

## **Concept Paper – Revised 05.16.11**

### **C&I Large Energy Users Pilot Incentive Program** **(“LEU Pilot Program”)**

#### **Purpose:**

The purpose of this pilot 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. Pursuant to the pilot program, incentives will be awarded to customers that satisfy the program’s eligibility and program requirements (“Eligible Customers”), 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.

#### **Eligibility and Pre-Qualification:**

- An open enrollment period (45 days) will be established for entities to submit qualifications for participation. In keeping with the intent of the pilot and limited available funding, the pre-qualification period will serve to expedite the process for those entities<sup>1</sup> meeting the eligibility requirements of the Program.
  - To qualify, eligible entities must have contributed a minimum of \$300,000 into New Jersey’s Clean Energy Program fund in calendar year 2010 (aggregate of all buildings/sites)
  - Only facilities with an annual billed peak demand of 400 kW within the entity’s portfolio will be considered for incentives<sup>2</sup>
- Entities shall submit the following information (limit 2 pages excluding attachments):
  - Number of buildings/sites and list of all associated 2010 utility and third-party supplier accounts.
  - Total usage and number of loc IDs<sup>3</sup> as provided by utility.

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<sup>1</sup> Entity shall be defined as (1) Public: having distinct and separate budgetary authority; (2) Public Schools: having distinct and separate budgetary authority; (3) Private: Non-residential companies including all related subsidiaries and affiliates regardless of separate EIN numbers or locations within New Jersey. Consistent with DOCKET NO. E007030203.

<sup>2</sup> 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.

<sup>3</sup> Location or premise ID assigned to a particular facility by the utility.

- Total contribution to New Jersey’s Clean Energy Program (NJCEP) fund in previous calendar year from above buildings/sites.
  - Qualifying entities will be ranked by amount of contribution to NJCEP fund in 2010 from eligible facilities (400kW annual peak demand or greater). Top 25 entities will be approved to submit their Draft Energy Efficiency Plan (DEEP) for fund reservation.

**Incentive Specifications:**

- Program Budget 2011: \$20 Million
- Maximum incentive per entity lesser of:
  - \$1 million
  - 75% of total project(s) cost<sup>4</sup> as identified in FEEP
  - 90% of total NJCEP fund contribution in previous year (i.e. from all entity facilities)
  - \$0.33 per projected kWh saved; \$3.75 per projected Therm saved annually
- Minimum incentive commitment of \$200,000. Projects with incentives below this threshold will be redirected to other NJCEP programs.
- Incentives shall be reserved upon approval of the Draft Energy Efficiency Plan. Program funds will be committed upon approval of Final Energy Efficiency Plan (FEEP) by Program Manager and Board of Public Utilities. Incentive shall be paid upon project completion and verification that all program requirements are met.
- Submitted DEEPs, which are deemed complete, shall be reviewed and incentives reserved on a first come, first serve basis until all incentive funds are reserved/expended.

**Submittal Requirements for Incentive Reservation:**

- Entity shall submit a Draft Energy Efficiency Plan (DEEP) to the Program Manager for existing facilities only. This shall be in a report format and must include at a minimum:
  - Executive Summary:
    - Existing energy use by source from previous 12 months (kWh, kW, MMBtu)
    - Existing total site energy use from previous 12 months (kBtu/sqft)
    - Projected annual energy savings by source (kWh, kW, MMBtu, and %)
    - Projected annual total site energy savings (kBtu/sqft and %)
    - Total estimated project cost
    - Total estimated annual energy cost savings
  - Site Overview
  - Utilities Overview
  - Table of Energy Conservation Measures (ECM) to be implemented in next 12 months. Including the following information by measure:
    - Estimated Installed Cost
    - Estimated Annual Energy Savings by source (kWh, kW, MMBtu)

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<sup>4</sup> Total project cost may include pre-engineering costs, soft costs, and other costs associated with the preparation of the FEEP.

- Estimated Annual O&M Savings (\$)
- Estimated Annual Energy Cost Savings (\$)
- Estimated Simple Payback or IRR % (*total of all measures*)
- Anticipated sources of all funding not including Large Customer Pilot incentive
- ECM Descriptions including:
  - General description of equipment being replaced/augmented
  - Anticipated Implementation Schedule
  - Estimated construction start and end dates for each measure

**Submittal Requirements for Incentive Commitment:**

- Entity shall submit a Final Energy Efficiency Plan (FEED) to the Program Manager for existing facilities only. This shall be a revision to the DEEP, and must include at a minimum:
  - Final Executive Summary:
    - Existing energy use by source from previous 12 months (kWh, kW, MMBtu)
    - Existing total site energy use from previous 12 months (kBtu/sqft)
    - Calculated annual energy savings by source (kWh, kW, MMBtu, and %)
    - Calculated annual total site energy savings (kBtu/sqft and %)
    - Total project cost<sup>5</sup>
    - Total calculated annual energy cost savings
  - Table of Energy Conservation Measures (ECM) to be installed. Including the following information by measure:
    - Installed Cost (Material, Labor, etc)
    - Annual Calculated Energy Savings by source (kWh, kW, MMBtu)<sup>6</sup>
    - Annual O&M Savings (\$)
    - Annual Calculated Energy Cost Savings (\$)
    - Simple Payback or IRR % (*total of all measures*)
  - ECM Descriptions including:
    - Detailed description of equipment being replaced/augmented
    - Detailed description of recommended measure (including quantities, EER, AFUE, etc.)
    - Basis for calculating energy savings and O&M savings (*including all assumptions*)
    - Basis for calculating installed cost (*including all assumptions*)

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<sup>5</sup> NJ law P.L 2009, c. 203: As of January 14, 2010, the prevailing wage rate shall be paid to workers employed in the performance of any construction undertaken in connection with Board of Public Utilities financial assistance programs. This law applies to contracts greater than \$14,187.

<sup>6</sup> Depending upon the complexity of the energy conservation measures in the EEP, the associated calculations may require building modeling to properly estimate the energy savings for particular measures. These measures may include building shell upgrades, building management systems, etc. Typical ECMs such as lighting, HVAC, motors, and others will likely not require these efforts and may be presented with generally accepted energy savings calculations and methodologies. Further details will be provided in the full program description.

- M&V:
  - Description of pre/post M&V to be implemented. Must be in accordance with IPMVP Option A or B, or other method pre-approved by Market Manager
- Appendices
  - Professional Engineer (PE) Certification to verify all FEEP documents are accurate.
  - Audit reports/results
  - Utility bills and/or summaries (*method to collect this information to be determined*)
  - Supporting calculations
  - Specification sheets

#### Submittal Requirements for Incentive Payment:

- Once the scope of work defined in the FEEP has been completed , entity shall submit proof of construction completion for all measures, which may include but is not limited to 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
- Differences between the FEEP and as-built project must be documented and will require a revised FEEP submitted for review. In the event the scope of work, savings, and/or cost estimates do not match as-built documentation, an incentive true-up will occur. The true-up is not to exceed the original incentive commitment.

#### Terms and Conditions:

- Each ECM must demonstrate a simple payback of 8 years or less (not to include maintenance or renewable projects) or, total ECM work scope must have IRR of 10% or greater (*prior to Incentive*)
- All ECMs must meet Minimum Performance Standards<sup>7</sup>, which shall be understood as the most stringent of:
  - 2011 Pay for Performance Guidelines-Appendix B (Attached in Appendix)
  - ASHRAE 90.1-2007
  - Local code
- FEEP must be submitted no later than ninety (120) days from fund reservation.
- ECMs must be fully installed no later than twelve (12) months from funding commitment. Extensions may be granted for a period of up to six months with satisfactory proof of project

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<sup>7</sup> This requirement may be fulfilled during Professional Engineer review. The Minimum Performance Standards are in place to assure projects funded under this pilot are held to a level consistent with other NJCEP C&I programs.

advancement. (This could be in the form of copies of permits, equipment invoices, installation invoices indicating percentage complete, updated project schedules, etc.)

#### **Limitations/Restrictions:**

- New construction buildings are not eligible under this pilot, however these projects will be eligible for other NJCEP incentives.
- No major rehabilitation projects will be permitted in this pilot or other NJCEP funded programs if an entity chooses to participate in the pilot program.
- 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 ECMs approved in the FEEP.
- ECMs already installed or under construction 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 Pilot Program funding shall not exceed 100% of total project cost.
- Projects with funds currently committed under other NJCEP funded programs must be excluded from DEEP/FEEP scope and value of incentive commitment will be deducted from total LEU incentive.
- Participation in any other NJ Clean Energy program in 2011 is prohibited for entities receiving LEU incentive. Entities shall certify, in writing, that they will opt-out of all SBC programs, for remainder of calendar year.

#### **Review and Payment Framework:**

- Upon receipt of DEEP and FEEP, Program Manager will have sixty (60) days to review submittal and provide comments to entity.
- Entity will have fifteen (15) business days to respond to comments.
- Market Manager will present FEEPs to Board for approval as required by Board policy and commitment of incentive. Market Manager may conduct up to three site inspections including a pre inspection, at 50% completion and 100% completion, as required. A pre inspection will be scheduled within 15 days of FEEP submittal, granted sufficient data is provided. Entity will need to provide access to site and notification upon reaching specific percent completions as mentioned above. Measures which require an inspection at 50% completion will be identified by TRC upon submittal of the FEEP. These measures may include building shell upgrades or equipment which will be inaccessible once installed.
- If ECMs are not completed within the specified timeframe, incentive commitment may be forfeited.
- Entity will provide M&V data as requested and will comply with any program evaluation activities.

# **Appendix B**

## **Energy Efficiency Improvement Opportunities**

**And**

## **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 workscope. 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 B-1. Energy Efficiency Measure Opportunities**

<b>Application or Energy End Use</b>	<b>Possible Energy-Efficiency Improvements</b>
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

<b>Application or Energy End Use</b>	<b>Possible Energy-Efficiency Improvements</b>
Building Controls	EMS with controls on more than one technology and must have a central controller
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



<b>Application or Energy End Use</b>	<b>Possible Energy-Efficiency Improvements</b>
Other commercial or Industrial refrigeration	<p>Oversized or evaporative condensers with VFD's on evaporative condenser fans Oversized/lower fan HP evaporative coils</p> <p>Evaporative fans on/off control Multi-stage compressor systems Oversized cooling equipment with thermal shifting capacity</p> <p>Gas engine driven compressors Desiccant dehumidification not covered in prescriptive</p>
Ice Rinks	<p>Gas engine driven compressors</p> <p>Desiccant dehumidification not covered in prescriptive</p> <p>Ice temperature reset based on occupancy/use</p> <p>Low E ceilings</p> <p>Water-cooled electric chiller Multi-stage brine pump (smart drive)</p> <p>Floating head pressure controls down to 75 deg F</p>
Plastic Injection Molding Machines	<p>All electric machine but may include an upgrade to existing chilled water plant</p> <p>Enhanced hydraulic operated with VFD's on motor</p>
Interior lighting	See Sections B-9 and B-10
Exterior Lighting	See Sections B-9 and B-10
Lighting controls	See Section B-10

## B-2. Chillers

### Electric Chillers

	<150 tons	150 to <300 tons		≥300 tons	
	Full Load	Full Load	Part Load	Full Load	Part Load
Water-Cooled	0.75 kW/ton	0.56 kW/ton	0.50 kW/ton	0.47 kW/ton	0.46 kW/ton
Air-Cooled	1.20 kW/ton				

### Gas Absorption Chillers

Gas absorption chillers must have a full load or part load efficiency  $\geq 1.1$  COP.

## B-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

<b>Packaged Terminal Systems</b>	
< 9000 BTUH	12.0 EER
≥9,000 BTUH to 12,000 BTUH	11.0 EER
> 12,000 BTUH	10.0 EER

<b>Water Source Heat Pumps</b>	
All size	14.0 EER

<b>Central DX AC Systems</b>	
> 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.

#### **B-4. Ground Source Heat Pumps**

<b>Type</b>	<b>Qualifying Efficiency Level</b>
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.

### **B-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.

### **B-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%.

## B-7. Gas Heating

Gas-Fired Boilers	
Capacity, MBH	Minimum Efficiency
< 300 MBH	85% AFUE
≥300 - 1500 MBH	85% AFUE for Hot Water boilers 84% AFUE for Steam boilers
>1500 MBH	84% AFUE for Hot Water boilers 83% AFUE for Steam boilers

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

## B-8. Premium Motors

Open Drip-Proof (ODP)
Totally Enclosed Fan-Cooled (TEFC)

Size HP	Speed (RPM)				Speed (RPM)		
	1200	1800	3600		1200	1800	3600
<u>NEMA Nominal Efficiency</u>							

1	82.5%	85.5%	77.0%		82.5%	85.5%	77.0%
1.5	86.5%	86.5%	84.0%		87.5%	86.5%	84.0%
2	87.5%	86.5%	85.5%		88.5%	86.5%	85.5%
3	88.5%	89.5%	85.5%		89.5%	89.5%	86.5%
5	89.5%	89.5%	86.5%		89.5%	89.5%	88.5%
7.5	90.2%	91.0%	88.5%		91.0%	91.7%	89.5%
10	91.7%	91.7%	89.5%		91.0%	91.7%	90.2%
15	91.7%	93.0%	90.2%		91.7%	92.4%	91.0%
20	92.4%	93.0%	91.0%		91.7%	93.0%	91.0%
25	93.0%	93.6%	91.7%		93.0%	93.6%	91.7%
30	93.6%	94.1%	91.7%		93.0%	93.6%	91.7%
40	94.1%	94.1%	92.4%		94.1%	94.1%	92.4%
50	94.1%	94.5%	93.0%		94.1%	94.5%	93.0%
60	94.5%	95.0%	93.6%		94.5%	95.0%	93.6%
75	94.5%	95.0%	93.6%		94.5%	95.4%	93.6%
100	95.0%	95.4%	93.6%		95.0%	95.4%	94.1%
125	95.0%	95.4%	94.1%		95.0%	95.4%	95.0%
150	95.4%	95.8%	94.1%		95.8%	95.8%	95.0%
200	95.4%	95.8%	95.0%		95.8%	96.2%	95.4%

**B-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.

**B-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 (OHLF and OHLH):

- 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.
- OHLF will control fixtures that have a ballast factor less than 1.0 for T-5s and 1.14 for T-8s.
- OHLH will control fixtures that have a ballast factor greater than or equal to 1.0 for T-5s and 1.14 for T-8s.

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."
- DLD will control fixtures that have a ballast factor less than 1.0 for T-5s and 1.14 for T-8s.
- DDH will control fixtures that have a ballast factor greater than or equal to 1.0 for T-5s and 1.14 for T-8s.