



Policies & Procedures Manual



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1. Program Overview

Progress Energy Carolina's Energy Efficiency for Business Program provides financial incentives for non-residential customers to implement energy efficiency measures. This program is available to all non-residential customers, including commercial, industrial, governmental, and nonprofits customers receiving retail service from Progress Energy in North Carolina.

This Policy and Procedures Manual is intended to convey the rules, policies and procedures that govern program administration and customer participation. It is a companion document to the Incentive Application forms and program information found at www.progress-energy.com/carolinasbusiness.

1.1 Incentive Types

Prescriptive Incentives (rebates) are available for energy efficiency upgrades and system improvements including lighting, HVAC, refrigeration, and motors. Incentives are paid based upon the quantity, size and efficiency of the technology or equipment that is installed, replaced or removed. Incentives are provided for qualified equipment commonly installed in a retrofit or equipment replacement situation. Most measures involving prescriptive incentives do not require pre-approval before implementation.

Custom Incentives (rebates) are available for less common or more complex energy saving measures which are not covered by a prescriptive application. Custom measure incentives are paid based on the annual electric energy (kWh) savings of the measure. All projects must meet Progress Energy's cost effectiveness requirements. Prescriptive measures are not eligible for custom incentives. All measures involving custom incentives require pre-approval before implementation.

Technical Assistance Incentives (rebates) are offered for new construction and retrofit applications to provide assistance to customers with development or implementation of system and building enhancements. Assistance may include, but is not limited to, feasibility studies, detailed energy audits, and retro-commissioning of existing building systems, or for efficient design or energy modeling for new structures. All measures involving technical assistance incentives should receive pre-approval before implementation.

The appropriate Retrofit, New Construction, or Technical Assistance Incentive Application(s) should be used to apply for project approval or incentive payments.

2. Program Effective Dates

Energy Efficiency Program for Business incentives are offered each program year. The effective dates of the program year and application submittal requirements are as follows:

- 2009 Energy Efficiency for Business Program incentives are available for eligible energy efficiency projects commencing and installed after April 21, 2009 and before December 31, 2009. Subsequent program years will begin on January 1 and end on December 31.
- Any energy efficient equipment or services purchased or contracted for prior to April 21, 2009 are **not eligible** for an incentive during the 2009 program year.

- All qualified project work, specific to energy efficiency measures, must begin during the program year and Final Applications must be received no later than February 28th, following the program year.
- Subsequent program year budgets and plans will be made available near the end of the existing program year. At the current time, Progress Energy has committed to provide this program through 2013.

3. Customer Eligibility

The following rules pertain to customer eligibility for the Energy Efficiency for Business Program: This program is available to any Progress Energy retail non-residential customer in North Carolina if the area of energy efficiency improvement utilizes an existing metered electrical service listed in **Table 3-1**.

Qualified customers may include owners of:

- Publicly owned buildings and sites, such as municipal, school and military installations.
 - Non-profit organizations
 - Common areas of multi-family or mixed-use buildings.
 - Centrally metered multi-family residential properties.
- If a customer is a tenant in a Facility where the landlord owns the equipment for which the customer pays for the electricity, the property owner must agree to the terms and conditions of the program for a tenant to participate in the program.
 - The customer paying for the Energy Conservation Measure (ECM) should submit the application to receive the incentive payment or designate the recipient of any incentive
 - Incentive payments may be paid directly to one of the following for any single application submittal at the discretion of the customer applicant:
 - Customer
 - Trade ally (contractor, vendor, consultant, etc.)
 - Owner of the building / site.

**Eligible Rate Schedules
Table 3-1**

Rate Schedule	Rate Schedule Description
SGS	Small General Service
SGS-TOU	Small General Service – Time of Use
MGS	Medium General Service
SI	Seasonal or Intermittent Service
CH-TOUE	Church Service – Time of Use
GS-TES	General Service (Thermal Energy Storage)
APH-TES	Agricultural Post-Harvest Service (Experimental)
LGS	Large General Service
LGS-TOU	Large General Service – Time of Use
LGS-RTP	Large General Service – Real Time Pricing (Experimental)
CSG	Church and School Service
CSE	Church and School Service

4. Project Requirements

Project requirements under the Energy Efficiency for Business Program include the following:

- Projects must involve a Facility energy efficiency improvement that results in a sustained reduction in electrical energy usage (kWh);
- New equipment and components must be installed: used or refurbished equipment or components do not qualify for incentive payments.
- Projects that are **NOT** eligible for an incentive include the following:
 - Fuel switching (e.g., electric to gas or gas to electric).
 - Projects involving natural gas-driven equipment in place of electric equipment (such as a chiller).
 - On-site electricity generation.
 - Projects involving renewable energy.
 - Projects that involve peak-shifting and do not provide kWh savings.
 - Measures installed with funding from or under another utility sponsored incentive program.
 - Changes in operational or maintenance practices.
 - Simple control modifications not involving capital investment costs.
- Any measures installed at a Facility must provide 100% of the energy benefits as stated in the Application for a period of at least five (5) years or for the life of the installed product, whichever is less.
- If the Customer removes the equipment or systems from service at the metered site at any time during the 5-year period, the Customer may be required to return a prorated amount of incentive funds to Progress Energy.
- Progress Energy reserves the right to thoroughly inspect project sites and related equipment prior to and after equipment installation, modifications or upgrades associated directly with this program. This includes, but is not limited to, metering and other data collection related to ECM proposals and installations.
- All replaced materials and equipment must be permanently removed from future service. They shall be disposed of properly to comply with local, state and federal requirements.

5. Incentive Limits and Caps

Incentives payments are subject to tiered financial limits that apply to qualified incentive totals that exceed \$100,000 per calendar year per Facility. Progress Energy utilizes this method to manage all available funds with the intent to attain equitable distribution among as many customers as possible.

For most situations, a Facility is defined as a structure, multiple structures and / or area served by a meter located on a contiguous piece of property. For those customers that have a primary meter and their own distribution equipment or customers that have multiple meters on the same contiguous piece of property, a Facility is a structure or area enclosed by defined boundaries. i.e. building firewalls, roadways, fences, etc as determined by the Program.

5.1 Facility Incentive Limits

Facility incentive payments shall be paid using a tiered method as shown in **Table 5-1**. All incentives earned are combined and paid according to the tiers below. No **maximum** financial cap exists and the dollars values listed pertain to earned incentives for installed measures in a given calendar year for a Facility.

**Table 5-1
Incentives Payment Limits**

Increment of Total Approved Measure Incentives	Incentive Payment, % of Total Approved Measure Incentives
\$1 to \$100,000	100%
\$100,001 to \$500,000	50%
\$500,001 to \$1,000,000	25%
Greater than \$1,000,000	10%

Example: A project with viable energy efficiency measures totaling **\$750,000** in gross qualified incentives will not receive a full incentive payment for this amount. Instead, a final incentive payment of **\$362,500** will be issued in compliance with the tiered payment structure shown in **Table 5-1**.

- The initial \$100,000 of the approved measure incentives is paid at **100%**.
- The next \$400,000 qualified measure incentives are paid at **50%**; and \$200,000 will be paid for this portion of improvements.
- The final \$250,000 portion of the qualified measures is paid at **25%**; and \$62,500 will be paid for this portion of improvements.
- The combined total incentive payment for this project example would be **\$362,500**.

\$100,000	x	100%	=	\$100,000
\$400,000	x	50%	=	\$200,000
\$250,000	x	25%	=	\$ 62,500
-----				-----
\$750,000				\$362,500

5.2 Technical Assistance Incentive Caps

Technical Assistance incentive payments for new construction and retrofit projects are capped as described in **Section 9**. For retrofit customers the incentive is capped at 50% of feasibility study or retro commissioning costs for customers with annual energy use > 500,000 kWh. PEC will pay a maximum of \$10,000 for those customers whose use falls between 500,000 kWh and 2 million kWh and \$20,000 for larger customers. For new construction, the Facility must have 20,000 ft² to qualify for the Building modeling or Design Assistance incentive.

6. Retrofit Incentives

6.1 Retrofit Prescriptive Incentives

The Energy Efficiency for Business Program offers prescriptive incentives for improvements in the following categories:

- Lighting

- Cooling & Heating (HVAC)
- Refrigeration
- Premium efficiency motors

6.1.1 Retrofit Prescriptive Incentives - Lighting

Incentives are paid on a per unit basis as noted in **Table 6-1**. Detailed specifications are provided in **Section 10**. Note that certain prescriptive incentives listed here require preapproval prior to implementation.

**Table 6-1
Retrofit Prescriptive Lighting Incentives**

	Equipment Type	Unit	Incentive / Unit
Lamp Replacement	Compact Fluorescent Lamps, Screw-in		
	ALL Wattages, see specifications for minimum standards	Lamp	\$1.50
	Reduced Wattage (Fluorescent Lamp Replacement)		
	4-foot lamp replacement only	Lamp	\$0.50
	8-foot lamp replacement only	Lamp	\$0.75
	Cold Cathode		
	Cold Cathode Lamps	Lamp	\$4.00
New Fixtures	Hardwired Compact Fluorescent Fixture		
	29 W or Less	Fixture	\$30.00
	30 W or Greater	Fixture	\$55.00
	Metal Halide – Ceramic, Quartz, or Pulse Start Fixture		
	100 W or Less	Lamp	\$20.00
	101 W - 200 W	Lamp	\$30.00
	201 W - 350 W	Lamp	\$55.00
	Exit Sign Fixtures		
	LED or Electroluminescent	Fixture	\$25.00
High Performance Fixtures, T5 or T8 (Pre-approval required)			
Total Existing Fixture Watts Less Total New Fixture Watts	Watt ¹	\$0.35	
Lamp Removal	Permanent Lamp Removal (Pre-Approval Application Is Required)		
	Remove 4-foot fluorescent lamp	Lamp	\$6.00
	Remove 8-foot fluorescent lamp	Lamp	\$8.00
	Remove 4-foot fluorescent lamp with reflector	Lamp	\$10.00
	Remove 8-foot fluorescent lamp with reflector	Lamp	\$15.00
Fixture Upgrade	T12 Fluorescent Fixtures to High Performance/Reduced Wattage T8		
	4-foot lamp and ballast upgrade	Lamp	\$6.00
	8-foot lamp and ballast upgrade	Lamp	\$8.00
	Lighting Controls (Incentive is per Watt controlled)		
	Occupancy Sensors	Watt ²	\$0.06

¹ Incentive Unit: Watts Reduced

² Incentive Unit: Watts Controlled

6.1.2 Retrofit Prescriptive Incentives – Cooling & Heating (HVAC)

Unitary air-cooled air conditioning units, air or water-cooled chillers, room air conditioners, packaged terminal air conditioners (PTAC), and variable speed drives (VSDs) for heating, ventilation, and air conditioning (HVAC) motors, are eligible for incentives. Detailed product specifications are discussed in **Section 9**. Cooling equipment must meet the minimum qualifying efficiency levels as shown in **Table 6-2**.

**Table 6-2
Prescriptive HVAC Incentives**

Equipment Type	Size Category	Qualifying Efficiency	Incentive (per ton)
Unitary and Split Air Conditioning Units and Air Source Heat Pumps	< 65,000 Btuh (5.4 Tons)	14 SEER	\$25
		15 SEER	\$45
	≥ 65,000 Btuh (5.4 Tons) and <240,000 Btuh (20 Tons)	11.5 EER	\$30
		12 EER	\$55
	≥240,000 Btuh (20 Tons) and <760,000 Btuh (63.3 Tons)	10.5 EER	\$30
		10.8 EER	\$55
	≥ 760,000 Btuh (63.3 Tons)	9.7 EER	\$30
		10.2 EER	\$55
Water-Cooled Chillers ³	ALL	Level 1 (see Section 11.2)	\$18
		Level 2 (see Section 11.2)	\$35
Air-Cooled Chillers	ALL	1.04 kW / ton-IPLV	\$35
Room Air Conditioners	ALL	Level 1 (see Section 11.3)	\$25
		Level 2 (see Section 11.3)	\$45
PTAC	ALL	13.08-(0.2556 x Btuh / 1000) EER	\$30
Equipment Type	Incentive		
Variable Speed Drive (VSD) on HVAC Fan and Pump Motors ⁴	\$45.00 / HP		

³ Single pass water cooled chillers (& other equipment) do not qualify for an incentive payment.

⁴ Refer to **Section 9.5** for qualified VSD applications pertaining to chillers, fans, pumps and other equip.

6.1.3 Retrofit Prescriptive - Refrigeration

The following are some common methods of reducing energy usage in refrigeration. The Energy Efficiency for Business Program is offering incentives for the refrigeration measures shown in **Table 6-3**. The specifications for each of these measures are provided in **Section 10**.

**Table 6-3
Prescriptive Refrigeration Incentives**

Refrigeration Measures		
Measure	Incentive Unit	Incentive/Unit
Strip Curtains on Walk-In Coolers and Freezers	Per Square Foot	\$3.00
Anti-Sweat Heater Control	Per Linear Foot	\$20.00
Electrically Commutated Motor for Walk-in	Per Motor	\$50.00
Electrically Commutated Motor for Reach-in	Per Motor	\$40.00
Evaporator Fan Control	Per Motor	\$60.00
Automatic Door Closers for Walk-in Freezers	Per Door	\$140.00
Beverage Machine Control	Per Unit	\$90.00
ENERGYSTAR® Beverage Machine	Per Unit	\$90.00
Snack Machine Control	Per Unit	\$50.00
High-Efficiency Ice Makers (Air Cooled Only)		
Size (lbs / 24 hrs)	Qualifying kWh per 100 lbs	Incentive per Ice Maker
101 - 200	8.5	\$75.00
201 - 300	7.7	\$125.00
301 - 400	6.5	\$175.00
401 - 500	5.5	\$225.00
501 - 1,000	5.2	\$300.00
1,001 - 1,500	5.0	\$450.00
> 1,500	4.6	\$600.00

6.1.4 Retrofit Prescriptive – Premium Efficiency Motors

Incentives are available for new premium efficiency motors ranging in size from 1 to 200 horsepower that meet or exceed the NEMA Premium efficiency standard listed in **Table 6-4**. Motor sizes not listed here may qualify for a custom incentive.

**Table 6-4
Prescriptive Motors Qualifying Efficiencies / Incentives**

NEMA Premium-Efficiency Motors – Minimum Qualifying Efficiencies							
Horse Power	3600 RPM		1800 RPM		1200 RPM		Incentive per Motor
	Open	Closed	Open	Closed	Open	Closed	
1	77.0%	77.0%	85.5%	85.5%	82.5%	82.5%	\$10
1.5	84.0%	84.0%	86.5%	86.5%	86.5%	87.5%	\$15
2	85.5%	85.5%	86.5%	86.5%	87.5%	88.5%	\$20
3	85.5%	86.5%	89.5%	89.5%	88.5%	89.5%	\$25
5	86.5%	88.5%	89.5%	89.5%	89.5%	89.5%	\$30
7.5	88.5%	89.5%	91.0%	91.7%	90.2%	91.0%	\$40
10	89.5%	90.2%	91.7%	91.7%	91.0%	91.0%	\$50
15	90.2%	91.0%	93.0%	92.4%	91.7%	91.7%	\$55
20	91.0%	91.0%	93.0%	93.0%	92.4%	91.7%	\$65
25	91.7%	91.7%	93.6%	93.6%	93.0%	93.0%	\$75
30	91.7%	91.7%	94.1%	93.6%	93.6%	93.0%	\$85
40	92.4%	92.4%	94.1%	94.1%	94.1%	94.1%	\$110
50	93.0%	93.0%	94.5%	94.5%	94.1%	94.1%	\$140
60	93.6%	93.6%	95.0%	95.0%	94.5%	94.5%	\$165
75	93.6%	93.6%	95.0%	95.4%	94.5%	94.5%	\$210
100	93.6%	94.1%	95.4%	95.4%	95.0%	95.0%	\$260
125	94.1%	95.0%	95.4%	95.4%	95.0%	95.0%	\$275
150	94.1%	95.0%	95.8%	95.8%	95.4%	95.8%	\$325
200	95.0%	95.4%	95.8%	96.2%	95.4%	95.8%	\$450

6.2 Retrofit Custom Incentives

The Energy Efficiency for Business Program offers custom incentives for eligible improvements not listed as prescriptive measures. Qualified custom ECMs reduce electric energy use due to an improvement in system efficiency, i.e. a net decrease in energy use without a reduction in the level of service. For example, installing a lower wattage lamp in place of a higher wattage lamp of the same type does not qualify for a custom incentive. However should the lighting *system* (i.e., lamp, ballast and fixture) demonstrably improve the total lumens per watt delivered, an incentive will be considered.

Examples of custom measures include, but are not limited to, the following:

- Economizers – air side or water-side
- Energy Star® solid door commercial freezers
- High Intensity Discharge (HID) or fluorescent light fixture improvements not covered under the prescriptive measures
- Variable frequency drives on non-HVAC pump and fan motors serving variable-capacity loads, such as air compressors, pumps, fans, blowers, chillers, and cooling towers.
- Automatic controls, including time switches, sensors, etc.
- Day lighting or light harvesting, when combined with appropriate lighting controls.
- Building envelope improvements (windows, window films, solar screens, cool roofs, etc.).
- Improved process efficiency.
- Compressed air system Improvements.

Incentives for custom measures are based on the electrical energy savings that result from the energy efficiency measure installation and are based upon the calculated annual kWh savings. The applicant must provide sufficient back-up descriptive information, equipment performance data, operating assumptions, measurements, calculations and models to support the energy savings estimates. Guidelines for calculating custom measure energy savings are detailed in **Section 16** and **Section 17**.

The incentive shown in Table 6-5 is based on the expected life of the measure. Custom projects eligible for an incentive must have a payback period ≥ one year and < 7 years to qualify for a \$0.08 per kWh incentive. Project payback is calculated as follows:

$$\text{Payback Period} = \frac{\text{Project Cost}}{\text{Annual Energy Savings (kWh)} \times \text{Electricity Rate (\$/kWh)}}$$

**Table 6-5
Custom Incentives**

Incentive	\$0.08 / kWh ⁵
Minimum Payback Period	One year
Maximum Payback Period	< 7 years

⁵ Incentive is a one-time payment for the value shown multiplied by the annual energy savings for a one year period.

All Custom incentive applications are subject to Program's review and analysis. Incentive payments for custom ECMs are capped at 75% of the incremental cost of the measure.

6.3 Retrofit Technical Assistance Incentives

The program offers technical assistance incentives for energy conservation measures in qualified existing facilities (retrofit) that result in energy efficiency improvements. Incentive types, values and limits described in this section are based upon task scope and anticipated product outcomes. A detailed work scope of technical assistance activities and costs should be submitted for review and pre-approval to qualify for any technical assistance incentives.

Technical assistance incentives are intended to assist with the initial cost of identifying energy conservation measures and may be combined with Prescriptive and Custom program offerings.

Retrofit technical assistance incentives are available for **feasibility studies, energy assessments** and **retro-commissioning**. Sections 6.3.1 and 6.3.2 briefly summarize the project requirements associated with each service type and both are intended to provide information and assistance to customers towards implementing ECMs at existing facilities.

All technical assistance incentive payments should be considered "one-time" payments for each Facility during a three year period. These incentives are issued to applicants that agree to implement cost effective ECMs in a timely manner. Failure to implement these ECMs in a timely manner constitutes a forfeit of any future technical assistance incentives until cost effective ECMs are investigated further and/or implemented.

Incentives for retrofit Technical Assistance will total up to 50% of the total technical assistance costs associated directly with electrical energy savings efforts and will be capped at \$10,000 for facilities that use 500,000 kWh to 2,000,000 kWh annually. The cap is increased to \$20,000 for facilities who use over 2,000,000 kWh annually. Facilities currently using less than 500,000 kWh annually do not qualify for Retrofit Technical Assistance incentives.

6.3.1 Retrofit Technical Assistance Feasibility Study

A feasibility study consists of a detailed engineering analysis to investigate the economics and technical feasibility of one or more ECM options. For purposes of this program, this includes comprehensive energy audits and technology feasibility studies.

A qualified service provider must produce a concise written report detailing the study findings, methodology and supporting documentation. The customer must submit the report plus an Energy Efficiency for Business Program application and copy of the paid invoice.

Incentives for feasibility studies will total up to 50% of the total technical assistance costs associated directly with electrical energy savings efforts and will be capped at \$10,000 for facilities that use 500,000 kWh to 2,000,000 kWh annually. The cap is increased to \$20,000 for facilities who use over 2,000,000 kWh annually. Facilities currently using less than 500,000 kWh annually do not qualify for feasibility study incentives.

Applications for approval must include a brief description of each proposed measure including:

- Existing systems or base case and proposed system
- Proposed methodology for analysis

- Estimated potential energy savings and costs to implement
- Estimated schedule to complete each task
- Estimated study cost per task.

A written report must be submitted with the incentive application and include the study findings, methodology and supporting documentation. Please provide this documentation electronically and in hard copy. The study must develop estimates of incremental measure costs and energy savings. The accuracy of the estimates should be aligned with the study purpose. Higher accuracy is typically required to make the final investment decision than what is needed to simply screen options for additional study. The study must identify and discuss barriers to implementation in the context of potential project economics.

6.3.2 Retrofit Technical Assistance Retro-Commissioning

Retro-commissioning services are designed to assess the operational and maintenance components of HVAC and lighting control systems in existing buildings to develop a strategy to optimize the systems' energy efficiency. Typical tasks include identifying and implementing relatively low-cost operational improvements, identifying current and future capital improvements and documenting these opportunities in a retro-commissioning report.

To be eligible for retro-commissioning services the facilities must have annual energy use >500,000 kWh. Incentives for retro-commissioning will total up to 50% of the costs associated directly with electrical energy savings efforts and will be capped at \$10,000 for facilities that use 500,000 kWh to 2,000,000 kWh annually. The cap is increased to \$20,000 for facilities who use over 2,000,000 kWh annually. To qualify for an incentive payment, the following requirement must be fulfilled satisfactorily:

1. A qualified engineering firm or service provider performs retro-commissioning service for the entire Facility and produces a concise written report documenting an assessment of the existing energy systems along with recommended actions for system optimization. The latter shall include energy savings estimates and calculations, accurately predicting the post-commissioning benefits and outcomes. At a minimum, retro-commissioning services must involve all of the following activities:
 - Review of all applicable equipment sequencing and operating schedules
 - Assess the existing condition and operation of economizers
 - Assess current control capability
 - Review and assess maintenance procedures.
2. A written report must be developed and contain the following items at a minimum:
 - A description and assessment of the energy system(s)
 - Recommended actions for system optimization
 - Estimated costs and energy impact for each action
 - List of actions that were implemented
 - Prognosis for remaining recommended actions.

7. New Construction Incentives

This section covers program offerings pertaining to new construction (NC) or existing buildings that are undergoing major renovation or expansion. The intent is to encourage energy efficiency at the onset of design and construction.

New construction incentives are capped at 75% of the incremental cost to the owner of the measure including labor and materials. New Construction Incentives are available using these methods:

- Prescriptive Measure Incentives
- Custom Measure Incentives
- Custom Whole Building Incentive (in lieu of Prescriptive & Custom Measure Incentives)
- Technical Assistance Incentives

Facilities utilizing the Custom Whole Building Incentive cannot apply for Custom or Prescriptive incentives at the same Facility.

7.1 New Construction Prescriptive Incentives

Prescriptive incentives for new construction are the same as the Retrofit incentives and are listed in **Section 6 for HVAC (Table 6-2), Refrigeration (Table 6-3) and Motors (Table 6-4).** **The only lighting prescriptive measures that are available for a new construction project are the Reduce Wattage Measure and the occupancy sensor measure copied in Table 7-1 below.** Incentives will be paid for measures that exceed applicable building code minimum requirements.

**Table 7-1
New Construction Prescriptive Lighting Incentives**

Equipment Type	Unit	Incentive / Unit
High Performance Fixtures (Pre-approval required)		
Total Existing Fixture Watts Less Total New Fixture Watts	Watt ⁶	\$0.35
Lighting Controls (Incentive is per Watt controlled)		
Occupancy Sensors	Watt ⁷	\$0.06

⁶ Incentive Unit: Watts Reduced

⁷ Incentive Unit: Watts Controlled

7.2 New Construction Custom Incentives

New Construction (NC) custom incentives are ECMs that are not included in the prescriptive measures incentives listed in **Section 6**. Incentives are based on the energy savings that result from the energy efficiency measure installation and are calculated using the estimated savings (kWh). The total incentive value shall be calculated using the annual energy savings multiplied by \$0.08 per kWh. The total incentive paid will be limited to 75% of the incremental measure cost(s).

For individual items or for measures in which a whole building simulation may require excessive effort relative to the project cost or the savings value, an alternative calculation of savings may be allowed. Please contact the program team for review.

The applicant must provide sufficient information to include equipment performance data, operating assumptions, and measurements, calculations and models to support the energy savings estimates. Applications and supporting calculations will be reviewed and accepted on a case-by-case basis. The program team may require equipment monitoring after the installation is complete to verify performance claims made in the application. The team will also work with the applicant to determine the appropriate energy use baseline.

7.3 Custom Whole Building Incentive (Performance-Base Approach)

The performance-based approach enables the building owner to consider integrated, optimized energy efficiency solutions. The applicant must provide the results of an acceptable building simulation model that shows that the annual energy consumption is at least 10% lower than the current Building Code. The model must be of the “As Built” condition of the building.

To receive an incentive, the following supporting documentation is required along with the application:

- A detailed narrative or list of specific energy efficient features of the building identifying the energy efficient system performance and comparing it to building code minimum system performance.
- A detailed description of the building schedule and other operating assumptions.
- The input and output files used for the model annotated to show the base case and where the energy efficient features are included. Building modeling tools such as e-Quest, DOE-2, Trane Trace or System Analyzer, etc. can be used for building simulation purposes.
- A worksheet summarizing the results of the building modeling showing annual energy savings and summer peak demand savings between the high-efficiency case and the building code.
- A copy of the License to Occupy (Final Occupancy Permit) prior to issuance of any incentive payment. Beneficial Occupancy Permits are not acceptable.

If a customer elects to apply for the Custom Whole Building Incentive they cannot receive prescriptive or custom incentives for the same Facility. The incentives are shown in **Table 7-3**, and are based on the percentage of savings below building code.

**Table 7-3
Performance-Based Incentives**

\$ / kWh ⁸	Percent Savings
\$0.09	10% to 20%
\$0.14	> 20%

7.4 New Construction Technical Assistance

New Construction technical assistance incentives are available for electrical energy efficiency design assistance for new construction projects, significant renovations or additions exceeding 20,000 ft² of conditioned space. These design services provide information and education to ownership and design teams in the use of energy efficient practices to improve the design and operation of the new Facility and related systems. The project requirements differ slightly depending on the type of technical assistance or engineering study utilized.

7.4.1 New Construction Design Assistance

Design assistance incentives off-set a portion of the incremental cost associate with a variety of new construction planning and design activities including building simulation modeling. To qualify the design services must focus on activities that result in energy savings. Customers may use these services to develop a business case for energy efficiency improvements or to incorporate energy efficiency concepts into the Facility design.

The new construction design technical assistance incentive is available for new construction projects or significant renovations exceeding 20,000 ft² of conditioned space that achieve energy use predictions that are at least 15% below existing Code requirements. Incentives paid for new construction design technical assistance are available using one of the two following methods and cannot be combined:

Building simulation modeling: 100% of the costs associated directly with building simulation modeling, using a preapproved software platform and methodologies, will be paid up to \$20,000 maximum.

Facility design assistance: a portion of the engineering and architectural design costs, specific to implementing and attaining energy efficiency performance within the Facility design will be offset by paying \$0.05 / kWh for the predicted energy savings during the first year of building occupancy. Conditioned space excludes covered parking structures and all other non-occupied spaces. This incentive is capped at \$50,000.

⁸ Incentives listed are a one-time payment for the value shown multiplied by the annual energy savings for a one year period.

8. Lighting Equipment Specifications

All ballasts, lamp fixtures and other materials shall be recycled or disposed of in compliance with local requirements.

8.1 Compact Fluorescent lamps (Screw-in)

This measure applies to screw-in compact fluorescent lamps (CFLs) and applies only if an incandescent or high intensity discharge (HID) lamp is being replaced. All screw-in CFLs must be ENERGY STAR[®] rated to qualify for the incentive payment. Electronic ballasts are required for lamps ≥ 18 Watts.

8.2 Hardwired Compact Fluorescent Fixtures

For hardwired interior CFL fixtures, only complete new fixtures and modular hardwired retrofits with electronic ballasts qualify. The CFL ballast must be programmed start or programmed rapid start with a power factor (PF) ≥ 90 and a total harmonic distortion (THD) $\leq 20\%$.

8.3 Permanent Lamp Removal

Incentives are paid for the permanent removal of existing fluorescent lamps. Customers are responsible for determining whether or not to use reflectors in combination with lamp removal in order to maintain adequate lighting levels. Lighting levels are expected to meet the Illuminating Engineering Society of North America (IESNA) recommended values. Unused lamps, lamp holders, and ballasts must be permanently removed from the fixture and disposed of in accordance with local regulations. This measure is applicable when retrofitting from T12 lamps to T5 or T8 lamps or reconfiguring a T8 fixture to reduce the number of lamps. Removing lamps from a T12 fixture that is not being retrofitted with T5 or T8 lamps are not eligible for this incentive. A **Pre-Approval Application is required** for lamp removal projects in order for Progress Energy to conduct a pre-retrofit inspection.

8.4 U-Tube Fluorescent Lamps

Existing fixtures with T12 u-bent (u-tube) fluorescent lamps qualify for a prescriptive incentive if the existing 2' x' 2' fixture is replaced entirely by a more efficient technology. Fixtures of other sizes and / or other u-bent lamp types will be considered as a custom incentive measure. Replacing lamps only, i.e. FB40T12 to FBO32T8 will also be considered as custom incentive measure.

8.5 High Performance T8 Systems

This measure consists of replacing existing T12 lamps and magnetic ballasts with high performance T8 lamps and electronic ballasts. This measure is based on the Consortium for Energy Efficiency (CEE) high performance T8 specification (www.cee1.org)⁹ and is summarized below. A list of qualified lamps and ballasts can be found at: <http://www.cee1.org/com/com-lt/com-lt-main.php3>. Both the lamp and ballast must qualify in order to receive an incentive. Incentives for this measure are calculated per lamp installed. Manufacturer's specification sheet must accompany the application.

⁹ This website contains a list of eligible fixtures.

**Table 8-5
High Performance T8 Requirements**

Performance Characteristics for Systems					
Mean System Efficacy	≥ 90 Mean Lumens per Watt (MLPW) for Instant Start Ballasts				
	≥ 88 MLPW for Programmed Rapid Start Ballasts				
Performance Characteristics for Lamps					
Color Rendering Index (CRI)	≥ 80				
Minimum Initial Lamp Lumens	≥ 3100 Lumens				
Lamp Life	≥ 24,000 hours				
Lumen Maintenance or Minimum Mean Lumens	≥ 90% or ≥ 2,900 Mean Lumens				
Performance Characteristics for Ballasts					
Ballast Efficacy Factor (BEF) BEF = (BF x 100) / Ballast Input Watts	Instant-Start Ballast (BEF)				
	Lamps	Low BF ≤ 0.85	Norm 0.85 < BF ≤ 1.0	High BF ≥ 1.01	
	1	> 3.08	> 3.11	NA	
	2	> 1.60	> 1.58	> 1.55	
	3	≥ 1.04	≥ 1.05	≥ 1.04	
	4	≥ 0.79	≥ 0.80	≥ 0.77	
	Programmed Rapid Start Ballast (BEF)				
	Lamps	Low BF ≤ 0.85	Norm 0.85 < BF ≤ 1.0	High BF ≥ 1.01	
	1	≥ 2.84	≥ 2.84	NA	
	2	≥ 1.48	≥ 1.47	≥ 1.51	
	3	≥ 0.97	≥ 1.00	≥ 1.00	
	4	≥ 0.76	≥ 0.75	≥ 0.75	
	Ballast Frequency	20 to 33 kHz or ≥ 40 kHz			
	Power Factor	≥ 0.90			
Total Harmonic Distortion	≤ 20%				

8.6 Reduced Wattage 4-foot T8

Incentives are available for replacing existing T12 or T8 systems with reduced wattage lamp and electronic ballast systems. The new lamps and ballasts must meet the Consortium for Energy Efficiency (CEE) Specification (www.cee1.org)¹⁰. Qualified lamps and ballast products can be found at <http://www.cee1.org/com/com-lt/com-lt-main.php3>. Both the lamp and ballast must qualify in order to receive an incentive.

Incentives are also available for replacing regular T8 lamps with lamps that qualify under the high performance T8 lamps and ballasts requirements when an electronic ballast is already present. The lamps must be reduced wattage in accordance with the Consortium for Energy Efficiency (CEE) specification (www.cee1.org). The nominal wattage must be 28W (≥2585 Lumens) or 25W (≥2400 Lumens) to qualify. The mean system efficacy must be ≥ 90 MLPW, CRI ≥ 80, and lumen maintenance at 94%. Manufacturer's specification sheet(s) must accompany the application.

¹⁰ This website contains a list of eligible lamps.

8.7 Reduced Wattage 8-foot T8

Incentives are available for the replacement of 59 Watt T12 lamps and magnetic ballasts with reduced wattage 8-foot T8s lamps and electronic ballasts. Lamps must have a minimum MLPW of 90 and must have a nominal wattage of less than 57W. Manufacturer's specification sheet(s) must accompany the application.

Incentives are also available for replacing 59 Watt T8 lamps with reduced wattage 8-foot T8s lamps. Lamps must have a minimum MLPW of 90 and must have a nominal wattage of less than 57W. The incentive is calculated on a per lamp basis and ballast replacement is not necessary. A manufacturer's specification sheet must accompany the application.

8.8 Metal Halide -Pulse Start or Ceramic

The prescriptive incentive listed in this document applies to retrofits of high intensity discharge fixtures with either quartz or ceramic, pulse start metal halide fixtures. Total replacement wattage must be lower than existing wattage to insure energy savings. This measure is subject to pre-inspection. Retrofit kits may be used on existing Mercury Vapor, Standard Metal Halide or High Pressure Sodium Fixtures only. A manufacturer's specification sheet must accompany the application.

8.9 Cold Cathode

All Cold Cathode Fluorescent lamps (CCFLs) must replace incandescent lamps of greater than or equal to 10 Watts and not greater than 40 Watts. Cold cathode lamps may be medium (Edison) or candelabra base. Product must be rated for at least 18,000 average life hours.

8.10 Exit Signs

High-efficiency exit signs must replace an existing incandescent exit sign. Electroluminescent, photo luminescent and light emitting diode (LED) exit signs are eligible under this category. T-1 type, non-electrified and remote exit signs are not eligible. All exit signs must be new, must be UL- or ETL-listed, have a minimum lifetime of 10 years, have an input wattage ≤ 5 watts or be ENERGY STAR[®] qualified, and comply with local codes and ordinances.

8.11 Controls

Passive infrared, ultrasonic detectors, fixture-integrated sensors or sensors with a combination thereof are eligible. All sensors must be hard-wired and control interior or exterior lighting fixtures. The incentive is calculated on a per-Watt-controlled basis. To assist in rebate processing, please provide the inventory of the controlled fixtures with the Final Application.

8.12 New T8 or T5 Fluorescent Fixtures with electronic ballast

A Pre-Approval Application is required for this measure. The program team will complete a pre-retrofit inspection prior to starting actual fixture replacement(s). An incentive will not be paid if work commences prior to approval to proceed.

This measure consists of replacing one or more existing fixtures with new fixtures containing T8 or T5 lamps and electronic ballasts. The new fixture lamps must have a color rendering index (CRI) ≥ 80 . The electronic ballast must be high frequency (≥ 20 kHz), UL listed, and warranted against defects for a minimum of 5 years. Ballasts must have a power factor (PF) ≥ 0.90 . Ballasts for 4-foot lamps must have total harmonic discharge (THD) $\leq 20\%$ at full light output.

For 2 and 3-foot lamps, ballasts must have THD $\leq 32\%$ at full light output. High output, T5 linear fluorescent fixtures also qualify for this incentive. This incentive can be used in high-bay and low-bay fluorescent applications.

Incentives for this measure are calculated based on the reduction in connected Watts. Specifications of the new fixtures must accompany the final application. Incentives are only available for new fixtures.

Note: PCB ballasts and lamps are hazardous materials and should be disposed of properly.

8.13 New Fluorescent High-Bay Fixtures

To qualify for an incentive, high-bay fluorescent fixture housings must be constructed from aluminum of no less than .040" thickness or CRS of at least 22-gauge and painted white. The housing shall be constructed to accommodate motion sensors, wire guards and lens options; using a single piece construction with a "ballast hat section" for strength and rigidity. The ballasts shall be located in this hat section and vented on the vertical plane to provide a chimney (cooling) effect. Housing shall incorporate the option for lamps concealed on top for indirect illumination. If the fixture is chain hung, plated steel V-hangers shall be provided. V-hangers shall be at least 12" wide for stability.

The fixture assembly must be photo metrically tested by an accredited independent laboratory and U.L. approved.

The fixture assembly must be equipped with one or more electronic ballasts manufactured by GE, Advance, Universal or Osram Sylvania. The lamp holders shall be of the rotating cam lock design for positive locking and carry a T-140 temperature rating.

9. Cooling Equipment Specifications

9.1 Unitary and Split Air Conditioning Systems and Air Source Heat Pumps

New unitary air conditioning units or air source heat pumps that meets or exceeds the qualifying Energy Efficiency Ratio (EER) shown in Table 6-2 are eligible for an incentive. They can be either split systems or single packaged units. The efficiency of split systems is based on an ARI reference number. Water-cooled systems, evaporative coolers, and water source heat pumps do not qualify for prescriptive incentives, but may qualify for a custom incentive. All packaged and split system cooling equipment must meet Air-Conditioning and Refrigeration Institute (ARI) standards (210/240, 320 or 340/360), be UL listed, and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). All required efficiencies are based on the Consortium for Energy Efficiency (CEE) high efficiency commercial air conditioning and heat pump specifications (www.cee1.org)¹¹. A manufacturer's specification sheet indicating the system efficiency must accompany the application. Disposal of the existing unit must comply with local codes and ordinances.

¹¹ This website also has a list of eligible systems.

9.2 Water and Air-Cooled Chillers

Chillers are eligible for an incentive if they have a rated kW / ton for the Integrated Part Load Value (IPLV) that is less than or equal to the qualifying Level 1 and Level 2 efficiency shown in the following table. The chiller efficiency rating must be based on ARI Standard 550/590-2003 for IPLV conditions and not based on full-load conditions. The chillers must also be UL listed and use a minimum ozone-depleting refrigerant (e.g., HCFC or HFC). The ARI net capacity value should be used to determine the chiller tons. A manufacturer specification sheet with the rated kW / Ton-IPLV or COP-IPLV must accompany the application. Qualifying efficiencies for chillers are summarized below.

**Table 9-2
Chiller Qualifying Efficiencies**

Chiller type	Size (Tons)	Level 1 kW/ton IPLV	Level 2 kW/ton IPLV
Scroll or Helical-Rotary	< 150	0.61	0.54
	150 to 300	0.57	0.50
	≥ 300	0.51	0.46
Centrifugal	< 150	0.60	0.54
	150 to 300	0.54	0.48
	≥ 300	0.49	0.44
Reciprocating	ALL	0.63	0.56
Air-Cooled	ALL	1.04	NA

Chillers with integrated VSDs also qualify and should be included in Custom measure applications.

9.3 Room Air Conditioners

Room air conditioning units are through-the-wall or built-in self-contained units that have capacity ratings of 2 tons or less. There are two eligible efficiency levels as listed by the Consortium for Energy Efficiency. A unit can either qualify under ENERGY STAR[®] standards or under Super Efficient Home Appliance Tier 1 standards. The minimum requirements and eligible equipment are listed Consortium for Energy Efficiency (CEE) high efficiency room air conditioning specifications (www.cee1.org)¹². These units are with and without louvered sides, without reverse cycle (i.e., heating), and casement. The qualifying efficiencies for both levels are provided below. Disposal of existing unit must comply with local codes and ordinances.

**Table 9-3
Room Air Conditioner Qualifying Efficiencies**

Size (Btuh)	Level 1 2000 ENERGY STAR [®] (EER)	Level 2 SEHA Tier 1 (EER)
< 8,000	10.7	11.2
8,000 to 13,999	10.8	11.3
14,000 to 19,999	10.7	11.2
≥ 20,000	9.4	9.8

¹² This website also has a list of eligible units.

9.4 Package Terminal Air Conditioning Units (PTAC)

Package terminal air conditioners and heat pumps are through-the-wall, self-contained units¹³ that have a capacity of two tons (24,000 Btuh) or less. Only units that have an EER greater than or equal to $13.08 - (0.2556 * \text{Capacity (Btuh)} / 1000)$, where the capacity is in Btuh, qualify for the incentive. All EER values must be rated at 95°F outdoor dry-bulb temperature. Minimum requirements are shown in the **Table 9-4**.

**Table 9-4
PTAC Minimum Efficiency Requirements**

Capacity (Btuh)	Minimum Efficiency (EER)
≤ 7,000	11.3
7,001 - 8,000	11.0
8,001 - 9,000	10.8
9,001 - 10,000	10.5
10,001 - 11,000	10.3
11,001 - 12,000	10.0
12,001 - 13,000	9.8
13,001 - 14,000	9.5
14,001 - 15,000	9.4
≥ 15,000	9.2

9.5 Variable Speed Drive on HVAC Chillers, Cooling Towers, Fans, and Pumps

Variable-speed drives (VSDs) installed on existing chillers, cooling towers, HVAC fans, or HVAC pumps are eligible for a prescriptive incentive.

New chillers or other equipment with integrated VSDs are likely eligible as a custom measure. The installation of a VSD must accompany the permanent removal or disabling of any flow control or throttling devices such as inlet vanes, bypass dampers, and valves.

VSDs for non-HVAC applications, including chillers, fans, pumps, cooling towers, air compressors and other equipment may be eligible for a custom measure incentive.

10. Refrigeration Equipment Specifications

10.1 Strip Curtains on Walk-in Coolers and Freezers

New strip curtains or clear plastic swinging doors must be installed on doorways of walk-in boxes and refrigerated warehouses. This incentive is not available for display cases or replacing existing strip curtains that have remaining useful life. A pre-inspection may be performed. The incentive is based on square footage of doorway (inside) opening.

¹³ These units have a combination of heating and cooling assemblies intended for mounting through the wall. It includes refrigeration, outdoor louvers, forced ventilation, and may connect to external heating source or have electric resistance heating.

10.2 Anti-Sweat Heater Controls

A control device is installed that senses the relative humidity in the air outside of the display case and reduces or turns off the glass door (if applicable) and frame anti-sweat heaters at low-humidity conditions. Technologies that can turn off anti-sweat heaters based on sensing condensation (on the inner glass pane) also qualify. Rebate is based on the total linear footage of the case.

10.3 Electrically Commutated Evaporator Fan Motor (Refrigerated Cases or Walk-ins)

This measure is applicable to the replacement of an existing standard-efficiency, shaded-pole evaporator fan motor in refrigerated display cases or fan coil in walk-ins. The replacement unit must be an electronically commutated motor. This measure cannot be used in conjunction with the Evaporator Fan Controller measure.

10.4 Evaporator Fan Controls

This measure is for the installation of controls in medium temperature walk-in coolers. The controller reduces airflow of the evaporator fans when there is no refrigerant flow. The measure must control a minimum of 1/20 HP where fans operate continuously at full speed. The measure also must reduce fan motor power by at least 75% during the off cycle.

This measure is not applicable if any of the following conditions apply:

- 1) The compressor runs all the time with high duty cycle
- 2) The evaporator fan does not run at full speed all the time
- 3) The evaporator fan motor runs on poly-phase power
- 4) The evaporator fan motor is not shaded-pole or permanent split capacitor (PSC)
- 5) Evaporator does not use off-cycle or time-off defrost.

10.5 Automatic Door Closers for Walk-in Freezers

This measure is for installing an auto-closer to the main insulated opaque door(s) of a walk-in freezer. The auto-closer must firmly close the door when it is within one inch of full closure.

10.6 Refrigerated Vending Machine Control

Controller must include a passive infrared occupancy sensor to turn off fluorescent lights and other vending machine systems when the surrounding area is unoccupied for 15 minutes or longer. Also, the control logic should power up the machine at minimum every 2-hour to maintain product temperature and provide compressor protection. For refrigerated beverage machines located indoors, backlighting lamps and ballasts should be removed to obtain additional energy savings.

10.7 Non-refrigerated Vending Machine Control

Controller must include a passive infrared occupancy sensor to turn off lamps and other vending machine systems when the surrounding area is unoccupied for 15 minutes or longer. For vending machines located indoors, backlighting lamps and ballasts should be removed to obtain additional energy.

10.8 ENERGY STAR® Refrigerated Vending Machine

ENERGY STAR® vending machines qualify for an incentive. Qualifying machines can be found at http://www.energystar.gov/ia/products/prod_lists/vending_machines_prod_list.pdf.

10.9 High-Efficiency Ice Makers

The incentive offering covers ice machines that generate 60 grams (2 oz.) or lighter ice cubes, flaked, crushed, or fragmented ice. Only air-cooled machines qualify (self contained, ice making heads, or remote condensing). The machine must have a minimum capacity of 101 lbs of ice per 24-hour period. The minimum efficiency required is per ENERGY STAR[®] or CEE Tier 2¹⁴. A manufacturer's specification sheet must accompany the application that show rating in accordance with ARI standard 810. Qualifying efficiencies, kWh per 100 lbs of ice are shown in **Table 6-3**.

11. Premium Efficiency Motor Specifications

Motors eligible for an incentive must be new three-phase AC induction motors, 1-200 HP, open drip-proof (open) and totally enclosed fan-cooled (closed) classifications. **Rewound motors do not qualify.** Incentives are based on the motor's Nominal Full Load Efficiencies, tested in accordance with IEEE (Institute of Electrical and Electronics Engineers) Standard 112, method B, that meet or exceed the NEMA Premium efficiency standards shown on Table 6-4. The application must include the manufacturer's performance data sheet that at least shows equipment type, equipment size, model number, and efficiency rating. Customers should consider matching water or air flows (GPM, CFM) of the existing pump or fan when installing energy efficient motors that inherently have higher speeds (less slip).

12. Custom Measures

The program staff will evaluate each Custom Application. These measures will be reviewed based on (but not limited to) the following criteria: energy savings, cost, reliability, measure life, and payback period. Applicants must provide the calculations documenting the estimated electrical energy (kWh) savings; the calculations and assumptions supporting the kWh impact estimates and the resulting incentive amount are subject to program staff review and approval.

Pre-approval is required for all Custom incentive applications. The pre-approval step provides an assurance that the methodology meets the program requirements. Program staff engineers will work with Customers or their installing contractor or consultant to review the proposed savings methodology and to identify the information necessary to support the savings estimate and any additional data that may be required to verify the savings after installation.

Measurement and verification activities, including power measurements or monitoring for a period of time prior to and after the measure is installed may be required to document that the energy impacts are consistent with the pre-approved estimates. In some cases Progress Energy may require monitoring the energy use of the base case (pre-retrofit) system as well as the post-retrofit system in order to establish or verify the savings and/or assumptions.

The final incentive amount will be based on the final savings documented through the post-retrofit review, and may be different than the savings and/or incentive amount originally estimated in the pre-approval estimate.

13. How to Apply - The Application Process

The incentive application process is intended to be simple, with as few steps as possible. The program staff is available to help you with the application process.

¹⁴ The websites have a list of qualifying model numbers, www.energystar.gov or www.cee1.org.

13.1 Pre-approval Application

A **Pre-approval Application is required for permanent lamp removal, New T5/T8 Fixture, and custom projects** and is strongly encouraged for prescriptive projects to reserve funding. Pre-approval Applications are not a guarantee of program acceptance.

- It is the responsibility of the Applicant to contact the Program team if a project is delayed, substantially changed or cancelled.
- Funds that have been pre-approved for specific applications are not transferable to other projects, facilities, and/or customers.
- A complete faxed or emailed copy of the pre-approval application form initiates the review process. Funding reservations are only committed to a given project when the project details have all been approved.
- The pre-approval application for prescriptive incentives and measures must include sufficient information (equipment specifications, quantities, etc.) to estimate the incentive amount.
- The pre-approval application for custom incentives must include an estimate of the annual energy savings, as well as sufficient descriptive information, including equipment performance data, operating schedules, load profiles, assumptions and calculations and other information to support the energy savings estimates.
- **The pre-approval application must include a customer signature.**

13.2 Program Steps

- **Step 1: Verify project eligibility.** Make sure that your project meets the project requirements as set forth in **Sections 3 through 5** including: customer eligibility, project requirements, and incentive limits.

Step 2: Submit a Pre-approval Incentive Application. Access the appropriate application form at www.progress-energy.com/carolinasbusiness. Complete all the required information and check the form's "Pre-approval" box. **Pre-approval is required for all projects exceeding \$25,000, Custom projects, Permanent Lamp Removal and New T5 and T8 fixtures measures.** Contractors may complete the form on behalf of their customers, using Customer information, including Customer contact name and signature. **Application** forms can be downloaded from the "Incentive Applications" section of the Energy Efficiency for Business Program website which can be accessed through www.progress-energy.com/carolinasbusiness. **A pre-inspection may be required. For projects requiring pre-approval, work cannot commence until pre-approval is provided to the applicant in writing.**

- **Step 3: ECM Installation: Install the equipment or systems properly.**
- **Step 4: Retire replaced equipment.** Dispose or recycle materials properly and remove all replaced equipment and systems from the retail market permanently.

- **Step 5: Assemble the required documentation of project completion, costs, and (for custom projects) documentation of energy savings within 60 days of project completion.** Obtain copies of the purchase orders, work orders, statement of work, equipment specifications, and paid invoices showing the itemized costs for applicable labor and materials. Documents should clearly indicate the equipment specifications and quantities. If equipment is included on several invoices, a summary sheet should be provided showing how the quantities match the quantities in the application.
- **Step 6: Complete the Final Application form.** Note that this form is the same as the Pre-Approval Application form found at www.progress-energy.com/carolinasbusiness. If pre-approval was submitted, accurately record any changes and check the “Final Application” box on the form. Final Applications should be received within 60 days after project completion. **A customer signature is required for payment and the form should not be submitted unless all work has been completed.**
- **Step 7: Program staff will review the Request for Payment and the final project documentation.** A post-inspection may be required for verification purposes. The final payment will be based on the results of the post-inspection or the requested amount; whichever is less.
- **Step 8: Payment is processed.** Incentive payments will be sent within 4 to 6 weeks from the time that all the required documentation is received and the field inspection is complete.

All projects are subject to be chosen for independent measurement and verification (M&V) purposes. If selected, the customer will be contacted by a Progress Energy representative. M&V may include obtaining logged data on individual project components.

13.3 Discrepancies

If it is determined that there are significant discrepancies between the incentive application and Progress Energy’s on-site analysis, the customer will be contacted to review these differences. This provides an opportunity for the customer (or contractor) to dispute the inspection results within **10 days. If the applicant does not respond adequately**, the revised incentive value will be confirmed and processed for payment.

13.4 Forms

The Energy Efficiency for Business Program Application form acts as both a pre-approval application form as well as a Request for Payment form (**please circle or select the appropriate type at the top of the form**).

If submitting a Pre-Approval Application, simply circle or select “**Pre-approval**” on the form and mail, fax or email the completed application to the Energy Efficiency for Business Program for pre-approval.

To request payment for a completed project, submit the same form with the “**Final Application**” box checked and any changes indicated. The Final Application must be fully completed and returned with an original signature before incentives will be paid. The Final Application must also include all necessary final documentation such as itemized invoices, receipts, cut sheets, and commissioning reports.

The program team reserves the right to conduct both pre- and post-inspections of all projects for quality control purposes.

14. Payment Process

For commercial (retrofit) projects, the incentives paid will be based on the per-unit incentives for the prescriptive measures **or** per kWh of energy savings for custom measures. The program team may choose to cap rebate payments at the reserved amount, even if actual project installations may calculate higher incentive amounts.

The incentive will be paid directly to a customer or to their designated recipient.

Indicate the name and Tax ID number for the recipient on the Incentive Application. If a contractor is to be paid directly, their signature, Tax ID and license number(s) must be included on the application form.

15. Prescriptive Documentation

For prescriptive incentive payment requests, invoices listing specific equipment information and quantities must be provided. These documents must itemize costs for equipment, materials, installation labor, supplies, and other related expenses.. The customer's address and business name on the invoice should be consistent with the application information. Only expenses incurred during the term of the program year can be reimbursed.

Applicants may also be asked to provide more detailed information on equipment location(s) during the pre- and post-inspection process. Manufacturer's literature, product brochures, cut sheets, or other certified performance data for the specific model numbers and sizes of the equipment must also be submitted with the Request for Payment. If the documented capacity or performance differs from the performance in the Pre-approval Application, the incentive will be adjusted accordingly. Failure to provide the documentation will delay or prohibit payment.

All Requests for Payment must be submitted properly with final documentation that includes an original signature of the customer and, if applicable, the designated third party recipient of the incentive.

16. Guidelines for Calculating & Documenting Energy Savings for Custom Measures

Custom incentives are calculated based upon the first year's estimated annual kilowatt-hour (kWh) savings. To be accepted as a basis for the incentive, the savings calculations must be developed using acceptable engineering calculation techniques supported by site-specific operating and equipment performance documentation. Other required documents include invoices, cut sheets, or commissioning reports. Applicants must also be aware that the incentive estimates are not final until after the measures have been installed and Progress Energy has performed various measurement and verification (M&V) activities. The final incentive payment may be different from the requested amount if the post-retrofit system operation or performance does not meet the criteria as provided to estimate the energy savings.

The following guidelines provide suggestions for submitting project documentation to ensure that your project qualifies for an incentive and delivers the proposed energy savings. This section also provides information to assist you in to calculate or measure energy savings.

The analysis methods and documentation details are recommendations and not requirements.

Before you submit your custom incentive application, verify that the proposed ECMs are not included as part of the prescriptive program and if so, submit them on a prescriptive application.

Before you begin your savings estimate, identify the project payback period as well as the measure life. Both of these factors will determine if the measure is eligible for the program as well as to identify the applicable incentive. If there is any concern on qualifying for the program, please contact the Energy Efficiency for Business Program Team for assistance.

For certain projects, in addition to energy savings calculations, the program may require measurement and verification (M&V) in order to qualify for an incentive payment. We encourage Custom Incentive applicants to review the International Performance Measurement and Verification Protocol (IPMVP) at www.ipmvp.org/download.html. Any operational data that supports the energy usage claims or savings calculations should be provided with your application. If you need assistance in identifying appropriate M&V procedures, the program team can assist you.

The following sections discuss general guidelines for project submittals. We recommend that you contact the program team as you prepare your custom incentive application to discuss documentation requirements and energy savings calculation methods.

16.1 General Guidelines

To estimate first year energy (kWh) savings for retrofit projects, calculate the difference between the pre-retrofit (“base case”) system energy (kWh) use and the post-retrofit or “efficient case” system kWh use. Define or describe the base case and efficient case system and operating conditions. The calculated kWh savings can be determined in a number of ways that depend upon the specific ECM.

There are general requirements that are common to all Custom projects as listed below:

- Concise project description: Describe **BOTH** the existing (pre-retrofit or “base case”) system and the proposed (post-retrofit or “efficient-case”) system. Be as concise as possible in the descriptions - include specific quantities and equipment descriptions.
- Provide the quantity, make, model number and rated capacity of **BOTH** the existing and the proposed equipment. Provide nameplate information, including operating voltage, operating efficiency and rated full load amps if applicable. **Work scope proposals issued to the customer are also often helpful to describe the new equipment and scope of work.**
- Provide copies of the manufacturer’s specification or performance rating sheets and website addresses where further technical information about the equipment performance might be found.
- Utilize the Customer’s numbering system and nomenclature to describe equipment. Example: “Replace compressor #3 with a new variable speed compressor”.

- Provide copies of sketches, drawings, equipment lists, or inventories that help to clarify the scope.
- Describe the locations where the equipment is installed. Include the street address, building name, room number, work area, etc.
- Describe **BOTH** the Facility operating hours and the equipment operating schedule for year round seasonal and / or daily operation.
- Describe equipment load conditions for the hours the equipment typically operates.
- Annotate all assumptions or constants used in engineering calculations.
- Provide the name of the person(s) conducting the savings calculations so that program staff can discuss any questions.
- Use accepted engineering algorithms and procedures from recognized technical organizations such as ASHRAE, SMACNA, ANSI, etc.
- Use rated performance factors tested under accepted procedures specified by recognized rating agencies such as ARI, AGA, ANSI, ASTM, etc. Provide an explanation when equipment performance rating conditions vary from standard conditions.

16.2 Acceptable Calculation Methods

A list of acceptable energy savings calculation approaches follows. Each of the methods will be discussed in more detail as they apply to categories of measures in the following sections:

16.3 Whole Building Metering

For some projects, where the energy savings exceed 10% of the total annual kWh usage, a “bills before – bills after” approach may be used. This approach assumes that building occupancy levels or operating hours are unchanged. Usually, a regression must be included in this approach to adjust for uncontrolled variables, such as weather.

- If a whole system or building model is used, be sure to provide sufficient documentation or annotation so that the differences in inputs between the base case and high-efficiency case can be understood and verified by the reviewers.
- Models that do not reflect the actual systems and their operation (i.e. defaults are used instead of building-specific equipment) are not acceptable.
- Whole building models should be calibrated to actual energy use (electric bills) and use typical weather data, such as TMY for weather calibration.

16.4 Equipment or Process Sub-Metering

When ECMs are installed that affect individual equipment or systems, sub-metering may be used to document energy savings. This may require the installation of temporary portable monitoring equipment that measures and records the equipment power at short intervals over several days or weeks. When sub-metering is used, a method must be developed to extrapolate the savings for the measurement period to a full year of operation. Component sub-metering may often include observation of other variables like outside air temperature, operating hours, or production quantities during the measurement period to allow for this extrapolation.

16.5 Engineering Calculations

For ECMs that impact several small systems, sub-metering may be impossible. For these measures, an engineering calculation method is likely the best method to document savings. For most equipment types and efficiency measures there are well-established engineering procedures and there are a number of public domain component or equipment performance models that are available to calculate pre- and post-energy use. One common modeling method is the “bin-method” in which the equipment pre and post-energy requirements are identified for several fractional load “bins” (i.e. 25%, 50%, 75% and 100% load or temperature range bins) and the pre- and post-equipment performance in each load or temperature bin is applied to the loads and hours that the system operates in the bin over the year.

16.6 Whole Building Modeling Methods

For measures that have building-wide or multi-system impacts, engineering modeling using generally accepted **public domain** software, is acceptable to document savings. When using any model, the applicant must provide both the “base case” and “post-case” input files and annotate the files to clearly show how the differences between the pre- and post-retrofit systems are being simulated. Applicants who expect to use modeling to estimate savings as a basis for the incentive should contact the Energy Efficiency for Business Program staff early in the project development process.

The following sections describe how these basic savings estimation principles and submittal requirements may apply to certain project types or technologies.

16.7 Custom Lighting Measures

The following information should be provided when submitting custom lighting measures.

1. Project description – for example, “Replace 20 ea., 400 watt hi-bay HID lighting fixtures in the warehouse with 22 ea. suspended 6-lamp high output T8 fixtures, equipped with daylight controls.”
2. Provide a detailed lighting inventory that includes the following):
 - Location (building, area, aisle #, etc.)
 - Existing and new fixture description, including specific ballast specifications
 - Existing and new fixture wattage
 - Existing and new fixture quantity
 - Existing and new controls
 - Existing and new annual operating hours (different if installing controls)
 - Interior or exterior fixtures

3. Provide the electrical plan sheet that shows the existing and proposed lighting layout or a reflected ceiling plan and the lighting fixture schedule, when available.
4. The use of standard “default” fixture wattages is acceptable. A table of “default” fixture wattages for common fixture / lamp types is available upon request. If the fixture type being installed is not on the table, specification sheets showing the wattage of all retrofit fixtures must be provided with the lighting inventory.

Use the following general equations to calculate the savings:

Base Case Lighting kW = (# base case fixtures * Base case *input* fixture wattage per fixture * fraction of fixtures that are typically operating) / (1,000 Watts/kW)

(Note: In the case of **new construction** projects, the base case lighting kW will be the maximum wattage that would be allowable by the applicable energy code in your jurisdiction.)

Base Case Lighting kWh = Base Case Lighting kW * base case annual operation hours

Post Retrofit Lighting kW = (# post-retrofit fixtures * post retrofit *input* fixture wattage per fixture * fraction of fixtures that are expected to be operating) / (1,000 Watts/kW)

Post Retrofit Lighting kWh = Postretrofit lighting kW * postretrofit annual operation hours

Annual kWh Savings = (Base Case Lighting kWh – Post Retrofit Lighting kWh) * HVAC Interaction Effect

Other Guidelines:

When preparing your project information, please consider:

- Operating hours are typically the operating hours of the Facility except as noted below. If the lighting is on a different operating schedule from the Facility, consider using lighting or power data loggers to document the fixture operating hours.
 - Exit signs and emergency lighting and many hallway and stairway fixtures are typically on 24 hours a day, 7 days a week, therefore use 8760 hours per year if you have a project that involves these technologies that falls outside of the prescriptive program.
 - In order to provide more accurate operation hours, consider dividing the fixtures into usage groups – offices, common areas, restrooms, and conference rooms to define operating hours by usage group or work area.
- Pre- and post-retrofit operation hours are often the same. However if the project includes the installation of control technologies such as occupancy sensors, timers, etc., new (lower) hours of operation usually result. Justification for the lower hours should be provided.
- Installing a lower wattage lamp of the same type is NOT considered an eligible measure unless it can be established that the replacement fixture is more efficient (i.e. the lumens per watt) than the fixture that it replaces.
- There may be cases when the program team will ask for validation of operating hours.

The review team will verify installed fixture quantities and compare them to initial savings calculations and invoices. Applicants need to clearly list installed fixture types and lamp quantities.

16.8 Custom HVAC Measures

The most common HVAC measures are included in the list of prescriptive measures and include chiller or packaged AC unit replacement. Variable frequency drives (VFDs or VSDs) for HVAC motors should be applied-for under the prescriptive application. Custom HVAC measures may include:

- Water-side economizer, a.k.a. “free cooling” (e.g. plate and frame heat exchanger, closed-loop tower, or “glycoler”)
- Air-side economizer
- Exhaust heat recovery equipment (heat exchangers)
- Constant volume to variable volume water or air distribution
- Variable-speed control of centrifugal equipment (other than HVAC fans or pumps) that are throttled by less efficient means
- Control upgrades or energy management system programming changes
- CO₂- or occupancy-based (demand-based) ventilation controls

Most HVAC system measures are weather-dependent. As such, the preferred methods of estimating energy savings are building or system models that integrate local weather conditions with system loads and performance or “temperature bin” models. This section includes several acceptable methods for providing the savings analysis for HVAC measures. In all cases, it is important to document the pre- and post-retrofit conditions thoroughly. For most projects, the analysis will need to be calibrated and adjusted to reflect the weather variances, occupancy variations or internal load changes.

The following techniques may be employed for calculating project savings:

- Building models that are publicly available and well-documented, such as EQuest, Energy Plus, DOE2 are recommended for measures with building-wide or interactive effects. Proprietary vendor programs such as Trane Trace or Carrier HAP may be accepted with appropriate documentation and program team approval¹⁵.
- ASHRAE-based simplified calculation methodologies including the “bin methods” may be used to estimate the savings of many weather-dependent strategies such as economizer systems (water and air), heat recovery, ventilation control, or VAV conversions. These methods can be easily calculated in a spreadsheet format so that the underlying assumptions can be easily followed. In many cases, for retrofit projects, the existing building energy use and energy use patterns can provide the basis for calibration for these methods.
- Simple spreadsheet analysis may be used for certain stand-alone retrofits such as carbon monoxide sensors for parking garages.
- For certain projects, a monitoring / metering approach may be the best means to document savings. The applicant should remember that it is simpler to verify the post-case, but it is the base case condition that requires documentation for program verification. Be sure to consider pre-project measurements when planning a future project. The following are some suggestion parameters for measuring pre- and post-retrofit:

¹⁵ The Program review team may attempt to duplicate savings estimates using other tools and must be provided sufficient information to do so.

- Power (kW) and energy (kWh)
- Air flows, temperatures, water flows
- Outdoor temperatures and humidity (may be available from other sources)
- Building activity and operating schedules (people, hours, etc)

16.9 Custom Building Envelope Measures

Common custom measures that may be applied for under this category include:

- Window treatments: external or internal shading
- Window film
- Insulation
- Cool roof technologies
- Door or window opening treatments that reduce infiltration

Accurately estimating envelope improvement ECM savings is often difficult because their impacts involve a high degree of system and interactive effects. Using a whole building model as described in the previous section may offer the best results and provide the opportunity to describe the pre- and post-retrofit insulation and surface characteristics, and effectively include all the system and interactive effects.

However setting up a whole building model to estimate the savings for envelope improvements is often not practical. There are a number of simplified degree-day or weather-based “bin analysis” methods that are sufficient to estimate the impacts of these measures. These methods are described in detail in the ASHRAE Handbooks. Combined with local weather data files, they will provide most of the information and calculation procedures necessary to estimate savings resulting from building envelope measures. Some of the more common methodologies have been put into spreadsheet format that are available commercially online. The Department of Energy and some states have supported the development of analytical tools that are useful in isolating the savings for various envelope improvements.

16.10 Custom Process and Refrigeration Measures

Some typical process and custom refrigeration measures are:

- “Tower-free cooling” for process cooling (e.g. plate and frame heat exchanger, closed-loop tower, or “glycol-cooler”)
- Waste heat recovery equipment (heat exchangers)
- Constant volume conversion to variable volume water or air distribution
- Variable-speed control of centrifugal equipment, such as fans or pumps, that are throttled by less efficient means
- Higher efficiency or improved-control process equipment
- Floating head pressure controls for industrial refrigeration
- Refrigeration compressor upgrades.
- Air compressor improvements

There are several methods that can be used to document energy savings for process ECMs. Nearly all process related measures will require some degree of monitoring, measurement, or hourly log observations to establish the load profile for the equipment. The energy use and the savings are then extrapolated to a full year period. In all cases, it is important to consider any seasonal, weekly, or monthly variations in operation.

- **Short-term pre- and post-retrofit measurements extrapolated by production.** Energy use for process systems can often be related to production output. One method to document annual savings is to compare the pre- and post-retrofit systems over a representative production period (which may include multiple shifts) and then extrapolate the results to a full year. The method is as follows:
 - Determine the pre-retrofit system kWh per unit of production, per shift, production run, or equipment cycle as appropriate.
 - Determine the post-retrofit kWh per comparable unit.
 - Adjust the baseline using the post-retrofit production levels if the ECM provides increased production output volume.
 - Extrapolate to a full year by multiplying the difference by the (new) annual production.
- **Short-term measurements extrapolated by shifts or operating time.** In some cases the energy use does not relate to production but to equipment operating time or availability. In this case the savings are similar to the above except the time in days or number of shifts is the factor used to extrapolate the savings to the full year.
- **Short-term monitoring extrapolated to a year.** A short term pre- and post monitoring of a week or two can be carried out and the results extrapolated to a full year based on time. The difference is then multiplied by the ratio of annual hours to the monitored hours.
- **Post-retrofit energy monitoring and calculated base case energy, extrapolated to a full year.** This method is useful when the performance or efficiency of the base case equipment is known but the load profile was not monitored prior to the project. This method often applies to compressed air systems or large refrigeration systems. In this case, the post retrofit system power and output (cfm or tons) is measured for a period of a week or more. The base case power for the same period is then calculated by multiplying the output by the base case equipment performance. The savings are then extrapolated to full year by extrapolating based on the projected loading pattern.

16.11 Unacceptable Documentation

This section lists methods that are not acceptable for calculating the energy savings for custom measures.

- Vendor-specific or proprietary analysis software will not be accepted unless the methods used are available for review and the input parameters are specific to the site.
- Simple percent of total kWh savings or percent of end use energy savings are not acceptable.
- Factors or percentages of savings achieved at other sites are not acceptable as documentation for custom savings unless there is an extensive body of statistically valid results.
- Using rules of thumb for calculating savings is not acceptable.
- Marketing materials from the manufacturer or distributor, their company's case studies, or savings claims based on non-standardized methods are not acceptable¹⁶. A manufacturer or distributor product savings claim will not be accepted.
- For intermittently operating equipment, the hours of operation must be documented in some fashion – either from logs, elapsed time meters, and daily observation of occupancy hours. If documentation is not provided, very conservative estimates must be used.

¹⁶ The program reserves the right to evaluate and excluded the means and methods used, including software or systems utilized to derive modeled outcomes.

- Spot measurements as documentation of power or energy use are typically not acceptable for variable load equipment.

17. Definitions

BEF: Ballast Efficacy Factor

Btuh: British Thermal Units per hour. (12,000 Btuh = 1 Ton)

Baseline ECMs: Also called “Prescriptive Measures, these ECMs exceed Code requirements and will be included in the building without analysis required. These measures represent typical design practice of the Design Team and / or measures that are commonly found to be cost effective and don’t warrant individual ECM analysis.

Building Code: 2009 North Carolina Building Code, based upon the 2006 International Building Code.

CAP: Maximum monetary limit associated with one or more incentive payments.

CEE: Consortium of Energy Efficiency

CFL: Compact Fluorescent Lamp

COP: Coefficient of Performance

CRS: Cold Rolled Sheet (metal).

Code Building: A hypothetical building design based on existing Code requirements that incorporate the design features of typical buildings of the same usage and just meets the requirements of the North Carolina Energy Code. The Code building is used to benchmark the energy efficiency improvements and determine relative energy efficiency performance.

Customer: The PEC customer-of-record for the principal account with the largest kWh consumption that is affected by the project. The primary criterion for determining the customer is the “Account name”.

ECM: Energy Conservation Measure

EE: Energy Efficiency

EER: Energy Efficiency Ratio

Earned Incentive: A financial payment associated with completing the installation and successful operation of one or more qualified energy efficiency measures, while meeting the minimum specifications pertaining to the implemented measure(s).

Energy Code: The 2006 North Carolina Energy Conservation Code (effective July 1, 2006), authored by North Carolina Building Code Council and North Carolina Department of Insurance. It is based on the provisions of the 2003 International Energy Conservation Code.

Facility: A structure, multiple structures and / or area served by a meter located on a contiguous piece of property. For those customers that have a primary meter and their own distribution equipment or customers that have multiple meters on the same contiguous piece of property, a Facility is a structure or area enclosed by defined boundaries. i.e. building firewalls, roadways, fences, etc as determined by the Program.

Final Application: The required documentation package submitted by the applicant after project completion. This includes a request for payment bearing an original applicant's signature and all appropriate backup documentation, including detailed invoices.

IPLV: Integrated Part Load Value

LED: Light Emitting Diode

Incentive: the amount to be paid to the customer or contractor once the final project documentation has been approved.

Incremental measure cost: realized additional financial costs, including design considerations, materials, equipment, and labor required and utilized to implement an energy conservation measure that exceeds current baseline Code requirements (i.e., the cost of the system with the energy-saving features minus the cost of the proposed or existing baseline system.)

Measure: any single energy efficiency method.

Measure Evaluation: technical review method or tasks related to a specific energy efficiency measure.

MLPW: Mean Lumens per Watt

PEC: Progress Energy Company

Pre-approval: the process of informing the program team of your project plans for the purposes of gaining prior approval based upon customer eligibility and project requirements. Pre-approval is required for all Custom projects. Pre-approval is also required for projects associated with permanent lamp removal and T5 or T8 new fixture measures.

PTAC: Packaged Terminal Air Conditioner

Program Year: The program year starts on January 1st and ends on December 31st.

Project: a defined scope of work or tasks not necessarily bounded by Facility or geography.

Proposed Baseline Building: a Code compliant building as planned by the design team before final decisions are made regarding which ECMs will be included in the final building design. The Proposed Baseline Building shall include ECMs that do not require cost effectiveness analysis. The Proposed Baseline Building is used to benchmark the cost effectiveness of ECMs that do require analysis.

SEER: Seasonal Energy Efficiency Ratio

Site: a qualified customer at a single address having contiguous property.

THD: Total Harmonic Distortion

Unsatisfactory Credit: A customer account that is not in good standing with Progress Energy.

18. Dispute Resolution

The program team will take every possible step to ensure a high level of satisfaction with all aspects of the program. However, if any problems or concerns should arise, we encourage you to contact the Energy Efficiency for Business Program Hotline: (866) 326-6059.

If you have questions that the hotline staff cannot answer, they can provide you with the appropriate contact information or other resources to help answer your questions.

19. Tax Implications

Paid incentives that exceed \$600 are reported to the IRS and may have tax implications. The recipient is responsible for any and all tax payments that may result from an incentive payment. Participants are encouraged to consult their tax advisors to determine implications.

20. Disclaimer

Progress Energy does not guarantee the energy savings and does not make any warranties associated with the measures eligible for incentives under this program. Progress Energy has no obligations regarding and does not endorse or guarantee any claims, promises, work, or equipment made, performed, or furnished by any contractors or equipment vendors that sell or install any energy efficiency measures.

21. Contact Information

- Energy Efficiency for Business Program Hotline: (866) 326-6059
- Email Address: PEC-EEB@kema.com
- Website: www.progress-energy.com/carolinasbusiness
- Mailing Address: PEC Energy Efficiency For Business
3605 Glenwood Avenue, Suite 435
Raleigh, NC 27612
- Fax: (919) 256-0844