



New Jersey's Clean Energy Program FY19-FY22 Strategic Plan

Draft



Submitted To:

New Jersey Board of Public Utilities

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I. EXECUTIVE SUMMARY

This New Jersey Clean Energy Program (NJCEP) Strategic Plan (“the Plan”) presents a portfolio of programs that will increase the level of energy savings delivered through energy efficiency (EE) and distributed energy resources (DER) in New Jersey by over 56% over the four-year Plan. The programs described herein will improve the environment, reduce utility costs, and provide ratepayers with significant net lifetime energy bill savings over the proposed four years of FY19-FY22 program implementation.

Spending on energy efficiency should be recognized as *an investment* that, unlike some other clean energy strategies, will reduce overall utility system costs and result in lower energy bills for participating customers. The State Energy Master Plan concluded that measures implemented as part of the NJCEP saved customers approximately \$4.29 for every dollar invested in the Commercial and Industrial (C&I) sector and \$1.80 for every dollar invested in the residential sector.

The process of formulating the Plan began in 2016-2017 with the development of Objectives and Operating Principles by New Jersey Board of Public Utilities (BPU) Commissioners and Staff; the solicitation of stakeholder feedback in a variety of program areas through facilitated focus groups and the submission of written comments; a survey of industry best practices for clean energy programming; and meetings with New Jersey’s utilities to identify paths for improved program coordination. Current program designs were then assessed for their ability to achieve the NJCEP Objectives. Improvements to those designs, as well as new program approaches that increase energy savings per dollar expended are proposed in this Plan.

I.1 Objectives

The planning process commenced with TRC soliciting input from BPU Commissioners and Staff to establish clear direction for the NJCEP by adopting a set of Objectives to guide planning and program implementation. A range of possible Objectives were considered, based on broad guidance provided by the Electric Discount and Energy Competition Act (EDECA or the Act) and the State Energy Master Plan (EMP). Through this process, the following Objective is proposed to provide primary guidance to the planning and implementation of the NJCEP:

Lower Energy Bills: Reduce the cost of energy and lower energy bills by maximizing lifetime¹ energy savings per program dollar spent (kWh² and therms³).

In addition, the following 5 secondary Objectives are proposed:

- ◆ Maximize peak demand (kW) savings.
- ◆ Provide equitable access to efficiency and renewable energy programs.

¹ “Lifetime” energy savings means the cumulative savings that will occur over the functional life of the measure. For example, if a new furnace is expected to last for twenty years, the lifetime energy savings would be equal to twenty times the annual, or “first year” savings.

² Kilowatt hour, a unit used to measure electric energy.

³ A unit used to measure natural gas energy.

- ◆ Promote the development and transformation of energy efficiency and renewable energy markets.
- ◆ Reduce long-term environmental impacts of energy use.
- ◆ Minimize lost opportunities.

Information regarding the development of these Objectives, their intended application, and the Operating Principles that support them can be found in Section 4: NJCEP Objectives and Operating Principles.

1.2 Stakeholder Engagement

The NJCEP planning team facilitated 9 stakeholder focus groups to solicit input on ways to improve the effectiveness of its programs. Participant perspectives were sought on a series of broad, open-ended questions, including the following:

- ◆ What do you think the most important job of the NJCEP is?
- ◆ What should the programs be focused on achieving?
- ◆ In your experience, what aspects of the NJCEP are most important to maintain in the face of any potential changes?
- ◆ In your experience, what aspects of the NJCEP should be changed to improve the programs' performance?
- ◆ Are there potential energy savings that the NJCEP is not currently capturing for the state? What do you think it would take to capture those savings?
- ◆ Are there emerging opportunities for the NJCEP to capture additional energy savings through new technologies or program approaches?

While there were many program-specific responses, broad themes emerged that were heard in many of the meetings. These included the following:

- ◆ It needs to be easier to participate in the programs.
- ◆ Contractors and customers need more flexibility, as project needs cannot always be made to fit within program requirements.
- ◆ The programs need to be faster and more responsive.
- ◆ In the absence of NJCEP marketing contractors are struggling to engage customers in doing projects.

These themes were addressed in the process of program design, and the results will be vetted with stakeholders before implementation to ensure that new program designs are responsive. More information about the Stakeholder Engagement process can be found in Section 5: Stakeholder Engagement.

1.3 Industry Best Practices

The development of a clean energy strategic plan should include close examination of best practices among leading peers, including a review of innovative program designs that are being implemented in

other jurisdictions. In addition to the expertise that the TRC team⁴ brought to the strategic planning process from their experience in other jurisdictions across North America, independent studies of clean energy program best practices were reviewed for key lessons learned. In these studies, experts highlighted the need to re-focus on the fundamentals of program design to encourage program participation, as well as the importance of ensuring that programs are designed according to clear policy rationales. This mix of fundamentals and innovation has played a key role in guiding the development of this strategic plan. More information regarding the work done in drawing from industry best practices research can be found in Section 6: Industry Best Practices.

I.4 Portfolio Design

I.4.1 Process

The effectiveness of the current NJCEP portfolio of programs was assessed to determine the extent to which it would achieve the Primary and Secondary Objectives going forward. This was informed using a rubric that was developed to quantify each program's expected success in contributing to the Objectives where such analysis was possible, and to allow the application of a qualitative assessment to those Objectives that did not lend themselves to meaningful numeric analyses. The rubric was used to help planners more clearly assess the contributions of each program type to the NJCEP Objectives, and to identify opportunities to adjust program designs to make them more effective in achieving the desired outcomes.

I.4.2 Portfolio Evolution

Numerous changes and innovations to the current program portfolio are proposed. These changes are based on the information gathered through the stakeholder engagement process, survey of industry best practices, and rubric analysis. Details about new program design proposals can be found in Sections 11 through 15. In general, the following themes were applied to program designs:

- ◆ Increase flexibility for customers and contractors.
- ◆ Define project types broadly to recognize that different customers will pursue different types of projects.
- ◆ Consolidate programs for easier customer access, and so that customers do not have to do the work of figuring out which program is best-suited to their needs.
- ◆ Simplify participation so that administrative requirements for customers and contractors are less confusing and burdensome.
- ◆ Bring innovation to program design and add new technology for continuous improvement of program offerings.
- ◆ Increase access to financing for specific program areas where it can increase participation and reduce program incentive costs.

⁴ TRC Energy Solutions and its subcontractors, CLEARResult Consulting Inc., ICF Resources, LLC, and Energy Futures Group, Inc.

- ◆ Engage midstream and upstream⁵ product channels to increase volumes and improve portfolio costs per MMBtu saved.

Historically, the NJCEP programs have been targeted to very specific opportunities, and as such the programs were designed to maximize results under somewhat narrow participation paths. As pictured in Figure 1, regardless of the sector in question customers perceived that the NJCEP programs boxed them in to one of two approaches. Either they could participate in a basic, one-for-one single measure equipment replacement program, or they could participate in a comprehensive whole building/whole facility program that typically had participation requirements that were onerous for customers and contractors. Customers whose contemplated projects did not easily fit into one of these two program types struggled to figure out how to participate, and sometimes chose not to participate at all.

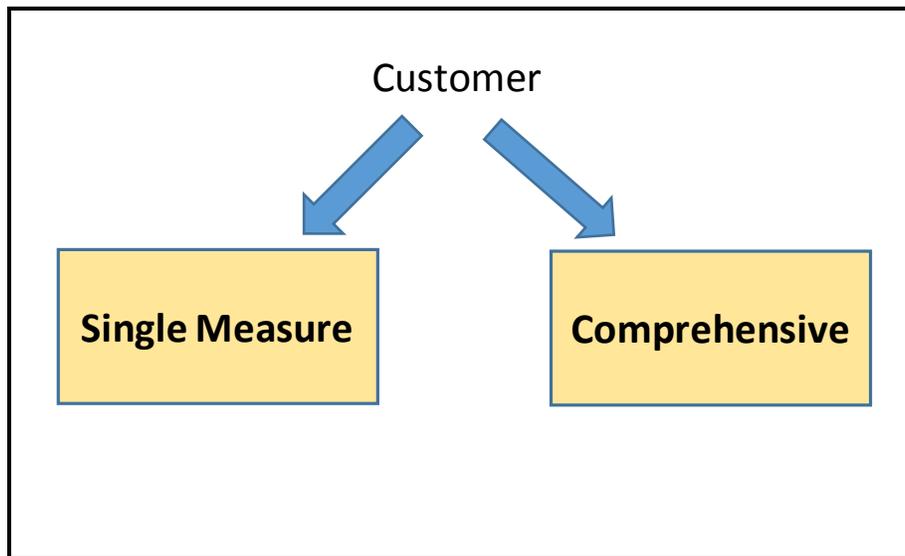


Figure 1: NJCEP Historic Program Approaches

This Strategic Plan proposes to shift the overarching program approach toward increased flexibility. This approach will be responsive to customer needs by offering participation at several levels of investment and effort within market sectors. Rather than forcing customers to figure out how to make projects fit into programs, the proposed strategic direction includes as a key element the idea that the programs will become more flexible to fit the needs of customers and their projects. Customers who are interested in doing projects in the wide area between single measure replacements and comprehensive, modeled whole building improvements will now have NJCEP program support, ensuring that mid-level savings opportunities are not neglected, and customers’ needs are met, as illustrated in Figure 2:

⁵ “Midstream” generally refers to a program that is focused on distributors and wholesalers, “upstream” generally refers to a manufacturer-focused program, and “downstream” refers to the retail product purchaser.

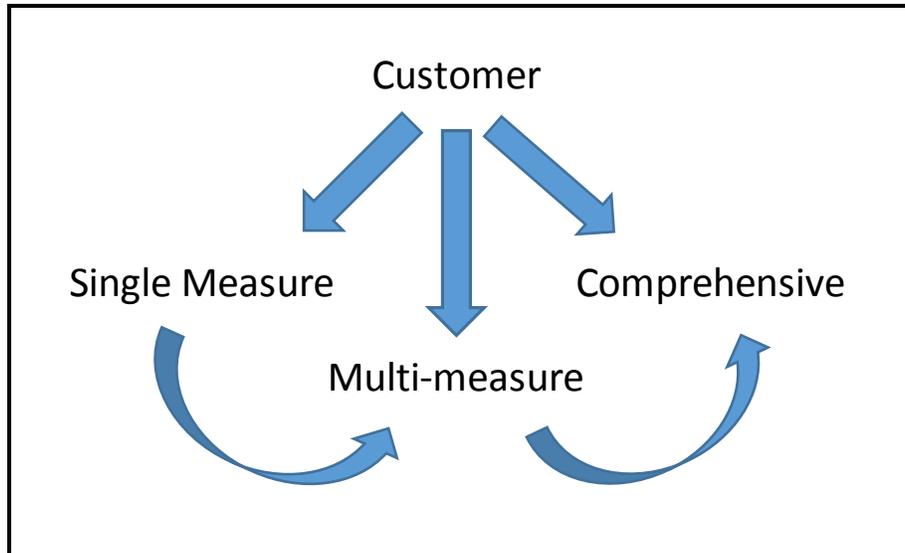


Figure 2: Proposed NJCEP Strategic Direction

1.5 Energy Savings Targets, Bill Savings, and Expected Costs

The TRC team developed a plan that would increase the amount of cost-effective energy efficiency savings produced by the NJCEP. The FY19-FY22 Plan that is proposed here will increase the quantity of new lifetime MMBtu savings achieved in FY22 by more than 56% compared with FY18 savings. This will be achieved by increasing marketing and outreach, shifting funding to market areas that can produce the highest level of savings at the lowest cost, phasing in a new suite of programs that will be more effective and easier for customers to participate in, and expanding the use of midstream/upstream promotion in specific market channels—notably C&I linear lighting. Figure 3 shows the expected growth in annual MWh savings, along with the savings for each year as a percent of retail sales:

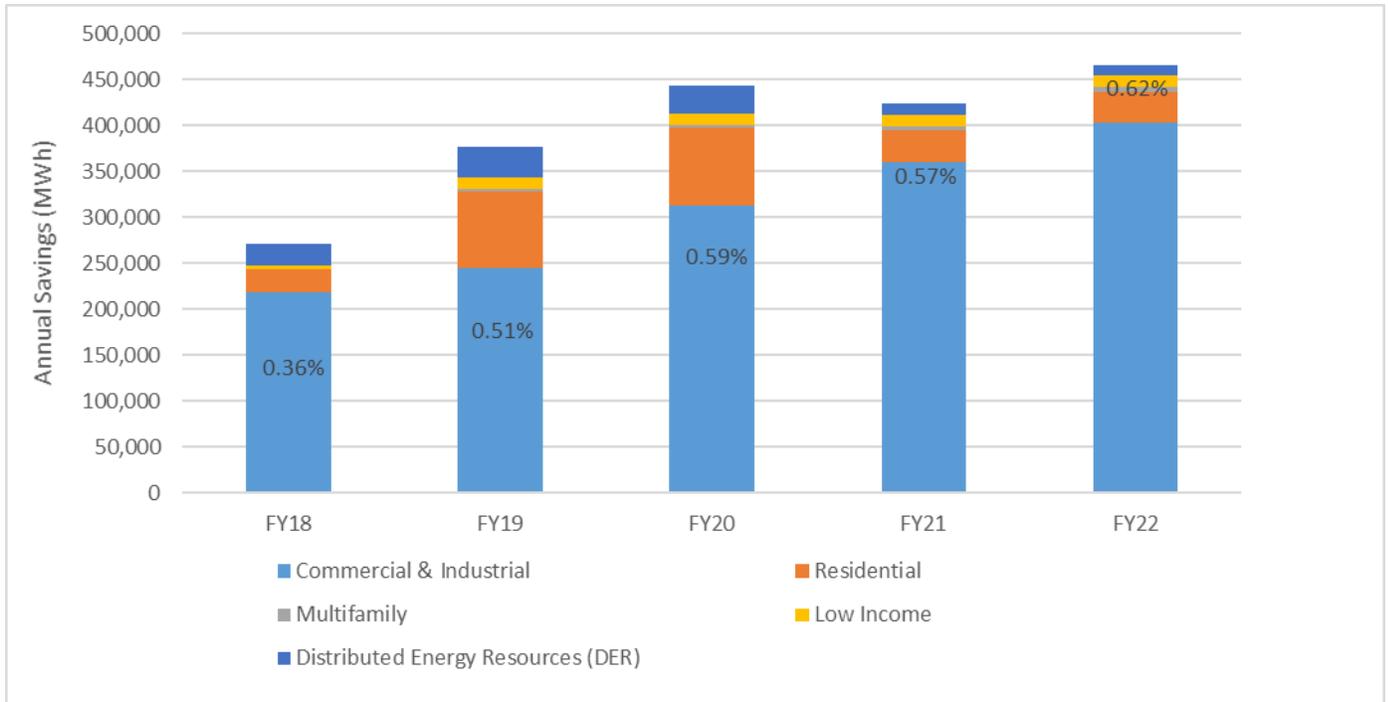


Figure 3: Annual MWh Savings

Note: the percentages shown Figure 3 above and Figure 4 below represent the percentage of retail sales.

Figure 4 illustrates the annual fossil fuel savings (natural gas, fuel oil, and propane) projected for the four years of program implementation, along with the savings for each year as a percent of retail sales:

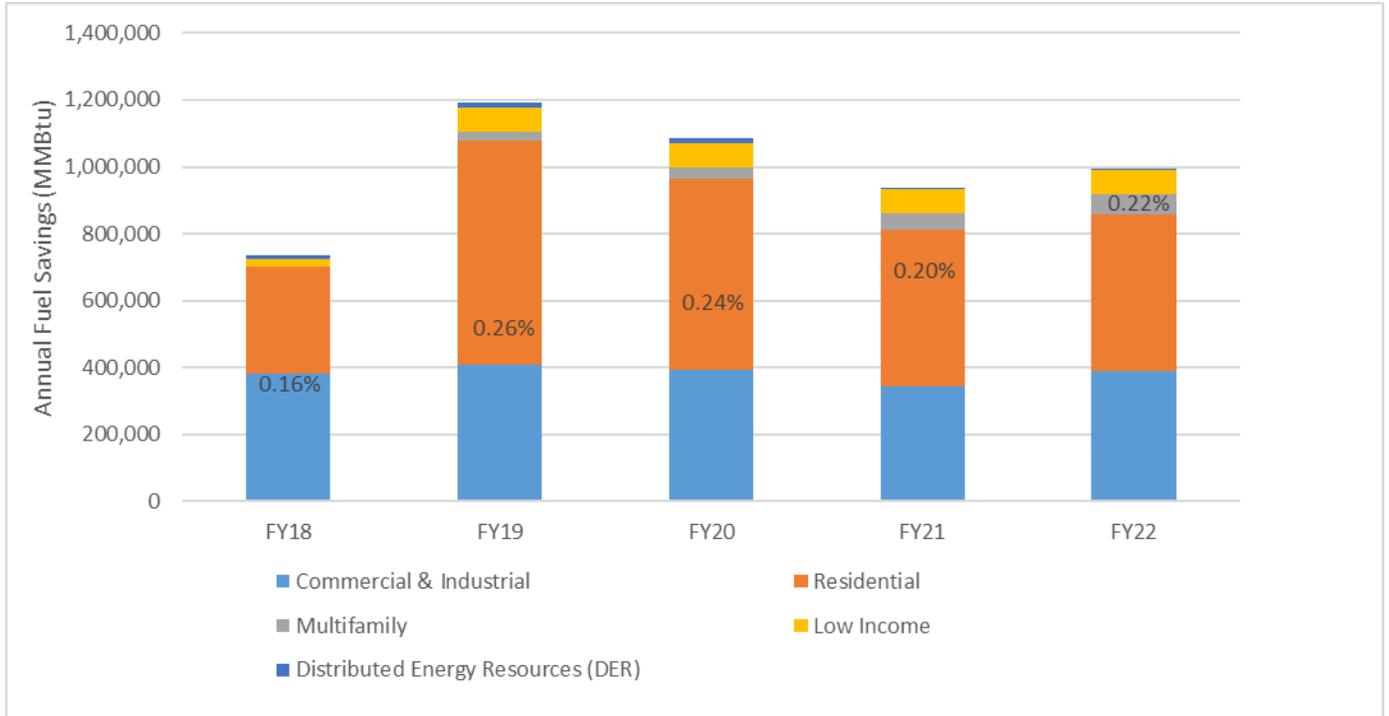


Figure 4: Annual Fossil Fuel Savings⁶

As shown in Figure 4, the Plan would result in a thirty-five percent in the level of natural gas savings delivered by the NJCEP in FY22 compared with FY18 savings.

⁶ Negative natural gas savings result from CHP installations, labeled as Distributed Energy Resources (DER) in Figure 4.

With savings increases for both electricity and fossil fuels, the total MMBtu equivalent of combined electric, natural gas, and fuel savings will also increase over the period, as shown in Figure 5:

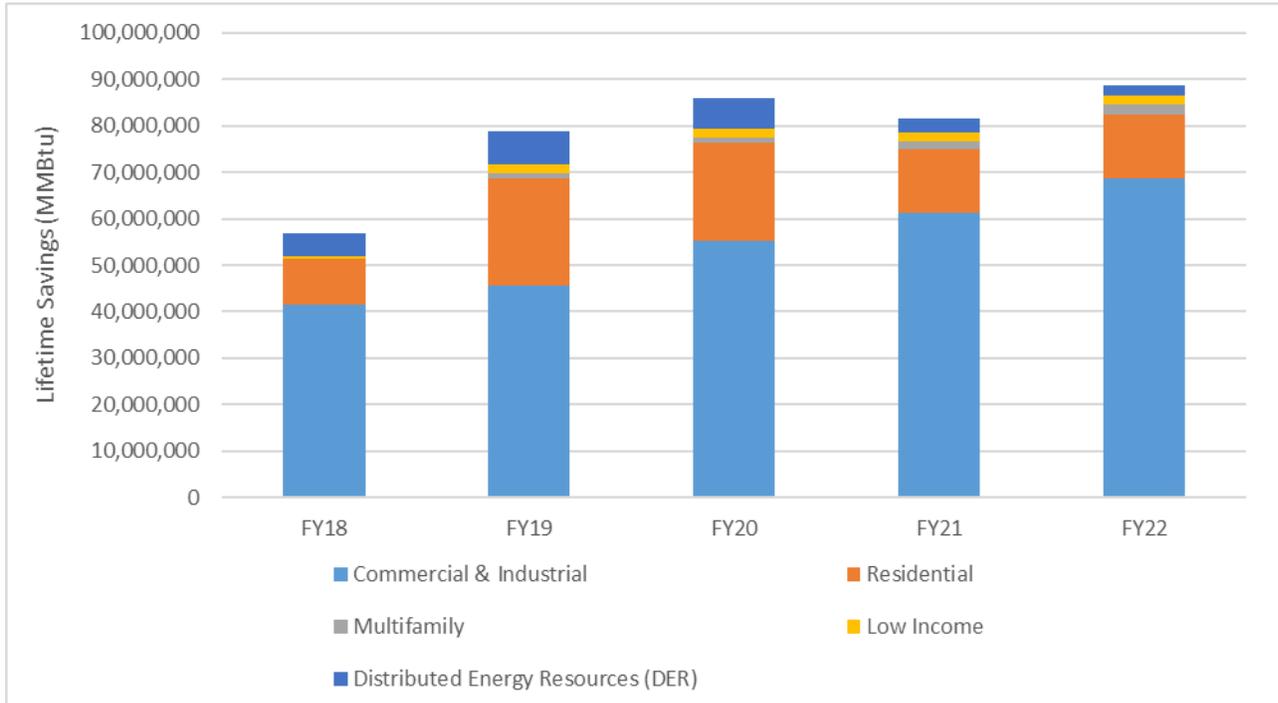


Figure 5: Expected Total Lifetime NJCEP Savings

Enhancements to program design and implementation in this Plan reduce the cost of saved energy by roughly eleven percent over the four-year planning period. This is consistent with the primary Objective of maximizing lifetime energy savings per dollar spent. Said another way, this Plan will result in the delivery of eleven percent more energy savings per program dollar spent than would be saved under a status quo scenario. This is illustrated in Figure 6:

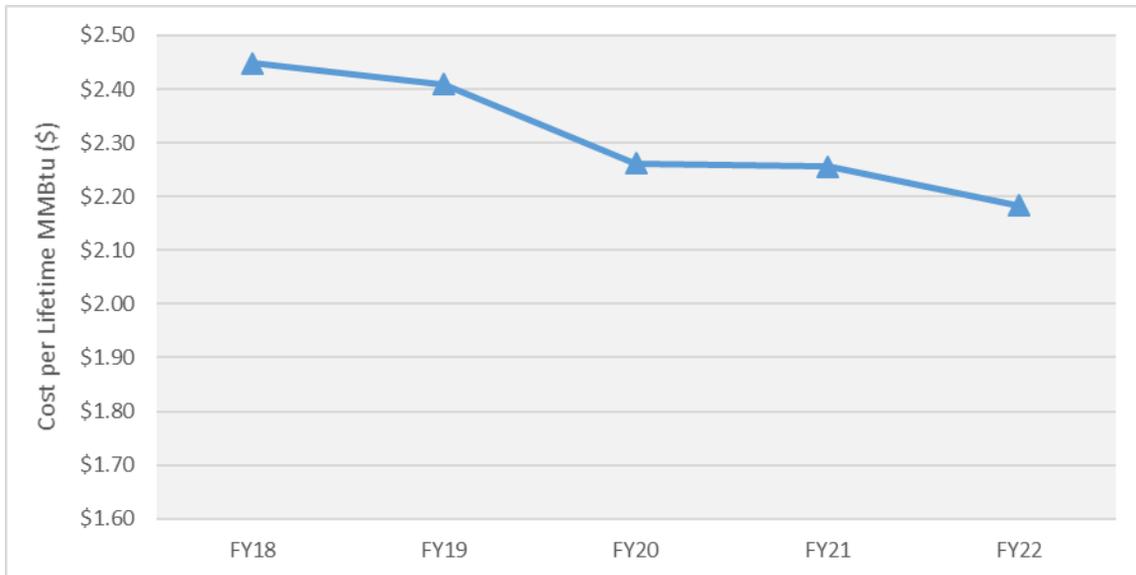


Figure 6: Expected NJCEP Cost of Saved Energy

The resultant energy savings are cost-effective, with a modeled Total Resource Cost Test result of 1.1 in FY19, meaning that for the EE programs managed by TRC the benefits to the State will be equal to 1.1 times the cost of investing in energy efficiency. The program cost-effectiveness increases as new programs and program enhancements are implemented, with Total Resource Cost results reaching 1.5 in FY21 and FY22.

Additional information regarding assumptions made in the development of this analysis can be found in Section 10.6: Expected Benefits and Costs.

1.6 What Actions are Needed to Achieve the Proposed Level of Savings?

As illustrated in Figure 5, the proposed NJCEP savings in FY22 are approximately 56% higher than the savings expected in FY18. The new funding that would be required to achieve these savings is illustrated in Figure 7:

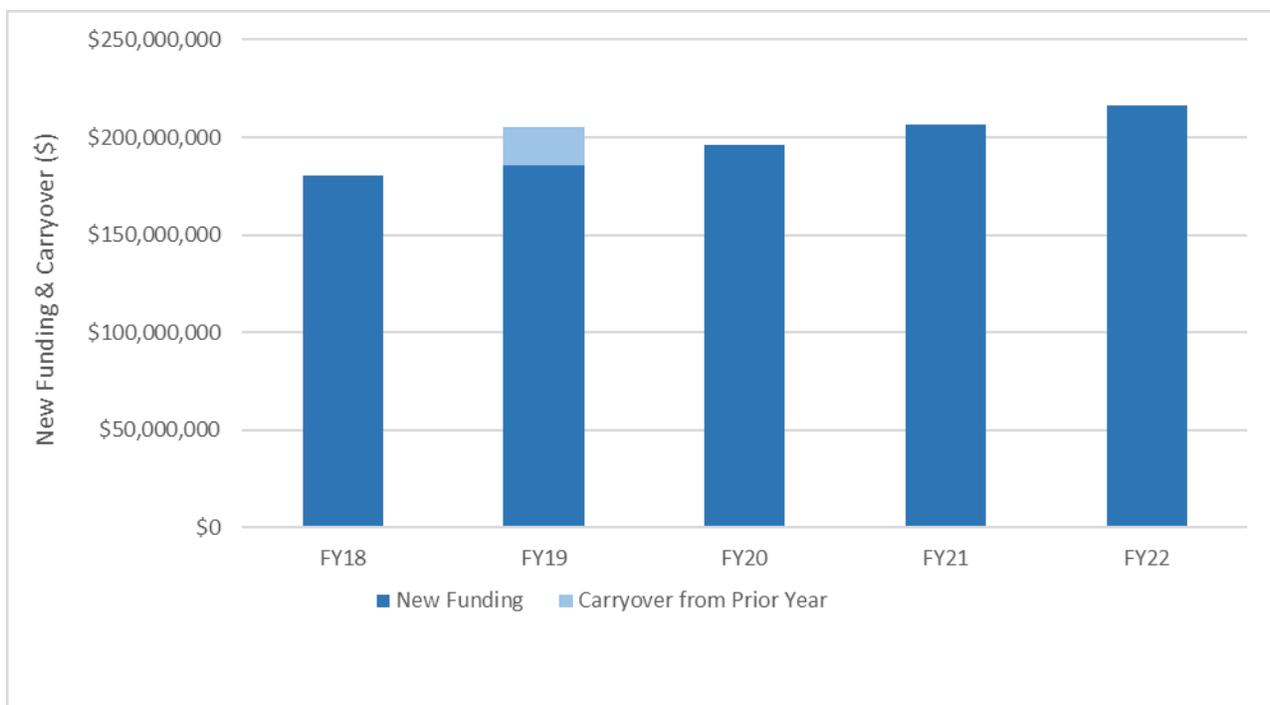


Figure 7: Required level of New Funding for NJCEP and Other OCE Initiatives

Note: The dark blue bar in Figure 7 above represents new SBC funds of \$186M in FY19 growing by \$10M/year to \$216M in FY22. The light blue bar represents approximately \$19M in estimated FY18 carry over into FY19.

The projection of savings is aggressive, but such growth is possible. There are a multitude of factors that will affect the outcome, and most, if not all of them need to “go right” if the proposed increase is to be achieved. Among these are the following:

- ◆ Achieving high levels of savings requires the program implementer to be able to quickly adjust to changing market conditions. This means, within certain yet to be defined bounds, the Implementer needs to have the authority and discretion to change incentive levels, shift funds between programs and between budget categories within programs, and generally modify program offerings to match the needs and demands of the market.

- ◆ Achieving high levels of savings requires a robust, targeted outreach effort. The lion's share of the savings in this Plan will come from C&I customers, and these customers will need direct engagement by the program's Outreach team to steer them towards savings opportunities that are well-matched to their specific needs, and ultimately to installed projects. Sufficient Account Management resources for not only the largest, but also for the next tier of large customers will be required in order to generate the level of participation needed to meet these targets. Account Managers will also need to develop market-specific expertise to, in effect, become technical and business model specialists in certain energy-intensive markets, such as hospitality, grocery, health care, and other industry segments that are identified as having cost-effective opportunities to save energy.
- ◆ If significantly increased participation levels are to be achieved, sufficient Marketing will be essential for all residential programs, and for many of the mass-market C&I programs as well. Marketing planning must be seamlessly integrated with program implementation planning in order to be successful. Failure to achieve this integration risks putting the state in the position of investing millions of dollars to diminished effect.
- ◆ A critical component of any marketing and outreach plan is an optimized website that not only continues the messaging but encourages deeper engagement. It is widely recognized that the NJCEP web site is woefully out of date and needs to be updated. An optimized website could provide critical data for program managers to use in evaluating marketing and outreach strategies and tactics. As a logical recipient of directed customer traffic, the website will supply critical access to program content and reinforce program advertising and marketing goals.
- ◆ To the extent that contract modifications are needed for optimal program delivery, those modifications will need to be approved and executed in a timely fashion, as there is no room for delay if the proposed savings increases are to be achieved.
- ◆ Program offerings need to be consistently available if maximum savings are to be achieved. Start and stop program cycles will dramatically inhibit NJCEP's ability to produce savings.
- ◆ New and expanded program offerings will require workforce development and training to ensure that the market is able to meet expanded demand for energy efficiency products and services. New Jersey's home and business owners will not be able to install energy efficiency projects if trained, competent energy efficiency professionals are not available to meet the program demand that will result from increased marketing and outreach.
- ◆ Utility energy efficiency efforts need to be closely coordinated with, and supportive of NJCEP programs if savings are to be achieved at the lowest cost to ratepayers. For example, utilities need to partner with NJCEP to identify eligible customers—especially larger C&I customers—and support customer projects by providing customer data. Further, any stand-alone utility programs need to be designed so as not to compete with NJCEP programs. To do otherwise will potentially diminish the savings that the state will ultimately achieve, and risks confusing or frustrating customers in the process.
- ◆ New program implementation—such as midstream C&I lighting and enhanced Customer Management—may require short-term outside technical assistance, or even solicitation of new specialized implementation vendors, contracting for which needs to be addressed expeditiously to avoid delaying bringing these programs to market.

- ◆ The timeframes for paying customer and vendor rebates must be significantly reduced, with a goal of payment within 30 days of project installation. Failing to accomplish this will limit the number of contractors that can afford to participate in the programs, as small contractors cannot survive the cash-flow challenges posed by 60, 90, and 120-day payment delays. Prefunding incentive pools so that program implementers can pay incentives directly may be required to address the lengthy delays that have historically been experienced.
- ◆ Addressing the inability of moderate income customers to participate in the programs requires adding an enhanced incentive option for moderate income customers.⁷
- ◆ Achieving a cooperative, coordinated relationship with NJ Department of Community Affairs (DCA) to address code support and verification is needed to increase participation in new construction programs.
- ◆ Expanded support of Home Energy Raters in residential new construction is needed to allow greater participation in the programs, and forge relationships with builders and developers as well as raters to expand NJCEP influence in new homes markets.
- ◆ Baseline and market potential studies must be conducted regularly so that program planners have sufficient market data to allow optimal program designs that will maximize participation. Similarly, evaluations must be conducted so that program implementation is constantly assessed and improved.

⁷ “Moderate income customers” here means those who make too much to qualify for Comfort Partners, but who don’t make enough income to afford improvements without a greater level of subsidy.

2. INTRODUCTION

2.1 Project Purpose

The NJCEP has provided significant benefits to ratepayers for over 17 years, including reduced energy bills, a cleaner environment, improved comfort at home and at work, investments in the local economy, and local job creation. During this time, there have been technological innovations, market developments, and new program designs implemented in other jurisdictions that suggest that there are worthwhile opportunities to explore that can improve the performance of the NJCEP. As such, in its Request for Proposals to administer the NJCEP, and subsequently in its contract with the TRC team, the New Jersey Board of Public Utilities (Board) identified the development of this Strategic Plan as a priority and key deliverable, with a goal of providing multi-year direction for the NJCEP programs. The direction provided by the Plan is intended to maximize the benefits that result from the investment of Societal Benefits Charge (SBC) funds on behalf of New Jersey ratepayers.

While this Strategic Plan focuses on the NJCEP, it also takes into consideration other complementary programs and efforts that support the State's energy savings goals. The Strategic Plan is intended to be a living document, subject to change as policy objectives change, as evaluations/market assessments are completed, and as markets and prices change. It is anticipated that specific program revisions will be proposed as part of any annual or multi-year program plans submitted to the Board for consideration.

2.2 Context: New Jersey's Clean Energy Landscape

The Energy Master Plan (EMP)⁸ documents the State's vision for the use, management, and development of energy in New Jersey. The EMP includes several recommendations related to energy efficiency and renewable energy (RE), some of which are applicable to the programs managed by the Board, and some of which are managed by other agencies such as the Department of Community Affairs (energy codes) or New Jersey Transit (transportation issues). In addition, the Board manages numerous energy related activities including New Jersey's Clean Energy Program, utility managed EE and RE programs, the State Energy Office and others. While taking other initiatives into consideration, this Strategic Plan focuses on New Jersey's Clean Energy Program.

Development of the NJCEP Strategic Plan commenced with a review of the relevant policy objectives set out in the EMP including:

- ◆ Energy efficiency is the most cost-effective way to lower energy costs.
- ◆ Energy efficiency programs should focus on both reducing energy usage and lowering peak demand, which can lower costs for all ratepayers.
- ◆ While energy efficiency programs are the cheapest source of energy, the Board must consider the funding impact on non-participating customers.
- ◆ Energy efficiency and renewable energy programs can contribute to the State's overall economic development and create in-State jobs.

⁸ http://nj.gov/emp/docs/pdf/New_Jersey_Energy_Master_Plan_Update.pdf

- ◆ Energy efficiency and renewable energy programs deliver environmental and health benefits and lower peak energy costs, both of which benefit all ratepayers, including non-participating customers.
- ◆ Energy efficiency and renewable energy programs must undergo regular and rigorous evaluation to confirm projected costs, energy savings and economic benefits.
- ◆ The promotion of **in-State** renewable energy resources can reduce emissions while promoting economic development.
- ◆ Energy savings must be considered comprehensively. Those savings that NJCEP delivers should complement other non-NJCEP activities such as stricter building codes, higher appliance standards, utility programs, and EE in State-owned facilities.
- ◆ Energy efficiency and renewable energy programs should reach across sectors including residential, commercial and governmental, etc. and be accessible to distressed communities.

These considerations provided a starting point for discussions regarding what the long-term goals and objectives of the NJCEP should be as discussed further below in Section 4: NJCEP Objectives and Operating Principles.

2.3 History of the New Jersey Clean Energy Program

On February 9, 1999, the Electric Discount and Energy Competition Act (EDECA or the Act)⁹ was signed into law, which, among other things, provided for the Societal Benefits Charge (SBC) to fund programs for the advancement of energy efficiency and Class I renewable energy technologies and markets in New Jersey. The Act also charged the Board with initiating proceedings and undertaking a comprehensive energy efficiency and renewable energy resource analysis in New Jersey. The Comprehensive Resource Analysis (CRA) would be used to determine the level of funding for energy efficiency and Class I renewable energy programs statewide. Collectively, these programs form New Jersey's Clean Energy Program. This Strategic Plan is designed, in part, to guide the development of programs and budgets as set out in future comprehensive resource analyses performed by the Board.

The legislative authority that enables the Board to collect SBC funds from ratepayers to support the NJCEP is found in EDECA. Specifically, EDECA directs that the Board, in consultation with the Department of Environmental Protection, shall determine the appropriate level of funding for energy efficiency and Class I renewable energy programs that provide environmental benefits above and beyond those provided by standard offer or similar programs in effect as of the effective date of the act. EDECA further states that the Board shall simultaneously determine, as a result of the CRA, the programs to be funded by the SBC, the level of cost recovery and performance incentives for old and new programs, and whether the recovery of demand side management program costs currently approved by the Board may be reduced or extended over a longer period of time. EDECA states that the Board shall make these determinations taking into consideration existing market barriers and environmental benefits, with the objective of transforming markets, capturing lost opportunities, making energy services more affordable

⁹ EDECA http://www.njcleanenergy.com/files/file/23_.pdf

for low income customers and eliminating subsidies for programs that can be delivered in the marketplace without electric public utility and gas public utility customer funding.

As required by EDECA, the Board initiated its first CRA proceeding in 1999 and issued the first CRA order in 2001. The 2001 order set funding levels, the programs to be funded, and the budgets for each of those programs for the years 2001 through 2003. Since then, the Board has issued numerous orders setting the funding levels, related programs, and program budgets for the years 2004 through fiscal year 2017.¹⁰

From 2001 until 2007 the NJCEP, excluding the renewable energy programs which were managed by Board staff, was managed by the state's seven electric and natural gas utilities. In 2004 the Board determined it would manage the NJCEP going forward and to that end in 2006 issued RFPs to contract for the necessary administrative services. Honeywell, Inc. was engaged to manage the RE and residential EE programs, TRC Energy Solutions was engaged to manage the C&I EE programs, and Applied Energy Group (AEG) was engaged as the NJCEP Program Coordinator. These contracts, following multiple extensions, terminated on March 31, 2016.

In April 2015, the Board, through the Department of the Treasury, Division of Purchase and Property (Treasury), issued RFP 16-X-23938 seeking proposals for a single Program Administrator. On December 1, 2015, Treasury awarded the Program Administrator contract to TRC.¹¹ TRC has subcontracted portions of the work under its contract to CLEAResult Consulting Inc., ICF Resources, LLC, and Energy Futures Group, Inc. (collectively, the "TRC team"). Following a transition period, TRC has managed the majority of the programs since March 1, 2016. Evaluation of the NJCEP Program was initially subcontracted separately through Rutgers Center for Energy, Economy and the Environment Program (CEEEM), and has subsequently transitioned to the Rutgers Center for Green Building and other independent evaluators.

2.4 Other Energy Efficiency and Renewable Energy Activities

The Board manages numerous activities in addition to NJCEP that promote EE and RE in the State. The activities include:

2.4.1 Renewable Portfolio Standard (RPS)

The Board's Renewable Portfolio Standard (RPS) rules as well as its net metering and interconnection rules implement statutory provisions that are designed to facilitate renewable energy market development. The Renewable Energy Certificate (REC) provisions within the RPS and the net metering and interconnection rules provide incentives for investment in and operation of renewable energy facilities connected to the electric distribution system serving New Jersey. These rules are directly responsive to the goals and objectives contained in the statute.

While the Board has authorized the use of NJCEP funds to facilitate compliance with the SREC provisions of the RPS rules, the goals of the RPS such as the percent of energy that must come from Class I

¹⁰ From 2001 to 2012 the budgets and programs were based on calendar years. In 2012, the Board shifted to basing the budgets and programs on fiscal years to align with the overall State budget cycle.

¹¹ On January 13, 2017, TRC Environmental Corporation acquired the NJCEP Program Administrator Contract that had been awarded to Applied Energy Group and assumed AEG's rights and duties thereunder. Hereafter "TRC" is used to refer to the NJCEP Program Administrator both prior to and after TRC's acquisition of the contract.

renewable and solar energy, and other RPS requirements such as the SREC qualification life, are established through statute and/or rulemaking. In addition, some of the statutorily-derived objectives of the RPS, such as the development of a multi-state market for renewable energy through REC eligibility including generation facilities located outside of the state, are not relevant to the NJCEP.

The broader nature of the goals and objectives of the state's renewable energy rules combined with the fact that many renewable energy goals and objectives are established by statute argue for a more selective application of the NJCEP goals and objectives to the renewable energy programs. Therefore, while the focus of this Strategic Plan is on EE goals and objectives, the TRC Team will work closely with Board Staff in the appropriate forum to support any efforts by the Board to modify its rules related to the development of renewable energy projects in New Jersey.

2.4.2 Utility Programs

Several utilities implement EE and RE programs that supplement NJCEP including New Jersey Natural Gas, South Jersey Gas, Elizabethtown Gas, Public Service Electric and Gas, Atlantic City Electric, and Rockland Electric Company. In general, the utility programs include the following types of programs:

- ◆ EE programs that supplement NJCEP
- ◆ EE finance programs
- ◆ Solar finance programs

As of the date of this Strategic Plan draft, several utilities are in the process of developing energy efficiency plan filings to be submitted to the Board for consideration. As the contents of those plans are still under development they have not been considered in the development of the NJCEP Strategic Plan. However, there is a clear need to coordinate, rather than compete in energy efficiency program delivery, hence the roles that utilities play in supporting NJCEP Objectives through their energy efficiency program delivery will need to be carefully considered.

2.4.3 U.S. Department of Energy Grants

The Board is the recipient of several U.S. Department of Energy grants that fund programs. These programs include an alternative fueled vehicle program and programs that allow homes heated by non-utility fuels such as oil or propane to participate in NJCEP programs.

2.4.4 State Energy Office

The State Energy Office within the Board coordinates with other State agencies to implement EE and RE projects in State facilities. The office also coordinates efforts to implement the Energy Savings Improvement Program (ESIP). ESIP allows local governments and schools to enter into long-term energy savings contracts and Board Staff reviews applications and assists entities in navigating through the ESIP process.

Board Staff, and, TRC in its role as NJCEP Program Administrator, strive to coordinate these efforts with the NJCEP to maximize savings and administer the programs effectively.

3. PROCESS FOR DEVELOPING THE STRATEGIC PLAN

In its Proposal to the Board, the TRC team identified a multi-step process for the development of the required Strategic Plan. The process as proposed began with defining the primary objectives that the Board sought to accomplish through investments in the NJCEP and moved through several steps to build programs that would be best-suited to achieving the desired objectives, as illustrated in Figure 8:



Figure 8: NJCEP Proposed Multi-Step Planning Process

This process has been expanded and refined to include the following critical activities:

- ◆ Establish “Objectives” — those desired outcomes that define success for the NJCEP.
- ◆ Define “Operating Principles” — the guidelines for Board Staff and program implementers to follow to maximize the likelihood that Objectives will be met.
- ◆ Gather performance data and evaluations to understand how current programs are performing.
- ◆ Gather stakeholder perspectives — the NJCEP relies on the participation of contractors, retail and wholesale operations, design professionals, and the many homeowners and business owners who participate in the programs. Their perspectives and expertise are critical to the success of the NJCEP.
- ◆ Identify current industry best practices — with over \$6 billion invested annually in utility and SBC-funded energy efficiency programs in North America there are many examples of effective clean energy programs for the NJCEP to review.
- ◆ Develop program concepts — these program models reflect a strategic direction suggested by analysis of industry best practices and stakeholder feedback that will drive in the direction of the NJCEP Objectives.

- ◆ Optimize investment allocations to maximize achievement of Objectives — determining the balance of the finite SBC funds to invest in different program areas will provide the best opportunity to achieve the NJCEP Objectives.
- ◆ Determine expected benefits and costs of the proposed portfolio — programs are designed to increase the efficiency of electric and natural gas use in New Jersey and to achieve other Objectives.
- ◆ Analyze prospectively the cost-effectiveness of the proposed portfolio — thus providing a benchmark for the portfolio against which future improvements can be measured.
- ◆ Recommend an approach for Evaluation, Measurement, and Verification (EM&V) — to measure and track portfolio performance and to provide a path for continuous improvement.
- ◆ Develop high-level scenarios for increased NJCEP investments and benefits — the current funding level for the NJCEP does not capture all cost-effective clean energy investments, nor does it achieve the level of savings of leading clean energy portfolios.¹² The scenario development provides perspective for policy-makers on the expected benefits and costs of multiple investment scenarios.
- ◆ Review utility coordination with NJCEP and develop concepts for enhanced implementation — a coordinated planning approach between the NJCEP and utilities will minimize redundancies and deliver the best ratepayer value.

Board Staff and the TRC team formed a “Steering Committee” to manage the early stages of developing the Strategic Plan. Details of the activities listed above, culminating in multi-year program design and funding allocation recommendations, follow in Sections 5 through 10. Proposed high-level program modifications for FY19-FY22 follow in Sections 11 through 15. Specific program changes will be proposed as part of the annual or multi-year program plans submitted to the Board for consideration.

¹² See, e.g., Berg, Weston, et al, The 2017 State Energy Scorecard. American Council for an Energy Efficient Economy Report U1710. <http://aceee.org/state-policy/scorecard>.

4. NJCEP OBJECTIVES AND OPERATING PRINCIPLES

4.1 Introduction: Why Objectives?

It is widely agreed across many industries, as well as in government and non-profit sectors, that clearly-stated objectives will improve success. This is because clear objectives guide decision-making for those involved in managing initiatives, and because clear objectives allow performance to be measured. The NJCEP has provided significant benefits to New Jersey ratepayers for over 16 years, but to determine if the SBC investments are returning the greatest benefits to ratepayers it is first necessary to define what the portfolio objectives are and set metrics to measure progress in meeting them.

A range of objectives for the NJCEP are implied—including saving energy, growing energy efficiency and renewable energy markets, creating clean energy jobs, etc. However, these objectives can sometimes conflict, so it is important to provide additional direction regarding a process for developing programs and budgets. For example, if the portfolio’s primary objective is to create jobs it will lead to different program management decisions than would a primary objective of reducing peak electric demand. The former would suggest that labor intensive activities might be the most important to pursue, regardless of how much energy is saved, whereas the latter would suggest that promoting equipment that is highly efficient during system peak loads would be best even if no new jobs are created.

The considerable value provided by the NJCEP to date is not under dispute. Instead, this Strategic Plan is intended to establish a process for improving results. Therefore, the first task of this strategic plan was to work with Commissioners and Staff to identify and prioritize NJCEP Objectives.

4.2 Process for Selecting Objectives

Key guidance for the articulation of NJCEP Objectives was found both in the EMP and in the EDECA. This guidance was used to draft a list of possible objectives, which was expanded to include clean energy objectives that are commonly found in other jurisdictions. The list of potential objectives considered included:

- ◆ Lower Energy Bills
- ◆ Maximize Peak Demand Savings
- ◆ Lower Electric and Gas Rates
- ◆ Provide Equity in Access to Benefits
- ◆ Reduce Long-Term Environmental Impacts of Energy Use
- ◆ Create Jobs
- ◆ Minimize Lost Opportunities
- ◆ Diversify Energy Resource Mix
- ◆ Enhance Energy Infrastructure Resiliency
- ◆ Maximize participation
- ◆ Save energy
- ◆ Marketing

Each of the Commissioners who was on the Board at the time provided a view on the relative importance of the various objectives. Concurrently 17 Board Staff members considered the pros and cons of each of the various possible objectives, as well as other potential objectives that were not included on the initial list. In aggregate, “lowering energy bills” was the top priority, with peak savings, equity, environment, and diversifying the energy resource mix in a cluster together as the next four.

4.3 Proposed Objectives

Based on the process described above, the following Objectives are proposed for the NJCEP:

4.3.1 Priority Objective

- ◆ **Lower Energy Bills.** Lowering energy bills is the primary objective of the NJCEP. There are several ways to measure the objective of lowering energy bills, including (1) maximizing first year energy savings per dollar spent; (2) maximizing lifetime energy savings per dollar spent; or (3) maximizing the net present value of economic net benefits per dollar spent. Of these, the second option, maximizing lifetime energy savings per dollar spent (kWh and therms) was chosen because it accounts for the full lifecycle effects of programs; it is simple to compute, track, and report; and it allows for “apples to apples” assessments of changes in performance over time in ways that other metrics do not (e.g. economic benefits, which can fluctuate dramatically from year to year with changes in key inputs like avoided costs, which have nothing to do with implementation performance). This concept has been defined in the Strategic Plan as: “Reduce the high cost of energy and lower energy bills by maximizing lifetime energy savings per program dollar spent (kWh and therms).”

One of the most impactful ways to mitigate the effects of increasing rates is to reduce the amount of energy used— thereby providing bill savings to customers— through clean energy programs. It is also important to note that while investments in clean energy programs can put upward pressure on rates due to program costs, they can also exert significant downward pressure on rates due to clean energy’s effect on avoiding capital investments for generation, transmission, and distribution and on reducing the need to purchase expensive peak power.

4.3.2 Secondary Objectives

- ◆ **Maximize peak demand (kW) savings.** When combined with the objective of maximizing lifetime energy savings, reducing peak electric demand provides maximum economic benefit to the state. Adoption of this objective will require some trade-offs in the design of program portfolios (since some programs that provide substantial peak savings provide comparatively less energy savings – and vice versa).
- ◆ **Provide equitable access to efficiency and renewable energy programs.** This objective is important, both to provide an opportunity for all customers to participate in a program and to offset any potential rate impacts for as many customers as possible over time. Adoption of this objective will require some trade-offs, as reaching some customer groups (e.g. low income or small businesses) can be considerably more expensive than reaching others.
- ◆ **Promote the development and transformation of energy efficiency and renewable energy markets.** This objective is articulated in Section 12 of EDECA and merits inclusion as a specific objective of the NJCEP. As efforts to bring energy efficiency and renewable energy technologies

and practices into the New Jersey marketplace succeed, ratepayer funds can be redirected to new opportunities that enhance ratepayer benefits.

- ◆ **Reduce long-term environmental impacts of energy use.** This objective could help position the state for meeting future environmental regulations. Pursuing the proposed primary objective of maximizing lifetime energy savings will provide significant environmental benefits, but an explicit environmental objective will encourage greater focus on investments that are unlikely to be made – even a decade or more into the future – absent market interventions (whole building retrofits are an example).
- ◆ **Minimize lost opportunities.** In the context of a constrained budget (i.e. not pursuing all cost-effective efficiency), this objective can provide value by keeping more options open for the future, thereby reducing long-term risk (i.e. once a building is built inefficiently or a new inefficient product is purchased, it is often difficult to go back and cost-effectively address that inefficiency). Further, it is explicitly mentioned as a priority for demand-side management programs in Section 12 of EDECA.

It is important to note that while the primary purpose of articulating NJCEP Objectives is to guide decision-making in the design of programs that comprise the NJCEP portfolio, those programs will result in additional benefits that are not specifically stated in the Objectives. It will be important to track and report on the full suite of benefits provided by the programs, not only those specifically addressed by the stated Objectives.

Figure 9 below summarizes the Objectives discussed above:

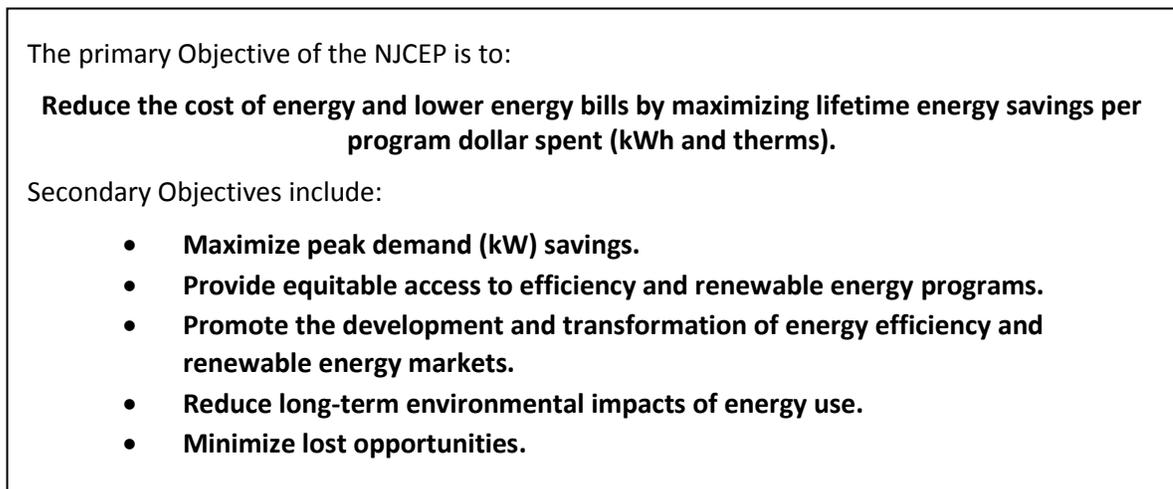


Figure 9: NJCEP Objectives

4.4 Operating Principles

Operating Principles will provide practical guidance to the program implementation team regarding the relative level of effort that the NJCEP will devote to different program areas, and will ultimately be used to help determine budget allocations and formulate broad program eligibility guidelines. The Operating Principles are not intended to serve as a comprehensive operations manual, but rather will provide high level guidance on how program planners should seek to design and implement programs that will best meet the Objectives of the NJCEP.

4.4.1 Discussion

If New Jersey established budgets for the NJCEP based on capturing all cost-effective energy efficiency and renewable energy savings, many of the questions raised below would be moot, because it would not be necessary to make choices between different cost-effective program areas. However, given that available budgets are limited, Operating Principles for the NJCEP should strive to answer and/or create a framework for answering questions such as these:

- ◆ How should the primary objective of maximizing savings/generation per NJCEP dollar spent be balanced against the various secondary Objectives articulated above?
- ◆ For which customer segments should concerns about equitable access to NJCEP programs be focused?
- ◆ To what extent should NJCEP be investing in longer-term market transformation initiatives that may lead to greater long-term savings at the expense of near-term results?
- ◆ Are there specific program areas that should be developed to be responsive to the objective of reducing long-term environmental impacts of energy use, or are the environmental benefits inherent in most (if not all) energy efficiency and renewable energy programming sufficient?
- ◆ How should funding be allocated between:
 - resource types (efficiency, renewables and/or other distributed resources);
 - sectors (residential, governmental/municipal, commercial/industrial);
 - fuels (electric vs. gas); and
 - different programs within each of the above classifications?

4.4.2 Proposal

The TRC team and Board Staff have identified the following Operating Principles that have informed the development of program designs and will guide program implementation:

1. All decisions on allocation of the NJCEP budget between resource types (e.g. efficiency, other distributed energy resources and/or renewable energy), between sectors (e.g. residential vs. commercial/industrial), between fuels (e.g. electric vs. gas vs. other) and between programs should be made based on the trade-offs related to the primary (i.e. maximizing lifetime energy savings/generation per dollar spent) and secondary policy objective summarized above.
2. So that programs are clearly focused on achieving the NJCEP Objectives, each program should have a clearly stated purpose and specific goals, with articulated logic that demonstrates how they will be achieved.
3. There should be performance metrics for the effective design and delivery of the NJCEP portfolio. The metrics should be directly related to the policy Objectives discussed above (e.g. MWh and therms of lifetime energy savings, peak MW savings, etc.). There should be a limited number of metrics—on the order of four to six, most if not all of them at the portfolio level.¹³

¹³ Specific metrics are proposed in Section 8.2.

That number is small enough to enable effective management, yet large enough to require balancing of the competing pulls of the primary and secondary Objectives.

4. To enable equitable access to NJCEP programs, the portfolio should include a sufficient variety of program options so that virtually every customer has a realistic opportunity to participate in at least one program over the course of a program cycle.
5. As low-income ratepayers are unlikely to have the resources to allow them to participate in the residential programs, the NJCEP should ensure the availability of programs specifically designated to serve income-qualified low-income ratepayers.¹⁴
6. To promote the sustained impact of the NJCEP over the long-term, 2-3 percent (2-3%) of the total NJCEP budget should be devoted to exploring and/or piloting programs that focus on advancing emerging technology or innovative program implementation approaches. These explorations should concentrate on opportunities that evidence suggests have the potential to make significant future contributions in meeting NJCEP Objectives.
7. As timely evaluation of the NJCEP programs is critical to optimizing performance, every major program shall be the subject of both an impact and a process evaluation during every CRA planning cycle (typically 4 years in duration). Note that 2% to 5% of total portfolio budget is typical for such purposes in other jurisdictions.
8. Timely and up to date market research is critical to the program implementer's ability to develop appropriate programs that are most-suited to New Jersey's specific customers. To this end, 0.5% to 1.0% of the total NJCEP budget should be devoted to market research.
9. Flexibility to make modest adjustments within approved budgets and program designs is critical to enable a timely response to changing market conditions and optimized performance of the portfolio.
10. Marketing is a critical tool for achieving desired outcomes in many of the programs that the NJCEP will offer and should be an integral part of NJCEP program planning. Therefore, the NJCEP program administrator must have access to marketing resources and the ability to quickly deploy them and/or adjust their deployment. Note that an analysis of efficiency program budgets for northeastern states (from Maryland to Maine) found that marketing represented between about 2% and 7% of budgetary expenditures in 2013.
11. NJCEP and utility-sponsored clean energy programs should be well-coordinated with each other to maximize benefits to ratepayers and minimize administrative costs.
12. These Operating Principles should be revisited and updated periodically so that the principles are aligned with market conditions and the NJCEP Objectives.

¹⁴ At present, *Comfort Partners* is the SBC-funded low-income energy efficiency program. It is jointly implemented by the utilities.

5. STAKEHOLDER ENGAGEMENT

5.1 Stakeholder Process and Opportunities for Input

Prior to developing program approaches for the NJCEP in this strategic plan, the TRC team and Board Staff asked a broad cross-section of NJCEP stakeholders for their thoughts regarding the NJCEP. Meetings were also held with each of the utilities; more information on the engagement with utilities can be found in Section 9. Input was also sought from Rate Counsel and the New Jersey Utilities Association (NJUA). The team sought opinions and perspectives on a series of broad, open-ended questions regarding the NJCEP's most valuable opportunities and attributes *before* crafting a proposal for stakeholder response. The team and Staff have considerable expertise in program implementation and design, but were concerned that applying that expertise to program design without first validating stakeholders' views on what the NJCEP should prioritize was risky. The team did not want the strategic plan to miss the mark. Therefore, the following stakeholder focus groups were held in Trenton to gather input on what the strategic plan should address:

- ◆ Existing Buildings Multifamily Energy Efficiency
- ◆ Existing Homes (single family market, 1-4 units)
- ◆ Small Business Energy Efficiency
- ◆ Industrial and Large Commercial Energy Efficiency
- ◆ New Construction for Single Family and Low Rise Multifamily Residential
- ◆ Government and Municipal Facilities Energy Efficiency
- ◆ Low Income Energy Efficiency
- ◆ Distributed Energy Resources
- ◆ Renewable Energy

In these focus groups, Staff and the team presented an overview of the strategic planning process and schedule, and introduced the draft NJCEP Objectives that had been developed with Commissioners and Staff. Participants were then asked the following broad, open-ended questions:

- ◆ What do you think the most important job of the NJCEP is?
- ◆ What should the programs be focused on achieving?
- ◆ In your experience, what aspects of the NJCEP are most important to maintain in the face of any potential changes?
- ◆ In your experience, what aspects of the NJCEP should be changed to improve the programs' performance?
- ◆ Are there potential energy savings that the NJCEP is not currently capturing for the state? What do you think it would take to capture those savings?
- ◆ Are there emerging opportunities for the NJCEP to capture additional energy savings through new technologies or program approaches?

This approach was designed to encourage stakeholders to step back from the day-to-day minutiae so that a broader view of the NJCEP could emerge. With each question, a free-flowing discussion was facilitated, and perspectives that went beyond a narrow program view were encouraged to make sure valuable ideas were not left unsaid. In addition, an email address was created (strategicplan@njcleanenergy.com) and participants were encouraged to send any additional comments to the planners using this email. Sending comments via this email was also encouraged at <http://www.njcleanenergy.com/strategicplan>. The schedule for stakeholder focus groups was posted there as well. Information was also distributed via the EE and RE listservs.

5.2 Recurring Themes and Overarching Findings

Over 200 stakeholders participated in the nine focus group meetings, and fourteen stakeholders submitted written comments to strategicplan@njcleanenergy.com. Some of the comments were highly specific to particular programs, while others expressed interest in the creation of program focus areas that do not yet exist. Others were quite general. A broad sampling of the written comments that were submitted includes the following:

- ◆ “All existing multifamily projects should be eligible for one single program....”
- ◆ “...if the programs are difficult to understand, cumbersome for businesses to deliver, and create consumer dissatisfaction during the application and implementation phases of their engagement, then participation will be expectedly low.”
- ◆ “...the DER program requires wholesale reform.”
- ◆ “...the NJCEP should not limit the size of high-rise apartment buildings that can receive a rebate for ENERGY STAR® MFHR certification.”
- ◆ “...public buildings that meet the 15% [ESIP] savings threshold, and no longer qualify due to the 200 Kw minimum are being unfairly disadvantaged.”
- ◆ [The NJCEP should] “...Put aside some FY2018 funds as incentives for [waste to energy] plants.
- ◆ “...the NJ Clean Energy Program needs to incentive[ize] [distributed generation] without imposing a 10-year ROI.”
- ◆ “...many leading programs have a commitment to Emerging Technologies as a critical strategy for the long-term sustainability of their programs.”
- ◆ “...the Strategic Plan [should] recommend that the [cost-benefit analysis] structure should quantify [non-energy benefits]”

All the comments that were received were reviewed and considered through the lens of the NJCEP Objectives. Operational recommendations regarding specific program procedures were reviewed by program managers as well as Staff and the TRC planning team. Some stakeholder recommendations, though laudable in intent, were viewed as outside the purview of the NJCEP.

Perhaps because of the broad nature of the questions asked, there was considerable thematic consistency across the nine focus groups. Whether the specific focus of the meeting was on multifamily (MF), small business, or residential existing homes these sentiments were expressed repeatedly:

- ◆ It needs to be easier to participate in the programs.
 - Participation/documentation requirements are often onerous

- Some programs require duplicative paperwork
- It is too hard for customers to sort through the different program requirements to determine which program is most likely to fit their needs
- ◆ Contractors and customers need more flexibility, as project needs cannot always be made to fit within program requirements.
 - The NJCEP focus on comprehensiveness, while laudable, locks out customers who are not willing or able to participate at that level
 - The NJCEP needs to create more “on-ramps” to program participation, rather than making the bar so high that potential participants simply decline to participate
- ◆ The programs need to be faster and more responsive.
 - The project approval process is slow and cumbersome
 - Incentive payment time frames are so long that small businesses are unable to meet cash flow requirements
- ◆ In the absence of NJCEP marketing, contractors are struggling to engage customers in doing projects.
 - Consistently available NJCEP marketing is essential to the success of the programs

Many of the themes that surfaced in these focus groups are consistent with the recommendations identified in the team’s best practice research, found in Section 6: Industry Best Practices, and have been reflected in the strategic direction proposed in this Plan. As new program designs are fleshed out, NJCEP will again reach out to stakeholders to solicit their comments and recommendations. The valuable input of these market actors will ensure that the portfolio is designed to meet their needs while maximizing success at meeting the NJCEP Objectives described in Section 4. The Board will also, as required by statute, provide opportunities for public comment on proposed funding and estimated savings levels prior to the issuance of any Board Order.

6. INDUSTRY BEST PRACTICES

6.1 Introduction

The development of a clean energy strategic plan calls for close examination of best practices among leading peers. Nationally, much of the recent focus on best practices in program design has focused on potentially declining savings opportunities from traditional sources, such as lighting, and increased exploration of other innovative technologies and approaches.¹⁵ At the same time, experts have highlighted the need to re-focus on the fundamentals of program design to encourage program participation, as well as the importance of ensuring that programs are designed according to clear policy rationales. This mix of fundamentals and innovation has played a key role in guiding the development of this strategic plan.

6.2 Resources Reviewed

The review of best practices for this strategic plan included surveys of leading jurisdictions saving the most energy relative to their market size. In addition, the review drew from targeted examinations of key tactics, such as strategies for maximizing program participation and employing innovative technologies and approaches. These studies drew from a wide range of jurisdictions around the country demonstrating leadership in key areas of program design. Insights also came from more focused treatments of specific program areas, such as residential retrofits, strategic energy management (SEM), and financing. Layered onto this review of targeted resources were higher-level examinations of overall frameworks for developing the underlying rationales for program design.

6.3 Program Rationales

Clean energy programs are sometimes launched or maintained without clear rationales first being identified to serve as their foundation. This lack of clarity may lead to program design decisions that are not always fully consistent with a jurisdiction's high-level policy objectives. As an overall best practice in program design, experts have highlighted the importance of clearly establishing program rationales aligned with a jurisdiction's policy goals as a framework for developing clean energy programs and portfolios.

This strategic plan begins first by prioritizing programs based upon a policy framework developed under the guidance of the Board of Public Utilities, drawing from the overall policy goals of the state and the Energy Master Plan. This approach helps to ensure that individual programs and the portfolio as a whole align with clearly articulated policy priorities. Cost-effectiveness screening can then be used to assess programs after an initial set of choices has been made to select and design programs according to this higher-level policy framework. This deliberate approach to strategic planning is consistent with expert recommendations on best-practice methods of program design.

¹⁵ Program-attributable lighting savings are projected to decline over time as federal lighting standards increase, though significant opportunities may remain to promote technologies such as LEDs.

6.4 Encouraging Participation

Occasionally, clean energy programs can become bogged down in the particulars of program design and technical requirements, sometimes to the point of losing focus on the fundamental objective of encouraging customer participation. Some technical standards and program requirements are typically needed to make program participation meaningful. Nonetheless, recent research on successful programs has underscored that program requirements can become self-defeating if they grow too complex.¹⁶ In some cases, burdensome program parameters may reduce overall savings volume by discouraging uptake.

To avoid this problem, researchers recommend that programs be designed in ways that help streamline participation. As one recent study advised, “Programs need to offer services that meet customer needs and reduce barriers to taking the types of actions sought by programs, such as purchasing an energy-efficient product or undertaking a comprehensive retrofit. Programs also need to be designed to make participation easy.”¹⁷ These findings also filter down into specific markets and program areas. For example, a recent survey of residential retrofit programs found, “Participants and contractors need programs to work for them—quickly, with minimal effort—and be aligned with their interests or counterbalanced with incentives.”¹⁸

Given these recommendations, this strategic plan sought to strike a balance in establishing program parameters that maintain robust technical standards while simplifying the process of program participation. In addition, the NJCEP program managers have undertaken a strategic review of existing program requirements and several changes that support this objective will be included in the proposed FY19 programs.

6.5 Other Key Fundamentals

Other surveys of successful programs have further emphasized the importance of fundamental aspects of program design.¹⁹ Key lessons include the following:

- ◆ Engage stakeholders in the process of identifying market barriers and key programmatic gaps and opportunities.
- ◆ Ensure that program delivery infrastructure (both internal program administrator resources and external delivery networks) is in place and ready to meet program demands.
- ◆ Establish robust quality control of the work done by those delivering programs to ensure customer satisfaction and long-term success.

¹⁶ York, Dan, et al., “Expanding the Energy Efficiency Pie: Serving More Customers, Saving More Energy Through High Program Participation,” American Council for an Energy-Efficient Economy, January 2015, <http://aceee.org/research-report/u1501>.

¹⁷ Id.

¹⁸ Grevatt, Jim et al., “Keys to the House: Unlocking Residential Savings with Program Models for Home Energy Upgrades,” 2016 ACEEE Summer Study on Energy Efficiency in Buildings, http://aceee.org/files/proceedings/2016/data/papers/2_693.pdf.

¹⁹ Baatz, et al., “Big Savers: Experiences and Recent History of Program Administrators Achieving High Levels of Electric Savings,” American Council for an Energy-Efficient Economy, 2016, <http://aceee.org/research-report/u1601>.

- ◆ Establish metrics for program delivery and performance.
- ◆ Make use of evaluation results to design programs and continuously improve program performance.

While many of these points represent common-sense approaches to program design and implementation, they are nonetheless consistently emphasized in surveys of leading program administrators and are therefore worth re-emphasizing in the context of this strategic plan.

6.6 Innovative Technologies and Approaches

Beyond the fundamentals, recent reports on best practices in program design have tended to focus on the promotion of new technologies and innovative approaches that have helped leading jurisdictions capture additional savings.²⁰ In the residential sector, for example, there is significant interest in exploring the savings potential of measures such as ductless heat pumps, heat pump water heaters, smart thermostats, and heat pump dryers. In the commercial and industrial sectors, leading program administrators are promoting LED lighting and controls, and there is growing interest in other technologies such as advanced rooftop HVAC systems, as well as integrated controls that help to optimize building or system performance.

Experts have also identified opportunities to achieve deeper levels of savings and greater market penetration of efficient technology using innovative approaches to program design. For example, several program administrators have tested midstream/upstream program models, in which incentives are aimed at distributors rather than end-use purchasers, for C&I lighting and both residential and C&I HVAC products. Midstream/upstream approaches have been carefully considered for their applicability to the NJCEP, and the program portfolio proposed in this Plan includes midstream C&I lighting as a very significant component. Such approaches have been shown to significantly increase program participation at modest costs compared with traditional approaches and will be critical to meeting the savings scenario outlined herein. Residential and C&I HVAC products will be considered for future enhancements to the portfolio.

In the commercial and industrial sector, approaches such as strategic energy management have also gained increasing interest in recent years. This strategy encourages customers to take a holistic approach to energy use, continuously identifying opportunities for energy savings and measuring the performance of energy-saving improvements. Strategic energy management can require a significant commitment of customer time and resources, and engaging customers particularly at the smaller end of the commercial and industrial spectrum can be a challenge. Nevertheless, researchers have found that “very significant energy savings are achievable if motivated companies are supported with the information, technology, and personnel resources corresponding to their needs.”²¹ The programs included in this Plan include modest efforts to test SEM in New Jersey, which may be expanded as the

²⁰ Neme and Grevatt, “The Next Quantum Leap in Efficiency: 30 Percent Electric Savings in Ten Years,” RAP 2016, <http://www.raonline.org/knowledge-center/meeting-30-percent-of-energy-needs-with-efficiency-within-ten-years-the-next-quantum-leap-in-electric-energy-efficiency/>.

²¹ Burgess, et al., “The Second Generation of Strategic Energy Management Programs,” 2015 ACEEE Summer Study on Energy Efficiency in Industry, <http://aceee.org/files/proceedings/2015/data/papers/1-31.pdf>.

programs gain experience and demonstrate the ability of this approach to increase savings for larger C&I customers.

A number of other innovative approaches have also shown promise among leading jurisdictions. For example, several leading programs have recognized that acquiring deep savings requires sustained engagement with large customers through “account management” approaches, and that specific intelligence about the business needs of different market sectors is critical to successful engagement. Many industries and market segments use energy in ways that are highly specific, and in some cases, are even unique when compared with other energy users in their rate class. Some leading jurisdictions have taken the concept of account management one step further to pursue industry-specific “deep dives” that have identified ways to produce significant savings. These efforts can include not only conducting extensive assessments of energy savings opportunities at individual facilities, but also investing in efforts to understand an industry’s specific needs to unearth barriers and identify unique savings opportunities. Account management will be fundamental to the NJCEP’s success. Indeed, the projected increase in C&I savings will only be possible with timely and aggressive deployment of an effective and sufficiently-scaled Outreach team. For more information on the proposed NJCEP approach to Outreach see Section 10.5.2.

Leading strategies and innovative approaches to achieve greater savings have been incorporated throughout this strategic plan to maximize the impact of the state’s clean energy programs. Cutting-edge strategies have been thoughtfully explored to integrate them in ways that are most appropriate to the contexts in which they are employed and that are most likely to produce positive results.

6.7 Diversification of Program Offerings

In addition to emerging technologies and innovative approaches, researchers have also emphasized that leading programs have been expanding to explore areas that have not necessarily been covered by traditional clean energy portfolios. In early years, many program administrators have tended to offer a simple and minimal selection of program types. However, over time they have often begun to seek new ways to achieve energy-savings goals and maximize net benefits.²² Diversification may include exploration of some of the innovative strategies described above, as well as expansion into non-traditional areas such as combined heat and power, conservation voltage reduction, and support for adoption of and compliance with more stringent building energy codes. This strategic plan encourages an open-minded approach to continuously examining new opportunities to capture energy savings and other benefits.

6.8 Key Takeaways

Following best-practice examples in strategic planning requires a combination of attention to the fundamentals of program design as well as an openness to innovation and expanding opportunities. At their core, programs and portfolios must be designed based on clearly articulated rationales that generally align with a jurisdiction’s policy objectives, and they must be implemented in ways that encourage contractor and customer participation. To be most successful, programs must also explore

²² Baatz, et al., “Big Savers: Experiences and Recent History of Program Administrators Achieving High Levels of Electric Savings,” American Council for an Energy-Efficient Economy, 2016, <http://aceee.org/research-report/u1601>.

the potential to generate increased savings in key program areas through the promotion of promising new measures and delivery mechanisms. Program administrators must also maintain a willingness to continuously examine new opportunities in both traditional and non-traditional areas of portfolio coverage. This strategic plan has sought to incorporate these principles into the program design process to set out a path toward the best possible program outcomes.

As shown in Figure 8: NJCEP Proposed Multi-Step Planning Process above, the strategic planning process is an ongoing feedback loop that starts with developing objectives and goals, designing programs and budgets intended to achieve those goals, implementing the programs, evaluating the programs to determine the extent to which the goals were met, and identifying opportunities to improve the programs. Thus, it is not intended as a static document but one that is continually updated as new information becomes available.

7. MARKET RESEARCH

7.1 Importance of Current, Relevant Market Data

To plan and implement programs that will most effectively meet the NJCEP Objectives, it is necessary to have a detailed understanding of the specific opportunities and challenges that are present for New Jersey's residential, commercial, and industrial ratepayers. The different states and regions of the country are far from homogenous, and local climactic and economic conditions, historic practices in building and heating homes, industrial trends, and institutional policies result in significant differences between one state and its neighbors. New Jersey-specific market research is needed to improve understanding of the opportunities for the NJCEP to cost-effectively invest in improving the energy efficiency and renewable energy profiles of the state. That includes assessing the magnitude of savings potential, the degree to which that is changing or likely to change over time, the nature and severity of barriers to consumer investment in those markets – by market segment or sub-segment, consumer interests that could be better leveraged to overcome those barriers, key trade allies whose engagement could be most pivotal in increasing efficiency investment in each market segment and sub-segment, and a variety of related topics.

State-wide studies are often useful first steps in such market research efforts, providing high-level insight needed to set future portfolio-level savings goals and budget. However, to be most effective, efficiency program strategies need to be informed by the greatest possible understanding of the opportunities, interests, needs and challenges faced by the many different types of customers (large vs. small, renters vs. owners, multifamily vs. single-family, commercial vs. industrial, retail spaces vs. offices, etc.). Thus, great value can be gained from supplementing statewide baseline studies and related potential studies with more granular and more targeted market research. Such market research can take the form of targeted “mini-studies,” field studies, customer surveys, customer focus groups, or a variety of other designs. The Office of Clean Energy will also explore opportunities to collaborate with other state agencies, such as DCA, EDA, DEP, and HMFA to increase the overall level of energy efficiency in New Jersey.

7.2 Availability of Data

In the absence of New Jersey specific baseline studies, the TRC team used its direct knowledge of New Jersey's energy efficiency and renewable energy markets, as well as its experience in other jurisdictions, in designing the proposed programs. However, this is not equivalent to the comprehensive analyses that are commonly used to inform program planning. Obtaining relevant market data as early in the FY19-FY22 program cycle as possible, with regular updates through the course of the program cycle and beyond, will yield considerable benefits in assuring that program strategies are well-aligned with market opportunities. The NJCEP will also explore opportunities to use other publicly available data which may be relevant for program planning, including from sources such as the U.S. Census Bureau, and the Energy Information Administration (EIA)/ State Energy Data System (SEDS). NJCEP program participant data will also be mined to inform planning for potential program improvements.

8. EVALUATION

8.1 Overview

Evaluation's role in developing and maintaining an effective portfolio of NJCEP energy efficiency programs is to measure and track portfolio performance and to provide a path for continuous improvement. This includes the timely evaluation of the NJCEP programs as well as the market research needed to understand the baseline levels of various energy efficient equipment, technologies and practices. A balanced plan of prospective and retrospective evaluation studies and analyses will allow the NJCEP programs to develop a broader understanding of the market and to determine what interventions are most appropriate to move the market toward more energy efficient practices. Establishing a common set of metrics across programs that are directly relevant to the performance goals on a continuing basis is critical to evaluation.

Between 2004 and late 2017 the Rutgers University Center for Energy, Economic and Environmental Policy partnered with Board Staff to prepare the evaluation and research plan for New Jersey's Clean Energy Program. In late 2017 responsibility for these activities has been transitioned to the Rutgers Center for Green Building. This plan annually sets out a proposed process for establishing and executing a detailed evaluation and research plan. The most recent plan was released in May 2017²³ and forms the basis of the information presented in this section. Evaluations and other studies related to the NJCEP can be found on the NJCEP website at <http://www.njcleanenergy.com/main/public-reports-and-library/market-analysis-protocols/market-analysis-baseline-studies/market-an>. The following evaluation studies have been undertaken since 2015.

- ◆ **Benchmarking and Metrics Studies** Independent review and benchmarking study of NJCEP programs has been completed to compare the effectiveness of the NJCEP and utility-administered programs with those in other jurisdictions, and establish goals for the New Jersey programs.
- ◆ **Avoided Cost Assumptions:** Avoided cost assumptions have been developed by CEEEP for electricity and natural gas (wholesale and retail), capacity, environmental externalities (CO₂), and line losses, most recently in March 2018.
- ◆ **Cost-Benefit Analysis (CBA):** Prospective CBA of energy efficiency and renewable energy programs sponsored by the NJCEP, market managers and utilities will be conducted by the TRC team.
- ◆ **Portfolio-level Process Evaluation:** Independent evaluation completed in January 2016.
- ◆ **Combined Heat and Power (CHP) Evaluations:** Conducted by the TRC team in consultation with CEEEP and Rutgers University Laboratory for Energy Smart Systems (RULESS) to inform CHP and Distributed Generation program design.
- ◆ **Offshore Wind (OSW) Evaluations:** Resource modeling and wind assessments have been conducted for Board internal purposes by Rutgers University.

²³ [http://www.njcleanenergy.com/files/file/Library/FY2017%20Evaluation%20Plan%20\(5-26-17\).pdf](http://www.njcleanenergy.com/files/file/Library/FY2017%20Evaluation%20Plan%20(5-26-17).pdf)

- ◆ **Protocols Evaluation:** Rutgers University has contracted for an independent evaluation of the Protocols (aka Technical Resource Manual) and updates for selected measures.

In addition, a multifamily baseline study is in process at the time of this writing, and is expected to be completed in late 2018. The TRC team is working with Rutgers and Board Staff to issue a Baseline Evaluation RFP to address all other markets.

Evaluation and market research activities are intended to provide a continual feedback loop to policymakers, program administrators and program managers. It is therefore important to integrate evaluation findings along with actual tracking of results, so that corrective actions can be taken and long-term policy decisions can be framed. As new programs are designed and existing programs improved, evaluation results should be a key ingredient in determining the optimal design and mix of programs. Establishing procedures to accomplish this is critical to its success.

Improving the NJCEP's ability to conduct timely program evaluations will be critical to its ability to enhance the performance of the portfolio. Based on discussions with Commissioners, Board Staff, Rate Counsel, the utilities and other stakeholders, there is near unanimous support of the benefits of ongoing program evaluation. This is acknowledged by its inclusion in the Operating Principles (see Section 4.4: Operating Principles). It is strongly recommended that the path forward provides for the timely release of RFPs and delivery of evaluation results to allow the NJCEP to keep pace with current market developments.

Evaluations fit into one of two main buckets as follows:

- ◆ **Market Assessments:** include the types of assessments noted above such as market potential studies, market assessments and baseline studies. These evaluations are critical to developing the best and most cost-effective programs.
- ◆ **Performance Assessments:** include impact evaluations, process evaluations and development of protocols for measuring energy savings.

A process should be considered for expediting contracting of market assessments, including a determination of whether it might be reasonable for the entity responsible for implementing and developing programs to also be responsible for performing Market Assessments. These types of assessments are critical to ensure programs are keeping pace with changes in the market including changes in prices.

However, an entity independent of the Program Administrator should have responsibility for conducting Performance Assessments which, in effect, are evaluating the performance of the Program Administrator.

8.2 Portfolio-Level Performance Metrics

8.2.1 Portfolio-Level Performance Metrics

Performance metrics are intended to track the extent to which the programs are achieving goals and objectives. Performance metrics should be based on information that is easily tracked. The number of metrics should be limited to four or five: too many metrics can drive unintended results. Taking these factors into consideration, and based on review of performance metrics used in other states and the NJCEP Objectives set out above, the following performance metrics are recommended for the NJCEP for the next planning cycle:

1. **Lifetime MMBtu's of source energy savings.**²⁴ This metric provides a direct indication of success in meeting the NJCEP's priority Objective.
2. **NJCEP Dollars Spent per Lifetime MMBtu's of source energy savings.** This metric is also related to the priority policy objective, reflecting the cost-efficiency of the NJCEP portfolio in capturing savings. The TRC team had stated in its proposal to manage the NJCEP programs that it would produce more "bang for the buck." This metric will keep a focus on the extent to which such improvement occurs.
3. **Lifetime coincident peak MW of savings.** This metric directly measures one of the secondary policy Objectives, as well as one specifically called out in the Energy Master Plan.
4. **Diversify Portfolio by Ensuring a Percent of Savings from Non-Lighting Measures.** Lighting savings – both residential and non-residential – are typically the easiest and cheapest savings to acquire. However, for many customers the largest savings opportunities are associated with non-lighting measures. Effective promotion of non-lighting measures serves the secondary Board policy objective of allowing *equitable access* to savings opportunities for all customers. There are also important opportunities for *transforming markets* for non-lighting efficiency products and services, consistent with another secondary Board policy objective. Finally, as opportunities will soon decline for the promotion of LED products through retailers it is important to lay the foundation for acquisition of cost-effective savings from other measures. This is designed so that such efforts are more mature and effective several years from now to compensate for the reduction in lighting savings in the NJCEP portfolio. A performance metric that encourages a focus on non-lighting savings will at least partially counter-balance the first two metrics' emphasis on getting the easiest and cheapest savings available now. This would encourage TRC to plan and manage with both near-term and medium/longer-term goals in mind.

Several points are worth making about these proposed performance metrics:

- ◆ Specific numeric values for each metric will need to be developed after detailed annual budgets, program plans and related savings estimates can be developed. That work will be done as part of the FY19 compliance plan and subsequent annual filings.
- ◆ By design, multiple metrics will create conflicts between the Objectives. Put another way, if all of the policy Objectives could be achieved every year by meeting just one performance metric, then there would be no point in having more.
- ◆ Collectively, these metrics directly touch on the primary objective and most of the secondary Objectives. The reduction of long-term environmental impacts is not directly addressed; however, achievement of that objective is so closely tied to maximizing lifetime source²⁵ energy savings that no additional metric is required to address that Objective. There is also not a metric proposed for minimizing lost opportunities. Experience in other jurisdictions suggests that metrics for this Objective are challenging to measure—so much so that the value of the

²⁴ The MMBtu total energy metric combines kWh and therm savings, both of which will be tracked and reported.

²⁵ By measuring success in terms of source, rather than site, energy savings, inefficiencies in generation and transmission/distribution are also accounted for. This is important because environmental impacts occur throughout the full cycle of energy production, delivery, and use.

Objective is best approached as a directional indicator, rather than as one that is associated with a metric.

- ◆ It is recommended that the proposed metrics remain in effect so long as the policy Objectives outlined in this Plan remain. Consistent metrics have value because optimizing the NJCEP performance relative to the policy Objectives will take time to take effect. Changing direction too frequently will diminish the NJCEP's ability to achieve the Objectives.

It is important to emphasize that the performance metrics proposed above are not the only indicators of success of the NJCEP portfolio. Nor are they the only indicators or metrics that the TRC team will track and report to the Board. Indeed, the TRC team is currently tracking numerous key performance indicators (KPIs), and we routinely use such tracking to inform efforts to effectively manage programs. That will not change, as many of those additional KPIs are important secondary indicators of progress towards the performance metrics above and/or indicators of success on other policy Objectives that, though perhaps not at the top of the list, are nevertheless still important.

8.3 Cost-Effectiveness Analysis

This section discusses how the NJCEP programs will be viewed from a cost effectiveness perspective. As described in Section 4, this strategic plan prioritizes programs based upon a policy framework developed with the input of BPU Commissioners and Staff, and then uses cost-effectiveness screening to assess programs after an initial set of choices has been made. The proposed FY19 programs will be screened for cost-effectiveness once budgets have been determined. Results of cost-effectiveness analysis will be included as part of the FY19 Compliance Filing.

The Center for Energy, Economic and Environmental Policy conducted the cost-benefit analysis of New Jersey ratepayer funded energy efficiency and renewable energy programs between 2003 and 2017. These include the programs managed by the Office of Clean Energy as well as utility programs. Beginning in late 2017 these responsibilities were assumed by the Rutgers Center for Green Building. In past years CEEEP released an annual report each year that presented the CBA analysis for the energy efficiency programs available to New Jersey's residential, commercial, and industrial customers. The Rutgers Center for Green Building will continue this work in future years. Information included in Section 8.3.1 is adapted from CEEEP's 2015 Cost-Benefit Analysis Report.

8.3.1 Cost-effectiveness Screening Methodology

Cost-effectiveness tests are used by State Utility Commissions and utilities to make decisions about the level of ratepayer funding that energy efficiency programs should receive. The California Standard Practice Manual²⁶ has historically served as the most commonly-referenced standard of cost-effectiveness analysis in the United States, and holds that each of the several tests it describes demonstrates different values to consider.

²⁶http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_Electricity_and_Natural_Gas/CPUC_STANDARD_PRACTICE_MANUAL.pdf

There is no specific guidance from the Board regarding which tests must be submitted for NJCEP programs or how the results of such tests are to be utilized in developing programs and budgets. Moreover, there has been considerable discussion in recent years regarding the limitations of the California tests. One result of that debate has been the publication of a new National Standard Practice Manual for cost-effectiveness analysis of efficiency.²⁷ Board Staff should consider initiating a process to solicit input regarding the use of the results of CBA tests in guiding the future development of energy efficiency programs and budgets. Following the process, recommendations should be developed for consideration by the Board.

This section will serve to inform this process and lay the groundwork for future discussions. Included below are definitions of the five common cost effectiveness tests. While the Total Resource Test (TRC) is the most widely used of the five, there are good arguments for applying other tests and there are also significant variations in what is considered within the tests, such as whether Non-Energy Benefits (NEB) are considered and to what level.

One alternative to the Total Resource Cost test is the Program Administrator Test (PAC) which does not take into account the part of measure cost paid by the customer. The PAC views the cost as the value of the incentives which partially offset the participant's cost for the measure. The incentive will be proportionally larger for customers who succeed in getting a good price for the measure, for whatever reason. If the incentive, plus whatever other benefits the customer values, are sufficient to induce adoption of the measure, then the savings are realized. In this scenario, the Board meets its goal of statewide savings at a reasonable cost and the customer is satisfied. As for determining the incentive level, the Program Administrator (PA) is charged with setting them high enough to gain sufficient participation, while keeping them as low as possible to maximize savings per dollar spent. In contrast, the Total Resource Cost test, through its extensive bank of avoided costs, calculates the cost effectiveness of the measure for the customer, rather than making an offer and letting the customers apply their own calculus of value. It is well documented that customers often give more weight to non-economic factors than to economic ones when deciding to implement efficiency measures. Economic models, including the Total Resource Cost test, estimate these non-economic benefits poorly. The nature of energy efficiency is unique in that it is engaged in a multitude of individual customer transactions which are driven by many factors.

Similar arguments can be made for focusing on the Total Resource Cost or other tests: this is provided to illustrate one of the perspectives from which to view cost effectiveness. The five costs tests, described below, utilized for the cost-benefit analysis are: Participant Cost Test, Program Administrator Cost Test, Ratepayer Impact Measure Test, Total Resource Cost Test, and Societal Cost Test.²⁸

- ◆ **Participant Cost Test:** This test measures the quantifiable benefits and costs to the customer attributed to participation in a program. The participant benefits are equal to the sum of any participant incentives paid, any reductions in bills, and any federal or state tax deductions or credits. Participant costs include any out-of-pocket costs associated with the program.

²⁷ <https://nationalefficiencyscreening.org/national-standard-practice-manual/>

²⁸ California Public Utilities Commission, Oct 2001, "California Standard Practice Manual – Economic Analysis of Demand-Side Programs and Projects" http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1-CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf.

- ◆ **Program Administrator Cost Test:** This measures the costs of a program as a resource option based on the costs incurred by the program administrator (including incentive costs), excluding any costs incurred by the participant. The benefits are the avoided supply costs of energy, avoided transmission and distribution costs, and the reduction in capacity valued at marginal costs for the periods when there is a load reduction. The costs are the program costs incurred by the administrator, the incentives paid to the customers, and the increased supply costs for the periods during which load is increased.
- ◆ **Ratepayer Impact Measure Test:** This measures what happens to customer bills or rates due to changes in revenues and operating costs caused by the program. The benefits equal the savings from avoided supply costs, including the reduction in capacity costs for periods when load has been reduced, as well as the increase in revenues for periods in which load has increased. The costs are the program costs incurred by program administration, the incentives paid to participants, decreased revenues for any periods in which load has been decreased, and increased supply costs for any periods when load has increased. It should be noted that many jurisdictions do not use this test because of its deficiencies in providing meaningful results – i.e. it is more of a test of distributional equity (with limitations even in that role) than of economic cost-effectiveness.
- ◆ **Total Resource Cost Test:** This test measures the costs of a program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. This test represents the combination of the effects of a program on both the participating and non-participating customers. The benefits are the avoided supply costs, federal tax credits, and the reduction in generation and capacity costs valued at marginal cost for the periods when there is a load reduction. Conceptually, other non-energy benefits to customers (e.g. improved comfort, improved building durability, improved business productivity) should also be included, but often are not, creating potential biases in the results. The costs are the program costs paid by the utility and participants plus the increase in supply costs for the periods during which load is increased.
- ◆ **Societal Cost Test:** This test attempts to quantify the change in the total resource cost to society as a whole rather than only to the utility and its ratepayers. Costs include all consumer, utility, and program expenses. Benefits associated with the societal perspective include avoided power supply costs, capacity benefits, avoided transmission and distribution costs, and emissions savings.

More information on the costs and benefits attributable to energy efficiency measures can be found in *Recognizing the Full Value of Energy Efficiency (What's under the feel-good frosting of the world's most valuable layer cake of benefits)*, a 2013 report by the Regulatory Assistance Project.²⁹

²⁹ Regulatory Assistance Project, September 2013, “*Recognizing the Full Value of Energy Efficiency (What's under the feel-good frosting of the world's most valuable layer cake of benefits)*” <http://www.raponline.org/event/recognizing-the-full-value-of-efficiency-theres-more-layers-in-the-layer-cake-than-many-account>.

8.3.2 Avoided Costs

For the purposes of cost-effectiveness analysis of energy efficiency programs, avoided costs are projections of marginal energy supply costs that will be avoided due to reductions in the use of electricity, natural gas, and other fuels resulting from energy efficiency programs. For the NJCEP, CEEEP has been providing an annual set of avoided energy costs based on information from several sources, including PJM³⁰ and the U.S. Energy Information Agency (EIA).³¹ The Rutgers Center for Green Building will continue this work going forward. EIA's Annual Energy Outlook provides growth forecasts of electricity and fuel demand and price for regions of the U.S. PJM provides historic wholesale electric prices as well as capacity costs that can be used to derive electricity demand forecasts. Values for the Social Cost of Carbon were taken from the U.S. Government Interagency Working Group on Social Cost of Carbon.

Going forward, the NJCEP will review avoided costs used in other leading jurisdictions to determine the most appropriate set of inputs into the cost-effectiveness analyses. Following are some of the primary components that make up the set of avoided costs required for cost-effectiveness screening:

- ◆ Retail Electricity Prices (\$/kWh)
- ◆ Wholesale Electricity Prices (\$/MWh)
- ◆ Capacity Electricity Prices (\$/kW-year)
- ◆ Electricity Forecast Pool Requirement (PJM obligation value, unitless multiplier)
- ◆ Retail Natural Gas Prices (\$/MMBtu)
- ◆ Wholesale Natural Gas Prices (\$/MMBtu)
- ◆ Residential Propane Prices (\$/Gallon)
- ◆ Wholesale Propane Prices (\$/Gallon)
- ◆ Residential Heating Oil Prices (\$/Gallon)
- ◆ Wholesale Heating Oil Prices (\$/Gallon)
- ◆ Environmental Externalities
 - CO₂ (\$/Metric Ton)
 - SO₂, NO_x, PM_{2.5}, PM₁₀ (\$/Short Ton)
- ◆ Water and Wastewater (\$/1,000 gallons)

³⁰ PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

³¹ For current avoided cost information see:
[http://www.njcleanenergy.com/files/file/Library/Market%20Research/Avoided%20Cost%20Memo%20\(3-13-18\).pdf](http://www.njcleanenergy.com/files/file/Library/Market%20Research/Avoided%20Cost%20Memo%20(3-13-18).pdf)

- ◆ PJM Marginal Generating Units (% on the Margin)
- ◆ Power Plant Emission Rates for CO₂, NO_x, SO_x (lbs./MWh)
- ◆ Discount Rate
- ◆ Electricity System Losses (% of sales)
- ◆ Natural Gas Pipeline Losses (% of sales)
- ◆ Electricity System Losses – Transmission & Distribution (\$/kW-year)
- ◆ Natural Gas Pipeline Losses – Transmission & Distribution (\$/MMBTU)
- ◆ Renewable Energy Adders (\$/MWh)
- ◆ Non-Energy Benefits

8.4 NJCEP Portfolio Cost-Effectiveness Results FY19-FY22

Preliminary Total Resource Cost test results were calculated at the Portfolio level based on the top-down cost and savings projections included in this Plan. These results are shown in Figure 10:

FY	TRC Benefits	TRC Costs	Portfolio TRC
2019	\$280,199,681	\$251,921,106	1.1
2020	\$337,268,103	\$259,537,140	1.3
2021	\$345,433,635	\$237,539,342	1.5
2022	\$385,181,857	\$259,069,595	1.5

Figure 10: Portfolio Level Total Resource Cost Test Results

As the new programs and program enhancements proposed in this Plan are implemented the cost-effectiveness of the portfolio is expected to improve, as illustrated above.

This demonstrates increasing success at meeting the primary Objective of the portfolio, “Reduce the high cost of energy and lower energy bills by maximizing lifetime energy savings per dollar spent (kWh and therms).”

9. UTILITY PROGRAMS AND THE NJCEP

9.1 NJCEP and Utility Clean Energy Programs Since 2014

The FY14 CRA identified areas where the lack of coordination between utility-run programs and NJCEP resulted in competing programs, duplicative administrative costs, and customer and contractor confusion.³² In response, Board Staff organized the Utility Work Group (UWG) to explore numerous issues regarding the role of utilities in administering EE and RE programs. The UWG discussed several related issues including:

- ◆ Administrative structures for delivering EE programs
- ◆ Ratemaking issues and decoupling
- ◆ Performance incentives

The UWG commenced its discussions with a brief history of EE programs in New Jersey, a review of utility-run programs, budgets, program eligibility requirements, incentive levels, energy savings and program costs including how utilities recover program costs. In an effort to identify more cost-effective models to deliver EE programs, UWG members engaged in a more expansive analysis to identify the pros and cons of both the current administrative approach and various other administrative models for program delivery. The UWG discussed the nature of traditional utility ratemaking, which discourages utility investment in energy efficiency (identified as the “throughput” issue) and investigated the role of performance incentives and energy savings targets in the cost-effective delivery of energy efficiency. While no consensus was reached regarding any of these issues, periodic discussions have continued.

9.2 Utilities and the NJCEP Strategic Plan

New Jersey’s utilities have taken widely varying approaches to implementing energy efficiency and renewable energy programs. In some cases, utility programs are closely coordinated with the NJCEP, either offering supplemental incentives or attractive financing to customers. In others, utility programs address specific markets that may have only been peripherally explored by the NJCEP historically. In still others, there are no utility energy efficiency programs to supplement the NJCEP offerings.

Over the course of the Strategic Plan development, Board Staff and members of the TRC planning team held meetings with representatives of New Jersey Natural Gas, South Jersey Gas, PSE&G, Atlantic City Electric, Elizabethtown Gas, Rockland Electric Company, Jersey Central Power and Light, and the New Jersey Utilities Association. These individual utility meetings have all been intended to gauge utilities’ interest in implementing energy efficiency programs for their customers, to provide information to the utilities regarding the development of the NJCEP strategic plan, and to discuss possible approaches to enhancing the coordination of NJCEP and utility programs so that ratepayers receive the best value for their investments regardless of whether the NJCEP or utilities lead implementation of specific programs.

³² These findings were further confirmed by the 2016 NJCEP Process Evaluation conducted by ERS.

9.3 Ongoing Activities

The UWG was re-formed in February 2017 with the purpose of establishing regular discussions between Board Staff, Rate Counsel, the utilities and the NJCEP. The UWG met regularly in 2017 to discuss the types of programs that could be best implemented by the NJCEP as well as those that could be best implemented by the utilities. As of the first quarter of 2018, when this draft Strategic Plan was developed, several utilities are concurrently working on their own energy efficiency plans, two of which were recently filed. Optimized coordination of the NJCEP and any utility programs will be necessary if the state is to achieve the greatly increased savings that are laid out in this Plan. The utilities will also need to provide support to the NJCEP in implementation of the proposed programs, such as assisting the NJCEP in identifying and engaging key customers. It will be critically important that the utility programs do not compete with NJCEP programs, as this approach could confuse customers and diminish the overall success of the combined NJCEP and utility portfolios.

10. PORTFOLIO DESIGN: OVERVIEW

10.1 Why Offer Energy Efficiency and Renewable Energy Programs?

Clean energy technologies have increasingly proven to be both cost-effective and reliable—so much so that it would seem logical to assume that large numbers of homeowners would invest in insulation and highly efficient HVAC and appliances, and that many business owners or governmental agencies would install advanced lighting and controls, super-efficient refrigeration, or other energy efficiency measures. Yet in most cases they do not, at least not of their own accord—even though it would seem to be in their best interest to do so. It is the job of clean energy programs, as mandated by EDECA, to identify those “barriers” that prevent residential and commercial customers from making cost-effective clean energy investments, and to develop strategies to overcome them.

While some technologies and sectors have barriers that are very specific, there are also barriers that are found in different customer groups and for different technologies. These include:

BARRIER	EXPLANATION	SOLUTION
FIRST COST	Either the customer does not find the benefits of a given opportunity to be compelling enough to make the required investment, or the customer simply does not have access to the necessary funds to make the investment at all.	Provide incentives and/or attractive financing to ease the first cost burden by either making the benefits more compelling relative to the required investment or by offering a subsidy sufficient to entice the customer to make the investment.
LACK OF INFORMATION	The customer may not be aware of the opportunity, or may not understand the benefits that could result from the action. Similarly, contractors might not be aware of the business opportunities and benefits from clean energy.	Provide information about the opportunity through media and marketing, outreach, and through participating vendors and contractors. Provide education and training for contractors and vendors.
LACK OF ACCESS	The customer may be aware of the opportunity in a general sense, but might not be able to identify a vendor or installer who can provide the desired product or service.	Work with vendors and contractors to increase the availability of clean energy products and technologies in the marketplace.
SPLIT INCENTIVES	When the party that would incur the costs of improved efficiency or of adding renewable energy to a project won't be the same as the party who will receive the bill savings it serves as a disincentive to make those investments.	In some cases, the magnitude of financial incentives alone must be sufficient to drive the investment. In other cases, providing a better understanding of the ancillary benefits—such as making rental properties more attractive to tenants—can also help overcome the barrier.

Figure 11: Common Clean Energy Barriers and Solutions

Clean energy programs provide solutions to overcoming these barriers across North America. For example, to encourage the use of efficient heating and cooling systems, programs commonly provide incentives to help defray higher costs for the purchase of HVAC products that meet certain efficiency criteria. Programs also frequently provide training for HVAC contractors so they understand the requirements for proper installation that will enhance energy savings. Lastly, programs commonly provide outreach and marketing to increase awareness of the benefits of energy efficiency purchases, so that customers are informed at the time of purchase.

Overcoming these and other barriers, as cost-effectively as possible, is the work of the NJCEP. The barriers faced by different market sectors, and the NJCEP programs that are proposed to address them in support of the NJCEP Objectives, can be found in Sections 11: Residential Programs through 15: Distributed Energy Resources.

10.2 Portfolio Design Process

The effectiveness of the current NJCEP portfolio of programs in achieving the newly articulated NJCEP Objectives was assessed. Specifically, the programs were assessed to determine the extent to which they achieved the following Primary and Secondary Objectives:

- ◆ Meet the primary NJCEP Objective to “reduce the high cost of energy and lower energy bills by maximizing lifetime energy savings per dollar spent (kWh and therms).”
- ◆ Assuring additional focus on the five secondary NJCEP Objectives:
 - Maximize peak demand (kW) savings.
 - Provide equitable access to efficiency and renewable energy programs.
 - Promote the development and transformation of energy efficiency and renewable energy markets.
 - Reduce long-term environmental impacts of energy use.
 - Minimize lost opportunities.

This was done by quantifying each program’s expected success in contributing to the Objectives where such analysis was possible, and by applying a qualitative assessment to those Objectives that did not lend themselves to meaningful numeric analyses. A “rubric” was developed to allow direct comparison of different program types, though it should be noted that the rubric was not used as a dispositive tool. Rather, it was used to help planners more clearly assess the contributions of each program type to the NJCEP Objectives, and to identify opportunities to adjust program designs to make them more effective in achieving the desired outcomes. The criteria used in assessing a program’s effectiveness in meeting the NJCEP Objectives is shown in Figure 12.

Home Performance with ENERGY STAR® can provide an example of how the rubric’s results were used. From the perspective of the Objectives, Home Performance with ENERGY STAR is valuable because of its market transformation benefits, but improvements in the program’s ability to provide equitable access would increase its value to the NJCEP. To achieve this, program adjustments are proposed that will, in effect, lower the bar for participation by allowing projects that are less comprehensive to receive incentive support. This will better serve the needs of a large group of customers and contractors who have not participated in the program in its current configuration.

Objective	Primary Objective	Secondary Objectives				
	Lower Energy Bills	Peak Savings	Equitable Access	Market Transformation	Environment	Lost Opportunities
Performance Metric or Indicator	lifetime energy savings per NJCEP \$	<i>+, ++ or +++ for contribution to a secondary objective</i>				
		\$ per lifetime coincident peak savings	(1) reaches many customers per \$ and/or (2) targets hard-to-reach customer groups	(1) MT design features (tech training, long-term awareness building, etc.); and/or (2) significant impacts likely to continue if program stopped w/in 5 years (function of both MT likelihood & size of EE market)	\$ per lifetime ton CO2 emission reduction as proxy for most environmental benefits; bonus for other environmental benefits not largely captured by that proxy	targets EE opportunities that are time sensitive (new construction or equipment replacement). The longer the opportunity would be "lost" if missed, the more important
Criteria	actual program dollars per lifetime source MMBtu saved	+ = >\$300/kW	+ = above avg. # of participants per \$	+ = modest	+ = >\$40/ton	+ = time sensitive for measures with 10-14 year lives
		++ = \$101 to \$300/kW	++ = very high # of participants per \$, or targets hard-to-reach customer groups (small business, multifamily)	++ = substantial	++ = \$20 to \$40/ton	++ = time sensitive for measures with 15-19 year lives
		+++ = <\$100/kW	+++ = targets hardest-to-reach customers (low income), or very high # of participants per \$ for hard-to-reach customers (small business, multifamily)	+++ = very large	+++ = <\$20/ton	+++ = time sensitive for measures with 20+ year lives

Figure 12: Rubric for NJCEP Objectives and Criteria

The guidance gathered through best practices research and the stakeholder focus groups and written comments was also closely considered in the portfolio design process. For each market or program area that the planning team found could meaningfully contribute to the NJCEP Objectives, a strategic approach was determined, and key steps to transition the current programs in the desired strategic direction were identified.

Given the clean energy investments that New Jersey home and business owners and trade allies are continuing to make, the NJCEP will make the desired program transitions in a thoughtful way that provides ample notice to the affected markets. Sufficient “grandfathering” of existing projects will be provided so as not to disrupt participation or inconvenience participants and contractors.

10.3 Evolution and Development of Programs FY19-FY22

The market areas in which to offer programs and services, and the technologies for the NJCEP to promote were identified based largely upon the potential to achieve cost-effective lifetime energy savings and on assuring additional focus on the remaining five Objectives as outlined in Figure 9: NJCEP Objectives. This analysis also identified program designs that would maximize savings within available budgets. Descriptions of the proposed programs and their strategic direction can be found in Sections 11 through 15. Specific program changes that are proposed for FY19 will be provided as part of the FY19 NJCEP Compliance Filing.

The way in which the programs will be designed and implemented will be significantly influenced by the best practices research, and importantly by the stakeholder feedback process. While the details of the revised program designs are still being developed, there are several common themes that will apply to the entire portfolio including:

- ◆ Program consolidation for ease of customer access.
- ◆ Program design that addresses gaps in current offerings.
- ◆ Clear pathways for all types of projects.
- ◆ Increased outreach to better understand customer goals.
- ◆ Program support for customer implementation of measures over time.
- ◆ Simplified application processes.
- ◆ Promotion of emerging technologies.
- ◆ Provide opportunities for continued contractor and partner participation and business growth.

10.3.1 Increased Flexibility

Historically, the NJCEP programs have been targeted to very specific opportunities, and as such the programs were designed to maximize results under somewhat narrow participation paths. As pictured in Figure 13: NJCEP Historic Program Approaches, regardless of the sector in question customers perceived that the NJCEP offered programs that boxed them in to one of two approaches. Either they could participate in a basic, one-for-one single measure equipment replacement program, or they could participate in a comprehensive whole building/whole facility program that typically had participation requirements that were onerous for customers and contractors. Customers whose contemplated

projects did not easily fit into one of these two program types struggled to figure out how to participate, and sometimes chose not to participate at all.

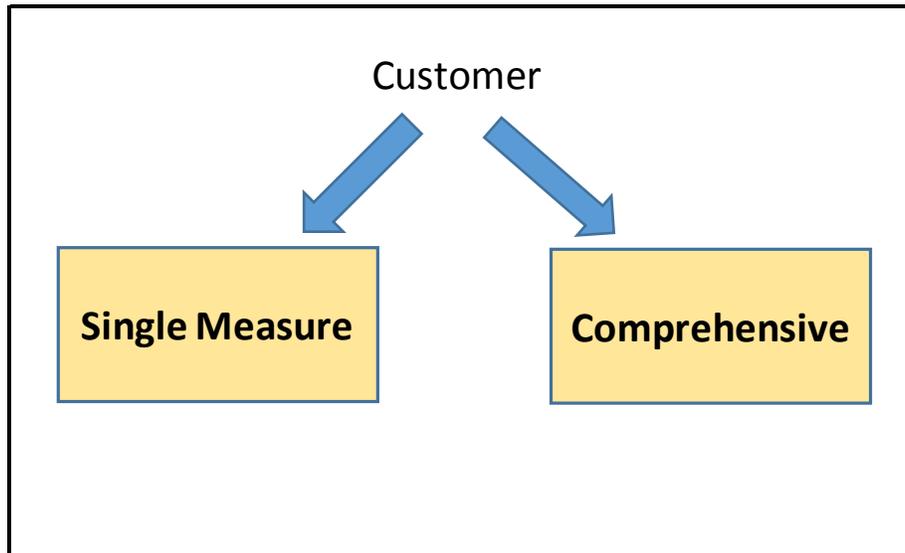


Figure 13: NJCEP Historic Program Approaches

This Strategic Plan proposes to shift the overarching program approach toward increased flexibility. This approach will be responsive to customer needs by offering participation at several levels of investment and effort within market sectors. Rather than forcing customers to figure out how to make projects fit into programs, the proposed strategic direction includes as a key element the idea that the programs will become more flexible to fit the needs of customers and their projects. Customers who are interested in doing projects in the wide area between single measure replacements and comprehensive, modeled whole building improvements will now have NJCEP program support, ensuring that mid-level savings opportunities are not neglected, and that customers' needs are met, as illustrated in Figure 14: Proposed NJCEP Strategic Direction.

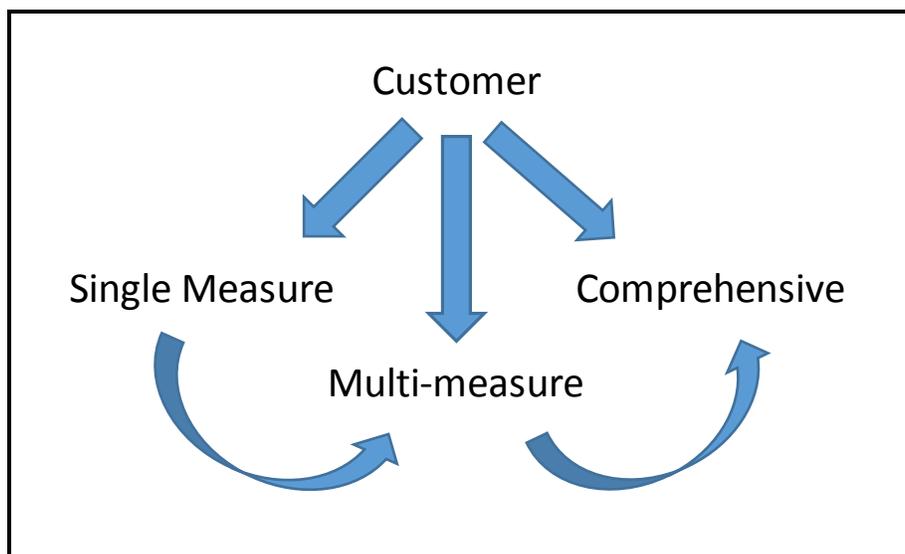


Figure 14: Proposed NJCEP Strategic Direction

Further, the new program designs will incorporate a more proactive role for program staff in guiding customers toward the services that will be most suited to their specific needs. Importantly, the new programs will foster ongoing engagement with customers, as opposed to the project-focused, “one and done” approach that may be less successful in encouraging repeat participation with NJCEP. The intention of providing customers with a range of services and program options and fostering ongoing engagement is illustrated for the C&I portfolio in Figure 15 below:

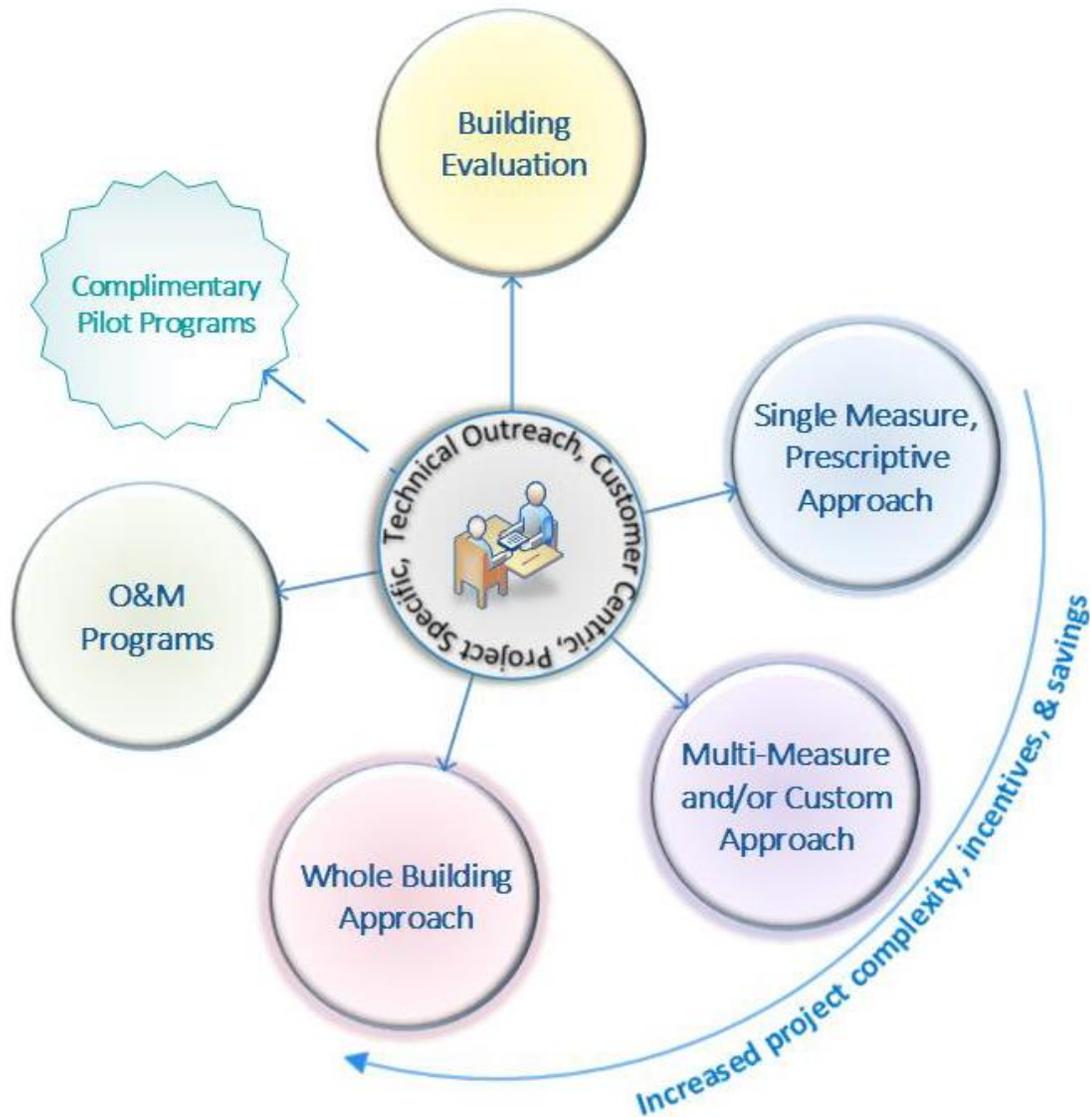


Figure 15: NJCEP Customer-Focused Program Approach

10.3.2 Broad Definition of Project Types

In addition to expanding the flexibility of the programs to address the wider spectrum of customer projects, it is also important to address the needs of the customer through the lifecycle of their

efficiency projects. In general, projects have three phases: project definition, project implementation, and ongoing operation. While NJCEP has focused much effort to date on the middle phase—project implementation—expanding focus to also identify potential opportunities to provide services to customers during project definition and ongoing operation will provide additional benefits. This approach, accomplished through increased and more targeted outreach, will help customers identify opportunities for participation in the program during the project definition phase and provide opportunities to improve existing equipment operation and persistence of savings throughout the life of their equipment. This approach will be accompanied by an invigorated NJCEP program focus on building ongoing relationships with customers to encourage greater comprehensiveness and greater savings over time. Rather than focus on a “one and done” approach to capturing savings from individual projects and energy conservation measures, the programs will strive to build ongoing engagement with customers that will lead to future energy savings.

10.3.3 Simplified Participation

The proposed NJCEP program portfolio will also assess all opportunities to streamline participation requirements for customers and contractors. All requirements will be looked at to confirm that they are relevant and necessary. Requirements that fail to meet these criteria will be modified or eliminated. Numerous proposed changes to the program requirements will be included in the proposed FY19-FY22 programs to begin to move the programs toward this more flexible, customer-focused design.

10.3.4 Program Innovation and New Technology

Finally, revised designs for the remaining NJCEP programs will utilize pilot programs to test concepts and collect data and customer and trade ally feedback that will assist in the long-term plans for the programs. This approach is being demonstrated with the Customer Tailored Energy Efficiency Pilot, which received Board approval in February 2017 and was launched in FY18. Innovation will continue with other programs in both residential and C&I in FY19-FY22. Opportunities for utilizing new technologies to advance clean energy Objectives will also be explored, potentially under the auspices of the UWG.

10.3.5 Multifamily

A unified multifamily program was developed in FY18 for launch in FY19, and will be a first step toward program simplification and streamlining. Customers in this sector currently navigate at least eight different program offerings to determine the best fit for their projects. This new, single program will improve ease of participation, address the current gaps in program offerings, streamline administration, increase participation and maximize savings for incentive dollars spent.

10.3.6 Midstream C&I Lighting Program

The NJCEP proposes to launch a midstream C&I lighting program for FY19-FY22 to greatly accelerate the adoption of cost-effective LED linear lighting in C&I applications. The midstream program will focus on providing incentives to lighting distributors to both increase the availability of energy efficient lighting products and make them more cost-competitive with less efficient products.

10.3.7 Strategic Energy Management

As outlined earlier in this Plan, SEM is a program approach that increases the depth of savings in larger commercial and industrial facilities over the long term through a holistic approach that addresses both capital improvements and operational efficiencies. The NJCEP proposes initially to test SEM as a pilot

approach that is incorporated within the broad C&I program sector rather than launching it as a stand-alone program. Should the results prove out, the NJCEP may propose to expand the approach and identify it as a specific program.

10.3.8 Consideration of Non-Traditional Programs

As discussed briefly in Section 6, there are emerging program areas that leading portfolios are exploring to capture savings that exceed those available from traditional energy efficiency programs. These include, among others, Conservation Voltage Reduction (CVR), support for enhanced codes and standards, integrated smart thermostat programs, and various types of behavioral and operational efficiency programs. These program types could potentially be valuable in New Jersey, but as a non-utility program administrator not all of these program types can be implemented within the NJCEP construct for the following reasons:

- ◆ CVR can save energy on the customer side of the meter, but it is principally a tool for managing electric distribution grid performance and hence falls within the purview of the utilities.
- ◆ Integrated smart thermostats have the potential to provide benefits both through reduced energy use and through demand response initiatives. Because integration with utility systems has the potential to provide greater benefits, and hence improved cost-effectiveness, it may be best to contemplate smart thermostat programs as utility-implemented initiatives.
- ◆ Some types of behavior programs require access to utility data to be implemented. Since the NJCEP does not have access to customer usage data it cannot implement such programs. However, C&I operational efficiency initiatives are included within the C&I portfolio.

10.3.9 Codes and Standards

This Strategic Plan does not contemplate incorporation of a Codes and Standards initiative, however that is not because it does not have merits. Several leading jurisdictions, including Massachusetts, Rhode Island, California, Arizona, and British Columbia all claim savings from specific programs that are designed to both raise the bar by supporting the adoption of increased building codes (including so-called “stretch codes”) and increase compliance with the enhanced codes through a variety of activities. Rather, because investing in Codes and Standards support would be a significant departure from previous NJCEP activities, and one that would require a collaborative effort with DCA, we suggest initiation of an exploratory process to determine whether such an approach could be developed for New Jersey.

10.4 Financing

10.4.1 Approach to Financing

As with other areas of program planning, energy efficiency financing programs should rely upon clearly defined rationales to support its implementation.³³ Wherever financing is used as a tool within the NJCEP, the TRC team has focused on using it strategically to achieve one or more of three potential objectives:

1. Greater program savings through increased participation.
2. Greater savings per project through increased customer ability to fund projects.
3. Reduced program costs resulting from using financing to offset the need for higher incentives per project.

The team has also emphasized the importance of weighing these potential benefits against the potential costs of financing, which can accrue in two distinct ways. First, costs can increase directly through increased program expenditures (e.g. interest-rate buy-downs, credit enhancements, financing administration, etc.). Second, program costs can increase indirectly through reduced participation and savings if incentives or other programmatic investments are reduced.³⁴ Weighing these costs and benefits against each other for New Jersey programs may require increased access to cost and benefit information from existing utility financing programs since in many cases the utility financing is used to support NJCEP program participation.

Researchers have underscored that financing on its own tends not to be a strong driver of demand for clean energy improvements and must be combined with a comprehensive set of mutually reinforcing program strategies to be successful. In exploring the rationale for integrating financing into specific program areas, experts recommend that program designers ask key questions such as, “What market segments are currently underserved by capital markets and why,” and, “Which market segments are likely to continue to be underserved even if the problems underlying other [non-financing barriers] are addressed?”³⁵

Based on these considerations, the NJCEP will explore increased access to better financing options in three specific program areas in the FY19-FY22 period: Direct Install, Multifamily, and Home Performance with ENERGY STAR. These program areas are discussed further below.

³³ As one recent national best practices report suggested, “At the most fundamental level, the rationale(s) for offering financing programs must be clearly established so that program administrators have an understanding of the problem(s) they are aiming to solve, and can recognize ‘success’ when (and if) it occurs.” Zimring, et al., “Getting the Biggest Bang for the Buck: Exploring the Rationales and Design Options for Energy Efficiency Financing Programs,” Lawrence Berkeley National Laboratory, 2013, <https://emp.lbl.gov/sites/all/files/lbnl-6524e.pdf>.

³⁴ If program participation is inadvertently reduced because customers view the financial package less favorably, the cost per participant or cost per unit of savings may increase because the program implementation costs are spread across fewer customers.

³⁵ Id., p. 11.

10.4.2 Soliciting Market Input

The TRC team has taken a focused approach to addressing these questions by soliciting direct feedback from contractors, program administrators, and other stakeholders in key market segments. Rather than assuming that all markets are currently underserved equally by available financing options, planners have focused attention on integrating financing in markets in which stakeholders most familiar with customers' specific needs have identified the lack of programmatic financing as a key barrier to participation. Planners have taken this feedback into account in determining where to focus in exploring the potential for expanding financing options.

10.4.3 Tailoring Solutions to Key Markets

The TRC team has looked at several key markets in which stakeholders have explicitly identified financing as a potentially valuable tool to overcome market barriers and achieve program objectives. Key areas of focus have included small business direct install customers, multifamily customers, and residential home performance customers who have applied for financing and been denied.

10.4.4 Small Business Direct Install

In the small business sector, the TRC team has gathered important feedback from contractors regarding the value of on-bill financing in closing more transactions with customers. Some contractors cited a close-rate differential of 30% between territories in which they can offer on-bill financing (70% close rate) and those in which they cannot (40% close rate). Given the potential to improve close rates, as well as address equity considerations among customers in different territories, the TRC team has recommended to the Board expanding on-bill financing eligibility to areas in which it is not currently available to small business customers. If on-bill financing is offered in upcoming program cycles by all the utilities, it could go a long way toward assuring that small businesses across the State have equal opportunities to participate in the Direct Install (DI) program. It would also allow the NJCEP to consider gradually reducing direct incentives for the DI program to test whether program costs can be reduced while still maintaining a viable savings opportunity for those customers it seeks to serve.

10.4.5 Multifamily

The TRC team has also received feedback from multifamily stakeholders that financing may help some customers overcome barriers to adoption of clean energy solutions. Currently, the NJCEP does not offer a specific financing solution for multifamily customers. PSE&G does offer on-bill financing to participants in its multifamily program, but does not currently extend that offer to participants in the NJCEP MF program. As a priority, the TRC team has focused on restructuring its multiple current multifamily offerings into a unified MF program³⁶ to make it more streamlined and effective, but the team will continue to consider multifamily financing as a tool that may be worth exploring.

10.4.6 Retrofit and Existing Homes Program

Financing options are currently available for single family energy efficiency retrofit projects across the state and within specific utility territories. These include the following:

³⁶ For more information see Section 12: Multifamily.

- ◆ cuGreen, a partnership with the New Jersey Credit Union League
- ◆ Energy Financing Solutions residential financing
- ◆ New Jersey Natural Gas on-bill financing
- ◆ South Jersey Gas residential financing

In the recent past, approximately 80% of Home Performance with ENERGY STAR jobs in New Jersey used some form of programmatic financing. Clearly, where it is available there is a preference for on-bill financing and extending this option so that it is available State-wide could provide benefits to homeowners in service territories where it is not currently offered. The TRC team has held discussions with other providers of residential financing solutions, such as the Warehouse for Energy Efficiency Loans (WHEEL) to explore their applicability and the potential benefits they might bring. However, it is not clear that adding more financing options beyond those that already exist would bring clear and distinct advantages that would justify the expense that would be required. One specific area that may merit attention is the segment of the market that has applied for financing and was denied due to debt to income ratios or credit scores that do not meet lender qualifying criteria. This group represents approximately one third of residential financing applications. This market segment must be considered carefully, given consumer protection considerations. Any potential solution must balance the desire to increase access to capital with the social risks of extending credit to customers already burdened by debt³⁷ and risks to the program from non-payment.

10.4.7 Related Areas

The TRC team has also considered and reviewed related tools that are not financing products, per se, but are designed in part to encourage additional financing investments. For example, the team has reviewed the experience of the Pay for Performance (P4P) program in piloting a partnership with the Investor Confidence Project (ICP). ICP overlays NJCEP requirements with additional protocols from pre-project assessment through post-project quality assurance in an attempt to provide greater confidence to investors that projects will actually perform as projected. Uptake of the ICP option to date has been limited in all jurisdictions where it has been offered nationally. This result may be due in part to a lack of understanding of the ICP process and in part because of the perception that there will be additional hurdles to implement ICP protocols. It should also be noted that most investors do not make investment choices based on project performance. Typically, overall borrower financial health is the dominant consideration. Nonetheless, investors may still value a more standardized process that does provide some commonality among projects and additional project quality assurance.

10.5 The Critical Importance of Marketing and Outreach

Successfully communicating the opportunities and benefits provided by the NJCEP to gain participation by a broad range of customers requires ongoing dedication to a market-driven and customer-engaging approach that includes sustained marketing and outreach strategies. Through marketing the NJCEP is

³⁷ Extending credit to households that will not be able to make their payments can increase poverty and homelessness, even though the desire to reduce energy bills may be driven by hopes of improving economic conditions for low to moderate income families.

able to inform and educate potential customers and trade allies about the programs and the value of energy efficiency. Education about the benefits that clean energy actions can provide, as well as information about the opportunities available through NJCEP, is necessary for generating project leads. Outreach complements Marketing by providing customized information targeted to specific sectors or customers.

New Jersey's Clean Energy Program operates within a marketplace where products, services and actions must be viewed in comparison to prevailing trends, and in the context of barriers to acceptance, lack of energy knowledge and competing alternatives. The NJCEP's ability to increase participation over the long term depends on recognizing the position of prospective customers and repeat participants within that marketplace. The NJCEP must consider the needs and wants of individuals and focus on providing new and enhanced ways to meet those needs and wants.

New Jersey customers represent a number of distinct, individual segments, each requiring its own unique strategy in terms of marketing, communications and outreach. The programs contained within the NJCEP portfolio are diverse and designed to produce a reduction in energy usage across a wide variety of sectors. The homeowners, decision-makers and influencers who the programs worked hard to educate through past marketing campaigns often have very different motivations, needs, preconceptions, resources and preferences. Each market segment responds differently to marketing and outreach efforts, and the effective engagement of the entire market in NJ depends on strong marketing and outreach. Research has shown that C&I customers respond better to outreach strategies (e.g. one on one contact), and marketing plays a more critical role in reaching residential customers, but the combination of market research, direct customer marketing, outreach, and general awareness campaigns are all components of a comprehensive marketing and outreach strategy that provides reinforcing messaging intended to drive energy efficiency and program participation in New Jersey.

10.5.1 Marketing

Marketing, education, and brand awareness are critical for keeping the programs visible to New Jersey residents, businesses and local government entities. A strong brand identity for NJCEP can help overcome customer misgivings about clean energy in general by helping customers navigate towards opportunities that have the credibility of State backing. Programs of similar scope and size around the country typically dedicate four to seven percent (4%-7%) of their overall program budget to marketing. Increasing the level of marketing investment by the NJCEP can increase program participation levels and lower overall costs, especially in residential programs like Home Performance with ENERGY STAR and Appliance Recycling.

Direct outreach is highly effective with large C&I customers where large savings potential makes the time invested in outreach worthwhile. Outreach is also a beneficial investment with trade associations and key trade ally groups where many parties can be reached through each interaction. Residential customers, however, require a different method of communication, because there are just too many individuals to use an account management approach to reach them. In these cases, direct, digital and other forms of marketing are most effective.

Research has shown that up to 94% of all business-to-business purchase decisions are researched online before a purchase is made.³⁸ In the business-to-customer markets that number can be 81% or higher.³⁹ A critical component of any marketing and outreach plan is an optimized website that not only continues the messaging but encourages deeper engagement. It is widely recognized that the NJCEP web site is woefully out of date and needs to be updated. An optimized website provides critical data analysis opportunities to evaluate marketing and outreach strategies and tactics as well as help define the customer's habits and preferences. As a logical recipient of directed customer traffic, the website will supply critical access to program content and reinforce program advertising and marketing goals.

Marketing will also play a critical role in the introduction of new or revised program offerings over time. Marketing strategies that help target specific sectors or customers will assist in building awareness of new programs and pilots and how to access them.

In addition to the above marketing tactics, cooperative advertising has proven extremely effective in the residential sector. The cooperative advertising program, utilized in the past, provided the ability to extend NJCEP marketing dollars even further through advertisements placed by contractors. Without the financial support from the NJCEP for cooperative advertising, contractors have noted a significant negative impact on their businesses resulting in a decline in program participation.

As described in Section 8.2: Portfolio-Level Performance Metrics, an approach is recommended that would evaluate the success of the NJCEP based upon energy savings per dollar spent; whether that dollar spent was for marketing, outreach or incentives. With a comprehensive marketing and outreach strategy in place to consistently educate and inform all customer segments about the program offerings and benefits, it is expected that over time, the programs could be delivered at a lower overall cost to ratepayers.

Based on discussions with Commissioners, Board Staff, Rate Counsel, the utilities and other stakeholders, there is near unanimous support of the need for and benefits of increased marketing. Developing a path forward to obtain additional marketing services will be required to deliver an effective program.

10.5.2 Outreach

As described above, the success of these program strategies depends on improved and increased communication with customers. It also depends on establishing lasting relationships with customers to assist them in meeting their efficiency goals over time. Consistent with, and building on the Enhanced Outreach program that began in FY17, the NJCEP proposes ongoing, account-managed engagement with large customers. Account managers will also engage key trade allies as a means of fostering frequent two-way communication between the programs and small and medium customers and trade allies. The Account Managers build relationships with decision makers and influencers offering consistent and knowledgeable support across all programs. Customers feel more comfortable having a trusted advisor to communicate with for all their energy efficiency and NJCEP questions and concerns, and therefore are more willing to participate.

³⁸ AdWeek November 28, 2014.

³⁹ Braffon.com Oct 28, 2014.

The proposed customer-responsive program implementation model requires this—without it, it will not be possible to gain a sufficient understanding of customers’ needs and wants and of the opportunities that they see to improve the efficiency of their homes and businesses. This will be especially true for larger customers, where significant cost-effective energy savings potential will be found. Bridging the gap for these customers between C&I prescriptive rebates and more comprehensive, whole building programs will yield substantial energy savings for the State, but will require a dedicated and expanded team of Account Managers to liaise between customers and the NJCEP. Account Managers would engage potential participants and key decision makers during the project definition phase helping identify initial energy efficiency priorities. Potential participants often focus on single measures or upgrades that need immediate attention, without viewing the larger picture. While helping participants navigate NJCEP offerings, Account Managers also help them expand their scope of interest across multiple technologies, programs and energy efficiency needs—and will remain in touch with them to provide assistance and guidance in achieving deeper, more comprehensive energy savings. A discussion of proposed metrics for gauging the team’s success will be included in the detailed Outreach Plan.

As programs evolve and pilot programs are initiated, the Outreach Account Management Team is uniquely poised to support these new developments. In addition to one-on-one relationships, the NJCEP Outreach effort will expand the knowledge base of residential and business customers through educational presentations encouraging customers to participate in the programs it offers. During the initial phases of the Enhanced Outreach Program, stakeholders requested that the Outreach Account Management Team provide a broader understanding of the entire portfolio. This approach will continue to evolve with regular NJCEP presentations for various organizations, tailored to the specific market segment or building typology. The presentations will be continuously updated to capture the latest program changes. In addition to learning from the Outreach Team, stakeholders are exposed to other stakeholders with a wide array of energy efficiency priorities which they can incorporate into their own strategies.

Additionally, as the suite of programs offered by the NJCEP evolve over the coming years, the Outreach Account Managers will be instrumental in seeking input on new program needs and design as well as messaging the availability of new programs and how best to use them.

10.6 Expected Benefits and Costs

10.6.1 Budget Assumptions

The previous sections described a proposed evolution of program designs that will better position the NJCEP to achieve its objectives while also providing a better experience for participants. Estimating the benefits that will result, and the cost of achieving those benefits, is critically important, but necessarily involves making certain assumptions to ground the analysis. For this analysis it was assumed that the annual funding level for the FY19-FY22 programs that are covered under this plan will increase by \$10 million per year beginning in FY20. Estimates are provided of the MMBtu savings that the proposed programs will yield over the four-year plan period in support of the NJCEP primary objective, i.e., the desired growth in lifetime energy savings per dollar spent. Program budget allocations and expected savings would be different should actual budgets differ from those assumed in the development of this Strategic Plan.

Importantly, the budget levels provided in this Plan are top-down budgets, based on NJCEP historic results, and modified by perceived opportunities that are grounded in high-level analysis and industry best-practices⁴⁰ to improve those results. The proposed budgets, and projected savings are directional, and are not intended to signify actual costs and savings that will be obtained by the NJCEP. Once funding levels are established by the Board, bottom up budgets will be developed at the program level that can be used to refine savings targets.

For this analysis, FY19 costs were allocated to individual programs using FY18 program budgets as a guide. Adjustments were made to incorporate shifting emphasis within the proposed new initiatives. For the proposed savings scenario, increased emphasis on Strategic Energy Management and retro-commissioning, and the addition of a C&I midstream lighting program have been reflected. Specific technologies may also receive greater emphasis within the core C&I programs. These could include steam trap replacements, which are a source of savings in many natural gas C&I programs, and advanced lighting controls that are integrated with efficient lighting fixtures. Also, the NJCEP C&I programs may employ more sub-market specialization to drive greater participation and savings. Initiatives that are specific to hospitality, grocery, health care, and other sub-markets could be developed that recognize the specific interests of these industries. These are all program approaches that are currently being used in other jurisdictions.

Figure 16 provides the level of new funding used as the basis for this Strategic Plan:



Figure 16: Required level of New Funding for NJCEP and Other OCE Initiatives

⁴⁰ In the absence of historic NJCEP program data for Marketing and Outreach, budgets are proposed at the low end of those seen in industry leading portfolios. The Board should conduct an analysis that is grounded in actual market data and program goals to determine the necessary amount of investment in Marketing and Outreach.

Note: The dark blue bar in Figure 6 above represents new SBC funds of \$186M in FY19 growing by \$10M/year to \$216M in FY22. The light blue bar represents approximately \$19M in estimated FY18 carry over into FY19.

In the FY19-FY22 Plan that is proposed here, the savings produced by the NJCEP will increase such that in FY22 the NJCEP will achieve over four hundred and fifty thousand MWh per year in annual electricity savings—savings that will reduce retail electric sales by roughly 0.6% before accounting for utility and state-managed programs—a seventy percent increase compared with FY18 savings. This increase will be achieved by increasing marketing and outreach, shifting funding to market areas that can produce the highest level of savings at the lowest cost, phasing in a new suite of programs that will be more effective and easier for customers to participate in, and expanding the use of midstream/upstream promotion in specific market channels—notably C&I linear lighting. The annual MWh savings trajectory can be seen in Figure 17, the percentages shown represent the percent of retail sales:

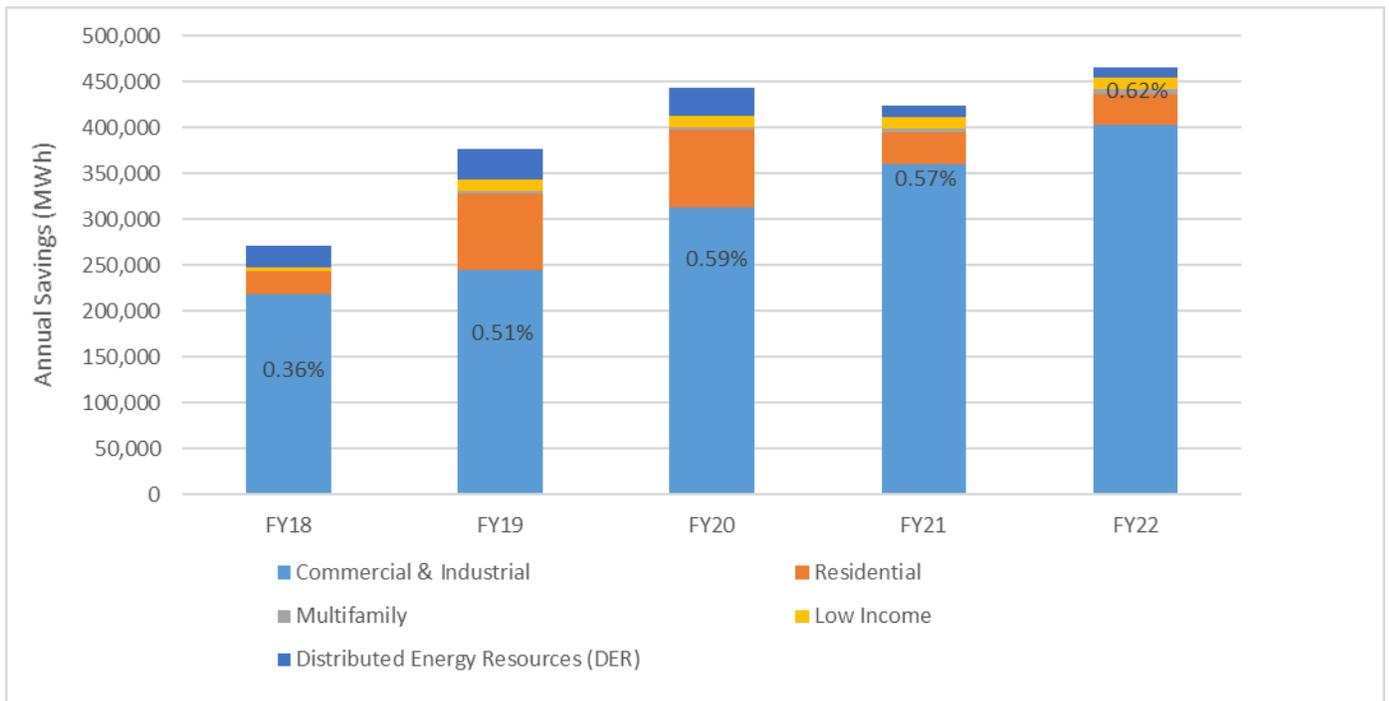


Figure 17: Annual MWh Savings

The lifetime MMBtu savings from electricity, natural gas, fuel oil, and propane that will result from these investments are shown in Figure 18:

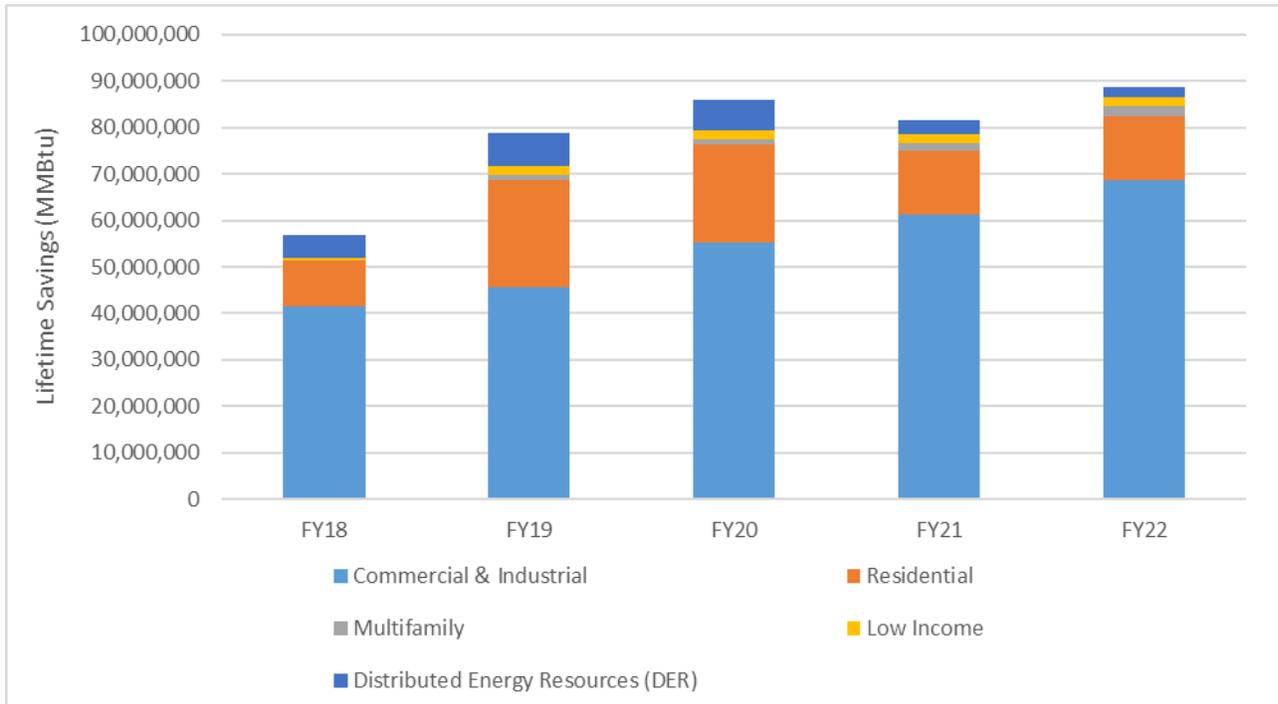


Figure 18: Expected NJCEP Lifetime MMBtu Savings

The program cost per lifetime MMBtu is expected to decrease by more than 11% over the course of this four-year Plan. This will occur as a result of improved program designs that make it easier for customers to participate, coupled with enhanced Marketing and Outreach, all of which will drive greater participation. The significant decrease in the cost of saved energy is shown in Figure 19:

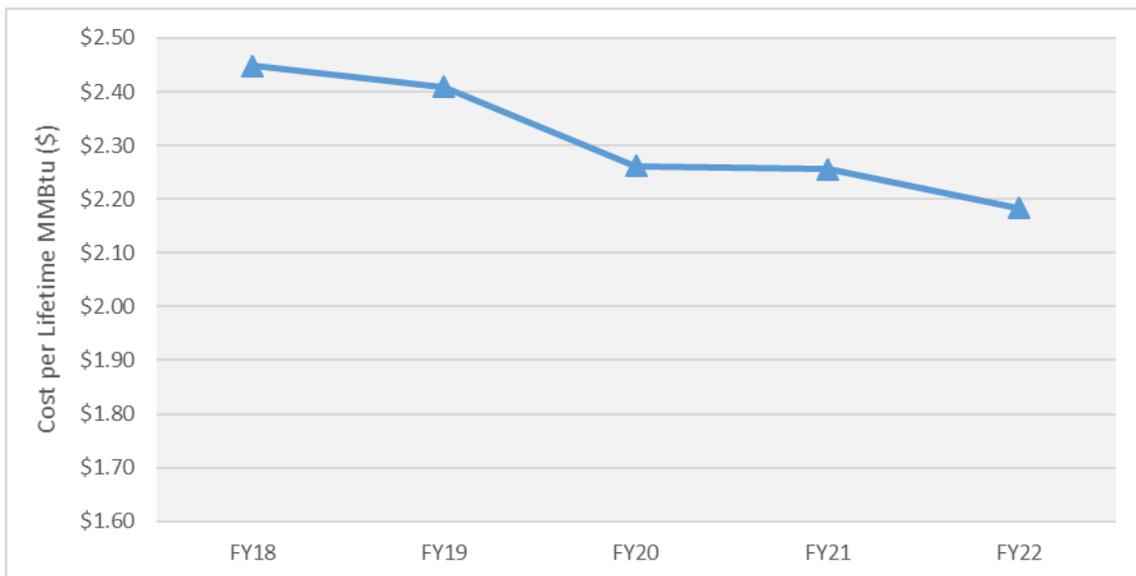


Figure 19: Expected NJCEP Cost of Saved Energy

10.6.1 An Investment in New Jersey's Future

In FY19, each ratepayer dollar that is invested in clean energy programs will return on average an estimated \$1.10 in benefits, growing to \$1.50 in benefits in 2022, providing significant value in reducing energy bills for participants, creating jobs, and improving the State's environmental and economic sustainability. To be sure, there are rate impacts that result from these investments, however, as Figure 20 shows, energy efficiency program spending (costs) is only one of a number of factors that affect rates, exerting both upward and downward pressure.

Factor	Electric and/or Gas	Impact on Rates
Program spending	Both	↑
Avoided capital investment in new generation	Electric	↓
Avoided capital investment in T&D	Both	↓
Avoided environmental compliance costs	Both	↓
Impact of less demand on market clearing prices for energy and capacity ⁴¹	Both	↓
Spreading fixed utility costs across smaller sales volume (utility “lost revenue”)	Both	↑

Figure 20: Rate Effects of Energy Efficiency Program Investments

The net effect of these factors will depend on a variety of factors including levels of spending and savings, avoided capacity and avoided T&D cost assumptions, the nature and magnitude of avoided environmental compliance costs, the sensitivity of market clearing prices to changes in demand, and the magnitude of utility fixed costs. However, it is not uncommon for the upward pressure on rates from program spending to be more than offset by downward pressure resulting from reduced investment in generation, reduced investment in T&D, and price suppression effects.

The TRC team calculated net customer bill savings⁴² for the proposed portfolio of NJCEP programs at more than \$700 million over the four years of program implementation. TRC estimated net bill savings by subtracting the net present value (NPV) of the Costs from the NPV of the Benefits associated with the Program Administrator Cost Test (PACT) for the Clean Energy Program portfolio, as seen in Figure 21:

Fiscal Year	Utility System Benefits	Utility System Costs	Utility System Bill Reductions	Utility System Benefit - Cost Ratio
2019	\$280,199,681	\$151,161,324	\$129,038,358	1.9
2020	\$337,268,103	\$167,359,754	\$169,908,348	2.0
2021	\$345,433,635	\$159,029,024	\$186,404,612	2.2
2022	\$385,181,857	\$169,943,272	\$215,238,585	2.3

Figure 21: Net Bill Savings from NJCEP Programs

⁴¹ With respect to electricity, this only applies to jurisdictions with competitive wholesale markets such as PJM states (including New Jersey).

⁴² For more information on the modeling tool, see [ANB Systems' ePLAN](#).

The magnitude of these savings reflects the anticipated value of the State's investments in clean energy for New Jersey's ratepayers.

10.6.2 Limitations

The ability of the NJCEP to achieve the results outlined here is contingent on the following:

- ◆ The program changes described here need to be approved and implemented in a timely manner. Delays in implementing program changes, or inability to obtain the required approvals will limit program success.
- ◆ The cost of saved energy illustrated above, and the amount of energy saved are based on the program allocations included in the Plan. Program budget allocations and expected savings would be different should actual budgets differ from those assumed in the development of this Strategic Plan.
- ◆ This scenario is based on best available information on current and anticipated market conditions. Assumptions are also made about savings baselines and codes and standards over the FY19-FY22 period. If significant unanticipated market or standards changes occur, then costs and savings results may be different.

II. RESIDENTIAL PROGRAMS

II.1 Energy Efficient Products Program

II.1.1 Overview

The EEP Program promotes the sale and purchase of ENERGY STAR® certified and other energy efficient products including lighting, and appliances, while also supporting the “early retirement” and recycling of existing inefficient appliances in New Jersey households. The EEP Program seeks to capture the greatest savings possible at the lowest cost, while also making sure that opportunities are available through a wide range of retail channels, including online, and through additional opportunities aimed at historically hard-to-reach customers.

The EEP Program provides targeted rebates and messaging to consumers, community partners, manufacturers, and retailers for the sale and purchase of selected energy efficient products. Rebates are intended to reduce the initial purchase price of energy efficient lighting and appliances so their typically higher costs do not deter consumers from choosing them over less efficient alternatives. Messaging via marketing and outreach raises awareness of efficient options and of the benefits they can provide, and rebate support provided by the program makes these products more affordable.

The target market for the EEP Program is all New Jersey consumers who purchase lighting, appliances, and other energy consuming devices in retail stores, and online, across the state. The appliance recycling program also targets all New Jersey residents who have older working refrigerators, freezers, room air conditioners (RACs) and dehumidifiers that typically consume considerably more electricity than comparable newer efficient models. The proposed multifamily appliance rebate and appliance recycling components target buildings having three or more independent resident housing units and a single owner or management entity as the participant (e.g. single owner, developer, management company, Home Owner Association).

II.1.1 Online Marketplace

We propose the establishment of an Online Energy Efficiency Store, which would be available to all residential customers and would offer energy efficient measures that would be incentivized through the NJCEP’s portfolio of energy efficiency programs. The Online Energy Efficiency Store could offer customers a platform to purchase small energy efficient measures that fall under EEP, including lighting and other products. The platform could also incorporate features to create a “one-stop shop” for many energy efficiency needs. This would allow for cross-promotion of the NJCEP’s Energy Efficiency programs via re-marketing to customers who purchase products through the Online Energy Efficiency Store. Implementation of the marketplace will be coordinated with any utility offerings to ensure that there is neither redundancy nor market confusion.

II.1.2 Energy Efficient Products: Retail Lighting

A restarting of the Lighting Program is proposed in FY19, offering retail price incentives through upstream markdown promotions for qualified lighting products. Through an RFP process, incentives will be provided for eligible products (up to a negotiated volume) sold by selected New Jersey retailers during promotional periods. Incentives will vary by type of product and/or distribution channel, based on negotiations with manufacturers and/or retailers.

11.1.3 Energy Efficient Products: Retail Appliances

The Appliance Program will continue to offer downstream mail-in rebates on efficient appliances purchased by NJ customers. Multifamily properties may also be eligible to participate in bulk-purchase appliance rebates for selected appliances. Midstream/upstream rebates for select products are also under consideration where they will lead to higher savings at lower costs.

11.1.4 Energy Efficient Products: Appliance Recycling

The Appliance Recycling Program offers residential customers the opportunity to recycle their old, inefficient refrigerators, freezers, room air conditioners, and dehumidifiers during the same appointment, in exchange for an incentive payment. Small commercial customers are also eligible if they meet program requirements. Customers can call or go online to schedule a pick-up appointment. NJCEP uses a third-party vendor to provide turnkey program implementation. The vendor manages the appointment scheduling, confirms customer and unit eligibility, conducts the pick-ups, transports the units to a recycling facility, and oversees their decommissioning. Recycling turn-in events, as well as multifamily bulk recycling may also be offered in the program where it will increase opportunities for customers who might not otherwise participate.

11.2 Retrofit and Existing Homes Program

11.2.1 Overview

Currently the NJCEP provides energy saving opportunities to New Jersey's residential customers wanting to improve the energy efficiency of the structure of their existing home or of their HVAC equipment through two distinct programs. Home Performance with ENERGY STAR (HPwES), promotes a comprehensive approach to home energy efficiency. The Residential HVAC Program focuses on increasing the efficiency of new HVAC equipment when purchases are being made. Over the course of the next several years the NJCEP proposes to merge these two programs into a single program that will also provide additional opportunities for residential customers to improve the energy efficiency of their homes. The goal is to offer a fully flexible program allowing homeowners to participate at a level that meets their needs and to connect them with contractors that can do so effectively. This approach will also permit homeowners to address their home's immediate needs and incorporate additional upgrades in phases over time, when they may not be able to undertake the expense of a full comprehensive retrofit all at once. The desired outcome for the NJCEP is increased participation (by both homeowners and contractors) resulting in increased energy savings, by facilitating participation in a full range of projects at varying levels of incentives, rather than just the lowest and highest. The new program will also include mid-range projects, where bundling envelope upgrades with mechanical upgrades captures lost opportunities. The NJCEP intent is to continue participating in the nationally recognized Department of Energy's HPwES Program while expanding the NJ market share. This change in program design is proposed to launch January 2019. The proposed residential retrofit program is intended to provide opportunities for owners of existing one and two-family homes and townhouses to reduce their energy usage by making energy efficiency improvements to the structure and mechanical systems of their homes. The goal is to offer multiple pathways to participation for both customers and contractors and capture savings from a menu of options, going from simple prescriptive measures to more comprehensive packages.

11.2.2 Target Market

The Home Performance program is designed to serve existing New Jersey households across all income categories particularly the broader market not eligible for low-income program services. The program, which is fuel neutral, targets customers that reside in existing one and two-family homes and townhouses, and multifamily buildings which are three stories or less until the stand alone multifamily program is approved and implemented. The new program will now allow any licensed HVAC, insulation, home improvement contractor to participate at some level of the program. The NJCEP recognizes that there is a large group of moderate income homeowners who are not eligible for the low-income program offered under Comfort Partners, and yet are unable either to meet current lending institution eligibility requirements or to come up with the funds that would be necessary to make energy upgrade investments on their own. The NJCEP will explore the potential to develop solutions for these homeowners by engaging current lenders and utilities offering on-bill repayment.

11.2.3 Program Delivery Approach

The program will open new pathways for both contractors and customers to participate. This new program will incorporate prescriptive single and bundled multi-measures of mechanical and building envelope upgrades, along with a prescriptive and modeled pathway to full comprehensive projects completed by BPI GoldStar contractors. Rather than asking customers to choose between different programs, NJCEP's intent is to provide clear guidance within a single "umbrella" program so that customers can find support for the level of investment that they are able to make, without being asked to sort through a confusing set of potentially competing programs. With these changes, the program will provide a wide range of retrofit efficiency measures enabling more New Jersey customers to participate.

The enhanced outreach team will work with HVAC manufacturers and distributors to reach and recruit future contractors. They will also continue to promote the programs and work hand in hand with marketing and cooperative advertising efforts. Technical field representatives will continue to inspect a percentage of projects through the program while account managers will work with their contractors to ensure they are entering program completion data accurately and coaching them on how to promote their business. The NJCEP will continue to offer technical and sales training classes for all contractors. In addition, the program will build on existing partner relationships such as utilities, lenders, NJIT, Sustainable Jersey and others.

11.3 Residential New Construction

11.3.1 Overview

The Residential New Construction (RNC) Program is designed to encourage builders to design and construct homes that perform better than if built to meet code. Doing so increases energy efficiency and environmental performance of single family and multifamily buildings, utilizing national brand recognition of EPA's ENERGY STAR⁴³ and DOE's Zero Energy Ready Home (ZERH)⁴³ as a program platform. Builders agree to work with credentialed independent third-party raters, who inspect, measure, and test the home's performance during and after construction. Raters, rating companies, and projects are

⁴³ <https://www.energy.gov/eere/buildings/zero-energy-ready-home>

subjected to quality assurance reviews regarding the Residential Energy Services Network (RESNET)⁴⁴ national technical rating standards and ENERGY STAR Certified Homes and ZERH Program requirements. Incentives are designed to partially offset the cost of rating and the incremental construction costs associated with building higher efficiency homes. As a market transformation program, staff works very closely with the participating raters to promote ENERGY STAR Home and Zero Energy Ready Homes and offer technical support to raters and builders.

Over the last ten years, ENERGY STAR completions are estimated to represent 27% of new construction certificates of occupancy in NJ. While the RNC program is proposed to operate with many similarities to its past implementation, in FY19 the program is proposing changes to the incentive structure and levels to correct for misalignment of savings to incentives that resulted from the State's adoption of a higher energy code and program changes by RESNET. The higher energy efficiency requirements in the statewide building code led to reduced incremental savings from the NJCEP RNC program and created a misalignment with the past incentive offerings.

11.3.2 Target Market

The target market for this program is builders, raters, and potential buyers of residential new construction in New Jersey including one and two-family homes and townhouses and also low, mid, and high rise multi-family buildings until the proposed stand-alone multifamily program is approved and implemented.

11.3.3 Program Delivery Approach

To participate in the RNC program, builders will work with credentialed independent third-party raters. As a market transformation program, program staff work very closely with the participating raters to promote ENERGY STAR Home and Zero Energy Ready Home and offer technical support to raters and builders. Additionally, the enhanced outreach team will work to recruit new builders to increase market penetration of energy efficient new homes, with an emphasis on driving participants toward Zero Energy Ready Homes. The program will also provide training to raters, trade allies and builders to ensure they understand the program rules and requirements, as well as energy efficient building practices as needed. Program staff performs field QA inspections on a sample of raters' work to verify the homes are following the program guidelines.

In FY19, the program will reduce the incentives compared with FY18 incentives by approximately 25%, while also streamlining and simplifying the incentive structure. The incremental incentives based on a HERS Index⁴⁵ for ENERGY STAR, ZERH and multifamily high rise will be eliminated and will be replaced with a fixed base incentive plus a performance incentive based on dollars per MMBtu saved. The program will eliminate the incentive for using the entry level pathway of meeting the IECC2015 Energy Rating Index (ERI) due to past lack of participation and relatively small incremental savings. Builders must agree to work with program-approved, independent third-party raters, who inspect, measure, and test the home's performance during and after construction. To participate in the program and as part of the program requirements, participating raters must use program-approved modeling software to

⁴⁴ <http://www.resnet.us/>

⁴⁵ <http://www.resnet.us/hers-index>

model savings, calculate the HERS Index and determine program compliance. The program would also benefit by moving potential homebuyers into the energy efficient new home market through marketing to realtors and the real estate community.

11.4 Comfort Partners

11.4.1 Overview

The Residential Low-Income Program known as Comfort Partners, managed by Atlantic City Electric, JCP&L, New Jersey Natural Gas, Elizabethtown Gas, PSE&G and South Jersey Gas is designed to improve energy affordability for low-income households through energy conservation. Rockland Electric manages a similar program in its service territory.

11.4.2 Target Market

The Comfort Partners Program targets participants in the Universal Service Fund who have high energy usage. This target population is characterized by high-energy burdens based on their income, and the program is available to households with income at or below the 225% of the federal poverty level. Customers who receive Federal Supplemental Security Income (“SSI”), Low Income Home Energy Assistance (“LIHEAP”), Universal Service Fund (“USF”), Lifeline, Pharmaceutical Assistance to the Aged and Disabled (“PAAD”), Temporary Assistance to Needy Families (“TANF”), Supplemental Nutrition Assistance Program (SNAP), Medicaid, Weatherization Assistance Program (“WAP”) or Section 8 Housing also may be eligible.

Program participation will be prioritized by energy use with the highest energy users being served first.

11.4.3 Program Delivery Approach

The program will provide direct installation of cost-effective energy efficiency measures at no cost to customers, and will include comprehensive, personalized customer energy education and counseling and the installation of health and safety measures as appropriate. The program directly reduces the use and cost of energy for low income customers who can’t afford to invest in energy efficiency. The program also focuses on customer energy education, so that those who reside in the home have a better understanding of how to manage their energy consumption. By reducing the customer’s energy costs, the rest of the State’s ratepayers benefit through reductions that may flow to the Universal Services Fund. Additionally, by making these treated homes more energy efficient, it can also aid in the issue of billing payment delinquency, which negatively impacts all rate payers. Most importantly, this program saves lives through investments in energy efficient mechanical equipment to replace the aging systems that are often in place, and which if left alone, can produce dangerous levels of carbon monoxide. This program also can remedy other items such as faulty electric wiring, and faulty plumbing that if not repaired, directly impedes the ability to insulate the home, and / or can cause serious injury.

12. MULTIFAMILY

12.1 Overview

In its FY17 Compliance Filing, the TRC team described the rationale for introducing a new MF program that would combine existing program components into a single program that serves the MF market. MF is widely thought to be a historically underserved market, both in New Jersey and nationally. To rectify this going forward, a new MF program is proposed to advance the following objectives:

- ◆ Consolidate multiple program offerings into a single program entry point to improve the ease of participation for the MF market.
- ◆ Improve access for segments of MF housing that have been unable to participate because current MF offerings have not been a good fit.
- ◆ Streamline program administration and avoid confusing participation rules.
- ◆ Increase participation and maximize savings for incentive dollars spent.

12.2 Target Market

All buildings classified by New Jersey code as either residential or commercial multifamily properties (five units or more) in New Jersey, including low-rise and high-rise, existing and new construction, will be eligible to participate in this unified MF program.

12.3 Program Delivery Approach

Multifamily energy efficiency has been challenging for energy efficiency program administrators in many jurisdictions. There are many barriers, some of which are unique to this market:

- ◆ Split incentives when tenants pay utility bills make landlord investments hard to justify.
- ◆ The combination of commercial and residential customer classes in the MF market, and often in the same property, creates funding and reporting challenges.
- ◆ Affordable-rate MF projects are often unable to take on additional debt to finance energy efficiency improvements.
- ◆ The term “Multifamily” incorporates a wide variety of property types, from high-rise to low-rise, incorporating only a few units or hundreds in a single building. The breadth of project types makes it challenging to create a program that addresses all project types comprehensively.

The proposed MF program will feature a single point of entry regardless of building style, fuels used, or metering configuration. Eligible multifamily properties will not be eligible to participate in other NJCEP programs such as HPwES, ENERGY STAR® Homes, WARM/COOL Advantage, P4P, SmartStart, or Direct Install. Rather, MF services will be designed to offer a range of options to fit a wide variety of needs within this single program. The single point of entry approach will guide participants to the services that best meet their needs. The NJCEP Outreach team will work to build relationships with the multifamily market through proactive engagement with large multifamily owners and management organizations as well as applicable associations and membership organizations. Particular attention will be paid to affordable-rate housing, including working with HMFA, to facilitate and promote participation.

The proposed MF program will include both a comprehensive/whole-building path, as well as a prescriptive equipment path. This approach will reward projects that achieve comprehensive savings (as do the current Home Performance with ENERGY STAR and P4P programs), but will also provide a less challenging prescriptive path for projects (as do the current WARM/COOLAdvantage and SmartStart program) that either do not have comprehensive savings opportunities, or where building owners are unwilling or unable to make the required comprehensive investment. The program will continue to leverage the professional market by utilizing pre-approved energy services companies to deliver the program to the MF sector, pulling from, refreshing, and adding to the existing list of HPwES contractors, Residential New Construction raters and builders, as well as P4P contractors. The program will also explore the benefits of adding a bulk appliance recycling component.

Both to identify potential projects as an outreach activity, and to “pre-qualify” projects, the program may provide no-cost walk-throughs of potential projects. This would provide the owner with an understanding of the potential benefits and costs and would give the program a sense of the savings opportunity. This pre-qualification will help identify the path that might be most-suited to the owner’s level of interest and opportunity, and in some respects, mirrors the service-focused approach of the Customer-Tailored pilot program. It is expected to help owners and the program determine successful participation levels and avoid investments that may not lead to savings.

Certain types of multifamily housing, such as shelters, dormitories, independent living facilities, and other similar housing types that more resemble single-room occupancy than the code definition of a “dwelling unit”, may be provided with services through this program. It is expected that reduced incentives will be scaled to the considerably smaller living area typical of these housing types compared with conventional apartments. Affordable housing, defined by income eligibility requirements, may be eligible for increased incentives in recognition of the significant financial barriers faced by affordable housing owners when contemplating energy efficiency upgrades.

The magnitude of incentives for participation in the whole-building performance path will be comparable to those currently provided under the P4P, Home Performance with ENERGY STAR and Residential New Construction programs so as not to deter participation. These incentives will be tiered, and based on modeled percentage of whole-building energy savings. While energy use is estimated based on whole building, incentives will be calculated based on number of living units and will be relatively consistent between low/mid/high-rise (if possible). Incentives in the prescriptive path will be comparable to those offered under the C&I SmartStart and Residential COOL/WARMAdvantage programs. Lists of prescriptive incentives will be expanded to cover common multifamily measures beyond lighting and HVAC, potentially including low-flow fixtures and appliances. Equipment outside of the prescriptive list may be considered for a custom incentive, or otherwise referred to the whole-building path.

13. COMMERCIAL AND INDUSTRIAL PROGRAMS

13.1 C&I Energy Efficiency Programs

13.1.1 Overview

The NJCEP offers programs to commercial and industrial (C&I) customers that are intended to address a wide range of energy efficient equipment opportunities. The C&I Energy Efficiency Programs offer a variety of participation options that can range from one-for-one measure replacement programs to comprehensively engineered solution programs. The program provides financial rebates and incentives to New Jersey's businesses for installation of energy efficient equipment. Through these incentives businesses can reduce their utility costs and improve the environment, while remaining successful in their industries and promoting future growth.

The program's primary goals are both to encourage C&I customers to choose high efficiency equipment rather than standard efficiency equipment when making purchase or design decisions, as well as to replace aging equipment in existing buildings with high efficiency new equipment. The NJCEP intends to transition its C&I programs over the next several years to become both more comprehensive and more flexible in meeting customer needs and to provide a greater range of participation pathways.

13.1.2 Target Market

Customers eligible for incentives are defined as non-residential electric and/or gas customers of one of New Jersey's regulated electric or gas utilities who contribute (or will contribute in the case of new construction) to the Societal Benefits Charge fund.

13.1.3 Program Delivery Approach

The Program will provide financial incentives determined by a customer's scope of work and desired level of engagement. Customers will have the opportunity to consult on their project with the Program's Technical Outreach staff who can provide a high-level facility assessment and help guide them to the best program path. Applications can be submitted by a customer or a customer's designated representative (e.g. contractor, engineer, etc.). All Rebates and Incentives are available for existing buildings, renovations, and new construction.

Fixed value rebates will be available for the most popular energy efficiency measures including Lighting, HVAC, Water Heating, VFDs, Food Service equipment, and Refrigeration. These rebates are best suited for customers looking for a simple and rapid application process requiring a minimal amount of effort. An application is submitted to the Program Manager upon project completion, with requisite supporting documentation (e.g. invoice, tax documentation, equipment specs, etc.). After which point a project may be inspected for verification. Once approved, the rebate is paid to the Applicant or other designated company. Rebates can be applied for within 12 months of equipment purchase. Applicants also have the option to submit their application prior to completing the work and receive a pre-approval notice.

Technologies that fall outside of the Rebate list (e.g. building automation system, VFD on industrial motors, process chillers) or projects requiring more detailed energy analysis (e.g. new construction lighting design) can pursue incentives through a custom approach. Custom measure incentives are paid based on \$/kWh and \$/MMBtu (or therm) of projected savings. For retrofit projects, a base incentive

rate will be paid for proposed equipment that meets code, and will scale up for equipment that exceeds code. Once the project is installed, the Applicant submits evidence of completion, such as invoices, after which point a project may be inspected for verification. Once approved, the incentive is paid to the Applicant. Customers pursuing rebates or incentives for multiple technologies in a single facility or site may be eligible for a bonus rebate. The goal of the bonus is to encourage adoption of non-lighting fixture measures, which have historically dominated the project pipeline. Custom incentive applications will accommodate multi-site projects and progress payments as measures are completed.

Customers looking to evaluate all potential energy saving measures within their facility or site can pursue a whole-building approach to maximize efficiency. Customers must work with a pre-approved Contractor certified to provide services using this approach. The Contractor will use a building energy simulation program (e.g. eQuest, Trane TRACE, etc.) to calculate estimated energy savings from each measure. Incentives will be paid based on \$/kWh and \$/MMBtu (or therm) of projected savings, but at a greater value than for less comprehensive projects to encourage customers to pursue more comprehensive scopes of work.

Multi-measure and comprehensive whole-building projects will have the option to garner additional incentives by completing post-installation whole-building savings verification. This is accomplished by comparing weather-normalized utility bills pre-retrofit and one year post retrofit to demonstrated actual project savings. This allows the program to collect verified savings, as well as demonstrate a project's persistence of savings. Incentives under this approach will be paid based on \$/kWh and \$/MMBtu of actual savings but will be proportionally smaller compared to the installation incentives, which are meant to offset equipment material and installation.

Customers that are defined as large energy users are able to take advantage of all program paths above, and will receive significant levels of support through the outreach team. A large customer is defined as one paying at least \$5 million in annual electric and natural gas costs across all of their facilities.

13.1.4 New Jersey Building and Systems Evaluation

The proposed New Jersey Building and Systems Evaluation (NJ BASE) is a new component of the larger Commercial and Industrial Buildings programs. NJ BASE will offer building-specific technical assistance that guides customers to a clear and informed energy improvement decision, which ultimately results in the implementation of energy conservation measures. Customers will work with a pre-approved program energy consultant (PEC) to apply for incentives that offset the cost of the proposed evaluation.

NJ BASE will address several market barriers that prevent customers from implementing energy conservation measures and strategies, including the cost required to perform a facility specific technical energy assessment, the lack of information regarding energy usage, unfamiliarity with beginning the process of developing energy saving strategies, and the lack of information about the benefits of both short-term and long-term energy reduction strategies and how they can impact a business's bottom lines.

This program will capture lost opportunities by filling a gap for customers who know they want to improve their energy use, but do not have the technical knowledge, in-house staff, or financial incentive to take the first step. NJ BASE will enlist a group of approved program energy consultants to work with the customer to provide services such as: energy audits, complex technology feasibility studies, industrial process and data center efficiency analysis, peak load reduction strategies, combined heat and

power generation viability, energy storage, retro-commissioning, geothermal, water and wastewater treatment energy strategies, as well as new construction planning and design review.

13.2 Local Government Energy Audit Program

13.2.1 Overview

The Local Government Energy Audit Program (LGEA) program was launched as part of NJCEP's portfolio in 2008 to provide financial incentives to cover the cost of having an energy audit performed for eligible facilities owned by municipalities, school districts, 501(c)(3) nonprofits, and other local and state government entities (Applicants). NJCEP proposes to continue to operate LGEA as a separate, standalone program in FY19 and beyond, with some proposed modifications and improvements.

13.2.2 Target Market

LGEA is open to the following eligible entities that contribute to the Societal Benefits Charge fund through either their gas and/or electric utilities:

- ◆ "State contracting agency" as defined by N.J.S.A. 52:34-35
- ◆ "Public agency" as defined by N.J.S.A. 52:35A-1
- ◆ Local governments per Local Public Contracts Law (N.J.S.A. 40A:11-1)
- ◆ Local governments per Public School Contracts Law (N.J.S.A. 18A:18A-1)
- ◆ County colleges per County College Contracts Law (N.J.S.A. 18A:64A-25.1)
- ◆ NJ State Colleges or State Universities per State College Contracts Law (N.J.S.A. 18A:64-52)
- ◆ Nonprofit charitable organizations per Section 501(c)(3) of the Internal Revenue Code

Consistent with the Direct Install program changes proposed for FY19, buildings must demonstrate an average peak demand of 200kW or greater in the most recent 12 months of electric utility bills (inclusive of all accounts in the building) in order to qualify to participate in LGEA. Buildings that do not meet this requirement will be directed to the Direct Install program.

13.2.3 Program Delivery Approach

No major modifications are proposed for this program in FY19. NJCEP will provide all program services including:

- Customer assistance;
- Application review;
- Energy efficiency auditing (ASHRAE Level 1⁴⁶ or 2);
- Energy audit reports;
- Follow-up discussion with Applicant to discuss findings and potential EE programs for incentives.

⁴⁶ Facilities below the 200 kW threshold that are granted a waiver will be provided a Level 1 audit, rather than a Level 2/3 audit reserved for larger facilities with more significant energy use. This is expected to improve the cost-effectiveness of the program while still providing valuable information to Applicants.

The general scope of work for each audit type is as follows:

ASHRAE Level 1:

- Brief walkthrough of the facility with an approximation of equipment inventory including lighting and HVAC.
- Utility bill analysis and energy use intensity (EUI) development based on available standard metrics such as the Commercial Buildings Energy Consumption Survey (CBECS).⁴⁷
- ECM recommendations focused on low cost retrofit solutions and identifying of potential capital measures. Energy calculations will be based on standard assumptions.

ASHRAE Level 2:

- Detailed site survey which includes a detailed equipment inventory of all major energy consuming equipment, as well as an energy breakdown for all end uses within the building.
- Utility benchmarking using EnergyStar Portfolio Manager including facility score, where applicable.
- Identification of low cost, capital cost and custom ECMs including detailed energy calculations and cost estimates.

Buildings not eligible for the audit will be directed towards other NJCEP programs.

The LGEA program will provide audits up to a value of \$100,000 per program year, per applicant. For larger applicants or those with complex/campus metering structure, if the audit cost exceeds or is expected to exceed \$100,000, the Program Manager will work with Board Staff to determine and authorize a larger cost cap, not to exceed \$300,000. Approval of a higher cost cap will be contingent on a commitment from the applicant to pursue the state's ESIP (identified on the Registration Form). If a higher cost cap is not an option and/or is not approved, TRC will work with the applicant to determine if buildings can apply for the program over several program years or if any modification to the scope of work is possible.

13.3 Direct Install Program

13.3.1 Overview

The Direct Install Program is a turnkey offering that provides small business customers, as well as local government entities and non-profit organizations, with a single source for financial incentives, information, and technical assistance. The Program works through a set of approved contractors who are empowered to promote, enroll, audit, and then install energy efficient measures. The use of fully trained and qualified contractors to provide customers with energy efficiency assessments, effective measure recommendations and installation, and access to incentives that cover up to 70% of the total project costs creates a powerful engine to transform this sector of the C&I market that has historically been unable to participate in the NJCEP programs at desired levels.

⁴⁷ <https://www.eia.gov/consumption/commercial/>

The Direct Install program was established in 2009 to address the unique barriers of the small business sector that resulted in a historic reluctance or inability to pursue energy efficiency improvements. Small businesses in New Jersey, as elsewhere, frequently lack funding for capital improvements, and almost universally lack the in-house expertise to identify economically advantageous energy efficiency projects. Additionally, small business owners lack the time to focus their attention on energy-related matters or to prioritize them as part of their business operations. The turnkey design of this program seeks to address these barriers and enable small businesses to assess their needs and implement energy efficiency measures with minimal disruption to their businesses and with minimal out-of-pocket expenses.

13.3.2 Target Market

The Direct Install Program is open to all eligible commercial and industrial customers whose average demand over the preceding twelve months did not exceed 200 kW. Historically, this small business sector has been reluctant or unable to fund energy efficiency improvements. In addition, their small size tends to exclude them as beneficiaries of services from other energy service providers.

Eligibility is determined on a facility basis. For purposes of the Program, “facility” is defined as a single building or multiple buildings billed off of a single electric meter. In order to qualify for participation in the Program, a facility must be an existing facility (i.e. not new construction), served as a non-residential electric and/or gas service metered and billed account of one or more of the following regulated utilities: Atlantic City Electric, Jersey Central Power & Light, Rockland Electric Company, New Jersey Natural Gas, Elizabethtown Gas, Public Service Electric and Gas, or South Jersey Gas, and served by a single electric billing meter with monthly average electric demand not exceeding 200 kW in the most recent preceding 12 months.⁴⁸

13.3.3 Program Delivery Approach

The Direct Install Program will provide turn-key services and offer customers a consistent source of technical assistance, installation services and financial incentives. The Program will be delivered across the state by the NJCEP in association with multiple regional contractors (contractors) who will be selected via a Request for Proposal (RFP) process to deliver installation and related services. Contractors will work in conjunction with material suppliers (vendors), who will be selected under a separate competitive RFP process.

The program will use fully trained and qualified contractors to both market the program and provide customers with energy efficiency assessments, effective measure recommendations and installation. The DI program will achieve deeper energy savings as each project strives to include a comprehensive package of cost-effective energy efficiency improvements. The program considers a wide array of improvements, including lighting, HVAC, refrigeration, and various controls, and bundles them all under a single application/project for a more streamlined experience.

Direct Install participants will also be held to a fiscal year entity cap of \$250,000 per entity. For Direct Install projects that are participating in the ESIP, the Program’s entity cap will be increased to \$500,000.

⁴⁸ Other eligibility criteria may apply.

This would facilitate the submission of larger projects that provide a good opportunity for significant, cost-effective energy savings. Incentives are paid to the installation contractor and the contractor will invoice the customer for the remaining balance of the installation.

13.4 C&I Midstream Lighting Program

13.4.1 Overview

Rather than continuing to rely solely on “downstream” lighting promotions for the C&I sector, the NJCEP proposes to implement a “midstream” approach that it expects to dramatically increase and accelerate the adoption of highly efficient linear LED lighting products. In a midstream approach, the program will work with distributors to increase the stocking and sales of efficient lighting choices by providing incentives directly to the supply houses to first ensure that inventory volumes are sufficient to handle increased demand, and then to make the efficient products cost-competitive with less efficient options.

13.4.2 Target Market

All C&I and municipal electric utility customers in New Jersey that may be contemplating lighting replacements or upgrades.

13.4.3 Program Delivery Approach

Midstream promotion of C&I linear LED lighting products shares similar characteristics with retail promotion of residential screw-based light bulbs. The NJCEP will negotiate cost-effective incentive levels with lighting supply houses through which they will aggressively stock and promote the sale of high-efficiency lighting products. In the midstream program, incentives are applied at the point of purchase for products sold through wholesale and/or retail distributors. In doing so, energy efficient products achieve higher levels of sales penetration, and reach a greater number of customers, due to: (1) reductions in cost premiums over standard efficiency products at the point of purchase; (2) distributor stocking of high efficiency products; (3) ease of participation with little to no paperwork; and (4) the capture of sales made under duress due to equipment failure. Meanwhile, ratepayer programs often benefit from reduced administration costs because applications are submitted in batches (typically monthly) and implementation happens through a relatively small number of market actors.

14. RENEWABLE ENERGY

14.1 Overview

NJCEP renewable energy programs currently support Class I Renewable Energy Resources and consist of: the SREC Registration Program; the Offshore Wind Program; the biomass component of the CHP program and the Renewable Electric Storage Program. The biomass component of the CHP Program and the Renewable Energy Storage Program are discussed further below in Section 15: Distributed Energy Resources.

The Offshore Wind program was developed to support development of New Jersey's offshore wind resources and the review and analysis of offshore wind projects. This program is managed by the Board. The TRC team did not assess opportunities for furthering the development of Offshore Wind projects, such efforts are being led by the Board through a series of Orders and rulemakings and will not be addressed further herein.

The SREC Registration Program is the program for processing SREC Registrations to ensure conformance with the Renewable Portfolio Standard (RPS) regulations. The program team processes initial and final SREC Registrations and inspects projects as required. The program also enables the Board to address issues related to consumer protection by stressing the importance of best practices for installation and investigating allegations of contractor misconduct.

Issues related to the development of the solar market in New Jersey have been decided through legislation, rulemaking proceedings, and Board Orders. TRC's role regarding SREC Registration is limited to administering the processing of Registrations and providing market analysis and recommendations to the Board regarding potential changes to its regulations, i.e., unlike other programs discussed in this document, changes to the SREC Registration program occur through Board rulemaking proceedings.

The Board recently adopted regulations related to the Solar Act of 2012. The TRC team is in the process of analyzing the impacts of various levels of Grid Supply capacity and other potential programmatic changes on SREC markets. Issues related to Grid Supply will be addressed in a future proceeding as directed by the Board.

Of note, the NJCEP costs for managing the SREC Registration program represent only a fraction of the cost of support for the solar industry. The vast majority of costs result from the cost of the purchase of SRECs by third party electric suppliers and providers in New Jersey. Staff estimates that these costs exceeded \$450 million in the last energy year (EY17). Other subsidies include the cost of net-metering and the cost of the utility solar finance programs.

The New Jersey Department of Environmental Protection (DEP) commented that the Board should consider the impact of emissions from out of state landfill gas systems, specifically, whether out of state landfill gas systems that adversely impact New Jersey air quality should be eligible for New Jersey RECs. Staff believes that this issue, as well as other related issues, should be considered in the context of future potential changes to the Board's Renewable Portfolio Standards regulations.

15. DISTRIBUTED ENERGY RESOURCES

15.1 Combined Heat and Power and Fuel Cells

15.1.1 Overview

This program is designed to increase overall New Jersey distribution system efficiency, improve overall system reliability, reduce overall system peak electricity demand, further the use of emerging and renewable technologies, reduce emissions, and provide cost-effective reliability solutions for New Jersey while supporting the State's Energy Master Plan.

15.1.2 Target Market

Prime candidates for the CHP program are commercial and industrial utility customers paying into the Societal Benefits Fund which have large, consistent thermal loads. These sectors include healthcare facilities, universities, hotels, food processing, chemical manufacturing, oil refineries, and critical facilities.

15.1.3 Program Delivery Approach

Natural gas, hydrogen, biogas, and mixed fuel (e.g. natural gas and biogas) CHP equipment installed on the customer side of the utility meter is eligible for incentives. 100% renewable fueled projects, including biogas and landfill gas-fueled projects which meet CHP program criteria, are also eligible to receive additional incentives.

Program outreach activities will focus on educating potential applicants and connecting them with successful CHP system owners by means of on-site CHP plant tours, presentations, and discussion on how successful CHP systems are implemented and maintained. Program incentives help overcome the high initial up-front costs required to invest in on-site cogeneration, especially systems consuming Class 1 Renewable fuels. Due to the nature of cogeneration, this program will focus on facilities with high on-site thermal load demands and assist applicants to design a CHP system to match their particular load profile.

15.2 Renewable Electric Storage

15.2.1 Overview

A proposed restart of the Renewable Electric Storage (RES) Program would provide financial incentives for electric energy storage systems that are integrated with Class 1 renewable energy projects installed behind the meter at non-residential customer sites. It would seek to benefit New Jersey ratepayers by supporting the installation of RES systems in government, commercial, institutional and industrial entities for the purpose of providing emergency back-up power for essential services, offsetting peak loads by shifting electricity to hours of higher demand and/or helping to stabilize the electric distribution system through the provision of frequency regulation services.

15.2.2 Target Market

The RES Program would be available to all commercial and industrial utility customers paying into the Societal Benefits Fund that can benefit from emergency back-up power for essential services or

offsetting peak loads during hours of higher demand. These sectors include governmental facilities, healthcare facilities, universities, hotels, large office campuses, and critical facilities.

15.2.3 Program Delivery Approach

The RES program would offer an incentive of \$300 per kWh of energy capacity for qualifying storage systems. The maximum incentive per project is proposed to be \$500,000 or 30% of the project's total cost, whichever is less. The maximum incentive per ownership entity would be \$2,000,000 which would apply to multiple projects under the ownership of a single site host, developer/installer or other ownership entity.

RES systems installed at public facilities (e.g. owned by a federal, state, municipality, public school, or public university) or at Critical Facilities (as identified in the host municipality's state-certified Emergency Operation Plan and/or as defined by the New Jersey Office of Emergency Management and/or FEMA) would be eligible for an additional 20% incentive and an additional 20% project maximum, regardless of who owns the facility.

16. CONCLUSION

This Strategic Plan is intended to provide the Board with information to guide its decisions regarding NJCEP programs and budgets over the FY19-FY22 time frame. The Plan provides a path forward for increasing energy savings by over 56% over the next four years and to maximize the cost-effective energy efficiency savings that benefit the State and utility ratepayers within available budgets. This Strategic Plan includes recommendations for improving programs that will both increase benefits per dollar invested and enhance customers' experience with the program. The Plan is intended as a living document to be updated as policy objectives change over time, as new market information becomes available, as evaluation studies are completed, and as we learn from program results here and in other states.