration. This occurred over two full-day meetings in early February 2015.

The Planning Committee included representatives from OCE Staff, Rate Counsel, Market Managers, the Program Coordinator, NJCEP evaluation consultants, NJIT's Center for Building Knowledge, P4P program Partners, Eastern Heating and Cooling Council (EHCC), Large Energy Users Coalition (LEUC), Rate Counsel, EDF and Sustainable Jersey.

In late February, with feedback from the Planning Committee, the Market Managers presented their recommendations. It should be noted that the recommendations were prioritized into two categories – those that could be accomplished through changes in compliance filings and do not require contract modifications, and those that require contract modifications and therefore cannot be implemented in the near term. Those that can be implemented without the need for a contract modification will be included in the draft FY16 compliance filings.

Consistent with the annual NJCEP budget process, the Market Managers are finalizing draft compliance filings that will identify specific changes to the programs proposed for FY16, as well as detailed budgets. Rather than repeat the proposed changes herein, a summary of the changes that Staff anticipates will be included in the draft compliance filings can be found at:

http://njcleanenergy.com/files/file/CRAFY16/Summary%20of%20Proposed%20Changes%20to%20the%20FY16%20Residential%20EE%20Programs.pdf

In addition, the Market Managers recommended a number of new programs and other changes to the programs that would require contract modifications to implement; these will not be included in the forthcoming draft FY16 compliance filings. However, over FY16, Staff will lead stakeholder meetings to propose and design these new or revised programs. A summary of the longer term recommendations can be found at:

http://njcleanenergy.com/files/file/CRAFY16/Proposed%20long-term%20recommendations%20Residential%20EE.pdf

## 2. RECOMMENDATIONS

Over the past three years, OCE staff has endeavored to identify the full extent of clean energy spending in the State, the multiple delivery systems for EE and RE programs, and the policy and program implications of the State's call for greater resilience in the wake of Superstorm Sandy. Over those three years, Staff has recommended and the Board has approved one-year funding levels and directed Staff to conduct a comprehensive review of the drivers of program delivery and performance – funding, data, evaluation, marketing, and program planning and design. Staff's goal has been to create greater consistency and find opportunities to better coordinate all clean energy programs – NJCEP, utility, ESIP and SEO. With this CRA, Staff is proposing to maintain the current funding level of $344,665,000 for FY16.

Table 9, below, shows NJCEP program expenditures for each funding category over the past four years and indicates that the NJCEP has experienced a steady increase in program participation and expenditures.

**TABLE 9 - NJCEP Actual and Committed Expenses for 2011 through Fiscal Year 2014**

| *Program* | *Actual/Committed* | *2011* | *2012* | *2013* | *FY2014* |
|---|---|---|---|---|---|
| *Energy Efficiency Programs* | Actual Expenditures | $139,035,801.19 | $154,966,793.44 | $163,611,248.71 | $186,813,948.65 |
| | Committed Expenditures | $71,002,166.00 | $95,095,783.89 | $107,965,268.28 | $125,024,005.87 |
| | ***Actual plus Committed Expenses*** | ***$210,037,967.19*** | ***$250,062,577.33*** | ***$271,576,516.99*** | ***$311,837,954.52*** |
| *C&I CHP-Fuel Cell Programs* | Actual Expenditures | | | $1,119,011.92 | $3,339,818.34 |
| | Committed Expenditures | | | $5,242,956.00 | $13,241,190.00 |
| | ***Actual plus Committed Expenses*** | | | ***$6,361,967.92*** | ***$16,581,008.34*** |
| *Renewable Energy Programs* | Actual Expenditures | $38,963,321.60 | $14,145,879.55 | $5,619,278.43 | $6,918,320.00 |
| | Committed Expenditures | $25,322,065.30 | $13,605,326.35 | $11,755,573.42 | $12,956,320.00 |
| | ***Actual plus Committed Expenses*** | $64,285,386.90 | $27,751,205.90 | ***$17,374,851.85*** | ***$19,874,640.00*** |
| *EDA Programs* | Actual Expenditures | $6,335,017.00 | $2,831,025.98 | $7,104,871.64 | $13,255,794.08 |
| | Committed Expenditures | $6,475,983.00 | $15,379,783.00 | $8,906,179.38 | $24,794,371.38 |
| | ***Actual plus Committed Expenses*** | $12,811,000.00 | $18,210,808.98 | ***$16,011,051.02*** | ***$38,050,165.46*** |
| *NJCEP* | Actual Expenditures | $4,331,674.86 | $5,648,873.49 | $5,535,286.99 | $9,082,687.71 |
| *TRUE Grant* | Actual Expenditures | $3,210,125.71 | $5,812,013.91 | $3,184,260.17 | $12,793,600.21 |
| | Committed Expenditures | $21,789,874.29 | $15,977,860.38 | $12,793,600.21 | $0.00 |
| | ***Actual plus Committed Expenses*** | ***$25,000,000.00*** | ***$21,789,874.29*** | ***$15,977,860.38*** | ***$12,793,600.21*** |
| **TOTAL NJCEP** | **Actual Expenditures** | **$191,875,940.36** | **$183,404,586.37** | **$186,173,957.86** | **$232,204,168.99** |
| | **Committed Expenditures** | **$124,590,088.59** | **$140,058,753.62** | **$146,663,577.29** | **$176,015,887.25** |
| | **Actual plus Committed Expenses** | **$316,466,028.95** | **$323,463,339.99** | **$332,837,535.15** | **$408,220,056.24** |

What follows is a summary of recent progress and current policy challenges within the five (5) primary NJCEP funding categories - Energy Efficiency, Renewable Energy, CHP/FC, EDA, and Administration – and Staff's planning goals and funding recommendations for FY16.

### Energy Efficiency

In FY16, the Board anticipates bringing on a new Program Administrator (PA). Transitioning NJCEP programs and the IMS databank to a new Program Administrator will be intensive and time-consuming and will occur at the same time that the State continues to deliver a full suite of NJCEP programs.

Staff also anticipates working with a new marketing contractor to conduct foundational market research, to redesign marketing strategies, tactics, and brand, and to develop a new website with more user-friendly navigation and a more transparent application tracking process, intended to improve DQV and evaluation. The new marketing contractor will also have to coordinate its efforts with the new PA's outreach plan and the next generation IMS.

As per the Evaluation Plan, in addition to the annual program CBAs and ongoing wind studies, the NJCEP will procure through CEEEP a third-party Protocols Evaluation. As the ERS Benchmarking study found, "The Protocols, which include certain important assumptions for estimating savings, were found to depend on outdated research. ERS recommends that NJCEP perform updates to the protocols with greater regularity and consider an independent third party to review the protocols and recommend changes."

Through Treasury procurement, the NJCEP will conduct a Residential and C&I Baseline – Appliance Saturation Survey; a study and stakeholder process to define Incremental Cost, due to its impact on assessing cost-effectiveness; and Residential and C&I program Impact Evaluations: Residential Products, HPwES, DI, C&I Retrofit, and P4P.

As part of developing this CRA, Staff conducted a simple regression analysis of past energy savings associated with NJCEP programs (see Section 3: Funding Levels and Goals) in order to set energy savings targets for FY16. Staff recommends applying the same analysis to NJCEP programs in future years and in consideration of recommended changes to programs. With a goal of applying the same standards to all EE programs, Staff also recommends, as an exercise, that the same analysis be applied to utility-run E3 programs, in order to set energy savings targets for those programs as well. The analysis would be based on the E3 filings currently being reviewed by the Board.

In FY16, in response to clearly articulated State policy goals and the recommendations of the new PA's strategic plan, Staff recommends a review of the NJCEP portfolio of programs. This will build on the FY15 work group findings and involve a stakeholder-driven process to recommend new programs/program design.

Staff will also focus on advancing the EMP goal of transitioning to alternative financing for EE services, including attracting private investment. As a first step, in FY16, Staff will propose a pilot program to incorporate ICP protocols and processes into the P4P program, as an alternative compliance path. The intent of the pilot is to develop a pool of investor-ready projects, to better understand what, if any, is the cost of increased M&V, and to assess the cost and value of the data captured by through the ICP process.

Finally, Staff believes it is in the interest of ratepayers and market development to continue to create consistency and standardization across all EE programs – NJCEP, utility-run, ESIP and through the SEO. To this end, Staff will review the findings of the Evaluation, Data and Utility work groups and work with the respective program administrators to implement uniform data, data-collection methods, evaluation and reporting requirements for all programs.

Staff is recommending new funding of $176,675,000 to continue its full suite of residential, low-income and C&I energy efficiency programs.

## Renewable Energy

EDECA defined NJ Class I renewable energy as solar, wind, biomass, geothermal, tidal and wave energy. The law provided the Board with basic tools to develop renewable energy markets, including the Societal Benefits Charge, net metering and interconnection standards and Renewable Portfolio Standard ("RPS"). Market assessments conducted for the Board in 2004, 2007 and 2012 found significant economic potential for grid-interconnected solar photovoltaic, biomass conversion, and renewable electric coupled with energy storage technologies. Less significant economic potential was found for onshore wind, tidal, wave, and fuel cells powered with renewable fuels. The variations in economic and technical potential, as well as the differences in market barriers confronting each technology, help to explain the variety of approaches used to encourage market development and the differing levels of adoption of each technology in the state.

### Solar

New Jersey's solar market ended CY2014 by recording its second highest level of monthly installed capacity, with 58 MWdc in December. The strong finish to the year, which brought the annual installed capacity to 240 MW, was not enough to keep the state from falling to sixth place among US states behind Arizona, which installed 247 MW in 2014. However, New Jersey retained third place for cumulative solar PV capacity, reaching 1,431 MW. By the end of 2014, after more than ten years of market development, over 32,000 facilities in New Jersey have received a financial incentive for a solar photovoltaic installation.

Since its passage in July 2012, the Solar Act of 2012 ("the Act") is credited with stabilizing the New Jersey solar market. This stability carried into 2014 as the amount of installed capacity slightly exceeded the amount installed in 2013. To stabilize the market, the Act amended several provisions of the Renewable Portfolio Standards ("RPS"). To address the SREC oversupply situation confronting the market in 2012, the Act increased the near term RPS solar obligation while limiting the contribution from the merchant wholesale "grid supply" market.

The volume of new registrations in the SREC Registration Program (SRP) during the past year has exceeded initial Staff estimates. In budgeting for FY15, the Renewable Energy Market Managers estimated processing 10,200 new SREC registrations.

Through March 1, 2015, the SREC registration team has processed 8,975 registrations and anticipates processing an additional 4,800 registrations before the end of the fiscal year. The Market Managers are currently developing an online registration portal that should streamline the registration process and reduce transaction costs for developers and administrative costs for ratepayers.

As described in the report on solar development volatility transmitted to the legislature in July 2014, Staff sees a critical need for consistency and coordination among policies that promote renewable energy in the state. The objective of sustained orderly development of New Jersey's solar PV market at the least cost to ratepayers is threatened when the economic attractiveness of net metering for large projects threatens to oversupply the SREC market at the expense of the small residential and commercial solar market. Staff recommends that facilities seeking to install large, customer-sited solar facilities be given the choice of participating in either the net metering program or the SREC program, but not both.

Similarly, to the extent that the renewable electric storage incentive program is available, sites where renewable technologies are being developed concomitantly with the energy storage, the storage incentive will contribute to an already oversupplied SREC market. Staff recommends that energy storage incentives be limited to projects where renewable energy systems already exist without adversely impacting the state's market development goals for the technology.

Staff anticipates that New Jersey's solar programs will see continued growth and is proposing approximately $4 million in FY16 for the cost of SREC registrations.

### Onshore Wind

Based in part on the findings set out in the Cadmus report discussed above, Staff is not proposing funding for onshore wind in FY16.

### Biomass

In FY14, one bio-power project rated at 240 kW became operational, bringing the total number of customer-sited projects that received a rebate since program inception in 2003 to fourteen (14) projects totaling 8.5 MW. From 2004 through 2009, five (5) merchant wholesale generation projects have been provided grants to build 22.7 MW of capacity. In total, nineteen (19) bio-power projects, totaling nearly 32 MW, have received incentives through the Societal Benefits Charge.

In FY14, the Board approved a change from an NJCEP prescriptive rebate to a competitive solicitation. The change was recommended due to the opaque nature of installation costs and the inability of a fixed rebate structure to attract applicants that are able to complete projects in a timely manner. Staff had received reports of existing landfill gas to electricity projects that were suffering from high maintenance costs associated with poor gas quality. In response, for the first time in the history of the bio-power programs, an incentive category was proposed for existing systems

that proposed to enhance their electric productivity through investment in feedstock conversion or gas clean up equipment.

In the first solicitation issued in FY14, only one project applied and it was denied for not meeting the solicitation criteria to provide a substantive feedstock plan and to be customer-sited, net metered and interconnected with the EDC. During FY15, the Board approved two competitive solicitations for eligible bio-power projects. Only two projects submitted applications in the first solicitation and neither project met the minimum requirements for evaluation. With revisions to the solicitation, Staff recommends that the CRA include $3 million in funding for a new biomass solicitation to be released in FY16.

### Off–Shore Wind

The main source of funding for off-shore wind (OSW) projects is through ORECs as set out in the Board's regulations. Applicants requesting Board approval for the issuance of ORECs are required to submit an application to the Board for review and approval. A summary of the status of OSW wind development in New Jersey can be found at:

http://njcleanenergy.com/files/file/OSW%20CRA%202016-2018.pdf

Applicants for OSW projects are required to submit with their applications fees intended to cover the cost of the Board's consultants engaged to assist in the review of the applications. In the past, the NJCEP has allocated funding to cover the costs of these fees for the time period between when costs are incurred and fees are collected. It is expected that eventually all fees associated with the review of OSW applications will be collected from the applicants. Staff is proposing nominal fees for OSW in FY16, to maintain the ongoing wind modeling studies performed by Rutgers University's Department of Marine and Coastal Sciences.

### Energy Storage

In 2012, to inform the CRA 2014 -2017, the Board commissioned a market potential study to examine the opportunities for energy storage. (Market Assessment Services to Characterize the Opportunities for Renewable Energy, Navigant Consulting, August 6, 2012) Based on the amount of intermittent renewable energy installed in New Jersey, Navigant identified two basic opportunities for storage in the near term: renewable energy shifting and frequency regulation. The potential for renewable electricity sifting was 750 MW, based on projections of 250 MW of offshore wind and 500 MW of solar PV anticipated to be in place by 2016. The technical potential for frequency regulation was estimated to be 52.5 MW and included 7.5 MW for offshore wind with the remainder for solar PV.

During the summer of 2014, based on input received in stakeholder meetings, program criteria were finalized and a competitive solicitation was drafted. Due to the potential resiliency benefits that could accrue to ratepayers, public and critical facilities were recommended as preferred sites for renewable energy-

interconnected electricity storage projects. Existing public sector solar systems that were rendered inoperable when the grid failed during Superstorm Sandy were viewed as a potential market for energy storage applications. Projects that could demonstrate financial and economic viability, required less than $500,000 in incentives, and that could be completed in a timely basis were also identified as preferred projects for the solicitations incentives.

On October 22, 2014, Staff issued a competitive solicitation for energy storage project. The responses to the solicitation provided insight into the emerging market for renewable electric storage in New Jersey. Twenty-two (22) applications requested more than $4.6 million in total incentives.

In describing the proposed uses of the storage systems, the majority (15) of the applicants indicated emergency backup would be the primary use. Five (5) applicants indicated frequency regulation and two (2) indicated load shifting would be the primary use. As the market evolves, it will be helpful to track how systems are being used – for resilience/emergency backup, peak load shifting, and/or frequency regulation.

At the March 18, 2015 agenda meeting, the Board approved $2.9 million in incentive commitments for the thirteen (13) top-ranked applications. Five (5) municipal utility authorities (waste water treatment plants), six (6) public schools, one private school and one local government services building were among the projects receiving incentive commitments. All thirteen (13) projects proposed the use of lithium ion batteries for emergency backup and frequency regulation applications.

For CRA2016-2018 planning, Staff plans to reengage the Renewable Electric Storage stakeholder group to refine the program goals and design, and to maximize the opportunity for customer-sited energy storage applications that support NJ Class I renewable energy market development. Staff recommends that the CRA include $6 million in funding for a new energy storage solicitation to be issued in FY16.

**Net Metering and Interconnection Update**

Throughout 2014, Staff periodically engaged stakeholders interested in Net Metering and Interconnection rules for New Jersey Class I renewable energy facilities. In addition to the routine implementation issues identified by stakeholders, the 2014 agenda for this group grew to include several new issues:

- Increasing levels of penetration of interconnected NJ Class I renewable energy facilities on individual distribution feeder circuits,
- Cases where NJ Class I renewable energy facilities were proposed to be co-located with other forms of distributed generation not addressed by the law enabling net metering and interconnection, and
- Treatment of interconnection applications for energy storage equipment in support of NJ Class I renewable energy facilities.

As Staff continues stakeholder discussions on evolving interconnection and net-metering issues, the goal is to ensure that the interconnection of a fossil-fueled generator alongside a NJ Class I renewable resource does not result in a greater net metering credit than the renewable system would be eligible for in isolation. The draft protocols are envisioned to involve proper meter placement, system controls, and EDC billing practices.

### CHP/Fuel Cell Program

From 2001 through 2009, the NJCEP included a stand-alone Combined Heat and Power/Fuel Cell (CHP/FC) program. In 2010, in an effort to encourage customers to reduce energy usage prior to investing in a CHP project, the CHP/FC program was eliminated as a stand-alone program and CHP/FC incentives were incorporated into the Pay-for-Performance (P4P) program. Customers were required to perform a P4P project with a minimum 15% reduction in energy usage in order to be eligible for a CHP incentive.

While the concept of requiring a customer to install energy efficiency measures before being eligible for a CHP incentive was sound in theory, in practice, it created a high hurdle that few customers were able to overcome. In 2012, a new stand-alone CHP/FC program was initiated to increase program participation, with TRC managing the program for small, less than 1 MW projects and EDA managing the program for projects over 1 MW. In FY14, OCE Staff assumed management of the program for projects over 1 MW.

The program results have been below expectations. Since 2001, 54 projects totaling approximately 91 MW[8] have been constructed with incentives from the NJCEP or with ARRA funds. To address the low participation rates, Staff and the Market Managers recently engaged in conversations with project developers and potential CHP/FC customers to assess barriers to the development of CHP/FC projects.

A number of issues were raised during these discussions, including the lack of a stable source of funding, the level of incentives, and other related matters such as utility interconnection requirements, standby tariffs and gas tariffs. Furthermore, toward the State's goal of building resilience, the ERB is also providing funding for CHP/FC at critical and public facilities.

Historically, NJCEP incentives have been utilized to promote efficient end use measures and to promote the generation of electricity using renewable sources of fuel. CHP and Fuel Cells with heat recovery capture waste heat to offset boiler fuel or other uses of on-site energy. While Staff recognizes that a fuel cell without heat recovery is a clean and efficient form of electric generation, Staff believes that a fuel cell without heat recovery is a form of distributed generation.

[8] The 54 projects totaling 94 MW includes several projects not included in Table 10 below.

Staff recognizes the merits of distributed generation and that the EMP recommends increased development of distributed generation. Staff recommends that the stakeholder process, in addition to assessing all barriers to CHP/FC development, also review Board and NJCEP policies in light of the State's resiliency goals.

The Board is also exploring policies and incentives intended to promote the development of micro-grids, which allow a facility to remain operational when utility systems experience outages. One of the major barriers to CHP/FC project development is the large, upfront costs. Both the US Environmental Protection Agency (EPA) and US Department of Energy's District Energy Technical Assistance Program have identified these costs as a major barrier to CHP microgrid development. To address this barrier, the stakeholder process will also explore developing an NJCEP program that provides incentives to offset these costs.

Table 10, below, shows the results of activity in all NJCEP, ARRA and utility-funded CHP/FC programs since their inception.

**TABLE 10 - Combined Heat & Power (CHP)**

***Project Funding and Status of Development****

| | ***Total*** ***(as of 12/31/14)*** |
|---|---|
| ***Completed or In Progress*** | |
| Funds Expended (Grants and Admin Costs) | $34,599,693.07 |
| Capacity (MW) | 64.3 |
| Number of Projects | 36 |
| ***Commitments*** | |
| Outstanding Balance of Funds Committed | $17,609,122.60 |
| Capacity (MW) | 15.5 |
| Projects Approved but not Underway | 11 |
| ***Total*** | |
| Funds Expended | $34,599,693.07 |
| Outstanding Balance of Funds Committed | $17,609,122.60 |
| Total Funds | $52,208,815.67 |
| Capacity Installed/Committed (MW) | 79.8 |
| Number of Projects | 47 |

**Includes all NJCEP, ARRA, and utility-funded programs since inception.*

Staff recommends that the NJCEP delay any significant program changes at this time pending the recommended stakeholder process. Based on the recent low-levels of activity in this market, Staff recommends a FY16 reduced funding level of approximately $14.8 million for the CHP/FC program. Staff further recommends a stakeholder-driven process to review and redesign the CHP program, while considering related factors such as use groups, project economics, payment structures, interconnection, stand-by tariffs, resilience, etc.

## NJ Economic Development Authority Programs

EDA is currently managing two NJCEP programs: the Clean Energy Manufacturing Fund and the Edison Innovation Green Growth Fund. These programs provide incentives to attract clean energy manufacturers to the State and to assist start-up companies in commercializing new technologies.

The Clean Energy Manufacturing Fund (CEMF) Program was created in 2009 to support the commercialization and development of Class I renewable energy and energy efficient technologies in New Jersey. Under the CEMF program, clean technology manufacturers can receive funding for two separate components of a project: project assessment and design, and project construction and operation. Up to $300,000 is available as a grant to assist with manufacturing site identification and procurement, design and permits. Up to $3 million is available as a zero-interest loan. Up to one-third of the loan may convert to a performance grant if business and technology-based milestones are met during the first three years. Two solicitations were open to applicants in 2009. In response to the first solicitation window, EDA received 4 full applications with total request for $13.2 million. After completion of the due diligence by EDA and review by the Clean Technology Evaluation Committee, Petra Solar was awarded $3.3 million.

In response to applications to the second EDA solicitation, the Clean Technology Evaluation Committee recommended five applicants for financial assistance. Upon completion of due diligence by EDA, financial assistances were awarded to AppliCad ($982,000), Princeton Power Systems ($3.3 million) and Noveda Technologies ($3.3 million), for a total of $7,582,000.

In November 1, 2009, the CEMF application process changed from open solicitations to rolling applications. Table 11 below summarizes CEMF funding awarded through December 2014.

| TABLE 11 - CEMF Project Funding thru 12-31-14 | | | | | |
|---|---|---|---|---|---|
| ***Project*** | ***Date Approved*** | ***Approved Commitment Amount*** | ***Nature of Business*** | ***Amount Disbursed*** | ***NJ Jobs*** |
| *MX Solar USA LLC** | 06/23/11 | $3,300,000 | Manufacturer and installer of solar panels | $3,300,000 | 0 |
| *Princeton Power Systems* | 05/03/10 | $3,300,000 | Alternative energy grid-tier inverter | $3,300,000 | 49 |
| *Fluitec Wind* | 08/09/12 | $3,300,000 | Solution provider gearbox failure due to lubrication breakdown for Wind industry | $1,199,673 | 3 |
| *Noveda Technologies* | 03/05/10 | $3,300,000 | Provides proprietary equipment (smart meters) and software used in real-time | $2,527,517 | 13 |
| *Petra Systems* | 12/01/09 | $3,300,000 | Developer and assembler of electric power and power management products focused on solar energy market | $3,300,000 | 28 |
| *AppliCad* | 05/25/10 | $982,000 | Manufacture and assembly of renewable energy system power meter/data logger. | $982,000 | 36 |
| **Total** | | **$17,482,000** | | **$14,609,190** | **129** |

**MX Solar has closed.*

In October 2014, the BPU board approved financial assistance of $3.3 million to ENER-G Rudox and $500,000 to SIEL America. Ener-G is a CHP assembler/service company and SEIL America is an inverter manufacturer. These loans are expected to close in Q2 2015. Total award under CEMF including these recent approvals will be $21,282,000.

The combined revenue (for 2014) of companies assisted under CEMF program was approximately $50 million and supported the employment of 129 individuals.

In May 2011, NJCEP funded a companion program to the CEMF, called the **Edison Innovation Green Growth Fund (EIGGF***).* Originally, the program awarded a loan not to exceed $1 million and included a performance grant component. In 2012, the maximum award was increased to $2 million. These funds support clean technology companies with commercially available products seeking funding to grow and support their technology business by providing working and growth capital for a 5-year fixed term. It is targeted for businesses that do not directly manufacture and addresses the incidence of non-manufacturing applicants to the CEMF program.

Table 12 below identifies companies that have received EIGGF funding:

| TABLE 12 - EIGGF Project Funding thru 12-31-14 | | | | | |
|---|---|---|---|---|---|
| ***Project*** | ***Date Approved*** | ***Approved Commitment Amount*** | ***Technology*** | ***Amount Disbursed*** | ***NJ Jobs*** |
| *FieldView Solutions* | 07/31/12 | $1,000,000 | Data center power management thru web-based application | $1,000,000 | 26 |
| *Locus Energy* | 12/21/12 | $1,454,000 | service for green energy businesses | $1,454,000 | 11 |
| *United Silicon Carbide* | 08/02/13 | $2,000,000 | Semiconductor with silicone carbide | $2,000,000 | 18 |
| | | **$4,454,000** | | **$4,454,000** | **55** |

In December 2014, Locus Energy was awarded additional assistance of $546,000, bringing the total funding awarded through EIGGF to $5,000,000. The combined revenue (for 2014) of companies assisted under EIGGF program was approximately $31 million.

Staff is proposing $2.5 million in new funding for the EDA programs. When combined with uncommitted funding from FY15, EDA will have approximately $6 million for new awards to the CEMF and EIGGF programs.

## NJCEP Administration

*Marketing*

The stakeholder-driven work groups – Data, Utility and NJCEP portfolio review - revealed a universal recommendation for increased and improved marketing of NJCEP programs. Creative, targeted marketing is a primary driver of brand trust and program participation. Brand awareness is also critical to building customer confidence about the NJCEP and the value of energy efficient and renewable energy measures.

In 2007, NJCEP program delivery transitioned from the utilities to the Market Managers, and with a marketing budget of $8.3 million, the Board engaged an advertising agency to deliver an umbrella marketing campaign that focused on building NJCEP brand awareness and delivering outreach and education. In 2009, with a budget of $6.8 million, responsibility for all marketing activities was transferred to the Market Managers. In 2010, the marketing budget was cut 31% and then cut again by almost 50% in 2011, resulting in a budget of less than $2.4 million. Recognizing the value of marketing in increasing customer and contractor participation, Staff recommended and the Board approved an increase to the marketing budget in 2012; however, the NJCEP is unable to obtain the contract modifications necessary to implement an expanded campaign.

Compared to peer states and programs, New Jersey has consistently under-budgeted for marketing. Table 13 below, shows the annual NJCEP marketing budgets and the percent of total program budgets in comparison to the 2013 marketing budgets of other northeastern clean energy programs.

| TABLE 13 - Program Marketing Expenditures<br>*NJ and Other Northeastern States* | | |
|---|---|---|
| ***New Jersey's Marketing Budget Analysis*** | | |
| **Year** | **Marketing Budget** | **% of Overall Budget** |
| CY2010 | $4,693,194 | 1.0% |
| CY2011 | $2,384,984 | 0.5% |
| CY2012-Jun 2013 | $3,318,976 | 0.6% |
| FY2014 | $2,384,984 | 0.6% |
| FY2015 | $2,384,984 | 0.6% |
| ***2013 Northeastern States' Marketing Budgets*** | | |
| **State** | **Marketing Budget** | **Expenditures as a % of Total Costs** |
| Connecticut | $2,348,532 | 1.6% |
| Dist. Of Columbia | $556,614 | 3.5% |
| Maryland | $20,378,395 | 7.0% |
| Massachusetts | $21,827,090 | 3.5% |
| New Hampshire | $562,334 | 1.8% |
| New York | $29,460,310 | 6.4% |
| Rhode Island | $3,828,208 | 4.7% |
| Vermont | $2,949,762 | 7.3% |

Staff will be also be working with a new Marketing Contractor to re-imagine NJCEP marketing strategies, tactics, and brand and to develop a new website that combines more user-friendly navigation with data collection and an application tracking process. The new Marketing Contractor will be responsible for developing a creative, strategic marketing plan that will be coordinated with the new Program Administrator's outreach plan, program design, and utility marketing. The marketing plan will also be required to develop a process to track and report on the effectiveness of its proposed marketing tactics.

Staff is proposing an NJCEP marketing and website budget of approximately 2% of the proposed NJCEP budget.

*Program Evaluation*

See Table 7 on page 24 for a comprehensive list of the evaluations proposed for FY16. Staff is recommending funding of $4.25 million for evaluations to be procured in FY16.

*Outreach and Education*

While its impact is often difficult to measure, Staff recognizes the value of education and outreach in refining clean energy programs, increasing program participation,

and reducing the market and policy barriers to increased investment in clean energy.

To that end, Staff is recommending three partnerships with State universities: The College of New Jersey's Institute for Sustainability and Sustainable Jersey (SJ), New Jersey Institute of Technology's and its Center for Building Knowledge (CBK) and Rutgers University's Laboratory for Energy Smart Solutions (LESS).

**Sustainable Jersey** plays a lead role in NJ in promoting and implementing sustainable planning and practices. NJBPU was a founding partner of the organization, and with other State agencies, participates on the Sustainable Jersey Board in an Ex Officio Capacity. SJ regularly participates in NJCEP strategic planning and program design workgroups, and provides valuable feedback and insight.

SJ has proven to be a valuable partner in educating local governments, school districts and residents about NJCEP programs and that energy efficiency is an investment that pays real dividends. Through its municipal certification program, SJ has prescribed a broad portfolio of 'actions" by which municipalities can implement clean energy initiatives. By leveraging its relationship with the League of Municipalities (LoM), SJ has successfully launched community-wide Home Performance with Energy Star programs and aspires to achieving similar success with community-wide Direct Install programs.

In 2015, SJ successfully launched its "Sustainable Jersey for Schools Certification Program" at the annual NJ School Board Association Conference (NJSBA). With 600 school districts and approximately 2500 separate schools, NJ's public school buildings represent a vast, untapped potential for energy savings - savings that can, in turn, provide considerable energy and operational and maintenance cost savings to taxpayers.

By leveraging its relationships with the LoM and NJSBA, in FY16, SJ proposes to continue its education and outreach of NJCEP programs to municipalities and schools, increase the coordination of its outreach with NJCEP marketing managers, and to educate school districts about the State's Energy Savings Improvement Program. Staff recommends that the Board continue its annual $500,000 grant to SJ. Sustainable Jersey's full grant proposal can be found at:

http://njcleanenergy.com/files/file/Sustainable%20Jersey%20Compliance%20Filing%20FY16%204-14-15.pdf

Staff is recommending that the NJCEP provide a grant to the **Center for Building Knowledge (CBK)** at NJIT, to create the NJ Clean Energy Learning Center. NJCEP has partnered with CBK in the past and is recommending this grant because of CBK's substantial experience – locally and nationally – in developing cost-effective, impactful energy efficiency training programs.

Across the country, training has become a critical component of local and state energy efficiency programs. In California, for example, investor-owned utilities currently spend close to $30 million per year on stakeholder education. Closer to home, MassSave – in cooperation with its seven participating utility companies – offers an ongoing series of training programs covering specific EE technologies, as well as general building design strategies. And just across the border, NYSERDA coordinates a comprehensive program of online, classroom and hands-on training, focused on both individual technologies and whole-building performance. NYSERDA's planned spending on energy code training is close to $6 million between now and the end of 2017, and the California Energy Commission has committed $9 million solely for residential energy efficiency workforce training during the same period.

These programs and others across the country recognize the value and efficiency of providing high quality education and training – both in-person and online – as a means to better inform key stakeholders; enhance program utilization and impact; develop a better-informed, more competent energy efficiency workforce; and streamline EE program administration by improving in-field program delivery.

Staff is recommending a $350,000 grant for FY16, for CBK to develop and provide educational offerings to the full range of stakeholder groups engaged with the Clean Energy Program – building owners and managers; design professionals; energy and other professionals; contractors; code officials; and CEP program managers. The Learning Center and will develop and deploy a minimum of 20-30 short tutorials, 10-20 in-field demonstrations, and 8-12 full courses each year, for a minimum of three years. Staff, CBK and a stakeholder advisory group will identify topics for these educational programs.

The full grant proposal by the Center for Building Knowledge can be found at:

http://njcleanenergy.com/files/file/CRAFY16/NJIT%20Training%20Proposal%20030215.pdf

Finally, Staff is recommending a $150,000 grant to the newly established L**aboratory for Energy Smart Systems (LESS)** at Rutgers University. Through this partnership, LESS will identify analytical methodologies that can used to support and evaluate energy policy decisions affecting customers in the State of New Jersey. In particular, this framework will be geared towards behind-the-meter distributed energy resource (DER) investments that increase energy resiliency and sustainability and promote energy efficiency. The project is scheduled for one year and will include the analysis of up to three case studies that inform NJBPU policy and approaches to incentivizing DER adoption.

As referred to in this proposal, the term *DER* includes distributed energy generation (both fossil fuel and renewable), energy storage (thermal and battery) and demand side management technologies and strategies (demand response, price responsive demand, and energy efficiency). Case studies will be defined by the BPU in conjunction with the Rutgers team and may include:

- Evaluation of policies to redesign existing distributed generation programs in a given region of the state
- Support of DER to increase resiliency, grid reliability and grid security
- Support of tri-generation technologies for wastewater and other critical infrastructures.

The analytical framework will be designed to assist State authorities in evaluating the design of incentive programs and proposed policies with respect to location, customer type, technology type and incentive structure. Depending on what the target is for a specific incentive policy, impacts on and values to different stakeholders should be accounted for in its design and/or evaluation. Furthermore, such analytics can later be deployed to support program evaluation studies by instituting consistent economics analysis throughout the system.

The full grant proposal by Rutgers Laboratory for Energy Smart Systems (LESS) can be found at:

http://njcleanenergy.com/files/file/public_comments/LESS%20grant%20proposal%204-9-2015.pdf

*OCE Overhead*
In FY16, Staff and NJCEP consultants will begin a review of NJCEP administrative costs and budget and accounting practices to improve tracking and accountability. As per the ERS Portfolio Benchmarking Study:

1. The portfolio-wide trend of note is an overall high cost per kWh relative to other programs, as measured by percentile for $/kWh.
2. NJCEP accounting and budgeting methodologies make benchmark comparisons difficult and skew program spending. ERS recommends that NJCEP account for all relevant spending at the program level in order to better understand the true and total cost of programs and to improve accountability. ERS recommends that NJCEP only count dollars that go to end users (or their vendors) as incentives to improve tracking and accountability.

Due to its impact on assessing cost-effectiveness, Staff recommends that the review be extended to utility-run programs, and both be compared to peer programs.

*Memberships*
The NJCEP will participate in National Association of State Energy Officers, NASEO, which represents 56 state energy offices. NASEO is funded by USDOE, foundation grants and annual membership dues, which are calculated based on population

## State Energy Initiatives

As per the Governor's February 2015 budget address, $118,289,000 in SBC funds will be redirected to fund the State's energy initiatives and utility bills. Another $10 million will be directed to the Energy Resiliency Bank. The expenditure for State energy initiatives recognizes that the State's EE initiatives extend beyond the BPU. Through energy efficiency efforts implemented by sister agencies, the office of Sustainability and Green Energy in DEP, the State conducts valuable research on clean energy technologies. Funding SAGE is consistent with EDECA in that a goal of SAGE is to accelerate the transition to a clean energy economy. Specifically, SAGE aims to "speed deployment of solar energy, offshore wind, sustainable biomass, geothermal, alternative fuels and vehicles, and innovative technologies like energy storage, fuel cells and tidal energy." By supporting SAGE, the NJCEP is furthering its commitment to EE and RE programs. BPU will enter into an MOU with DEP concerning use of the funds, including but not limited to program coordination. Likewise, NJ Transit aims to implement strategic energy efficiency initiatives to lower utility costs. Such efforts have a direct impact on utility costs and should be encouraged.

## 3. FUNDING LEVELS AND SAVINGS GOALS

### Proposed Funding Levels

The table below summarizes Staff recommendation for NJCEP funding in FY16.

**TABLE 14 - Proposed FY2016 Funding Levels**

| *Budget Category* | *Proposed FY2016 Funding Level* |
|---|---|
| *Residential EE* | $66,800,000 |
| *Low Income* | $30,000,000 |
| *C&I EE* | $79,875,000 |
| ***Sub-Total EE*** | ***$176,675,000*** |
| *CHP-FC* | $14,776,000 |
| *RE* | $11,000,000 |
| *EDA* | $2,500,000 |
| *NJCEP Administration* | $8,725,000 |
| ***Total NJCEP*** | ***$213,676,000*** |
| *True-Grant* | $2,700,000 |
| *State utility bills and EE projects* | $118,289,000 |
| *ERB* | $10,000,000 |
| **Required FY16 funding Level** | **$344,665,000** |

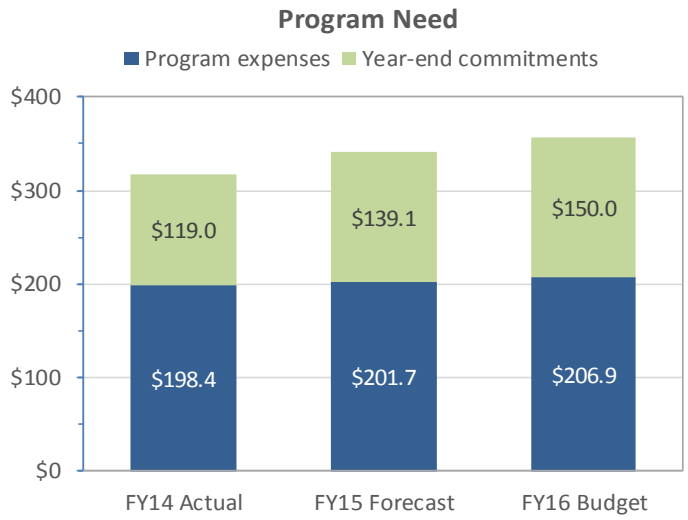
Staff is recommending that the Board maintain a funding level of $344,665,000 for FY16. While it is difficult to foresee what changes may occur in response to evaluation, the new PA's strategic plan, as a result of the new marketing plan, and in response to stakeholder-driven work groups, Staff anticipates that the recommended level of funding is sufficient to maintain a full portfolio of programs. Furthermore, in concert with utility-run programs and NJ's commitment to increasing the level of private investment in EE, Staff believes that ample funding will be available to advance NJ's clean energy markets. Staff also believes all EE programs can focus on delivering a higher level of savings and reducing the cost per MWh or therm saved.

The following table shows the accounting for the NJCEP Trust Fund including beginning balances, new sources of funding, actual or estimated expenses and commitments, and year-end balance for FY14 (actual), and FY15 and FY16 (estimated).

## TABLE 15: NJCEP Trust Fund Accounting

**Clean Energy Program**
***Fiscal Summary***
*($ millions)*

| | FY14 Actual | FY15 Forecast | FY16 Budget |
|---|---|---|---|
| **Beginning Balance** | **$ 225.7** | **$ 134.5** | **$ 139.1** |
| Societal Benefits Charge | 344.7 | 344.7 | 344.7 |
| Other resources | 1.5 | 0.2 | 1.5 |
| **Total Resources** | **$ 571.9** | **$ 479.3** | **$ 485.2** |
| Program expenses | 198.4 | 201.7 | 206.9 |
| Year-end commitments | 119.0 | 139.1 | 150.0 |
| **Program Need** | **$ 317.4** | **$ 340.8** | **$ 356.9** |
| Energy Resilience Bank | - | 1.3 | 10.0 |
| State energy initiatives | 238.9 | 137.3 | 118.3 |
| **Total Need** | **$ 556.4** | **$ 479.3** | **$ 485.2** |
| Surplus / (Deficit) | $ 15.5 | $ - | $ - |
| **Ending Balance** | **$ 134.5** | **$ 139.1** | **$ 150.0** |
| *(commitments and surplus)* | | | |




## Proposed Savings Goals

The FY16 energy savings targets below are derived from historic NJCEP energy savings data from CY2008–FY14. Data for FY15 was not included in the analysis because the year has not yet ended.

The forecast was generated using a simple linear regression analysis. For the purposes of this CRA, the analysis attempts to project the value of a dependent variable, i.e., energy savings, as a function of an independent variable, i.e., time. Two separate linear regressions were performed, one to forecast annual MWh savings and the other for annual DTh savings, and both were performed at the portfolio level, i.e., for all NJCEP programs that track MWh or DTh savings. Those portfolio levels projections were then divided amongst program sector - residential, residential low income and C&I – based on each sector's proportion of average historic savings.

Table 15, below, sets out the energy savings goals based on past performance.

**TABLE 16 - Energy Savings Target FY16**

| *Sector* | *FY2016* | |
|---|---|---|
| | *MWh* | *DTH* |
| *Residential* | 341,838 | 495,310 |
| *Residential Low Income* | 10,688 | 93,029 |
| *Commercial and Industrial* | 188,645 | 397,570 |
| ***NJCEP Total*** | ***541,171*** | ***985,909*** |

Staff recognizes that past performance is only one factor that should inform future performance and recommends these targets as a starting point.

## SBC Collection Schedule

Staff recommends that the Board utilize the same allocation methodology that was utilized in the last CRA to allocate the overall funding level to the monthly payments due by each natural gas and electric utility. This will minimize rate impacts while allowing all ratepayers to benefit equally from the reduction in the funding level.

The Table 17 below sets out the monthly payments to the Trust Fund due from each utility:

**TABLE 16 - Monthly Utility Funding Levels - Clean Energy Trust Fund - FY2016**

| | *ACE* | *JCP&L* | *PS-Electric* | *RECO* | *NJN* | *Etown* | *PS-Gas* | *SJG* | Total |
|---|---|---|---|---|---|---|---|---|---|
| *Jul* | $3,148,876.57 | $6,465,285.50 | $12,635,550.09 | $503,498.58 | $446,534.61 | $407,102.14 | $2,230,339.48 | $749,312.53 | $26,586,499.50 |
| *Aug* | $3,375,822.61 | $6,845,702.83 | $13,000,942.56 | $529,700.10 | $439,588.17 | $386,363.86 | $2,193,308.39 | $705,697.03 | $27,477,125.55 |
| *Sep* | $3,098,433.25 | $6,198,124.99 | $12,272,227.38 | $490,843.96 | $433,936.56 | $376,232.17 | $2,006,611.03 | $625,224.13 | $25,501,633.47 |
| *Oct* | $2,454,144.08 | $5,066,317.20 | $10,077,428.75 | $396,877.22 | $781,075.34 | $479,808.98 | $2,674,333.50 | $632,565.80 | $22,562,550.87 |
| *Nov* | $2,195,674.00 | $4,650,760.08 | $9,796,466.83 | $362,454.95 | $1,442,272.29 | $837,444.83 | $4,827,560.19 | $915,511.71 | $25,028,144.88 |
| *Dec* | $2,366,457.74 | $5,099,080.61 | $10,797,907.85 | $405,444.46 | $2,449,393.68 | $1,384,074.30 | $8,130,811.09 | $1,578,624.81 | $32,211,794.54 |
| *Jan* | $2,682,429.42 | $5,354,313.21 | $11,486,687.55 | $451,745.58 | $2,906,129.92 | $1,704,670.66 | $10,730,910.49 | $2,176,824.08 | $37,493,710.91 |
| *Feb* | $2,544,717.67 | $5,408,255.54 | $10,831,030.01 | $423,008.22 | $2,456,559.49 | $1,679,954.59 | $10,584,319.76 | $2,139,725.64 | $36,067,570.92 |
| *Mar* | $2,451,376.47 | $5,190,079.16 | $10,526,604.77 | $376,231.83 | $1,976,950.76 | $1,520,289.07 | $9,312,684.08 | $1,957,091.95 | $33,311,308.09 |
| *Apr* | $2,256,108.91 | $4,895,328.10 | $10,121,712.24 | $369,553.43 | $1,101,642.52 | $1,053,240.32 | $6,200,145.30 | $1,314,529.03 | $27,312,259.85 |
| *May* | $2,198,027.93 | $4,518,387.95 | $9,558,224.59 | $375,250.62 | $604,378.01 | $642,574.63 | $3,686,609.64 | $875,871.33 | $22,459,324.70 |
| *Jun* | $2,478,957.73 | $5,365,624.79 | $10,887,557.24 | $447,737.93 | $438,742.20 | $513,829.54 | $2,743,631.31 | $711,995.94 | $23,588,076.68 |
| **Total** | **$31,251,026.38** | **$65,057,259.96** | **$131,992,339.88** | **$5,132,346.89** | **$15,477,203.56** | **$10,985,585.09** | **$65,321,264.27** | **$14,382,973.97** | **$339,600,000.00** |

## Conclusion

Staff's straw proposal for the FY16 CRA is intended to recognize the value of energy efficiency as a foundational energy resource that when delivered cost-effectively, reduces the cost of energy for all ratepayers, while providing additional benefits, including the health benefits associated with improved air quality, lower environmental compliance costs, increased grid reliability, and economic development opportunities in the form of jobs in construction and a more competitive business environment.

Furthermore, Staff recommends that the State seek to achieve greater transparency and uniformity across all energy efficiency programs, whether run by the State or by the Utilities. Standardization of the metrics, definitions of cost, data collection methods and evaluation of NJCEP and utility-run energy efficiency programs, as well as projects performed through the State Energy Office (SEO) and the Energy Savings Improvement Program (ESIP), will ensure that the State's approach to energy savings is comprehensive and effective. Standardization also has the potential to reduce transaction costs associated with the delivery of EE projects, to streamline the origination process, and to improve investor confidence in the performance of EE projects and loans – all required to attract private capital to New Jersey's energy efficiency market.

Finally, Staff anticipates that with a new Program Administrator on board and a new marketing campaign in FY16, the NJCEP is poised to expand market penetration, and achieve increased program participation and improved energy savings goals.