



New Jersey SmartStart Buildings[®]
Program Guide
January 1, 2010

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PREFACE

New Jersey SmartStart Buildings® is a statewide energy efficiency program administered by the New Jersey Board of Public Utilities' Office of Clean Energy and delivered by the Commercial/Industrial Market Manager, TRC Energy Services.

The incentives, technical assistance, and other services described in this Program Guide are available to qualified commercial, industrial, institutional, government or agricultural customers in the state who are planning to construct, expand, renovate, or remodel a facility, or to replace electric or gas equipment. It also provides incentives to local governmental entities to conduct investment grade audits of their facilities as well as professional services to help guide customers through designing and planning phases. Projects must be located within the service territory of at least one of the following New Jersey Utilities:

1. Atlantic City Electric
2. Jersey Central Power & Light
3. New Jersey Natural Gas
4. Elizabethtown Gas
5. Public Service Electric and Gas
6. Rockland Electric Company
7. South Jersey Gas

Projects located in areas where electricity is provided by a municipal utility are eligible for only those portions of the program that address the energy efficiency of natural gas equipment. Customers planning to construct or expand a building are eligible for services under this program only if constructing within a designated smart growth area. Public school (K-12) new construction projects are exempted from this restriction and are eligible for new Program incentives throughout the State. Customers or their trade allies can assess if a location is in a designated growth area by referring to the Smart Growth Locator available from the HMFA website or contact the Market Manager if you are uncertain about project eligibility.

Please note: pre-approval is required for almost all incentives. This means you must submit an Application Form before any equipment is installed

SECTION I - PROGRAM OVERVIEW

A. Program Eligibility

The New Jersey SmartStart Buildings Program is available to qualified non-residential customers, including commercial, industrial, educational, institutional, government, and agricultural operations who are constructing, expanding, renovating facilities, or replacing equipment. Projects located in areas where electricity is provided by a municipal utility are eligible for only those portions of the program that address the energy efficiency of natural gas equipment.

Customers planning to construct or expand a building are eligible for services under this program only if constructing within a designated smart growth area. Public school (K-12) new construction projects are exempted from this restriction and are eligible for new Program incentives throughout the State. Customers or their trade allies can assess if a location is in a designated growth area by referring to the Smart Growth Locator available from the HMFA website or contact the Market Manager if you are uncertain about project eligibility.

Please note: pre-approval is required for almost all incentives. This means you must submit an Application Form and in some cases receive an inspection before any equipment is removed or installed.

B. Program Delivery

The Commercial/Industrial Market Manager delivers this program using consistent statewide eligibility criteria and measure lists, plus a single set of program application forms. Clients can be assured that the services and incentives available through the program will be the same everywhere in New Jersey.

C. “Market-Driven” Program

The primary goal of New Jersey SmartStart Buildings is to target the customer-initiated construction events. Incentive and service offerings are tailored to influence market-driven events by acknowledging the customer’s own initiative and the time-sensitive nature of these events.

- **New Construction and Additions** During new construction and addition projects, critical decisions, from an energy perspective, are made regarding building design and components, including: 1) the building form and configuration; 2) lighting systems; 3) heating, ventilation, and cooling systems (HVAC); 4) industrial process; and 5) other energy-using equipment.
- **Renovations** Renovation projects typically entail the wholesale “gutting” of a building, the replacement of the HVAC and lighting systems and, often, major modifications to the building shell.

- **Remodels** Remodeling is an appearance upgrade that may include: 1) lighting changes (soft remodel); 2) a new configuration of internal space or alteration in mechanical/electrical systems to update appearance; 3) reconfiguration of space for a tenant; and/or 4) major configuration or system changes for safety/security or other reasons (hard remodel).
- **Equipment Replacement** Although equipment (e.g., lighting fixtures, motors, HVAC units, compressors, pumps, fans, etc.) is often replaced at times of remodeling or renovation, it is also replaced at other times, i.e., if the equipment fails, becomes prohibitively expensive to maintain, provides inadequate service, or becomes inappropriate for new uses.

D. Summary of Program Components

The following provides a summary of the services and incentives available through the New Jersey SmartStart Buildings Program. Complete details are found in subsequent sections of this Program Guide. These offerings are subject to revision as the program evolves and in response to changes in the Commercial and Industrial (C&I) construction market. Consult the Commercial/Industrial Market Manager before beginning a project.

The New Jersey SmartStart Buildings Program has several participation options, depending on the building's status in the construction or renovation schedule and the owner's wishes. There are also several specialized services and options to address unique efficiency opportunities.

Customers can participate in the Program via three distinct avenues:

1. **Prescriptive Measures** – allows customers to choose equipment from a pre-qualified list of measures and receive an incentive. Customers who install more than two different measures (an example would be lighting and HVAC replacement) may also qualify for a Multiple Measures Bonus.
2. **Custom Measures** – allows customers to request technical assistance to qualify unique measures of their choosing that are not on the prescriptive list, and may receive an incentive.
3. **Comprehensive Building Design Measures** – in which the customer, the design team, and program-supported experts work together from the conceptual design stage of a new construction or substantial renovation project to consider holistic design and equipment options to improve the overall efficiency of a building. Under this approach, customers will be eligible for both program-sponsored technical assistance in defining and costing efficiency options, as well as reimbursement to the customer's own design team for additional design work or analysis necessary to accommodate program recommendations. The customer's financial incentive will be calculated and awarded based on an analysis of the entire project design and the interrelationship between the various energy consuming systems in the building.

Customers participating in the Program will also be offered an array of Ancillary and Supportive Services targeted to their specific needs, including:

- **Building Commissioning Incentives** – The New Jersey Department of Community Affairs (DCA) enforces the ASHRAE Standard 90.1-2004 as a revised Energy sub-code, part of the NJ Uniform Construction Code effective February 20, 2007.

Commissioning Incentives:

The Program provides incentives for commissioning mechanical systems for K-12 public schools over 50,000 square feet. Incentive amounts for each qualified K-12 school project will be based on the following guidelines:

- A 50/50 cost share basis up to \$30,000
- At no time will the Commissioning incentive exceed the incentive for the equipment on each project
- Total amount of incentive for each project will be determined by the Market Manager on a case-by-case basis
- Program incentives for commissioning may be reduced in the future as the demand for this service matures

For details, see Section II “Program Services, Incentives & Requirements.”

- Incentives for Technical Assistance and oversight is available to help customers evaluate energy efficiency options, utilize program offerings and services, and effectively use performance-contracted services. Funding is available on a cost-shared basis, through a customer trade ally agreement subject to pre-approval by the Market Manager.

In addition to the basic features of the program, customers with unique needs will be offered Specialized Program Support, including:

- **Chiller Optimization** – addresses opportunities to maximize efficiencies in chiller-related energy-consuming building systems during a chiller replacement by examining ways to optimize the efficiency of the chiller in relation to its distribution systems (pumps, fans, ducts, pipes, controls, etc.) while simultaneously reducing other building cooling loads (such as lighting). It is often possible to reduce the size (thus the cost and peak demand) of the replacement chiller. Additional benefits can include a better performing building and improved savings from the ancillary efficiency measures.
- **Compressed Air** – Significant energy savings can be achieved from optimizing compressed air systems in industrial facilities (over 100 HP). The focus is on the efficiency of all compressor system elements, including compressors, auxiliaries, controls, distribution, end-use, and operation and maintenance.

SECTION II - PROGRAM SERVICES, INCENTIVES, & REQUIREMENTS

A. Standard Program

1. Program Measures and Incentives

a. Prescriptive Measures

Overview

Prescriptive Measures allow customers to choose equipment from a pre-qualified list of energy-efficiency measures and receive a fixed incentive. This path is designed for customers who have projects that are beyond the design phase. These may include new construction, renovation, remodeling, and equipment replacement projects.

Eligibility and Incentives

Commercial and industrial customers of any size are eligible for measures found in the prescriptive measure lists. Prescriptive measures are those technologies where energy savings can be predicted with reasonable accuracy across all applications. These technologies include: lighting equipment and controls, unitary HVAC equipment, chillers, motors, and variable frequency drives.

A summary of the range of technologies and incentives is listed below. Full Eligible Measure and Incentive Tables, as well as technical and minimum requirements relating to specific prescriptive measures, are appended to this Program Guide.

b. Custom Measures

Overview

Custom Measures are designed to encourage measures that are innovative and more energy efficient than today's standards, and have not yet been adopted as a prescriptive technology. This path allows customers to request an assessment of measures of their own choosing that are not on the prescriptive list. The Custom Measures option allows for consideration of projects that are more complex than the Prescriptive measures, but involve less than a whole building design.

Eligibility, Services, Requirements, and Incentives

Custom measures are more complex projects that do not lend themselves to, or have not yet been adopted as, prescriptive projects, and yet involve less than a comprehensive building design. Often the savings generated by these measures are site- and end-use specific, and thus a detailed analysis is required to qualify them for incentives. Custom

Measures may include HVAC systems, refrigeration measures, and a variety of industrial process end-uses.

Project viability, eligibility, and incentives are assessed on a case-by-case basis and may be determined as part of a technical study, which details energy and demand savings and project costs. The study is conducted according to Market Manager-specified procedures and is subject to Market Manager review and approval. Consult the appendix of this document for a guide to elements needed for a technical study proposal. In other cases, custom measure applications may contain all of the information necessary for processing without the need for a formal technical study.

To be eligible, a proposed electric project must offer a minimum first year energy savings of 75,000 kWh for custom electric projects or 1,500 therms for custom gas projects.

The baseline standard practice against which energy savings for each proposal will be judged is to be determined on a case-by-case basis, using such resources as: current New Jersey baseline studies and other market research; the program experience of the Commercial/Industrial Market Manager; and experience of the New Jersey utilities or utility/public program experience from other comparable jurisdictions.

The established incentive cap will be the lesser of a set value of \$.16/kWh and \$1.60/therm based on estimated annual savings, 50% of the total installed project cost, or a buy down to a one year payback. In addition, all custom projects must have an IRR greater than or equal to 10%. The baseline for retrofit projects will be existing conditions. Custom measures for retrofit projects must exceed ASHRAE 90.1-2004 standards by at least 2% where specific standards exist. Where ASHRAE guidelines do not apply, measures will be required to exceed industry standards as determined by the Consortium for Energy Efficiency (CEE), EPA's ENERGY STAR[®], and/or others. New construction and complete "gut-rehab" projects will use ASHRAE 90.1-2004 as the baseline for estimating energy savings. For new construction and major gut/rehab projects, baseline measure costs will be determined on a case-by-case basis, using the Market Manager's measure cost research, program experience, and technical judgment.

The Market Manager reserves the right to limit funding on a per project or customer basis, based on the availability of funds and other program considerations.

c. Multiple Measures Bonus Incentive

Description

The Multiple Measures Bonus Incentive is designed to: (a) encourage more comprehensive and integrated use of multiple energy efficiency measures, and (b) encourage participation in Comprehensive Design Support. Customers who agree to install two or more different energy efficiency measures from the eligible categories will

receive a bonus incentive up to 15% above what would normally be entitled under either the Custom or Prescriptive Measures.

Eligibility, Services, and Incentives

Customers must agree to install measures from two or more of the following categories: lighting/controls, unitary HVAC, chillers, gas heating and/or cooling measures, gas water heating, motors, VFDs, and/or Custom Measures.

The Multiple Measures Bonus incentive will be up to a 15% addition to each fixed prescriptive incentive or calculated custom measure incentive (i.e., 115% of the original incentive). However, the total Multiple Measure Bonus paid to a customer shall not exceed the equipment incentive paid to that customer for any one measure category.

Requirements and Operation:

Lighting must be one of the energy conservation measures (ECM) categories in new construction projects. This requirement may be waived for renovation projects if the building's lighting system has already been treated.

d. Comprehensive Design Support

Description

Comprehensive Design Support provides technical support and incentives that allow building owners and their design teams to pursue the highest levels of energy efficiency options available that fully integrate the building envelope, lighting and mechanical systems. The combination of technical consultation and incentives provided by the program is designed to cover a significant portion of the additional design costs.

Eligibility

Any new construction or substantial renovation project of 50,000 sq. ft. or larger, provided that both lighting and HVAC systems are involved, or a project of any size where significant energy use is projected (a minimum of 150 tons of cooling and 75 kW of lighting) is eligible for Comprehensive Design Support. The building owner, the owner's design team and the Market Manager must sign a Comprehensive Design Support agreement to proceed in good faith and to give fair consideration to all recommended energy efficiency measures and design proposals in order to be eligible for program services.

Services and Design Incentives

There are two potential service options, depending on the building's stage of development and the level of the owner's interest and commitment.

- Comprehensive Design Support is best suited to projects in the conceptual or early schematic design stage, where there is a potential to influence many of the building’s design features and equipment choices. The requirements and offerings are as follows:
 1. Projects must involve at least lighting and an HVAC system, and preferably the shell as well.
 2. The Comprehensive Design Support Agreement is provided as an appendix to this Guide. In addition to signing the agreement, the owner’s design team must agree to participate in a brainstorming session with the Market Manager to establish the building base case design, as well as to identify and pass on the acceptability of potential design/equipment improvement options. The design team will receive an incentive of \$1,000 for participating in this session.
 3. After the brainstorming session, the owner’s design team will perform an energy simulation analysis, using DOE-2.0E or an equivalent simulation program appropriate for the given project. The choice of simulation tool is subject to review and approval by the Market Manager prior to simulation, as are the final simulation results. This simulation will provide a model of building energy use under the base case and under the various agreed-upon equipment and design scenarios, as well as an estimate of ECM costs and savings and an estimate of interactive equipment effects.
 4. The customer’s design team is responsible for detailed design and specification for the project. The customer’s design team is eligible for a design incentive to cover the incremental design cost up to a maximum of \$5,000 per facility/project. The Market Manager will review and approve the design team’s work prior to awarding the reimbursement.

- Modified Design Support is best suited to projects that are past the conceptual or schematic design stage, but are prior to release of bid documents. The customer’s design team has primary responsibility for detailed design and equipment specification. The customer is eligible for reimbursement of up to \$5,000 in incremental design costs for retaining services of an independent design reviewer, to be prorated as follows: lighting, \$2,000; HVAC, \$2,500; and motors and other, \$500. The Market Manager will review and approve the design team’s work prior to awarding the reimbursement.

Summary of Design Incentives

| | |
|---|-----------------|
| Pre-design planning session | \$1,000 |
| Design simulation and screening | \$5,000 or more |
| Incorporation of energy-efficient measures in facility final design | Up to \$5,000 |

Summary of Measure Incentives

Incentives for measures in a comprehensive project can be based on a mix of the following:

1. Predetermined incentives for measures from the electric and gas prescriptive measure lists;
2. Calculated custom measure incentives, subject to the requirements laid out in the custom offering (See: Custom Support description);
3. Multiple measure bonus incentives added to the above, subject to the requirements of that option. (See: Multiple Measures Bonus description.)

Quality Control/Assurance

Quality control steps are built into each project stage. There may be:

1. A technical review of the customer's study/proposal and design documents;
2. An on-site project visit, when appropriate;
3. A "Minimum Requirements Document" developed to list the key features to be inspected in post-installation review;
4. A post-installation review of documents supporting project costs (e.g., cut sheets, invoices, etc.);
5. A post-installation inspection/verification.

Also, the Market Manager reserves the right to monitor/evaluate performance of measures as part of an evaluation plan.

2. Ancillary and Supportive Services

a. Technical Assistance Services

Description

Through the Technical Assistance Services component of the program the Market Manager provides technical support matched to the needs and capabilities of commercial and industrial customers. Services may include incentives for detailed energy-efficiency studies for C&I buildings, and incentives for specialized technical studies, such as studies of industrial process improvements, chiller optimization projects, and compressed air projects.

Eligibility/Services

Technical Assistance Services and incentives will be available to qualifying commercial, institutional, agricultural, and industrial customers. Services to be provided include:

1. Project assistance for all program participants. This assistance is intended to move customers and their projects through the application, study, approval, installation, and inspection processes.
2. Design support and building simulation services. These services will be provided under Comprehensive Design Support and Chiller Optimization Support for eligible new construction and renovation projects.
3. Technical studies for the custom measure incentives, which may include technical assessments of energy efficiency opportunities for building measures and systems (e.g., lighting and HVAC) and industrial process.

Requirements and Operation

Technical Assistance Services will be subject to the following requirements:

1. All proposed projects require prior review and approval by the Market Manager. This approval will be based on the following: a) only to help customers decide about system improvements (e.g. chiller optimization); b) study will not be used to review application of a particular measure.
2. All custom measure proposals, including industrial process improvements, require review by the Market Manager.
3. Technical studies will be reviewed by the Market Manager's program representative.
4. Building/system computer simulation tools will be scaled appropriately for the given project's needs. Simulation tools used for a given project will properly account for all viable options and reasonably reflect the proposed measure's operating characteristics.

Technical Study Incentives and Cost-Share Requirements

1. The Program and the customer cost-share the technical study on a 50%/50% basis.
2. The total contribution by the Program will not exceed \$10,000 (this may be waived at the discretion of the Market Manager for large/complex projects with significant energy-savings potential).
3. The Program's contribution can be increased to 75% for customers who implement the study's recommendations, not to exceed the total Program share of \$10,000 (again, this may be waived at the discretion of the Market Manager.)

b. Commissioning Services

Description

The Commissioning Services or “Cx Services”- component of the NJ SmartStart Buildings Program, has two objectives: (a) to demonstrate the value of commissioning services to customers, thereby building a market- based demand for the service, and (b) to provide quality control when a significant investment is being made to implement complex energy efficient measures.

It is important for customers and trade allies to recognize that this is a limited offering intended to achieve the above two objectives. It is not intended to duplicate (or fund) the full commissioning services now offered in the marketplace.

Project Eligibility Guidelines

The incentive for commissioning is only available for a K-12 public school facility that is over 50,000 sq. ft. and qualified under the Comprehensive Design Support component of the program.

Commissioning Incentives

Cx Services provides incentive for commissioning of a school’s mechanical systems only. Incentive amounts for a qualified K-12 school project will be based on the following guidelines:

1. Program will cover on a 50/50 cost sharing basis up to \$30,000;
2. At no time will the Commissioning incentive exceed the incentive for the equipment on each project.
3. Total amount of incentive for the project will be determined by the Market Manager on a case-by-case basis;
4. Incentive for Cx services may be reduced in the future as the demand for this service matures

For additional details see the section on Building Commissioning.

B. Specialized Marketing and Program Support

1. Chiller Optimization

Description

Chiller Optimization is a specialized path within New Jersey SmartStart Buildings, designed to (a) capture potential additional savings available at the time of a chiller replacement or conversion to a new refrigerant, and (b) help to lay the foundation for market-based comprehensive treatment of major HVAC replacement projects. By

examining ways to optimize the efficiency of the chiller in relation to its distribution systems (pumps, fans, ducts, pipes, controls, etc.) while simultaneously reducing other building heat-producing loads (such as lighting), it is often possible to reduce the size (and thus cost and peak demand) of the replacement chiller. Additional benefits may include a better performing building and improved savings from the ancillary efficiency measures.

Eligibility, Services, and Incentives

Only customers with existing chiller plant of 500 tons and above are eligible to participate.

This path will be targeted to C&I customers with large chillers that are due for replacement. The path provides:

1. Technical Assistance in identifying potential savings and costs, made available to the customer through the program's Technical Assistance Services.
2. Incentives for the Chiller Replacement at the established levels found in the prescriptive measure tables.
3. Incentives for Auxiliary Enhancements, such as fans, pumps, motors, controls etc., at either a) the prescriptive level for prescriptive items or b) at a level defined by the Custom Measures approach for non-prescriptive measures.
4. Incentives for Lighting System Improvements based on the existing NJ SmartStart Buildings Program lighting incentives

Requirements and Operation

This path is available only to customers who are planning to replace or convert chiller systems and is designed to address the special opportunities, requirements, and problems that may occur when chillers are replaced. New chillers are handled through new construction services.

The technical analysis will:

1. Use the most current version of DOE-2 or other equivalent hourly whole-building model, unless facility loads are predictable or non-weather dependent (e.g., some process chillers), at the discretion of the Market Manager; and
2. Use metered data to calibrate the facility simulation.
3. The customer may contract with the chiller optimization modeler or the Market Manager may hire the chiller optimization modeler, either option being at the Market Manager's discretion.

4. The Market Manager may exceed the \$10,000 technical study budget cap at its discretion for larger, complex projects with significant energy-savings opportunities.

Compressed Air System Study Incentives

Significant energy savings can be achieved from optimizing compressed air systems in industrial facilities (over 100 HP). The focus is on the efficiency of all compressor system elements, including compressors, auxiliaries, controls, distribution, end-use, and operation and maintenance.

Financial incentives are provided for: a) the technical studies on a cost-shared basis and b) for qualified equipment.

SECTION III - BUILDING COMMISSIONING PROGRAM GUIDE

Forward

The purpose of this Program Guide is to define the guidelines and processes for the Building Commissioning Program (“Program”), a part of the New Jersey SmartStart Buildings Program.

The term Commissioning (Cx) means different things to different people. As such the best place to start is to clearly define the term for the purposes of this Program. Commissioning is a professional practice to be delivered by a Commissioning Authority (CxA) following ASHRAE Guideline 1.1-2007 or other similarly accepted practices.

The goal of the commissioning process is to ensure that equipment operates as intended and at optimum efficiency. Equipment and systems for which the program provides financial assistance are expected to realize energy savings. Commissioning will help ensure energy savings through the pursuit of optimal performance by the measures taken while influencing design whenever possible with energy conservation recommendations.

Commissioning Terms:

- Commissioning New Construction/Renovations – This process is recommended to start at the concept phase of a project and continue through design, construction, and first year warranty.

Eligibility Guidelines and Commissioning Incentive

Incentive for commissioning is only available for a K-12 public school facility that is over 50,000 sq. ft. and qualified under Comprehensive Design Support.

Commissioning Incentive

The Cx Program provides incentive for Cx of schools’ mechanical systems only. Incentive amounts for each qualified K-12 school project will be based on the following guidelines:

1. The Program will cover on a 50/50 cost-sharing basis up to \$30,000;
2. At no time will the Commissioning Incentive exceed the incentive for equipment rebated on each project.
3. Total amount of incentive for each project will be determined by the Market Manager on a case-by-case basis;
4. Program incentive for Cx services may be reduced in the future as the demand for this service matures.

Guidelines to Qualify Commissioning Authority

A Cx Authority (CxA) must satisfy the following guidelines to be qualified to provide Cx services under the New Jersey SmartStart Buildings Program:

1. Be knowledgeable of and follow ASHRAE Guideline 1.1-2007 and/or other similarly accepted Commissioning guidelines dependent on project requirements
2. Be knowledgeable of and/or become knowledgeable of the New Jersey SmartStart Buildings' full range of program offerings and be able to convey these to an owner and or construction team.
3. Be a full member of the Building Commissioning Association or be NEBB Certified to provide Cx services, or demonstrate, through proper documentation, necessary experience and qualification to deliver independent professional Cx services.
4. Be experienced in writing commissioning specifications and reports.
5. Have completed a minimum of three independent Cx projects following Cx guidelines listed above (#1) to the satisfaction of an owner.
6. Have extensive field experience in the operation and troubleshooting of HVAC systems and energy management control systems.
7. Have extensive experience in building operation and maintenance and O&M training. Be knowledgeable of ASHRAE Guideline 2008.
8. Be knowledgeable in testing and balancing of both air and water systems.
9. Be experienced in energy-efficient equipment design and control strategy optimization. Have a working knowledge of ASHRAE Standard 90.1-2004.
10. Be knowledgeable in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
11. Have excellent verbal and written communication skills. Highly organized and able to work with both owners/owners representative and trade contractors.
12. Have the ability to conduct business electronically over the Internet.

If a customer decides to use its in-house expertise and experience to commission a project and not hire an independent outside CxA, then the customer must submit this request in writing to the Market Manager. The Market Manager will review this request using the above guidelines and will approve or reject this request at its own discretion and on a case-by-case basis.

Description of the Commissioning Process

The following outlines are intended to serve as guidelines for customers interested to adopt Cx as a part of their construction projects. These guidelines should not be construed as either implicit or explicit requirements or conditions for participation in the Building Commissioning Program by the Market Manager. These guidelines are designed more as an educational tool for customers to follow when implementing commissioning and in dealing with Commissioning Authority.

Commissioning Process:

The process described in the following discussion is based upon the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Guideline 1-1-2007, The HVAC Commissioning Process.

Commissioning Definition:

- Commissioning is a systematic process of achieving, verifying and documenting that the performance of the facility and its various systems meets the design intent and functional and operational needs of the owner and occupants. Commissioning includes specific training of the personnel involved in the operation and maintenance of the building's equipment and facilities. The process extends through all phases of a project, from the design phase to occupancy and operation.
- The Commissioning Process introduces a new player to the design and construction team, referred to in this document as the Commissioning Authority (CxA). The CxA is a person or team with extensive building design and construction experience generally retained during the project-planning phase. The CxA is involved with the design, installation, performance verification, system documentation, and operator training phases of the project.

Commissioning Objectives:

Commissioning is intended to achieve the following objectives:

1. Ensure the design meets the functional needs of the owner;
2. Ensure that all systems are properly installed and work together as per design intent;
3. Verify and document proper performance of all equipment and systems;
4. Ensure that O&M documentation is complete;
5. Ensure that owner's operating personnel are properly trained to efficiently operate and maintain installed equipment and systems;
6. Deliver the comfort and indoor air quality expected by the building owner from day one;
7. Enhance facility productivity.

The following outlines the requirements to participate in and receive incentives under the Cx program.

Initial Steps:

- An owner or owner's representative (e.g. A&E, CM, CxA) must complete a project registration form and submit it to the Market Manager.

- The Market Manager will set up a meeting between the owner and the owner's representative if applicable to discuss the project.
- The Market Manager will determine the level of participation (up to 50%) and inform the owner and owner's representative if applicable of its decision.
- Should the owner decide to participate and a CxA has not been selected, the owner will advertise an RFP for CxA services.
- Once a CxA has been retained, the Market Manager, owner and CxA enter into agreement to commence work on the project.

Commissioning Program Stages:

The following details the minimum level of effort required by a CxA under this program. While it is most desirable to begin commissioning at the very start of a project or no later than during the design phase, this does not always occur. As such, a scalable process for commissioning is required to fit these occurrences. This offering, while not as effective as full commissioning, can still provide substantial benefit to an owner. So as not to confuse this process with full commissioning, for the purposes of this program it will be known as Adapted Cx. This Adapted Cx scalable process shall follow the Cx guidelines below, dependent on the stage of construction the CxA begins. A CxA general plan or scope of work will be developed for approval prior to commencement of work.

Cx Project Phases:

Pre -Design Conceptual Phase

During this phase a CxA works with the owner and design team to develop a document called the "Design Intent", which specifically states the owner's requirements and criteria for the project.

Design Specification Review and Comment

CxA meets with the design team prior to their commencement of work and details areas of the specifications, which will be influenced by the Commissioning process. Request that documentation be submitted for review as these are developed. Review the design documents and specifications at 50% and 95% completion.

Construction Team Orientation

Following bid submittals, but prior to contract awards, an orientation meeting will be scheduled between all responsible parties to ensure that the proposed construction team understands the Cx process and requirements.

Submittal Review

The CxA will receive and review at the same time as the design team, all submittals for equipment and controls that are to be commissioned. The CxA will document and make comments as required on all noncompliance issues and discuss them with the engineer.

Construction phase

This section details the commissioning process by commissioning task or activity during the construction phase.

- **Commissioning Scoping Meeting**
A commissioning scoping meeting is held in conjunction with the first construction project meeting. The Cx Plan will be reviewed, process questions will be addressed, lines of reporting and communications determined and the work products list discussed. The meeting will provide the CxA additional information needed to finalize the Cx Plan, including the commissioning schedule.
- **Final Commissioning Plan--Construction Phase**
The CxA will finalize the Cx Plan using the information gathered from the scoping meeting. The initial commissioning schedule will also be developed along with a detailed timeline. The timeline is fine-tuned as construction progresses.
- **Site Observation**
The CxA makes periodic visits to the site, as necessary, to witness equipment and system installations.
- **Miscellaneous Meetings**
The CxA attends selected planning and job-site meetings in order to remain informed on construction progress and to update parties involved in commissioning.
- **Logs**
The CxA will maintain logs which contain - an update of the schedule with list of requested schedule changes and new items added to the schedule; a list of new and outstanding deficiencies; a description of commissioning progress corresponding to the plan; etc. The log provides a form for tracking the status of documentation and testing for each piece of equipment and system.
- **Pre-functional Checklists, Tests**
The CxA provides all contractors responsible for commissioned equipment with commissioning documentation requirements for their respective equipment and systems. This typically coincides with the normal A/E submittal process. At minimum, this equipment data includes - installation and start-up procedures; O&M data; performance data and control drawings. Pre-functional checklists will document specified equipment versus installed equipment including installed equipment nameplate data.

- **Start-up**
The CxA assists the construction team members responsible for startup in developing detailed start-up plans for all equipment and shall witness startup of major equipment.
- **Deficiencies and Non-Conformance**
The CxA clearly lists any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully. The CxA works with the construction team to correct and retest deficiencies or uncompleted items.
- **TAB**
The TAB contractor submits the outline of the TAB plan and approach to the CxA. The CxA will observe certain TAB tests to ensure accuracy.
- **Controls Checkout Plan**
The controls contractor develops and submits a written step-by-step plan to the CxA which describes the process they intend to follow in checking out the control system and the forms on which they will document the process. The CxA will witness certain portions of the controls installation.
- **Functional Test and Verification Procedures**
The CxA develops the functional test procedures in a sequential written form, coordinates, oversees and documents the actual testing, which is performed by the installing contractor or vendor. Testing proceeds from components to subsystems to systems and finally to interlocks and connections between systems. The CxA documents the results of the test. Deficiencies or non-conformance issues are noted and reported for repair. The CxA schedules retesting as required to finalize a successful functional test.

Training and System Documentation

The CxA works with the other team members to prepare high quality training and documentation to enable building operating staff to make optimum use of their new systems, properly maintain them, and extend the building life. The documentation includes a “system manual”, which differs from the traditional O&M manuals. The “system manual” provides additional system schematics and instruction that explain how individual building equipment components are installed and work together. The commissioning specifications include instructions on how the O&M manuals are to be assembled and what they are to include.

The CxA also meets with representatives of owner’s O&M staffs to identify the type of training they need to maintain and optimize system performance. The CxA also coordinates the training and documentation requirements with other contractors. Ideally, if the training and documentation needs are clearly identified during the design phase, more specific requirements can be included in the bidding documents. The CxA observes much of the training to ensure training objectives are accomplished. It is advisable to schedule training during construction and over a long period of time rather than having all training immediately after construction. Doing this significantly increases training effectiveness. Further guidance on system documentation is available in the ASHRAE Guideline 4-2008, Preparation of Operating and Maintenance Documentation for Building Systems.

Warranty Period

During the warranty period, CxA will coordinate and supervise required seasonal or other deferred testing and deficiency corrections and provide the final testing documentation for the Cx Record and O&M manuals. In addition the CxA will return to the project site approximately 6 months into the 12-month warranty period and review with the facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning. Also, interview facility staff and identify problems or concerns they have with operating the building as originally intended. Identify areas that may come under warranty or under the original construction contract. Assist facility staff in developing reports and documents and requests for services to remedy outstanding problems.

Reporting

Three types of reports are required. A monthly report will be the main vehicle of communication throughout the commissioning process to the owner. A project status report will be provided to the Market Manager at the completion of each phase of the project. A final report will summarize the results of the commissioning service to the customer and the Market Manager.

Monthly Report

The monthly report should consist of:

1. Commissioning status (list current tasks)
2. Noncompliance items
3. Current issues of importance
4. Recommendations
5. Future issues
6. Schedule

The monthly report should be forwarded to the Owner.

Project Status Report

At the conclusion of each project phase e.g. pre-design, design specification review, construction, etc., a status report will be submitted to the Market Manager.

Final Report

A final commissioning report will be generated and delivered to the owner and the Market Manager at the conclusion of the project.

SECTION IV - PROCESS TO EVALUATE POTENTIAL TECHNOLOGIES OR MEASURES

Guidelines for Qualifying Technologies as Potential Prescriptive Measures in the New Jersey SmartStart Buildings Program

The purpose of this document is to assist vendors on how technologies or measures can be included in the New Jersey SmartStart Buildings (NJSSB) program's prescriptive list for incentives. This document defines, in general terms, how energy efficient technologies and conservation measures can be added to the prescriptive list and identifies the process steps.

Conservation measures and energy efficient technologies that are on the present prescriptive list have established performance and reliability characteristics that lend them to well-defined outcomes for energy savings and long life of use.

For energy efficient technologies and conservation measures that are not on the present prescriptive list, a custom path in the program has been developed for the purpose of evaluating their performance and potential energy savings characteristics. This path allows for new or unknown technologies and measures to become eligible for incentives and be tested at customer locations within the State. If these custom measures satisfy the requirement of predictability of energy savings and the general procedure below, they may move forward and be adopted onto the prescriptive list.

General Procedure for evaluating new potential measures

Step A. Screening Criteria

The energy efficient technology or measure must meet the following screening criteria:

- Cannot be 'standard practice' Definition: A 'standard practice' measure is already being widely purchased and installed in New Jersey without incentives (e.g., insulation). This may be a partially subjective determination based on the Market Manager's professional judgment.
- Cannot void end use equipment manufacturer's warranty. The vendor must document that the product will not impact OEM warranty or void any safety certification of impacted equipment.
- Must be safety tested and certified by a nationally recognized lab.
- Must meet codes (all applicable local, state, and federal codes).
- Must be commercially available in the marketplace from two or more manufacturers.
- Energy performance evaluation must have evaluation conducted by a nationally recognized independent testing lab including any negative impact on performance of host equipment.

- Should not be a maintenance measure or a substitute for maintenance activities. This may be a partially subjective determination based on the Market Manager's professional judgment.
- Market Potential should have substantial market potential based on judgment of the Market Manager.

First pass the 8 screening criteria above, then;

Step B.

Demonstrate at least three (3) installations within the custom path, with product in use at several customer locations within New Jersey. This requirement will be determined by the Market Manager on a case-by-case basis. Metering of some installations may be required to satisfy steps C, D and E below.

Step C.

New measures will be evaluated using a custom measure-screening process which includes a minimum internal rate of return (IRR) along with other criteria for cost effectiveness. An IRR of $\geq 10\%$ will be required before any further evaluation steps are taken by the Market Manager. Third-party case studies or laboratory reports may be used to support energy savings figures and provide a thorough description of the unique technology. The Market Manager may determine additional necessary information required for the evaluation of new technologies.

Step D.

Savings should be predictable enough to establish an incentive that meets confidence of energy savings as other prescriptive measures do.

Step E.

Costs should be sufficiently constant to establish a prescriptive incentive.

After above steps have been met, and the technology evaluated, the Market Manager will present the technology and a recommended incentive to the Energy Efficiency Committee at their monthly meeting. After committee presentation and the opportunity to community, a recommendation is sent to the NJ Board of Public Utilities' Office of Clean Energy to adopt the technology as a prescriptive measure in the program. If the Office of Clean Energy agrees with the Market Manager's findings, this technology or measure will become part of the program.

APPENDIX - Specific Requirements

| New Jersey SmartStart Buildings Program Custom Measure Opportunities | | |
|---|--|--|
| Application or Energy End Use | Current Design Practice Or Baseline Practice | Possible Energy-Efficiency Improvements |
| Window and Skylight Glazing | <p>0.78 for windows 10% or less of total wall area</p> <p>0.59 for windows between 10% and 30% of total wall area</p> <p>0.52 for windows greater than 30% of total wall area</p> <p>0.46 in curtain walls, atrium and skylights</p> | <p>0.51 for windows 10% or less of total wall area</p> <p>0.44 for windows between 10% and 30% of total wall area</p> <p>0.41 for windows greater than 30% of total wall area</p> <p>0.35 in curtain walls, atrium and skylights</p> |
| Air Distribution in all building types | Constant volume distributed HVAC systems | VAV Distribution Systems |
| Fume hood exhaust systems | VAV and VFD supply and exhaust distributed HVAC systems | Improvements above this baseline |
| Water Source Heat Pump Systems | <p>Constant flow water loop</p> <p>Forced draft cooling tower with constant speed centrifugal fan</p> | <p>Variable flow water loop with VFD</p> <p>Cooling tower with VFD or evaporative cooling tower with or without VFD</p> |
| Chilled Water Plant (new and existing) | <p>Chiller water reset based on return water temp</p> <p>Primary/Secondary pumping with constant speed pump</p> <p>Cooling towers with multiple fans or dual fans with single speed.</p> <p>Constant flow condenser water pump system</p> <p>Chiller sequencing controls on load</p> <p>No heat-x-changers</p> <p>No thermal storage</p> | <p>Chilled water reset based on building HVAC loads and discharge air temps</p> <p>VFD's on pumps or multiple sequenced high efficiency pumps on secondary distribution system</p> <p>Two speed motor upgrades, VFD's, and control for multiple cells</p> <p>VFD's on condenser water pump system</p> <p>Optimization chiller sequencing controls based on load and overall operation kW/ton</p> |
| Building Controls | No EMS (EMS is defined as an energy management system that controls multiple technologies.) | Controls on more than one technology and must have a central controller |
| Boiler equipment (greater than 1500 MBH) | <p>Constant speed feed water pumps</p> <p>Constant speed forced draft fans</p> | <p>VFD's on feed water pumps with automatic pressure controls</p> <p>VFD's on draft fans with automatic pressure controls</p> <p>Modulating Burners</p> |
| Package Humidification | Electric resistance steam generators | Ultrasonic humidification |

| New Jersey SmartStart Buildings Program Custom Measure Opportunities | | |
|---|---|--|
| Application or Energy End Use | Current Design Practice Or Baseline Practice | Possible Energy-Efficiency Improvements |
| Retail display refrigeration | <p>Multiplexed refrigeration racks</p> <p>Constant speed on lead compressors</p> <p>Plate and frame sub-coolers</p> <p>Floating head pressure controls</p> <p>Demand defrost controls</p> <p>T8's for case lights</p> <p>Air cooled condensers</p> <p>Screw compressors</p> <p>Case doors with anti-sweat heat controls</p> <p>Humidity controls with reheat</p> <p>Refrigeration heat recovery for DHW</p> <p>Self contained TEV (thermal expansion valves)</p> <p>Rack type refrigeration comp.</p> | <p>VFD on lead compressor</p> <p>Evaporative condensers VFD's on condenser fans</p> <p>Scroll compressors</p> <p>Heater doors (triple pane)</p> <p>Heat pipe on HVAC unit with coil bypass</p> <p>Low temperature air distribution</p> <p>Electronic controlled TEV</p> <p>Distributed refrigeration systems (no pumps, smaller diameter pipes)</p> |
| Other commercial or Industrial refrigeration | <p>Evaporative cooled condensers</p> <p>Standard size evaporative coils and controls</p> <p>Single-stage compressor system</p> <p>Floating head pressure controls, electric defrost control, and sub coolers</p> <p>Standard design cooling equipment and controls sequences</p> | <p>Oversized evaporative condensers with VFD's on evaporative condenser fans</p> <p>Oversized/lower fan HP evaporative coils</p> <p>Evaporative fans on/off control</p> <p>Multi-stage compressor systems</p> <p>Oversized cooling equipment with thermal shifting capacity</p> <p>Gas engine driven compressors</p> <p>Desiccant dehumidification not covered in prescriptive</p> |
| Waste water treatment and fresh water plants | <p>Fine bubble aeration with multi-stage centrifugal blower and constant speed motors, VFD's on all pumps 25 HP and larger, constant speed on all pumps 25 HP or less, VFD's on ID fans and fume control system</p> | |

| New Jersey SmartStart Buildings Program Custom Measure Opportunities | | |
|---|--|---|
| Application or Energy End Use | Current Design Practice Or Baseline Practice | Possible Energy-Efficiency Improvements |
| Ice Rinks | <p>Low E ceilings</p> <p>Water-cooled electric chiller</p> <p>Multi-stage brine pump (smart drive)</p> <p>Floating head pressure controls down to 75 deg F</p> | <p>Gas engine driven compressors</p> <p>Desiccant dehumidification not covered in prescriptive</p> <p>Ice temperature reset based on occupancy/use</p> |
| Plastic Injection Molding Machines | Enhanced hydraulic operated with VFD's on motor | All electric machine but may include an upgrade to existing chilled water plant. Electric machines greater than 40 ton and less than 400 tons will not be considered for custom incentives. |
| Air compressors (under 130 PSI) | Incentives available only for participants in the compressed air optimization program in serving cooling load | |
| Interior lighting | See Performance Lighting Approach | |
| Exterior Lighting | See Performance Lighting Approach | |
| Lighting controls | Only measures in present program will receive an incentive. See building controls for custom | |

| Electric Chillers Efficiency Levels and Incentives | | | | | | | | | | |
|---|-----------------------|------------------------------|------------------------------|--------------------------------|--------------|-------------------------|--------------|----------------------------|------------------------|------------------------|
| Water-Cooled Chillers | | | Water-Cooled Chillers | | | | | Air-Cooled Chillers | | |
| All Compressor Types | Incentives (<70 tons) | Incentives (70 to <150 tons) | All Compressor Types | Incentives* (150 to <300 tons) | | Incentives* (≥300 tons) | | All Compressor Types | Incentives (<150 tons) | Incentives (≥150 tons) |
| KW/Ton | Full Load \$/Ton | Full Load \$/Ton | KW/Ton | Full Load \$/Ton | (PLV) \$/Ton | Full Load \$/Ton | (PLV) \$/Ton | KW/Ton | Full Load \$/Ton | Full Load \$/Ton |
| 0.75 | \$16 | \$25 | 0.56 | \$16 | | | | 1.20 | \$14 | \$8 |
| 0.74 | \$18 | \$26 | 0.55 | \$21 | | | | 1.19 | \$16 | \$10 |
| 0.73 | \$20 | \$27 | 0.54 | \$26 | | | | 1.18 | \$18 | \$12 |
| 0.72 | \$22 | \$28 | 0.53 | \$31 | | | | 1.17 | \$20 | \$14 |
| 0.71 | \$24 | \$30 | 0.52 | \$36 | | | | 1.16 | \$22 | \$16 |
| 0.70 | \$26 | \$32 | 0.51 | \$41 | | | | 1.15 | \$24 | \$18 |
| 0.69 | \$28 | \$34 | 0.50 | \$46 | \$16 | | | 1.14 | \$26 | \$20 |
| 0.68 | \$30 | \$36 | 0.49 | \$51 | \$22 | | | 1.13 | \$28 | \$22 |
| 0.67 | \$32 | \$38 | 0.48 | \$56 | \$29 | | | 1.12 | \$30 | \$24 |
| 0.66 | \$34 | \$40 | 0.47 | \$61 | \$35 | \$12 | | 1.11 | \$32 | \$26 |
| 0.65 | \$36 | \$42 | 0.46 | \$66 | \$41 | \$14 | \$12 | 1.10 | \$34 | \$28 |
| 0.64 | \$38 | \$44 | 0.45 | \$71 | \$47 | \$16 | \$14 | 1.09 | \$36 | \$30 |
| 0.63 | \$40 | \$46 | 0.44 | \$76 | \$54 | \$18 | \$16 | 1.08 | \$38 | \$32 |
| 0.62 | \$42 | \$48 | 0.43 | \$81 | \$60 | \$20 | \$18 | 1.07 | \$40 | \$34 |
| 0.61 | \$44 | \$50 | 0.42 | \$86 | \$66 | \$25 | \$20 | 1.06 | \$42 | \$36 |
| 0.60 | \$46 | \$52 | 0.41 | \$91 | \$72 | \$30 | \$25 | 1.05 | \$44 | \$38 |
| 0.59 | \$48 | \$54 | 0.40 | \$96 | \$79 | \$40 | \$30 | 1.04 | \$46 | \$40 |
| 0.58 | \$50 | \$56 | 0.39 | \$101 | \$85 | \$50 | \$42 | 1.03 | \$48 | \$42 |
| 0.57 | \$52 | \$58 | 0.38 | \$106 | \$91 | \$60 | \$53 | 1.02 | \$50 | \$44 |
| 0.56 | \$54 | \$60 | 0.37 | \$111 | \$97 | \$70 | \$65 | 1.01 | \$52 | \$46 |
| | | | 0.36 | \$116 | \$104 | \$80 | \$77 | | | |
| | | | 0.35 | \$121 | \$110 | \$90 | \$89 | | | |
| | | | 0.34 | \$126 | \$116 | \$100 | \$100 | | | |
| | | | 0.33 | \$131 | \$122 | \$110 | \$112 | | | |
| | | | 0.32 | \$136 | \$129 | \$120 | \$124 | | | |
| | | | 0.31 | \$141 | | \$130 | | | | |
| | | | 0.30 | | | \$140 | | | | |
| | | | 0.29 | | | \$150 | | | | |
| | | | 0.28 | | | \$160 | | | | |
| | | | 0.27 | | | \$170 | | | | |
| | | | 0.26 | | | | | | | |

Electric Chiller Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.

- Please submit manufacturer's certified AHRI performance sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Incentive is available for meeting either the full load kW/ton level or the partial load kW/ton, but not both.
- Incentives are available for new centrifugal chillers outfitted at the factory with Variable Frequency Drives (VFDs) calculated at the appropriate partial load kW/ton level. There is no extra incentive for the VFD.
- All water cooled chillers must be submitted at AHRI conditions of:
 - Evaporator - 54 degrees entering water temperature (EWT) and 44 degrees leaving water temperature (LWT)
 - Condenser - 85 degrees EWT and 95 degrees LWT
- Efficiency requirements must comply with ASHRAE Standard 90.1-2004.

| Gas Cooling Equipment Efficiency Levels and Incentives | | | |
|---|--|--|---|
| Gas Absorption Chillers | | | Regenerative Desiccant Units |
| Size Range | Indirect-Fired (Incentive & Efficiency Threshold) | Direct-Fired (Incentive & Efficiency Threshold) | Incentive per CFM (based on process airflow) |
| <100 tons | ≥ 1.1 F.L. COP \$450/ton | ≥ 1.1 F.L. COP \$450/ton | \$1.00 per CFM |
| 100 to 400 tons | ≥ 1.1 F.L. COP \$230/ton | ≥ 1.1 F.L. COP \$230/ton | Eligible when matched with core gas or electric cooling equipment |
| >400 tons (only two-stage chillers) | ≥ 1.1 F.L. COP \$185/ton | ≥ 1.1 F.L. COP \$185/ton | |

Gas Cooling Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Chiller full and part load efficiencies are determined in accordance with AHRI Standard 550/590-2003.
- Efficiency requirements must comply with ASHRAE Standard 90.1-2004.

| Electric Unitary HVAC Efficiency Levels and Incentives | | | |
|---|----------------------------------|--|-----------------------|
| Unitary HVAC/Split Systems | | Water Source Heat Pumps | |
| < 5.4 tons | 14.0 SEER \$92/ton | ≤ 5.4 tons | 14.0 EER \$81/ton |
| ≥ 5.4 to < 11.25 tons | 11.5 EER \$73/ton | > 5.4 tons | 14.0 EER \$81/ton |
| ≥ 11.25 to < 20 tons | 11.5 EER \$79/ton | | |
| ≥ 20 to 30 tons | 10.5 EER \$79/ton | | |
| Air-to-Air Heat Pump Systems | | Central DX AC Systems | |
| < 5.4 tons | 14.0 SEER & 7.8 HSPF \$92/ton | > 30 to 63 tons | ≥ 9.5 EER \$40/ton |
| ≥ 5.4 to < 11.25 tons | 11.5 EER \$73/ton | > 63 tons | ≥ 9.5 EER \$72/ton |
| ≥ 11.25 to < 20 tons | 11.5 EER \$79/ton | | |
| ≥ 20 to 30 tons | 10.5 EER \$79/ton | | |
| Packaged Terminal Systems | | Dual Enthalpy Economizer Controls | |
| < 9000 BTUH | 12.0 EER \$65/ton | ALL | \$250/Unit |
| ≥ 9,000 BTUH to 12,000 BTUH | 11.0 EER \$65/ton | Occupancy Controlled Thermostats (for Hospitality/Institutional facilities) \$75 per occupancy controlled thermostat | |
| > 12,000 BTUH | 10.0 EER \$65/ton | | |

Electric Unitary HVAC Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet and AHRI Certified Net Capacity with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Both indoor and outdoor components of a Split System must be replaced to qualify for an incentive.
- Incentive calculation is based on the Electric Unitary HVAC equipment capacity at AHRI Certified Net Capacity and Rating at operating conditions; it is not based on the nominal Electric Unitary HVAC equipment capacity.
- Dual Enthalpy Economizer Control incentive is available with new installation on qualifying Electric Unitary HVAC equipment.
- Efficiency requirements must comply with ASHRAE Standard 90.1-2004.

| Ground Source Heat Pump Equipment Efficiency Levels and Incentives | | |
|---|-----------------------------|-----------------|
| Ground Loop & Ground Water Heat Pumps | | |
| Type | Qualifying Efficiency Level | Incentive |
| Open and Closed Loop ≥ 16 EER ENERGY STAR rated equipment only | ≥ 16 EER | Up to \$450/ton |
| | ≥ 18 EER | Up to \$600/ton |
| | ≥ 20 EER | Up to \$750/ton |

Ground Source Heat Pump Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Performance ratings (EER, Btuh) for qualifying closed loop Ground Source Heat Pump equipment are calculated at 77 degrees Fahrenheit 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 degrees Fahrenheit entering water temperature per test procedure ISO-13256-1.
- Efficiency requirements must comply with ASHRAE Standard 90.1-2004.

| Variable Frequency Drive Incentives | |
|---|---------------------------------------|
| Centrifugal Fan Applications on Variable Air Volume HVAC Systems | |
| Cumulative Motor HP Controlled by Each VFD | Incentive \$/Cumulative HP Controlled |
| 5 to < 10 hp | \$155 per hp |
| 10 to < 20 hp | \$120 per hp |
| 20 + hp | \$65 per hp |
| Chilled Water Pump Motors for HVAC Systems | |
| 20 + hp | \$60 per VFD rated hp |
| Rotary Screw Air Compressors | |
| 25 to 29 hp | Up to \$5,250 |
| 30 to 39 hp | Up to \$6,000 |
| 40 to 49 hp | Up to \$7,200 |
| 50 to 59 hp | Up to \$8,000 |
| 60 to 199 hp | Up to \$9,000 |
| 200 to 249 hp | Up to \$10,000 |
| ≥ 250 hp | Up to \$12,500 |

Variable Frequency Drives Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Incentives for VFDs in HVAC VAV systems are available only for installing a VFD on existing VAV systems as an add-on measure. Replacement of an existing VFD on VAV systems and installations on VAV systems in new construction are not eligible for incentives.
- The Variable Frequency Drive (VFD) incentive for pumps is available only for VFDs installed on centrifugal chilled water pump motors for HVAC systems.
- The VFDs must be installed in a system (VAV air supply or chilled water pumping systems) 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.

| Gas Water Heating Efficiency Levels and Incentives | | | | |
|---|---------------------------------|--|-----------------------|---|
| Gas-Fired Water Booster Heaters | | Gas Water Heaters ≤ 50 Gallons | | |
| Capacity – MBH | Incentive | Capacity – MBH | Incentive | |
| ≤ 100 MBH | \$35 per MBH | 0.62 or better Energy Factor | \$50 per water heater | |
| > 100 MBH | \$17 per MBH | Size limit: ≤ 50 gallons | | |
| Tankless Water Heaters (Instantaneous) | | Gas Water Heaters > 50 Gallons | | |
| Minimum Efficiency | Incentive | < 300 MBH | 85% AFUE | \$2.00 per MBH, not less than \$50/unit |
| ≥ 82% EF | \$300 per tankless water heater | ≥ 300 – 1500 MBH | 85% AFUE | \$1.75 per MBH |
| | | > 1500 - ≤ 4000 MBH | 84% AFUE | \$1.00 per MBH |

This incentive is only available for the replacement of existing, free-standing water heaters.

Gas Water Heating Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.

| Gas Heating Efficiency Levels and Incentives | | |
|---|--|---|
| Gas-Fired Boilers | | |
| Capacity – MBH | Minimum Efficiency | Incentive |
| < 300 MBH | 85% AFUE | \$2.00 per MBH but not less than \$300 per unit |
| ≥ 300 – 1500 MBH | 85% AFUE for Hot Water boilers, 84% AFUE for Steam boilers | \$1.75 per MBH |
| > 1500 - ≤ 4000 MBH | 84% AFUE for Hot Water boilers, 83% for Steam boilers | \$1.00 per MBH |
| > 4000 MBH | See Custom Measure Path | |
| Gas Furnaces | | |
| Capacity | Minimum Efficiency | Incentive |
| No size/capacity limitation | 92% or greater AFUE, ENERGY STAR | \$300 per furnace |
| No size/capacity limitation, Furnace with Electronic Commutated Motor (ECM) or equivalent | 92% or greater AFUE, ENERGY STAR | \$400 per furnace |

Gas Heating Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.

| Qualifying Premium Motor Efficiencies and Incentives | | | | | | | | | |
|---|------------------------------------|-------|-------|--|--|------------------------------------|-------|-------|--|
| Premium Motor Incentives Open Drip-Proof (ODP) | | | | | Premium Motor Incentives Totally Enclosed Fan-Cooled (TEFC) | | | | |
| Size HP | Speed (RPM) | | | Customer Incentive (\$/Motor) | Size HP | Speed (RPM) | | | Customer Incentive (\$/Motor) |
| | 1200 | 1800 | 3600 | | | 1200 | 1800 | 3600 | |
| | NEMA Nominal Efficiency | | | | | NEMA Nominal Efficiency | | | |
| 1 | 82.5% | 86.5% | 77.0% | \$45 | 1 | 82.5% | 85.5% | 77.0% | \$50 |
| 1.5 | 86.5% | 86.5% | 84.0% | \$45 | 1.55 | 87.5% | 86.5% | 84.0% | \$50 |
| 2 | 87.5% | 86.5% | 85.5% | \$54 | 2 | 88.5% | 86.5% | 85.5% | \$60 |
| 3 | 88.5% | 89.5% | 85.5% | \$54 | 3 | 89.5% | 89.5% | 86.5% | \$60 |
| 5 | 89.5% | 89.5% | 86.5% | \$54 | 5 | 89.5% | 89.5% | 88.5% | \$60 |
| 7.5 | 90.2% | 91.0% | 88.5% | \$81 | 7.5 | 91.0% | 91.7% | 89.5% | \$90 |
| 10 | 91.7% | 91.7% | 89.5% | \$90 | 10 | 91.0% | 91.7% | 90.2% | \$100 |
| 15 | 91.7% | 93.0% | 90.2% | \$104 | 15 | 91.7% | 92.4% | 91.0% | \$115 |
| 20 | 92.4% | 93.0% | 91.0% | \$113 | 20 | 91.7% | 93.0% | 91.0% | \$125 |
| 25 | 93.0% | 93.6% | 91.7% | \$117 | 25 | 93.0% | 93.6% | 91.7% | \$130 |
| 30 | 93.6% | 94.1% | 91.7% | \$135 | 30 | 93.0% | 93.6% | 91.7% | \$150 |
| 40 | 94.1% | 94.1% | 92.4% | \$162 | 40 | 94.1% | 94.1% | 92.4% | \$180 |
| 50 | 94.1% | 94.5% | 93.0% | \$198 | 50 | 94.1% | 94.5% | 93.0% | \$220 |
| 60 | 94.5% | 95.0% | 93.6% | \$234 | 60 | 94.5% | 95.0% | 93.6% | \$260 |
| 75 | 94.5% | 95.0% | 93.6% | \$270 | 75 | 94.5% | 95.4% | 93.6% | \$300 |
| 100 | 95.0% | 95.4% | 93.6% | \$360 | 100 | 95.0% | 95.4% | 94.1% | \$400 |
| 125 | 95.0% | 95.4% | 94.1% | \$540 | 125 | 95.0% | 95.4% | 95.0% | \$600 |
| 150 | 95.4% | 95.8% | 94.1% | \$630 | 150 | 95.8% | 95.8% | 95.0% | \$700 |
| 200 | 95.4% | 95.8% | 95.0% | \$630 | 200 | 95.8% | 96.2% | 95.4% | \$700 |

Fractional < 1 HP Electric Commutated Motors (ECM) \$40 per ECM, replacement of existing shaded pole motor in refrigerated/freezer cases.

> 200 HP must follow the Custom Electric Equipment Path

Premium Motors Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Incentives are only available for qualifying Premium Motors that operate at least 2000 run hours annually.

| Prescriptive Lighting Measures Incentives | |
|---|--|
| Type of Fixture | Incentive |
| Recessed and Surface-Mounted Compact Fluorescents (New Fixtures Replacing Incandescent Fixtures Only): Only available for hard-wired, electronically ballasted new fixtures with rare earth phosphor lamps and 4-pin based tubes (including: twin tube, quad tube, triple tube, 2D or circline lamps), THD<33% and BF>0.9 | \$25 per 1-lamp fixture \$30 per 2-lamp or more fixture |
| Screw-in PAR 38 or PAR 30 Compact Fluorescent Lamps (CFL) | \$7 per lamp replaced |
| High-Efficiency Fluorescent Fixtures: T-12 to T-5 or T-8 with electronic ballasts | \$15 per fixture for T12 to T8/T5 (1-4 lamps retrofit) |
| For replacement of fixtures with new T-5 or T-8 fixtures: (Old Type, Old Wattage, New Type) | Incentive per fixture: |
| (HID-T-12-Incandescent, ≥1000, T-5/T-8) | \$284 |
| (HID-T-12-Incandescent, 400-999, T-5/ T-8) | \$100 |
| (HID-T-12-Incandescent, 250-399, T-5/ T-8) | \$50 |
| (HID Only, 175-249, T-5/T-8) | \$43 |
| (HID Only, 100-174, T-5/T-8) | \$30 |
| (HID Only, 75-99, T-5/T-8) | \$16 |
| (T-12 Only, <250, T-5/T-8 - 1&2 lamps) | \$25 |
| (T-12 Only, <250, T-5/T-8 - 3&4 lamps) | \$30 |
| For retrofit of T-8 fixtures by permanent delamping & new reflectors are available only for fixtures with a Total Harmonic Distortion of ≤20%. Electronic ballast replacement required for all eligible delamped fixtures. | \$20 per fixture |
| New Construction & Complete Renovation | Performance based only |
| LED Exit Signs (new fixtures only): For existing facilities with connected load ≤75kW | \$20 per fixture |
| LED Exit Signs (new fixtures only): For existing facilities with connected load ≥75kW | \$10 per fixture |
| Pulse Start Metal Halide (for fixtures ≥150 watts) | \$25 per fixture (includes parking lot) |
| Parking lot low bay - LED | \$43 per fixture |
| T-12 to T-8 fixtures by permanent delamping & new reflectors. Electronic ballast replacement is necessary for all eligible delamped fixtures. | \$30 per fixture |

| | |
|--|--|
| Retrofit of existing 32 watt T-8 system to Reduced Wattage (28W/25W 4') | \$10/fixture (1-4 lamps) |
| LED Refrigerated/Freezer Case Lighting: Incentive for replacement of fluorescent lighting systems in medium or low temperature display cases | \$42 per 5' fixture \$65 per 6' fixture |
| Induction Lighting Fixture - Retrofit of HID | \$50/HID ($\geq 100W$) fixture retrofitted with induction lamp, power coupler and generator. Replacement unit must use 30% less wattage/ fixture than existing HID system. |
| Induction Lighting Fixture - Replacement of HID | \$70/HID ($\geq 100W$) fixture with a new induction fixture. Replacement unit must use 30% less wattage/ fixture than existing HID system. |

Prescriptive Lighting Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, Prescriptive Lighting worksheet, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate. .
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Incentives for T-5 and T-8 lamps with electronic ballasts are available only for fixtures with a Total Harmonic Distortion of $\leq 20\%$.
- All eligible lighting devices must be UL listed.
- Requirements for CFL fixtures (must meet all requirements):
 - Fixtures must be new and ENERGY STAR qualified
 - Fixtures must have replaceable electronic ballasts
 - Total Harmonic Distortion (THD) must not exceed 33%
 - Power factor of the ballast must be no less than 90%
 - The manufacturer must warrant all fixtures for a minimum of 3 years. Warranty does not pertain to lamps or photocells not physically part of the fixture.
 - The installer must warrant installation of fixtures for a minimum of 1 year.
- Screw-in PAR 38 or PAR 30 Compact Fluorescent Lamps (CFL) with Aluminum Reflectors replacing existing incandescent fixtures.
 - The lamp must be warranted by the manufacturer for 8,000 hours
 - Total Harmonic Distortion must not exceed 33%
 - Power factor of the ballast must be $\geq 90\%$

-
- Pulse Start Metal Halide (including pole-mounted parking lot lighting) must have a 12% minimum wattage reduction.
 - 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.
 - 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.
 - Incentives for delamped T-8 lamps with new reflectors are available only for fixtures with a Total Harmonic Distortion of $\leq 20\%$. Electronic ballast replacement required for all eligible de-lamped fixtures. Eligible de-lamping can include reduction in linear lamp feet from existing conditions. For example, 1-8' linear fluorescent lamp can be considered as 2-4' linear lamps. U-bend lamps 4' in total length can be considered as 2-F17/T8 lamps.
 - Electronic ballast replacement is necessary for all eligible delamped fixtures.
 - Reduced wattage T8 (28W/25W 4') (1-4 lamps) retrofit requires lamp and ballast replacement.
 - LED refrigerated/freezer case lighting must meet NEEP Design Lights Consortium Standards or be on an ENERGY STAR or a SSL Qualified Product list. For new door installations on existing open cases, indicate the number of LED fixtures to be installed. Also indicate "New Door" in Fixture Type column on the Prescriptive Lighting Worksheet (i.e. New Door 5' LED).

| Lighting Control Prescriptive Incentives | |
|--|---|
| Non High Bay Applications Only | |
| Control Device Type | Incentive per Unit |
| OSW – Occupancy Sensor Wall Mounted (Existing facilities only) | \$20 per control |
| OSR – Occupancy Sensor Remote Mounted (Existing facilities only) | \$35 per ballast |
| DLD – Fluorescent Daylight Dimming | \$25 per fixture controlled \$50 per fixture controlled (office applications only) |
| OHLF – Occupancy Controlled High-Low with Step Ballast | \$25 per fixture controlled |
| High Bay Applications Only | |
| Control Device Type | Incentive per Unit |
| OSRH – Occupancy Sensor Remote Mounted | \$35 per control |
| OHLH – Occupancy Controlled High-Low with Step Ballast | \$75 per fixture controlled |
| DDH – Daylight Dimming | \$75 per fixture controlled |

Lighting Controls Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, a Lighting Control worksheet, utility bill, and manufacturer's specification sheet.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- All lighting controls eligible for incentives must be UL listed.
- Lighting control incentives are only available for control of eligible energy efficient lighting fixtures.
- If more than one eligible lighting control device is associated with the same eligible fixture, the incentive paid will be for the lighting control device that yields the largest incentive only.
- Occupancy Sensor Controls (existing facilities only):
 - There is no incentive available for occupancy sensors installed in a space where they are prohibited by state or local building or safety code. Additionally, no incentive is eligible for occupancy sensors in the following specific spaces in all cases: stairways, restrooms (remote mounted only allowed), elevators, corridors/hallways, lobbies, and closets/storage areas.
 - Incentives will only be paid for eligible occupancy sensors (OSW & OSR) controlling at least 2 eligible lighting fixtures and, for OSR installations, a minimum total connected load of 180 watts.

-
- Incentives will only be paid for eligible OSRH occupancy sensors controlling eligible fixtures when the controlled wattage is greater than 180 watts.
 - Occupancy sensors with manual override to the “ON” position are ineligible for incentive.
 - High-Low Controls (OHLF and OHLH):
 - Incentives will not be paid for high-low controls on eligible fluorescent fixtures where daylight dimming controls can be effectively employed.
 - Incentives will not be paid for spaces where the bottom of the fixture does not comply with the appropriate Prescriptive Lighting 2008 incentives, nor in spaces smaller than 250 square feet.
 - Incentives available only when “low level” is no more than 60% of “high level.”
 - Incentives are not available 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:
 - Incentives will only be paid for eligible daylight dimming controls operating 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.
 - Incentives will be paid only for eligible daylight dimming control systems 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.

| Performance Lighting Incentives | |
|---|--|
| Indoor Lighting Outdoor Lighting (attached to building only) | \$1.00 per watt per square foot below program incentive threshold |
| Maximum Incentive | \$30 per qualified fixture |
| Baseline | NJ Code (ASHRAE 90.1-2004) |
| Incentive Threshold New Construction & Complete Renovation | Complete Renovation=100% fixtures must be replaced 5% more energy efficient than ASHRAE 90.1-2004 |
| Minimum Lighting Levels – Applicant shall be responsible for confirming light levels | Lighting installed under the performance incentive path should comply with the following minimum lighting levels: 1. Lighting level requirements as specified by New Jersey’s nonresidential construction code, or 2. For publicly supported schools, minimum lighting levels as specified in the New Jersey Administrative Code Title 6-NJAC 6:22-5.4, g1-h1. |

Performance Lighting Requirements:

- Applicant must submit for approval a properly completed Application Package, which includes an Application, a Performance Lighting worksheet, utility bill, manufacturer's specification sheet, W9 form and tax clearance certificate.
- Include the manufacturer's specification sheet with the application package and mail or fax directly to the Commercial/Industrial Market Manager.
- Incentives for T-5 and T-8 fluorescent lighting fixtures with electronic ballasts are available only for fixtures with a Total Harmonic Distortion of $\leq 20\%$.
- All eligible lighting devices must be UL listed.
- Existing buildings must remove 100% of fixtures.

CUSTOM GAS AND ELECTRIC EQUIPMENT INCENTIVES

- To be eligible, projects must have a minimum first-year energy savings of 75,000 kWh for custom electric measures or 1,500 therms for custom gas measures.
- Established incentive caps will be the lesser of 1) a set value of \$0.16/kWh and \$1.60/therm based on estimated annual savings, 2) 50% of the total installed project cost or 3) "buy down" to a one-year payback.
- Custom Measure applicants will be provided with program spreadsheets to be used for reporting measure savings and cost-effectiveness calculations including Internal Rate of Return (IRR) of $\geq 10\%$ and project payback (with and without incentives).
- Retrofit projects must exceed ASHRAE 90.1-2004 standards by at least 2% compared to existing conditions where specific guidelines exist. Where ASHRAE guidelines do not apply, measures will be required to exceed industry standards as determined by the Consortium for Energy Efficiency (CEE), EPA's ENERGY STAR[®], and/or others. New construction and complete "gut-rehab" projects will use ASHRAE 90.1-2004 as the baseline for estimating energy savings.
- A complete application package should include the following: - Application completed and signed by the customer, cost and energy savings calculations information referenced in the application package, project summary describing existing conditions/equipment and proposed custom technology, W9 form from the payee, 12 months of electric and/or gas utility bills including any third party supplier invoices, equipment manufacturer specifications documents.

TECHNICAL STUDY PROPOSAL TEMPLATE

Technical Study Proposal Requirements:

- Define the baseline system you are going to use in the study.
- Define the alternative(s) to be examined.
- Describe the methodology to be used to compare both the baseline and the alternative(s); including software and simulation methods.
- Provide an estimate of the cost to complete these tasks, including total hours to be spent on this study.

Chiller Optimization Proposal Requirements:

- Provide a detailed description of existing system, including all mechanical equipment associated with this system.
- Describe the methodology to estimate building loads.
- Define the software of the modeling program to be used.
- Provide an estimate of the cost to complete these tasks including the total hours to be spent on this study.

Minimum requirement for a commissioning report to be handed out with the project approval letter:

Building commissioning documentation required for obtaining an incentive t must include these elements:

- Design intent document
- Design review report
- Commissioning specification
- Commissioning plan
- Performance testing protocol
- Start up protocols
- Issues database
- Final commissioning report

Technical Study final report that comes from the previously approved technical study – The study incentive is approved from above proposal and then this is distributed with the approval letter to the client.

- Executive summary
- List of all assumptions
- Provide a complete list of indoor and outdoor conditions
- Detailed description of base system and proposed or alternative system(s) studied
- Provide a complete building schedule used
- Provide all input data sheets
- Provide all output data sheets
- Provide monthly operating profile and typical weekday and weekend operating profiles
- Provide a summary of annual operating costs including; utility costs and lifecycle costs for all systems examined base and alternate. Provide these without, as well as with, program incentives.

Chiller optimization report will also include:

- Field survey report
- Description of all recommended measures and a financial summary of all these measures; including cost to install, operating cost, lifecycle cost, etc.

COMPREHENSIVE DESIGN SUPPORT AGREEMENT

Basic Understandings

This agreement is entered into between the Commercial Industrial Market Manager, TRC Energy Services on behalf of New Jersey's Clean Energy Program, hereafter identified as "TRC" and _____, hereafter identified as the "Owner", and _____, hereafter identified as the "Design Team". The New Jersey SmartStart Buildings Program offers to pay incentives ("design incentives") to qualified Design Teams for including energy efficiency in the design of a commercial or industrial customer facility, hereafter identified as the "Facility" to be constructed or reconstructed at _____. This agreement provides the terms for payment of the design incentives by TRC pertaining to the Facility.

1. Design Incentive Payments

a) TRC will pay the Owner's Design Team a design incentive, as defined in the New Jersey SmartStart Buildings program materials, for approved design analysis and information gathering that Design Team performs on the Facility according to the specifications outlined in the Attachment(s) and according to plans reviewed in advance of construction by TRC in accordance with paragraph 2 below. The amount of the design incentive shall be set forth in the Attachment(s). TRC will calculate and approve the design incentive amount and issue payment by check in accordance with paragraph 3 below.

b) If the Facility, as designed for construction, includes any electric service self-generation capability, the amount of any design incentive payable under this agreement will be reduced such that the percentage of the design incentive payable will be equal to the percentage of total Facility electric load supplied with electric service from the Utility.

2. Analysis Requirements and Review of Specifications

The Owner or Design Team will provide TRC with a copy of the Facility plans and specifications. Such specifications must include plans for the possible inclusion of energy efficient measures. The Owner or Design Team will work with TRC to determine appropriate energy efficient measures prior to the performance of energy design analysis and information collection associated with this design incentive. TRC may refuse to approve the analysis plans if the analysis plans do not adequately provide for the incorporation of the energy-efficient program measures, or any other specific requirements set forth in the Attachments.

3. Date of Design Incentive Payment

TRC will pay the design incentive amount to Design Team within forty-five (45) days after the following conditions are met: (1) Construction of the Facility has begun, (2) TRC has received satisfactory documentation that requirements in the Attachment(s) have been met, and (3) TRC has received funds from the Program related to this Design Incentive.

4. Verification of Analysis

New Jersey's Clean Energy Program shall not be obligated to pay any design incentive amount unless TRC is satisfied that the analysis performed by the Design Team was completed in accordance with the requirements and any other specifications set forth in the Attachment(s).

5. Cancellation

a) The Design Team may cancel this agreement at any time. If the Design Team is not engaged in a continuous effort of design analysis for the Facility in accordance with the analysis plans by the end of one year from the date this agreement is signed, TRC may cancel this agreement.

b) Upon cancellation of this agreement, the Design Team will promptly reimburse TRC for all payments made by TRC to the Design Team under this agreement.

6. Limitations of Liability

a) The Design Team shall not be liable to TRC for any damages under this agreement other than reimbursement of amounts paid by TRC, pursuant to paragraph 5 above.

b) TRC and/or its affiliates and representatives' liability is limited to paying the design incentives specified herein pursuant to the New Jersey SmartStart Buildings Program Conditions/Eligibility/Requirements. The company is not liable for any consequential or incidental damages or for any damages in tort connected with or resulting from participation in this Program.

c) TRC shall not be liable to the Owner and/or the Design Team for any damages in tort (including negligence) caused by any activities, including without limitation the activities of any agent, subcontractor, engineer or consultant retained by the TRC associated with this agreement.

7. No Warranties

a) The Owner and Design Team acknowledge that TRC and/or its affiliates and representatives are not responsible for assuring that the design, analysis, engineering, or construction of the Facility or installation of any or all of the individual measures, as defined in the New Jersey SmartStart Buildings Program Conditions/Eligibility/Requirements is proper or complies with any particular law, code, or industry standard or is suitable or appropriate for the accomplishment of any purpose.

b) The Owner and Design Team acknowledge that TRC and/or its affiliates and representatives do not guarantee that the results of any design analysis and/or modeling performed pursuant to this agreement, or the installation of any or all of the individual measures, as defined in the New Jersey SmartStart Buildings Program Conditions/Eligibility/Requirements, will result in any level of energy savings or result in any measurable energy-related benefit.

8. Tax Liability

Neither TRC, nor its affiliates and representatives, will be responsible for any tax liability that may be imposed on the Design Team as a result of the payment of incentives. The

Design Team must supply its Federal Tax Identification Number or Social Security Number in order to receive an incentive.

9. Miscellaneous

a) This agreement, including the attachments noted (checked) here,

Attachment A - Specifications for Brainstorming Session

Attachment B - Specifications for Simulation

Attachment C - Specifications for Measure Design

is the entire agreement among the parties and supersedes all other communications and representations, other than any New Jersey SmartStart Buildings Program agreement entered into between two or more of the parties in conjunction with or resulting from this agreement.

b) If either TRC or the Design Team desires to modify this agreement, the modification must be in writing and signed by an authorized representative of each party in order for the modification to be enforceable against that party.

In order to evidence its agreement to the above terms, each party has caused an authorized representative to sign this agreement on the date(s) specified below.

TRC

By: (signed)

Name: (printed or typed)

Title:

Date:

Owner

By: (signed)

Name: (printed or typed)

Title:

Date:

Design Team

By:(signed)

Name: (printed or typed)

Title:

Date:

Company Name:

Address:

Federal Tax I.D. #:

COMPREHENSIVE DESIGN SUPPORT AGREEMENT

Attachment A Specifications for Brainstorming Session

The information below defines the requirements for this Design Incentive, and the amount of the incentive offer. Additional pages may be attached. Submitting complete, concise, and accurate information will ensure that your Design Incentive is processed as quickly as possible.

Brainstorming Incentive Amount: Up to \$1,000 per project.

Brainstorming Requirements:

1. Prior to the brainstorming session, the Design Team will provide a preliminary design definition of the project, including (where known):

- Building uses and hours of operation -Number of occupants
- Total floor area and number of floors
- Descriptions of typical wall, roof, and fenestration sections
- Preliminary lighting and equipment power levels
- Anticipated HVAC systems and source fuels
- Projected control strategies

2. The brainstorming session involves a single meeting between the Owner, the Design Team, and the Commercial/Industrial Market Manager's program representative. At the meeting, the group will establish the base case design for the building and decide upon the efficiency measures to be simulated. Follow-up assignments will be established at the brainstorming meeting.

Attachment B Specifications for Simulation

This attachment is used only when the Design Team is providing building simulation services.

The information below defines the requirements for this design incentive, and the amount of the incentive offer. Additional pages may be attached. Submitting complete, concise, and accurate information will ensure that your design incentive is processed as quickly as possible.

Simulation Incentive Amount:

| | Project Size (sf) | Incentive (\$/sf) | Incentive |
|------------------|-------------------|-------------------|-----------|
| First 50,000 sf | 50,000 | x \$0.10 = | \$5,000 |
| All remaining sf | | x \$0.03 | \$ |
| Totals | | | \$ |

TRC reserves the right to negotiate the combined total amount for design incentives.

Simulation Requirements:

- The approved energy simulation program is DOE-2.0E or a more recent version of that program. Other simulation programs will be considered for approval on a case-by-case basis, provided they have hourly simulation capability.

Approved Simulation Tool: _____

- Brainstorming session must be completed in order for the Design Team to be eligible for simulation incentives.
- The brainstorming session will define the base case building design and measures to be simulated.
- The process for conducting simulations in the Comprehensive Design Support approach as defined in the New Jersey SmartStart Buildings program materials are summarized below:
 - The simulation process begins with these steps: 1) simulate the base case building, 2) simulate each measure individually with the base case building to determine annual kWh savings and kW demand savings relative to the base case, and 3) screen each measure for cost-effectiveness according to the Market Manager's criteria, using incremental costs estimates.
 - The results at this phase of the simulation process are summarized and provided to participants for review.
 - TRC will arrange a meeting with all participants to review the above work, and reach consensus regarding which of the screened measures will be modeled interactively and considered for inclusion in the final building design. The Market Manager will provide an estimate of the incentive

payments available to the owner and identify any additional design support or measure design incentives that the program will provide or arrange. Measures will be ranked according to cost-effectiveness and/or owner preference.

- The interactive modeling step will add measures in incremental steps to the base case design and evaluate measures for interactive savings and cost-effectiveness. The Market Manager reviews the simulation results. The Market Manager revises incentive calculations, if necessary.
- TRC provides the results to the Owner and Design Team. The Owner selects the measures that will be included in the final building design and informs TRC.
- A final interactive simulation is performed, if needed.
- TRC will be given copies of simulation inputs and summary results in printed and electronic formats, including program input electronic data files. The Market Manager reserves the right to have all simulation work reviewed by its own, or a third party, simulation specialist.
- Attached is a summary of the defining parameters for the base case building, as agreed upon from the brainstorming session.
- Attached is a description of the measures to be simulated, as agreed upon from the brainstorming session.
- Additional simulation requirements.

Attachment C Specifications for Measure Design

The information below defines the requirements for this design incentive, and amount of incentive offer. Additional pages may be attached. Submitting complete, concise, and accurate information will ensure that your design incentive is processed as quickly as possible.

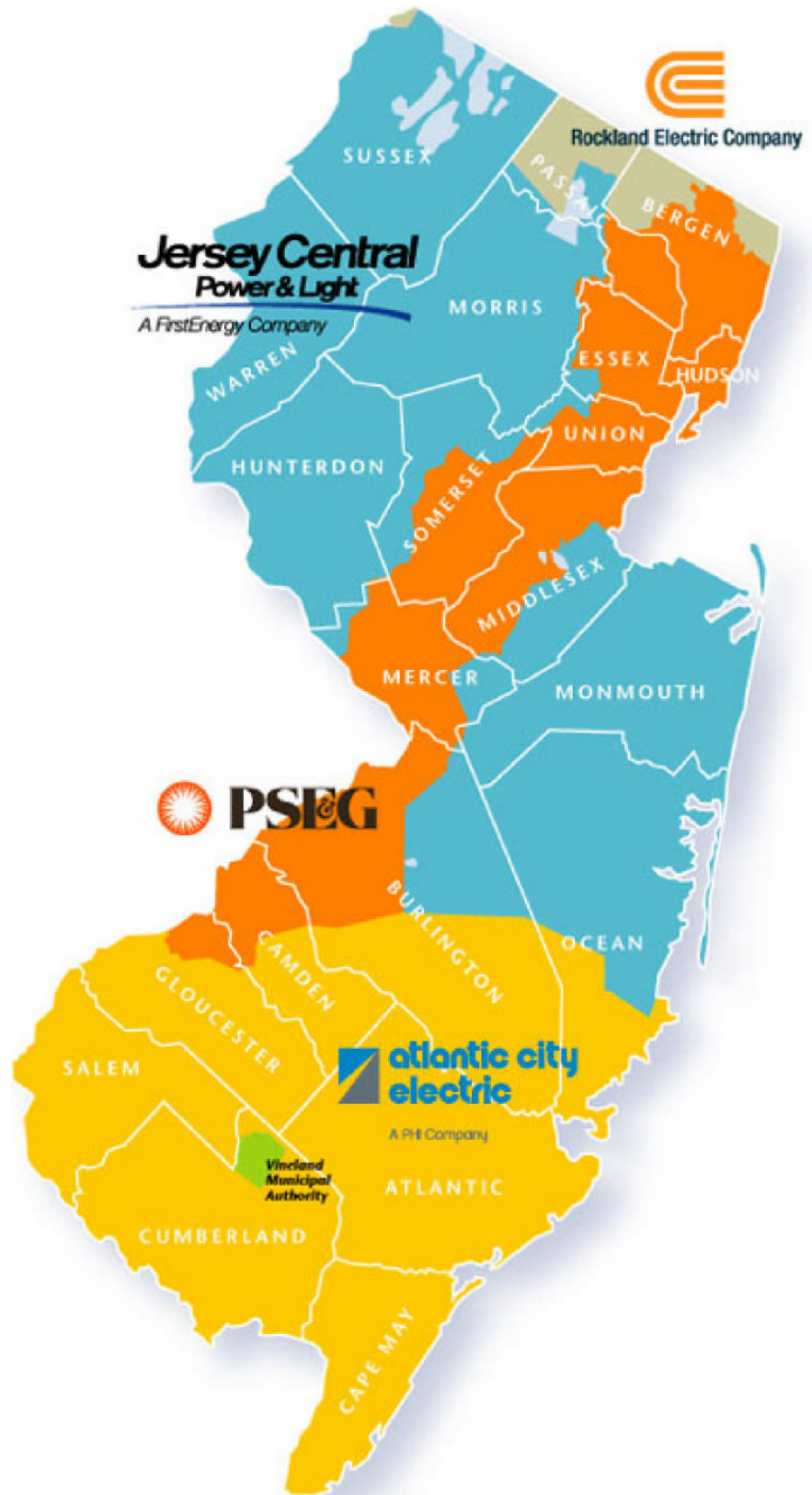
Measure Design Incentive Amount:

| End-Use Category | Estimated Incremental Design Cost | Maximum Prescriptive Design Incentive | Project Incentive |
|------------------|-----------------------------------|---------------------------------------|-------------------|
| Lighting | \$ | \$2,000 | \$ |
| HVAC | \$ | \$2,500 | \$ |
| Motors and Other | \$ | \$500 | \$ |
| Totals | \$ | \$5,000 | \$ |

Measure Design Requirements:

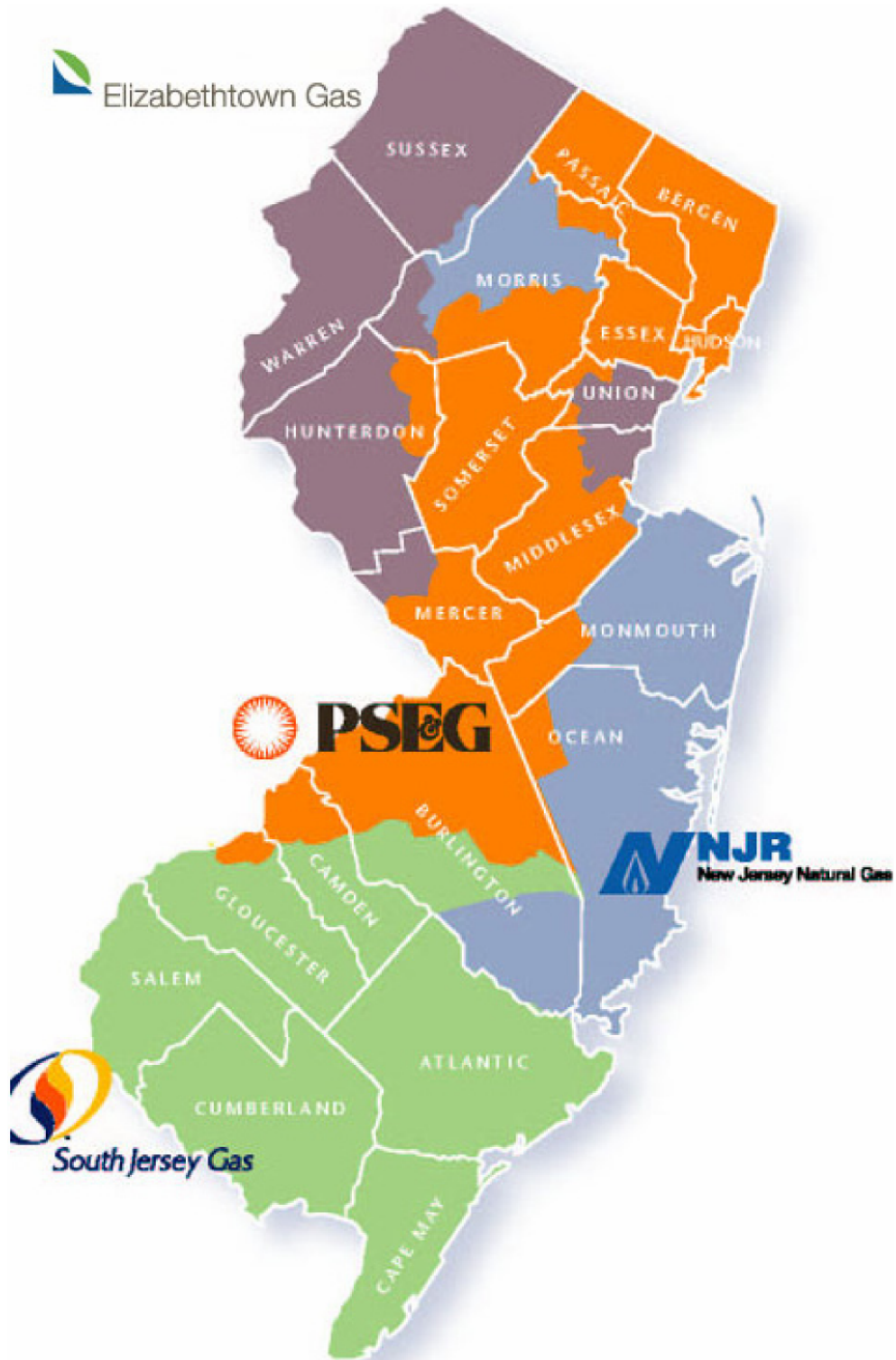
1. Measure design incentives are available only for measures approved by the Commercial/Industrial Market Manager.
2. Attached is a description of the approved measures, as agreed upon by the Market Manager.
3. The incremental measure design costs eligible for incentives are those incurred after a Comprehensive Design Support Agreement including this Attachment C - Specifications for Measure Design has been executed up to the release of bid specifications.
4. The Design Team is instructed to prepare and submit to the Market Manager a fee proposal addressing the incremental design time necessary to incorporate the agreed upon measures into the final design of the building. The proposal must outline the method of analysis and software design tools to be used.
5. TRC will review the submittal for reasonableness, and prepare and execute a Comprehensive Design Support Agreement including this Attachment C - Specifications for Measure Design.
6. TRC will be given copies of inputs and summary results in printed and electronic formats, including computer program input electronic data files.

ELECTRIC UTILITIES TERRITORY MAP



Atlantic City Electric Company is now known as Atlantic City Electric

GAS UTILITIES TERRITORY MAP



For more information, please visit the website @ www.njcleanenergy.com/ssb