



New Jersey's Clean Energy Program
Fiscal Year 2016 Large Energy Users Program
July 1, 2015 – June 30, 2016
Guidelines v1.0

Managed by TRC as C&I Market Manager



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1 Program Purpose

The purpose of this program is to foster self-investment in energy efficiency, and combined heat and power projects while providing necessary financial support to large commercial and industrial utility customers in the state of New Jersey. Incentives will be awarded to customers that satisfy the program's eligibility and program requirements, to invest in self-directed energy projects that are customized to meet the requirements of the customers' existing facilities, while advancing the State's energy efficiency, conservation, and greenhouse gas reduction goals. The incentives available to eligible customers will be determined and issued based on the specifications outlined below.

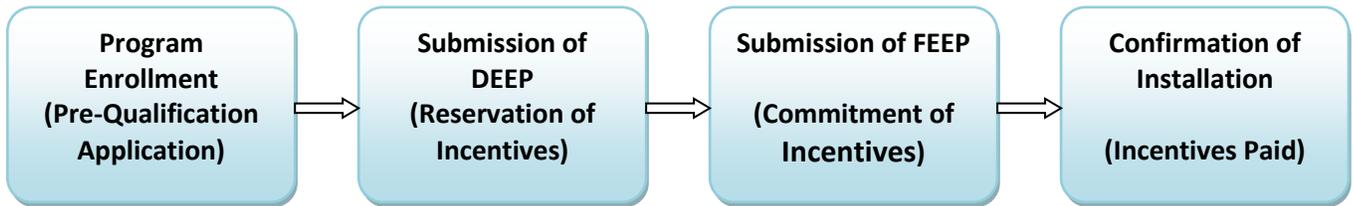
2 Eligibility and Pre-Qualification

- Entities (customers) will be able to submit qualifications for participation on a first-come, first-served basis dependent upon available funding.
 - To qualify, eligible entities must have contributed a minimum of \$300,000 into New Jersey's Clean Energy Program fund in fiscal year 2015 defined as July 1, 2014 through June 30, 2015 (aggregate of all buildings/sites)
 - The total fiscal year 2015 contribution is calculated as \$0.025905/therm times total therms plus \$0.003437/kWh times total kWh.
 - In order to be considered for incentives, the average billed peak demand of all facilities submitted in the Draft Energy Efficiency Plan(DEEP)/Final Energy Efficiency Plan (FEED) must meet or exceed 400kW and/or 4,000 DTh. ¹
 - Example: Entity submits DEEP/FEED for two buildings. Building one has a metered peak demand of 200kW, building two has a metered peak demand of 600kW. Per the above guideline, both buildings would be considered for incentives as the average would be equal to 400kW.
- Entities shall submit the following information:
 - Completed Pre-Qualification Application and requirements outlined within.
- Qualifying entities will be approved to submit their Draft Energy Efficiency Plan (DEEP) for funding reservation OR Final Energy Efficiency Plan (FEED) for funding commitment. An entity may submit up to three DEEPs/FEEDs within the program fiscal year.

² For campus facilities, the 400kW threshold shall be met on a campus-wide level (i.e. total demand of campus). Any number of buildings may be included in the Energy Efficiency Plan.

3 Program Process

The flow chart below provides a general overview of the program process.



3.1 Program Enrollment

Prospective entities will submit a complete Pre-Qualification Application to the Market Manager for review.

To be eligible, entity must have contributed a minimum of \$300,000 into the NJ Clean Energy Program (NJCEP) fund during the period defined as July 1, 2014 through June 30, 2015. The total contribution is calculated as \$0.025905/Therm times total Therms plus \$0.003437/kWh times total kWh. NJCEP contribution is NOT equivalent to the Societal Benefits Charge (SBC). All entity SBC contributing utility accounts must be included in the enrollment application.

Following the pre-qualification enrollment period, prospective entities will be approved to submit a Draft Energy Efficiency Plan (DEEP) to reserve incentives. To be considered for incentives, the average billed peak demand of all facilities submitted in the Draft Energy Efficiency Plan (DEEP)/Final Energy Efficiency Plan (FEED) must meet or exceed 400kW and/or 4,000 DTh. The approved entity may choose to submit the Final Energy Efficiency Plan (FEED) in lieu of submitting a DEEP. Entities may submit up to three DEEPs and/or FEEDs within the program fiscal year.

The program will forward an approval letter to the entity's contact, which must be signed and returned to the Market Manager. The signed document will confirm enrollment in the program and acknowledges that the entity accepts all of the terms and conditions of the program.

Along with the approval letter, Market Manager will also provide the entity's contact with a list of pending, approved, and/or paid fiscal year 2016 NJCEP applications and their current status. Entity must take appropriate action on these applications to make certain projects submitted through other NJCEP programs are not duplicated with the LEUP scope of work (see Section 3.5).

3.2 Draft Energy Efficiency Plan (DEEP) Submission

After program enrollment, the entity will be approved to submit their Draft Energy Efficiency Plan (DEEP). The purpose of the DEEP is to provide the program with a high level overview of the proposed project and to provide a basis for incentive reservation. Details of the DEEP and submission requirements are provided later in this document (see Section 4).

As previously mentioned, the average billed peak demand of all facilities submitted in the Draft Energy Efficiency Plan (DEEP) must meet or exceed 400kW and/or 4,000 DTh to be considered for program incentives.

Upon notice of approval into the program, entities will have 3 months to submit their first DEEP, or the entity will be removed from the program. DEEPs will be received, and incentives reserved, on a first-come, first-serve basis up to the 3 month limit. As previously indicated, the entity may submit the FEED in lieu of the DEEP however the 3 month limit will still apply.

3.3 Final Energy Efficiency Plan (FEED) Submission

Following the approval of the DEEP by the Market Manager, the entity will have 3 months to submit the Final Energy Efficiency Plan (FEED). The purpose of the FEED is to provide specific details with regards to the proposed projects outlined in the DEEP. Final energy savings projections, project costs, equipment specs and other project specific information must be provided in the submission of the FEED. Details of the FEED and submission requirements are provided later in this document (See Section 5).

The Market Manager will conduct pre-inspections for all projects prior to incentive commitment. In the event an incentive is >\$500,000, BPU approval will be required. Once program incentives have been committed, the entity may proceed with installation of the energy efficiency measures as outlined in the FEED.

3.4 Incentives

The following provides the incentive structure for the program.

- Maximum incentive per entity and all DEEP/FEED submissions will be the lesser of:
 - \$4 million
 - 75% of total project(s) cost² as identified in FEED(s)
 - 90% of total NJCEP fund contribution in previous fiscal year (i.e. from all entity facilities).
 - \$0.33 per projected kWh saved; \$3.75 per projected Therm saved annually

² Total project cost may include pre-engineering costs, soft costs, and other costs associated with the preparation of the FEED.

- Minimum incentive commitment of \$200,000. Projects with incentives below this threshold will be redirected to other NJCEP programs.
- Submitted DEEPs, which are deemed complete, shall be reviewed and incentives reserved on a first come, first serve basis, up to 3 months from application approval, and/or until all incentive funds are reserved/expended.
- Program incentives will be committed upon approval of the FEEP by Market Manager. For projects with an incentive exceeding \$500,000, Market Manager and Board of Public Utilities approval will be required.
- Incentive shall be paid upon project completion and verification that all program requirements are met.

3.4.1 Incentive Payment

Incentives will be released to the entity upon confirmation and post-inspection of the installed measures outlined in the FEEP. Entity shall submit proof of construction completion for all measures, including the following:

- Invoices for material/labor including as-built report
- Work orders
- Completed M&V report(s) certified by PE
- Certification of compliance with prevailing wage
- Valid tax clearance certificate

The documents must be submitted within 6 months of project completion. Differences between the FEEP and as-built project must be documented and will require a re-submittal of revised FEEP for review by Market Manager. In the event that the as-built scope of work, energy savings, and/or cost estimates are different than what was outlined in the FEEP, an incentive true-up will occur. The true-up is not to exceed the original incentive commitment.

3.5 General Eligibility Requirements/Limitations

- New construction buildings are not eligible, however these projects will be eligible for other NJCEP program incentives.
- No major rehabilitation projects will be permitted.
- Incentive will be limited to energy-efficiency measures. The following shall not be included as part of this incentive:
 - Renewable energy
 - Maintenance energy saving projects
- Incentive shall only be used in implementation of Energy Conservation Measures (ECMs) approved in the FEEP(s), unless prior approval from Market Manager is obtained.

- ECMs installed or under construction prior to FEEP approval will not be considered for incentive and shall not be included in DEEP/FEEP.
- Federal grants/incentives are allowed; other state/utility incentives are allowed so long as they are not originating from NJCEP funds; NJCEP loan funds are allowed. Total of Federal, state, utility, and LEU Program funding shall not exceed 100% of total project cost.
- Upon LEUP enrollment, participation in any other NJ Clean Energy program is permissible however no duplication of scope will be permitted. The enrollment approval letter will request a return receipt acknowledging this program requirement. Any existing/pending fiscal year 2016 applications will be handled as detailed in the following bullet.
- If an entity has projects with incentives currently committed under other NJCEP funded programs, the following options are available:
 - Eligible entities will have the opportunity to cancel existing NJCEP applications and include previously submitted projects in the LEUP scope of work provided that the equipment related to those projects has not yet been installed. Entities may cancel applications for both projects *pending approval* and for which a rebate *approval letter* has been issued provided that the equipment related to the application has not yet been installed.
 - Alternatively, entities may continue with their existing applications however any measures included these applications must not be submitted in the LEUP DEEP/FEEP scope of work.
 - If equipment has been installed and/or TRC has authorized payment of an incentive, an application may not be canceled and the project may not be included in the LEUP scope of work.
 - In all cases, eligible equipment may not be installed prior to a successful pre-inspection. A pre-inspection will occur after the FEEP has been submitted granted the submission is sufficiently detailed. Entities installing equipment prior to FEEP approval do so at their own risk. If the incentive value of the FEEP exceeds \$500,000, the incentive commitment will need to be approved by the BPU. Typically, BPU approval will take ~1 month after final review by the Market Manager and Project Coordinator.

4 Draft Energy Efficiency Plan Development

This section of the guidelines provides information on how to successfully complete and submit a Draft Energy Efficiency Plan (DEEP) for the Large Energy Users program (LEUP).

The DEEP shall be submitted on a first-come, first-serve basis following the formal approval of a customer's Pre-Qualification Application. Entity will have a maximum of 3 months from application approval to submit the DEEP, otherwise participation in the program will be forfeited. Submission of the FEEP in lieu of the DEEP within the 3 month timeframe will also be permitted.

4.1 Contents of the Draft Energy Efficiency Plan

The DEEP is a succinct report that outlines a customer's energy efficiency work plans for the following year. The DEEP should include, at a minimum, estimated energy savings, a preliminary capital cost/financing plan, and a construction schedule.

The DEEP shall include the following necessary components, organized in a report format with a cover and table of contents:

- Executive Summary
- Site Overview
- Utilities Overview
- Summary of Proposed Conservation Measures (ECM)
- ECM Descriptions
- Financing Plan

4.1.1 Executive Summary

The Executive Summary of the DEEP shall include a short write-up summarizing the contents of the report, as well as the following metrics:

- Existing site energy use from previous 12 months (kWh, kW, Therm)
- Existing total site energy use from previous 12 months (kBtu/sqft)
- Projected annual site energy savings (kWh, kW, Therm, and %)
- Projected annual total site energy savings (kBtu/sqft and %)
- Total estimated project cost (\$)
- Total estimated annual energy cost savings (\$)

The following summary tables may be used to complete this task.

	Annual Consumption	Projected Savings	% Savings
Electricity (kWh)	0	0	0%
Electricity (kW)			
Natural Gas (Therm)	0	0	0%
Other (Therm)	0	0	0%
Total Site Energy Use Intensity (kBtu/ft2)	0	0	0%

Total Project Cost (\$)	\$0
Annual Energy Cost Savings (\$)	\$0
Internal Rate of Return (IRR)	0%
Simple Payback (yrs)	0

4.1.2 Site Overview

The Site Overview section of the DEEP shall include, but is not limited to, the following information for each facility where energy-efficiency work is to be performed:

- Name and address
- Short description and use
- Year built
- Square footage

The following summary table may be used to complete this task.

	Building Name	Address	Description/Use	Year Built	Sq. Ft.
1					
2					
3					
4					
5					
Total					0

4.1.3 Utilities Overview

The Utilities Overview section of the DEEP shall include a summary of the utility services for the facilities listed in the Site Overview, including total annual usage, total annual cost (supply and delivery), and average cost per unit.

The following summary table may be used to complete this task.

Building Name			Electricity (kWh)	Natural Gas (Therm)	Other (Therm)
1	<Building Name>	Total Annual Use	0	0	0
		Total Cost	\$0	\$0	\$0
		Average Unit Cost	\$0	\$0	\$0
2	<Building Name>	Total Annual Use	0	0	0
		Total Cost	\$0	\$0	\$0
		Average Unit Cost	\$0	\$0	\$0

4.1.4 Summary of Proposed Energy Conservation Measures

The Proposed Energy Conservation Measures (ECM) section of the DEEP shall include a summary of the recommended measures to be implemented at the facilities listed in the Site Overview during the next twelve (12) months. The following information shall be included (by measure) for each facility:

- Estimated installed cost
- Estimated annual site energy savings (kWh, kW, Therm)
- Estimated annual O&M savings (\$)
- Estimated annual energy cost savings (\$)
- Estimated simple payback or IRR % (*total of all measures*)

The following summary tables may be used to complete this task.

1	<Building Name> ³	Installed Cost (incl. design)	Annual Energy Savings			Demand Savings	Annual O&M Savings	Annual Cost Savings	Measure Life	Simple Payback	IRR
Measure Name		\$	kWh	Gas Therm	Other Therm	kW	\$	\$	years	years	%
1		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
2		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
3		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
4		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
5		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%

2	<Building Name>	Installed Cost (incl. design)	Annual Energy Savings			Demand Savings	Annual O&M Savings	Annual Cost Savings	Measure Life	Simple Payback	IRR
Measure Name		\$	kWh	Gas Therm	Other Therm	kW	\$	\$	years	years	%
1		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
2		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
3		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
4		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%
5		\$0	0.0	0.0	0.0	0.0	\$0	\$0	0	0.00	0.0%

<i>CM Fees</i>		\$0									
<i>Other Fees</i>		\$0	Average								
TOTALS		\$0.00	0.0	0.0	0.0	0.0	\$0	\$0		0.00	0.0%

³ Master-metered campus facilities do not necessarily need to break out savings per building.

4.1.5 Energy Conservation Measure Descriptions

The ECM Descriptions section of the DEEP shall include, at a minimum:

- General description of existing conditions
- General description of proposed improvement
- Estimated construction start and end dates for each measure

Descriptions can be drafted as narrative text within the report, or organized using the summary table below.

1	<Building Name>	Measure Details	Equipment Replaced	Fuel Affected	Quantity	Estimated Construction Start Date	Estimated Construction End Date
Measure Name							
1							
2							
3							
4							
5							

2	<Building Name>	Measure Details	Equipment Replaced	Fuel Affected	Quantity	Estimated Construction Start Date	Estimated Construction End Date
Measure Name							
1							
2							
3							
4							
5							

Etc.

4.1.5.1 Measure Evaluation

When selecting ECMs, please keep in mind the following:

- The appropriate lifetime for each measure must match those given in Appendix A of this document.
- All ECMs must meet Minimum Performance Standards, which shall be understood as the most stringent of:
 - Appendix B of this document
 - ASHRAE 90.1-2007
 - Local code

4.1.5.2 Non-eligible measures

The program will only provide incentives for eligible energy efficiency equipment. Maintenance energy savings project cannot be included for incentive consideration. Additionally, renewable energy technologies that generate power cannot be included for incentive consideration, such as:

- Solar panels
- Wind turbines
- Biogas
- Hydro power

The following technologies are not considered to be power generating, and may be included for incentive consideration:

- Geothermal heat pumps
- Thermal storage
- Solar water heaters

Most energy-efficient technologies will qualify under the program. If the work scope recommends new or emerging technologies it is recommended that the Market Manager is contacted to verify eligibility. When in doubt, please contact the Market Manager for clarification.

4.1.5.3 Combined Heat and Power & Fuel Cells

The installation of a CHP or Fuel Cell system can be included as part of the LEUP work scope for incentive consideration. Preliminary plans for the selected system should be included with the DEEP submittal. However, a separate CHP or Fuel Cell application must be filled out and submitted with the FEED. Incentives will be limited per the LEUP program with no additional incentives offered through other NJCEP programs. The CHP or Fuel Cell application can be downloaded from the NJ Clean Energy website (www.njcep.com/ssb).

4.1.6 Financing Plan

The objective of the Financing Plan is to clearly present a detailed description of how the proposed energy efficiency work scope is intended to be financed. The plan should provide enough detail to ensure that all parties (customer, contractor, and the Market Manager) are aware of the intended sources of funding for the energy efficiency project.

The Financing Plan of the DEEP shall include estimates of all anticipated sources of funding, including LEUP incentive. Sources of funding may include customer capital, bank loan, federal grants, etc. Total estimated funding should equal total estimated project cost.

The following summary tables may be used to complete this task.

Total Cost of Improvements	\$0
Construction Management Fees	\$0
Other Fees	\$0
TOTAL COSTS	\$0

Anticipated LEUP Incentive	\$0
<Funding source 1>	\$0
<Funding source 2>	\$0
TOTAL FUNDING	\$0

5 Final Energy Efficiency Plan Development

This section of the guidelines provides information on how to successfully complete and submit a Final Energy Efficiency Plan (FEEP) for the Large Energy Users program (LEUP).

The FEEP shall be submitted no later than 3 months from DEEP approval. The entity has the opportunity to submit the FEEP in lieu of the DEEP however it must be received by the Market Manager within 3 months of enrollment application approval. Please be aware that prior to approval of the FEEP, a pre-inspection will be required to confirm proposed project equipment has not been installed. After the FEEP is approved and the incentives are committed, a post-inspection will be scheduled after the installation of the energy efficiency equipment. The Market Manager may request a mid-construction inspection for particular measures that would not be accessible at installation completion.

5.1 Contents of the Final Energy Efficiency Plan

The FEEP is a detailed report that contains a finalized scope of work, revised project cost, and a more accurate projection of energy savings.

The FEEP may be seen as a modification to the DEEP and shall provide a revision to the following necessary components, organized in a report format with a cover and table of contents:

- Final Executive Summary
- Site Overview
- Utilities Overview
- Summary of Proposed Conservation Measures (ECM)
- ECM Descriptions
- Financing Plan

In addition, the FEEP shall also include:

- Metering Plan
- Appendices:
 - Utility data
 - Supporting cost and savings calculations
 - Manufacturer/Equipment specification sheets
 - Professional Engineer (PE) Certification

5.1.1 Metering Plan

A building-specific pre and post metering plan is a required component of each FEEP and must, in general, address the following for each measure and building in order to properly determine energy savings:

1. How will the pre-retrofit equipment usage be determined?
2. How will the post-retrofit equipment usage be determined and how will that relate to the pre-retrofit conditions?
3. What factors or variables affect energy consumption of both pre and post-retrofit conditions (e.g. outside and indoor air temperature, humidity, occupancy, and operating hours)?
4. How will these factors/variables be measured and used to adjust the pre or post-retrofit energy usage, if necessary, so savings can be determined?

5.1.1.1 Measurement and Verification Procedure

The following chart presents four different options for determining pre and post-retrofit equipment energy consumption. Entities and their contractors are required to follow one of the options outlined below when preparing the FEEP. The FEEP should include the entities plan and methodology to calculate the savings of the project(s). The entity does not need to select only one option and has the flexibility to select different plans for different ECMs. Alternative methods for M&V must be pre-approved by Market Manager.

The M&V options and methods below are adopted from the *2011 International Performance Measurement and Verifications Protocol (IPMVP), Volume I*⁴.

⁴ Free for download at:

http://www.evo-world.org/index.php?option=com_content&view=article&id=272&Itemid=504&lang=en

IPMVP Option	How Savings Are Calculated	Typical Applications
<p>A. Retrofit Isolation: Key Parameter Measurement</p> <p>Savings are determined by field measurement of the key performance parameter(s) which define the energy use of the ECM's affected system(s) and/or the success of the project.</p> <p>Measurement frequency ranges from short-term to continuous, depending on the expected variations in the measured parameter, and the length of the reporting period.</p> <p>Parameters not selected for field measurement are estimated. Estimates can be based on historical data, manufacturer's specifications, or engineering judgment. Documentation of the source or justification of the estimated parameter is required. The plausible savings error arising from estimation rather than measurement is evaluated.</p>	<p>Engineering calculation of baseline and reporting period energy from:</p> <ul style="list-style-type: none"> ▪ short-term or continuous measurements of key operating parameter(s); and ▪ estimated values <p>Routine and non-routine adjustments as required.</p>	<p>A lighting retrofit where power draw is the key performance parameter that is measured periodically. Estimate operating hours of the lights based on building schedules and occupant behavior.</p>
IPMVP Option	How Savings Are Calculated	Typical Applications
<p>B. Retrofit Isolation: All Parameter Measurement</p> <p>Savings are determined by field measurement of the energy use of the ECM-affected system.</p> <p>Measurement frequency ranges from short-term to continuous, depending on the expected variations in the savings and the length of the reporting period.</p>	<p>Short-term or continuous measurements of baseline and reporting period energy, and/or engineering computations using measurements of proxies of energy use.</p> <p>Routine and non-routine adjustments as required.</p>	<p>Application of a variable speed drive and controls to a motor to adjust pump flow. Measure electric power with a kW meter installed on the electrical supply to the motor, which reads the power every minute. In the baseline period this meter is in place for a week to verify constant loading. The meter is in place throughout the reporting period to track variations in power use.</p>

<p>C. Whole Facility</p> <p>Savings are determined by measuring energy use at the whole facility or sub-facility level.</p> <p>Continuous measurements of the entire facility’s energy use are taken throughout the reporting period.</p>	<p>Analysis of whole facility baseline and reporting period (utility) meter data.</p> <p>Routine adjustments as required, using techniques such as simple comparison or regression analysis.</p> <p>Non-routine adjustments as required.</p>	<p>Multifaceted energy management program affecting many systems in a facility. Measure energy use with the gas and electric utility meters for a twelve month baseline period and throughout the reporting period.</p>
<p>D. Calibrated Simulation</p> <p>Savings are determined through simulation of the energy use of the whole facility, or of a sub-facility.</p> <p>Simulation routines are demonstrated to adequately model actual energy performance measured in the facility.</p> <p>This Option usually requires considerable skill in calibrated simulation.</p>	<p>Energy use simulation, calibrated with hourly or monthly utility billing data. (Energy end use metering may be used to help refine input data.)</p>	<p>Multifaceted energy management program affecting many systems in a Facility, but where no meter existed in the baseline period.</p> <p>Energy use measurements, after installation of gas and electric meters, are used to calibrate a simulation.</p> <p>Baseline energy use, determined using the calibrated simulation, is compared to a simulation of reporting period energy use.</p>

5.1.1.2 Metering Plan Outline

The following items must be addressed in the Metering Plan for each proposed ECM.

- **Method:** Identify the energy metering procedure that will be followed.
- **Assumptions:** State all substantive assumptions for the post-retrofit energy consumption for the equipment that may differ from pre-retrofit conditions. Include a description of any variables that affect energy consumption, such as outside temperature, time of day, etc.
- **Schedule:** State the schedule for performing all metering, analysis and reporting.

5.1.1.3 Determining Metering Duration

The metering and monitoring period must be long enough to accurately represent the annual amount of energy consumed by the affected equipment. The required duration depends on the measure. For instance, if a system that operates according to a well defined schedule under a constant load, such as a constant-speed exhaust fan motor, the period required for determining

annual savings could be short. In this case, measured energy savings can be extrapolated to account for the entire year.

If, however, the equipment's use varies across both day and season, as with air-conditioning equipment, a much longer metering or monitoring period may be required to characterize the system. In this case, long-term metering (3-6 months) is used to determine annual energy savings. A chiller retrofit may require metering throughout the cooling season or perhaps for one month each season of the year.

If energy consumption varies by more than 10% from one month to the next, measurement duration should be sufficient enough to document these variances. In addition, changes that will affect the baseline adjustment by more than 10% should also be documented and explained. Any major energy consumption variances due to seasonal activity increases or periodic fluctuations must also be monitored. If these variances cannot be monitored for whatever reason, they must be included in the annual energy consumption figure through a mathematical adjustment agreeable to the Market Manager. Note that any auxiliary energy-consuming equipment must be metered or modeled if its energy consumption changes as a result of project installation.

5.1.1.4 Multiple Buildings

Using the multiple building plan approach will reduce the required total number of monitoring points. A multiple building Metering Plan can be used only for multiple buildings with common measures and similar occupancy, usage, and energy consumption patterns. If any of these variables are significantly different, an individual Metering Plan must be prepared for each building. The Market Manager encourages the use of multiple building approaches when possible to minimize M&V costs. As buildings are aggregated together into a multiple building Metering Plan it is imperative to carefully select the usage groups. Spaces within a single usage group should have an expected range in hours of operation of no more than $\pm 15\%$. Failure to follow this guideline can result in incorrect calculation of energy savings, and hence incentive amounts.

5.1.1.5 Submitting Metered Data

Please be aware, pre and post-metered data itself is not required to be included in the FEEP however the Market Manager reserves the right to request metered data at any time. Data must be provided in formats usable by the Market Manager and not based on products or software that are not publicly available. If special software products are required for the reading or analysis of entity submittals, the Market Manager may reject the data or request the entity to provide the software. Both "raw" and "compiled" data may be required by the Market Manager to support surveys, savings estimates, and calculations.

5.1.2 Appendices

The following appendices shall be compiled and attached to the FEEP:

- **Appendix 1: Utility Data**

- Include a copy of one utility bill for each facility addressed in the FEEP. The month selected should reflect the annual peak kW demand.
- **Appendix 2: Supporting Cost and Savings Calculations**
 - These should include copies of spreadsheets, or other means, used to determine projected energy savings, energy cost savings, and project costs. Electronic copies may be submitted with prior approval from Market Manager.
 - Must support data presented in *Summary of Proposed Conservation Measures (ECM)* section of the FEEP.
- **Appendix 3: Manufacturer/Equipment specification sheets**
 - Include manufacturer specification sheets for each proposed ECMs. Specification sheet should clearly list capacity and efficiency of the equipment.
- **Appendix 4: Professional Engineer (PE) Certification**

Appendix A: Minimum Performance Standards

This appendix contains information on different types of energy efficiency improvements, as well as minimum standards for measures included in the project work scope. They are derived from the standards of New Jersey’s Commercial & Industrial Clean Energy Programs. Please submit manufacturer’s specification sheet to confirm performance.

Table A-1. Energy Efficiency Measure Opportunities

Application or Energy End Use	Possible Energy-Efficiency Improvements
Window and Skylight Glazing	0.51 for windows 10% or less of total wall area 0.44 for windows between 10% and 30% of total wall area 0.41 for windows greater than 30% of total wall area 0.35 in curtain walls, atrium and skylights
Air Distribution in all building types	VAV Distribution Systems
Fume hood exhaust systems	VAV and VFD supply / exhaust distributed HVAC systems
Water Source Heat Pump Systems	Variable flow water loop with VFD Cooling tower with VFD fan or evaporative cooling tower with or without VFD
Chilled Water Plant	Chilled water reset based on building HVAC loads and discharge air temps VFD's on pumps or multiple sequenced high efficiency pumps on secondary distribution system Two speed motor upgrades, or VFD's, and control for multiple cells VFD's on condenser water pump system Chiller sequencing controls based on load and overall operation kW/ton
Building Controls	EMS with controls on more than one technology and must have a central controller

Application or Energy End Use	Possible Energy-Efficiency Improvements
Boiler equipment (greater than 1500 MBH)	VFD's on feed water pumps with automatic pressure controls VFD's on draft fans with automatic pressure controls Modulating Burners
Package Humidification	Ultrasonic humidification
Retail display refrigeration	VFD on lead compressor Evaporative condensers VFD's on condenser fans Scroll compressors Heater doors (triple pane) Heat pipe on HVAC unit with coil bypass Low temperature air distribution Electronic controlled TEV Distributed refrigeration systems (no pumps, smaller diameter pipes) Refrigeration heat recovery Case doors with anti-sweat heater controls T8 or T5 case lighting Demand defrost controls Multiplexed refrigeration racks Floating heat pressure controls LED case lighting
Other commercial or Industrial refrigeration	Oversized or evaporative condensers with VFD's on evaporative condenser fans Oversized/lower fan HP evaporative coils Evaporative fans on/off control Multi-stage compressor systems Oversized cooling equipment with thermal shifting capacity Gas engine driven compressors Desiccant dehumidification not covered in prescriptive

Application or Energy End Use	Possible Energy-Efficiency Improvements
Ice Rinks	Gas engine driven compressors Desiccant dehumidification not covered in prescriptive Ice temperature reset based on occupancy/use Low E ceilings Water-cooled electric chiller Multi-stage brine pump (smart drive) Floating head pressure controls down to 75 deg F
Plastic Injection Molding Machines	All electric machine but may include an upgrade to existing chilled water plant Enhanced hydraulic operated with VFD's on motor
Interior lighting	See Sections A-9 and A-10
Exterior Lighting	See Sections A-9 and A-10
Lighting controls	See Section A-10

A-2. Chillers

Electric Chillers

Capacity	Path A		Path B		Path A		Path B	
	Incentive Minimum Full Load kW/ton	Qualifying IPLV kW/ton	Qualifying Full Load kW/ton	Incentive Minimum IPLV kW/ton	Incentive Minimum Full Load EER	Qualifying IPLV EER	Qualifying Full Load EER	Incentive Minimum IPLV EER
Air Cooled								
tons < 150					10.30	13.70	9.70	16.12
tons > 150					10.30	14.00	9.70	16.42
Water Cooled Positive Displacement								
tons < 75	0.735	0.600	0.780	0.490				
75 ≤ tons < 150	0.706	0.560	0.750	0.480				
150 < tons < 300	0.647	0.540	0.680	0.431				
300 < tons < 600	0.598	0.520	0.625	0.402				
tons > 600	0.549	0.500	0.585	0.372				
Water Cooled Centrifugal								
tons < 150	0.598	0.550	0.695	0.431				
150 < tons < 300	0.598	0.550	0.635	0.392				
300 < tons < 400	0.549	0.520	0.595	0.382				
400 < tons < 600	0.549	0.500	0.585	0.372				
tons > 600	0.549	0.500	0.585	0.372				

Gas Absorption Chillers

Gas absorption chillers must have a full load or part load efficiency ≥ 1.1 COP.

A-3. Electric Unitary HVAC

Unitary HVAC/Split Systems*	
< 5.4 tons	14.0 SEER
≥ 5.4 to < 11.25 tons	11.5 EER
≥ 11.25 to < 20 tons	11.5 EER
≥ 20 to 30 tons	10.5 EER

Air-to-Air Heat Pump Systems	
< 5.4 tons	14.0 SEER & 7.8 HSPF
≥ 5.4 to < 11.25 tons	11.5 EER
≥ 11.25 to < 20 tons	11.5 EER
≥ 20 to 30 tons	10.5 EER

Packaged Terminal Systems	
< 9000 BTUH	12.0 EER
$\geq 9,000$ BTUH to 12,000 BTUH	11.0 EER
> 12,000 BTUH	10.0 EER

Water Source Heat Pumps	
All size	14.0 EER

Central DX AC Systems	
> 30 to 63 tons	≥9.5 EER
> 63 tons	≥9.5 EER

*Both indoor and outdoor components of a Split System must be replaced to qualify for the Program.

A-4. Ground Source Heat Pumps

Type	Qualifying Efficiency Level
Closed Loop	≥16 EER (@ 77 deg)
Open Loop	≥16 EER (@ 59 deg)

- Performance ratings (EER, Btuh) for qualifying closed loop Ground Source Heat Pump equipment are calculated at 77 °F entering water temperature per test procedure ISO-13256-1.
- Performance ratings (EER, Btuh) for qualifying open loop Ground Source Heat Pump equipment are calculated at 59 °F entering water temperature per test procedure ISO-13256-1.

A-5. Variable Frequency Drives

- The VFDs must be installed in a system that incorporates pressure sensors (or other applicable sensor devices) in the flow stream.
- The VFD must have either an input line reactor or isolation transformer.

A-6. Gas Water Heating

	≤ 50 Gallons	>50 Gallons	
		≤ 1500 MBH	>1500 MBH
Gas Water Heater	62% energy factor	85% AFUE	84% AFUE

Tankless Water Heater

Tankless Water Heaters must have a minimum energy factor of 82%.

A-7. Gas Heating

Boiler Type	Size Category (MBh input)	Proposed Prescriptive Non-Condensing	Proposed Prescriptive Condensing
Hot Water	< 300	85% AFUE	93% AFUE
Hot Water	≥ 300 and ≤ 2,500	85% Et	91% Et
Hot Water	> 2,500	85% Ec	93% Ec
Steam	< 300	82% AFUE	NA
Steam, all except natural draft	≥ 300 and ≤ 2,500	81% Et	NA
Steam, all except natural draft	> 2,500	81% Et	NA
Steam, natural draft	≥ 300 and ≤ 2,500	79% Et	NA
Steam, natural draft	> 2,500	79% Et	NA

For steam boilers “all except natural draft” is equivalent to “power ventilation” in the attached calculations

Gas Furnaces	
Capacity	Minimum Efficiency
No size/capacity limitation	90% AFUE
No size/capacity limitation, Furnace with Electronic Commutated Motor (ECM) or equivalent	92% AFUE

A-9. Lighting - Fixtures

Linear Fluorescents:

- All new linear T-5 and T-8 fluorescent fixtures must be installed with new electronic ballasts and maintain minimum or required light levels.
- All electronic ballasts must have a Total Harmonic Distortion of $\leq 20\%$.
- Permanent delamping of lighting fixtures must include new reflectors which results in a more efficient lighting system with maintained light levels.
- T-5 or T-8 Fixtures replacing incandescent or T-12 fluorescent fixtures greater than 250 watt or High Intensity Discharge shall comply as follows:
 - T-5 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.0; have reflectivity greater than or equal to 91%; have a minimum 2 lamps; and be designated as F54T5 HO.
 - Four foot T-8 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 1.14; have reflectivity greater than or equal to 91%; have a minimum of 4 lamps; and be designated as F32T8, minimum 32 watts.
 - Eight foot T-8 fixtures replacing T-12 fluorescent or incandescent fixtures 250 watts or greater, or HID fixtures shall have a ballast factor greater than or equal to 0.80; have reflectivity greater than or equal to 91%; have a minimum of 2 lamps; and be designated as F96T8 HO.
- All eligible lighting devices must be UL listed.

Compact Fluorescents:

- Fixtures must be new and ENERGY STAR qualified
- Total Harmonic Distortion (THD) must not exceed 33%
- Power factor of the ballast must be no less than 90%
- Screw-in PAR 38 or PAR 30 CFLs must be warranted by the manufacturer for 8,000 hours.

LED:

- LED fixture must be listed on Energy Star or Design Lights Consortium qualified products list. For replacement of incandescent, fluorescent or HID only.

Other:

- Pulse Start Metal Halide (including pole-mounted parking lot lighting) must have a 12% minimum wattage reduction.
- Induction Lighting fixtures replacing HID must use 30% less wattage per fixture than HID system.

A-10. Lighting - Controls

All lighting controls eligible for incentives must be UL listed.

Lighting controls, where installed, must control eligible energy efficient lighting fixtures

Occupancy Sensor Controls:

- Occupancy sensors shall not be installed in a space where they are prohibited by state or local building or safety code. Additionally, occupancy sensors shall not be installed in the following specific spaces in all cases: stairways, restrooms (remote mounted only allowed), elevators, corridors/hallways, lobbies, and closets/storage areas.
- Occupancy sensors (OSW, wall mounted) must control at least 2 eligible lighting fixtures.
- Occupancy sensors (OSR and OSRH, remote mounted) must control at least 2 eligible lighting fixtures and a minimum total connected load of 180 watts.
- Occupancy sensors must not allow manual override to the "ON" position.

High-Low Controls (OHLC):

- The program does not condone high-low controls on eligible fluorescent fixtures where daylight dimming controls can be effectively employed.
- The program does not condone high-low controls in spaces smaller than 250 square feet.
- "Low level" must be less than 60% of "high level."
- The program does not condone high-low controls for the following spaces: stairways, elevators, corridors/hallways, or lobbies.
- Occupancy-based dimming controls must control a minimum of 180W per sensor.
- CEE qualified dimming ballast must be used for T8 4' systems.

Daylight Dimming Controls for Eligible Fixtures:

- Daylight dimming controls must operate at least 4 eligible ballasts with a minimum total connected load of 240 watts.
- Dimming shall be continuous or stepped at 4 or more levels.
- Daylight dimming control systems must be designed in accordance with IESNA practice as delineated in "RP-5-99, IESNA Recommended Practice of Daylighting."
- CEE qualified dimming ballast must be used for T8 4' systems.

Appendix B: Measure Lives

The measure lives listed below should be used for all recommended measures included in the Draft and Final Energy Efficiency Plan

PROGRAM/Measure	Measure Life
<u>Non-Residential Programs</u>	
C&I Construction	
Commercial Lighting — New	15
Commercial Lighting — Remodel/Replacement	15
Commercial Lighting Controls — Remodel/Replacement	18
Commercial Custom — New	18
Commercial Chiller Optimization	18
Commercial Unitary HVAC — New - Tier 1	15
Commercial Unitary HVAC — Replacement - Tier 1	15
Commercial Unitary HVAC — New - Tier 2	15
Commercial Unitary HVAC — Replacement Tier 2	15
Commercial Chillers — New	25
Commercial Chillers — Replacement	25
Commercial Small Motors (1-10 HP) — New or Replacement	20
Commercial Medium Motors (11-75 HP) — New or Replacement	20
Commercial Large Motors (76-200 HP) — New or Replacement	20
Commercial VSDs — New	15
Commercial VSDs — Retrofit	15
Commercial Air Handlers Units	20
Commercial Heat Exchangers	24
Commercial Burner Replacement	20
Commercial Boilers	25
Commercial Controls (electric/electronic)	15
Commercial Controls (Pneumatic)	10

Commercial Comprehensive New Construction Design	18
Commercial Custom — Replacement	18
Industrial Lighting — New	15
Industrial Lighting — Remodel/Replacement	15
Industrial Unitary HVAC — New - Tier 1	15
Industrial Unitary HVAC — Replacement - Tier 1	15
Industrial Unitary HVAC — New - Tier 2	15
Industrial Unitary HVAC — Replacement Tier 2	15
Industrial Chillers — New	25
Industrial Chillers — Replacement	25
Industrial Small Motors (1-10 HP) — New or Replacement	20
Industrial Medium Motors (11-75 HP) — New or Replacement	20
Industrial Large Motors (76-200 HP) — New or Replacement	20
Industrial VSDs — New	15
Industrial VSDs — Retrofit	15
Industrial Custom — Non-Process	18
Industrial Custom — Process	10
Industrial Air Handler Units	20
Industrial Heat Exchangers	20
Industrial Burner Replacements	20
Small Commercial Gas Furnace — New or Replacement	20
Infrared Heating	17
Small Commercial Gas Boiler — New or Replacement	20
Small Commercial Gas DHW — New or Replacement	10
C&I Gas Absorption Chiller — New or Replacement	25
C&I Gas Custom — New or Replacement (Engine Driven Chiller)	25
C&I Gas Custom — New or Replacement (Gas Efficiency Measures)	18
PROGRAM/Measure	Measure Life
Non-Residential Programs	
Building O&M	
O&M savings	3

Compressed Air	
Compressed Air (GWh participant)	8
Refrigeration	
Evaporator Fan Control	10
Cooler and Freezer Door Heater Control	10
Polyethylene Strip Curtains	4
Food Service	
Fryers	12
Steamers	10
Griddles	12
Ovens	12

* For custom applications, projects will be evaluated upon industry/multiplier data but not to exceed value in above table unless authorized by the Market Manager. Reported savings will be calculated per measure life indicated in this table.

Appendix C: Frequently Asked Questions

TERMINOLOGY

Q: What is "Loc. ID"?

A: Location or premise identification number assigned to a particular facility by the utility company servicing that facility.

Q: If a contractor is facilitating the application process on behalf of a customer, who should be listed as the point of contact on the Pre-Qualification application?

A: Please list customer information on the Pre-Qualification application. You may attach a letter from the customer indicating the contractor that is facilitating them with the program and they will be included in all correspondence.

ELIGIBILITY

Q: The qualifications state that, in order to be eligible, an entity had to have paid a minimum of \$300,000 into New Jersey's Clean Energy Program (NJCEP) fund. Only around 40% of the Societal Benefits Charge (SBC) goes toward the NJCEP. How do you calculate your NJCEP contribution?

A: The program will consider entities that have a minimum NJCEP contribution of \$300,000. NJCEP contribution is calculated as $(\$0.025905/\text{Therm} \times \text{Total Facility Therm Usage}) + (\$0.003437/\text{kWh} \times \text{Total Facility kWh Usage})$.

Q: What facilities can we include when calculating "Total Facility Therm Usage" and "Total Facility kWh Usage"?

A: All facilities within the state of New Jersey owned by the applicant entity, and pay into the Societal Benefits Charge, can be included when calculating total Therm and kWh usage.

Q: Is the "Total Facility Therm Usage" and "Total Facility kWh Usage" based on annual consumption?

A: Yes. But more specifically, total Therm and kWh usage is for 12 months of utility bills for fiscal year 2014 (i.e. July 1, 2013 – June 30, 2014).

Q: Are all facilities owned by the applicant entity eligible for incentives through this program? A: All facilities may be eligible however the program requires the the average billed peak demand of all facilities submitted must meet or exceed 400kW and/or 4,000 DTh.

Example: Entity submits DEEP/FEED for two buildings. Building one has a metered peak demand of 200kW, building two has a metered peak demand of 600kW. Per the above guideline, both buildings would be considered for incentives as the average would be equal to 400kW.

Q: Does the program require an approved a specific contractor for this program?

A: No specific contractor is needed for this program as it is self-directed. A customer may use whomever they choose or do the work internally.

PROGRAM DEADLINES**Q: Once our Pre-Qualification Application has been approved, how long do we have to submit the Draft Energy Efficiency Plan (DEEP)?**

A: Entities will have 3 months to submit their DEEP if they wish to be considered for program incentives.

Q: Once our Draft Energy Efficiency Plan (DEEP) has been approved and funds are reserved, how long do we have to submit the Final Energy Efficiency Plan (FEEP)?

A: The FEEP must be submitted to within 3 months from DEEP approval.

Q: Once our Final Energy Efficiency Plan (FEEP) has been approved and funds are committed, how long do we have to install our scope of work?

A: Energy conservation measures (ECMs) must be fully installed no later than 12 months from FEEP approval.

INCENTIVES**Q: What is the difference between “fund reservation” and “fund commitment”?**

A: Funds are “reserved” upon receipt and review of the DEEP. Reserved funds are calculated based on estimated project costs and estimated energy savings, and are not deducted from the total program budget. Upon receipt and review of the FEEP, which has a finalized scope of work, and more precise project cost and energy savings, the reserved funds are revised and “committed”. Committed funds are guaranteed and are deducted from the total program budget.

Q: It seems that if an applicant is approved to submit their DEEP, they are not guaranteed for an incentive reservation. It seems like a lot of work for something that is not guaranteed.

A: The DEEP submittal is not meant to be time or labor intensive. The information provided in the DEEP is based on estimated project costs and savings. Previous conversations with large energy users indicated that the majority have similar annual energy plans already drafted.

Q: When are incentives actually paid out?

A: Incentives are authorized upon installation of scope of work, successful post-inspection, and submittal of required documentation (e.g. invoices, purchase orders, etc.) detailed in section 3.4.1. Customer will receive their check within 45-60 days from the date of authorization.

Q: Based on FY2014's fee for the NJCEP (roughly \$0.003/kWh), a customer site would need to have used 370 million kWhs in the previous year to max out at the \$4 million incentive. Is that correct?

A: According to the Instructions on the LEU Pre-Qualification Application, the NJCEP contribution is calculated as: $(\$0.025905/\text{therm} \times \text{Total Facility Therm Usage}) + (\$0.003437/\text{kWh} \times \text{Total Facility kWh Usage})$. In order to reach the \$4 million incentive cap, an entity must have contributed a total of \$4.44 million to the NJCEP in FY2014 ($\$4.44 \text{ mill} \times 90\% = \4mill). This translates to 1,164 million kWhs, assuming all the entity's facilities were all-electric (or heated by fuel other than natural gas) AND, assuming this was the project didn't cap out at 75% of total project cost.

Q: It seems that the incentives under this program are more lucrative than under the Pay for Performance program.

A: The \$/kWh and \$/therm payout is higher than Pay for Performance, but the overall incentive caps in Pay for Performance are higher than the LEUP program.

PROGRAM REQUIREMENTS

Q: What information do you need in the DEEP and FEET?

A: Full Program Guidelines are currently being developed. In the meantime, please refer to the "Complete Program Details" document available at: <http://www.njcleanenergy.com/LEUP> . Additional details will be provided in the complete program guide when it is released.

Q: Are combined heat and power (CHP) project allowed under this program? If so, what are you looking for as far as efficiency? Is it the reduction of electricity purchased or savings due to high temp hot water or both?

A: Yes, CHP projects are eligible for incentives through this program. All CHP systems must meet current requirements as outlined in the CHP application, which is available at:

<http://www.njcleanenergy.com/commercial-industrial/programs/combined-heat-power/combined-heat-power-fuel-cells-non-renewable-fuel>

Q: Do hardware and software qualify as measures under the LEUP program?

A: Controls software such BMS, EMS, DDC will be considered. Monitoring software that strictly monitors/reports usage but does not control equipment operation will not be considered.

Q: The LEUP program framework states that maintenance projects will not be considered for incentives. Can you clarify what you mean by 'maintenance'?

A: Some examples of maintenance projects are fixing steam leaks, repairing broken insulation, etc. If you have a specific measure that you are not sure would be categorized as "maintenance", you can contact the program manager.

Q: Is energy modeling required in this program?

A: It is not required, but may be used to meet program requirements.

Q: Are energy-efficiency measures limited to those listed in Table B-1 of Appendix A in the program framework?

A: No. This table is provided as a guide.

Q: Are measures under this program limited to “building type” improvements. Or are other improvements, such as efficiency improvements to generation equipment eligible?

A: Most likely yes, but the program manager would need to collect more specific information on a case by case basis to determine if improvements to generation equipment will qualify.

Q: Who can I contact if I have additional questions?

A: You may contact the Market Manager via email, phone or fax. The specific email address for the program is LEUP@trcsolutions.com. Please visit the following URL for additional contact details.
<http://www.njcleanenergy.com/misc/about-njcep/contact-us>