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May 31, 2012

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Clerk's Office  
N.C. Utilities Commission

Ms. Gail Mount  
Deputy Clerk  
North Carolina Utilities Commission  
4325 Mail Service Center  
Raleigh, NC 27699-4325

RE: Filing of the Residential New Construction Program ("RNC")  
Docket No. E-2, Sub 1021

Dear Ms. Mount:

Enclosed for filing with and approval by the North Carolina Utilities Commission are an original and 30 copies of Progress Energy Carolinas, Inc.'s ("PEC") Residential New Construction RNC-1 filing and Residential New Construction RNC-1 tariff (see Appendix A).

PEC is proposing the Residential New Construction ("RNC") program to encourage the new home market to consider inclusion of energy efficiency measures beyond state code requirements. RNC offers cash incentives to builders and developers of residential new construction single family and multi-family units in PEC's service territory who install specific energy efficient heat pump water heaters, and heat pump and central air conditioning equipment or who elect to build to or exceed the specifications of the optional 2012 North Carolina Energy Conservation Code Council ("NCECC") High Efficiency Residential Option ("HERO") whole house residential building code. This HERO code is comprised of increased energy efficiency measures that have been evaluated by the North Carolina Building Code Council to be the most cost effective means for achieving an additional 15-20% energy efficiency beyond the baseline code minimums.

RNC will also provide training resources for builders, developers, and other industry professionals to understand and value energy efficiency activities in the residential new construction market.

PEC Requests that the Commission:

1. Approve the Residential New Construction Program and Residential New Construction RNC - 1 Tariff at the Commission's earliest convenience.
2. Find that the Residential New Construction Program meets the requirement of a "new" energy efficiency program consistent with Rule R8-69.

Progress Energy Service Company, LLC  
P.O. Box 1551  
Raleigh, NC 27602

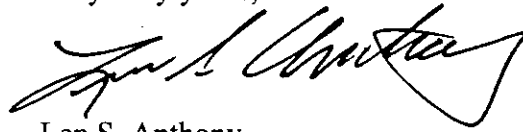
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3. Find that all costs incurred by PEC associated with the Residential New Construction Program will be eligible for consideration for cost recovery through the annual DSM and energy efficiency rider in accordance with Rule R8-69(b).
4. Approve the proposed utility incentives for inclusion in the annual DSM and energy efficiency rider in accordance with Rule R8-69.

The attached filing package contains a more detailed description of this program, prepared in accordance with Rule R8-68(c)(2) and (3).

The Commission's prompt attention to this matter is appreciated.

Very truly yours,



Len S. Anthony  
General Counsel  
Progress Energy Carolinas, Inc.

LSA: mhm

Attachments

STAREG2557

**PEC DSM/EE PROGRAM APPROVAL REQUEST**  
**COVER PAGE**

***Docket No. E-2, Sub 1021***

*Program Name:* Residential New Construction Program

*Program Type:* Energy Efficiency

*Target Class:* Residential Single Family Homebuilders and Multi-family Housing Developers

*Target End-uses:* High Efficiency HVAC, High Efficiency Water Heating, and Whole House Efficiency Applications for Single Family and Multi-family Dwellings.

*Duration:* Ongoing

In accordance with North Carolina Utilities Commission (“Commission”) Rule R8-68, Progress Energy Carolinas, Inc. (“PEC” or “Company”) respectfully submits the attached request for approval of the Residential New Construction Program (“RNC”). This program addresses the market needs anticipated by the retirement of the Residential Home Advantage Program.

**Program Description**

The program offers incentives to both single family builders (“Builders”) and multi-family developers (“Developers”) who install energy efficient equipment or build to energy efficient standards as defined by the program. Builders and Developers may elect to receive incentives for the installation of heat pump water heaters (“HPWH”) and/or high efficiency HVAC equipment; or they may elect to receive incentives for exceeding the residential requirements of the 2012 North Carolina Energy Conservation Code (“NCECC”). Builders and Developers have the option to receive incentives for the equipment measures implemented, or the whole house measures implemented, but not both.

## **Consideration to be Offered**

Financial incentives will be provided to participants for each of the energy efficiency measures both equipment and whole house based, promoted within the program. Detailed information regarding incentive structures and maximum allowable incentive levels for each measure is defined in the corresponding program tariff (See Appendix A). The table below summarizes the incentives available to Builders and Developers.

### Equipment Incentives

The equipment incentives allow Builders or Developers to participate in the program by installing energy efficient equipment in the new home.

Measures to be incentivized include:

- High Efficiency HVAC Equipment – Encourages Builders and Developers to upgrade the SEER rating of installed heat pumps and central air conditioning units to SEER 15 or higher.
- Heat Pump Water Heater – Encourages Builders and Developers to improve the efficiency of the home by installing high efficiency water heaters with an energy factor of 2.0 or greater.

### Whole House Incentives

The whole house incentives build on the 2012 NCECC High Efficiency Residential Option (“HERO”) standards. This HERO code is comprised of increased energy efficiency measures that are strictly voluntary at the option of the permit holder and have been evaluated by the North Carolina Building Code Council to be the most cost effective measures for achieving an additional 15-20% energy efficiency beyond the code minimums. Builders and Developers will receive incentives for building to the HERO code; those who build to even higher levels of energy performance as measured by the Home Energy Rating System (“HERS”) Index will receive larger incentives.

The program further provides Builders and Developers, building to or exceeding the HERO code, the opportunity to participate in a limited heating and cooling bill guarantee as a unique means of marketing the improved energy efficiency of their product to prospective homebuyers.

**Builder and Developer Incentives**

	<b>Option 1 – Equipment Incentives</b>		<b>Option 2 – Whole House Incentives</b>			
<b>Measure</b>	HVAC ≥ SEER 15	HPWH	HERO	HERO + HERS 70	HERO + HERS 65	HERO + HERS 55
<b>Incentive</b>	\$300 / unit	\$350 / unit	\$1,000 / home	\$1,750 / home	\$2,500 / home	\$4,000 / home

**Total Cost of the Program (3-Year Summary)**

<b>Year</b>	<b>Amounts (\$000)</b>
Year 1	\$ 6,366
Year 2	\$ 9,962
Year 3	\$ 14,906
<b>Total</b>	<b>\$ 31,234</b>

**Proposed Funding**

All eligible program costs will be funded from PEC’s general funds, consisting of all sources of capital. These costs will also be subject to cost recovery through a Demand Side Management and Energy Efficiency (“DSM/EE”) annual cost-recovery rider consistent with the terms of the Cost Recovery and Incentive Mechanism for Demand-Side Management and Energy Efficiency programs approved by the Commission in Docket No. E-2, Sub 931.

## Program Name

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## **R8-68(c)(2)(ii) Program Description**

This program offers incentives to both Builders and Developers who install energy efficient equipment or build to energy efficient standards as defined by the program. Builders and Developers may elect to receive incentives for the installation of HPWHs and/or high efficiency HVAC equipment; or they may elect to receive incentives for exceeding the residential requirements of the 2012 NCECC. Builders and Developers have the option to receive incentives for the equipment measures implemented, or the whole house measures implemented, but not both.

The program further provides Builders and Developers, building to or exceeding the HERO code, the opportunity to participate in a limited heating and cooling bill guarantee as a unique means of marketing the improved energy efficiency of their product to prospective homebuyers.

The program also provides training resources for Builders, Developers, and a variety of other industry professionals (including subcontractors, real estate agents, inspectors, appraisers, and financiers) to understand, value and include energy efficiency in their activities related to residential new construction.

### ***R8-68 (c)(2)(ii)a. Program Objective***

The primary objective of this program is to reduce energy consumption and system peak demand. New construction represents a tremendous opportunity to capture cost effective energy savings that would otherwise be impractical or more costly to install at a later time.

### ***R8-68 (c)(2)(ii)b. Program Duration***

The program is expected to be ongoing with no planned end date.

### ***R8-68 (c)(2)(ii)c. Targeted Sector and Eligibility Requirements***

The Company is targeting Builders and Developers of all residential new construction projects in PEC's service territory regardless of fuel type. Furthermore, the Company is targeting, via marketing and education, prospective homebuyers looking to purchase new homes in PEC's service territory who will benefit from the measures undertaken by Builders and Developers.



Single family homes and multi-family developments, three stories and under, qualify for either the equipment or whole house incentives. However, multi-family developments over three stories, as well as all manufactured homes, only qualify for the equipment incentives.

**R8-68 (c)(2)(ii)d. Communication Costs and Examples**

PEC anticipates promoting the program extensively to Builders and Developers through a variety of means, including:

- Outreach to industry through direct interaction with Builders and Developers and participation in a variety of home building and development related professionals organizations, as well as conferences and trade shows
- Targeted online and print advertising
- Social media

PEC may provide marketing support to Builders and Developers to promote the advantages of energy efficient new homes using a variety of means, and may include:

- Signage, displays, yard signs, consumer collateral, and giveaways
- Model homes support
- Sales toolkits
- Website
- Interactive demonstrations
- Social media
- Online, radio and print promotions

<b>Communications Cost</b>	
<b>Year</b>	<b>Amounts (\$000)</b>
Year 1	\$ 664
Year 2	\$ 565
Year 3	\$ 555
Total	\$ 1,784

Program marketing and outreach materials have not been created at this time.

**R8-68 (c)(2)(ii)e. Estimated Number of Participants**

The Company’s estimated number of program participants, as defined by total homes participating in either the equipment or whole house options during the first three years, is provided in the following table:

<b>Estimated Number of Participants (Cumulative)</b>	
<b>Year</b>	<b>Participants</b>
Year 1	5,100
Year 2	13,950
Year 3	26,550

**R8-68(c)(2)(ii)f. Program Impacts**

Measured impacts for the Company, its customer body as a whole, and its participating North Carolina customers are provided in the following table. These values are based at the customer meter.

<b>Year</b>	<b>System as a Whole</b>		<b>North Carolina Customers</b>	
	<b>Peak Annual MW Savings</b>	<b>MWh Annual Energy Savings</b>	<b>Peak Annual MW Savings</b>	<b>MWh Annual Energy Savings</b>
Year 1	2.9	6,892	2.5	5,895
Year 2	7.5	17,743	6.4	15,176
Year 3	13.9	32,907	11.9	28,146

**R8-68(c)(2)(ii)g. Other Relevant Information**

Not Applicable.

**R8-68(c)(2)(iii) Additional Information**

**R8-68(c)(2)(iii) a. Proposed Marketing Plan**

PEC will provide the following marketing:

- Collateral explaining the advantages of participating in PEC’s program

- Signage that identifies participating homes
- Web site that describes energy savings benefits and provides program details
- Recognition for contractors that participant in the program
- Actively participate in various associations, conferences, and trade shows
- Any other marketing opportunities that move the new residential construction market to higher levels of energy efficiency

Anticipated market barriers include:

- Incremental costs to Builders and Developers to include program measures that add upward pressure on housing costs
- Training and education needed to help a very wide industry meet or exceed HERO standards
- Prospective homebuyers and industry professionals who may undervalue the inclusion of program measures

PEC will confront these market barriers by offering a combination of attractive incentives, targeted training, and education resources.

**R8-68(c)(2)(iii)b. Market Potential and Estimated Market Growth**

Year	Eligible Market Potential *
Year 1	15,000
Year 2	15,000
Year 3	15,000

\* Single and multi-family housing.

It is expected that the residential new construction market will not see any measurable combined growth over the next three years due to the current economic situation and will remain constant at 15,000 homes per year.

**R8-68(c)(2)(iii)c. Estimated Summer and Winter Peak Demand Reductions**

The following table provides the estimated summer peak demand reductions averaged for homes participating in either the equipment or whole house measures, and totaled for the system as a whole. These values are meter based.

Year	Summer Load		Winter Load	
	Per Participant (KW)	Total Annual (MW)	Per Participant (KW)	Total Annual (MW)
Year 1	0.6	2.9	0.6	3.2
Year 2	0.5	7.5	0.6	8.3
Year 3	0.5	13.9	0.6	15.5

**R8-68(c)(2)(iii)d. Estimated Energy Reduction**

The following table provides the estimated energy reductions averaged for homes participating in either the equipment or whole house measures, and totaled for the system as a whole. These values are meter based.

Year	Cumulative Energy Reductions (At the Meter)	
	Per Participant (kWh)	System Wide (MWH)
Year 1	1,351	6,892
Year 2	1,272	17,743
Year 3	1,239	32,907

**R8-68(c)(2)(iii)e. Estimated Lost Energy Sales**

The following table provides the estimated annual lost sales per MWh and for the system as a whole. These values are based at the customers' meters.

Year	Lost Sales (Cumulative)	
	\$ Per MWh	System Wide (\$000)
Year 1	\$ 98	\$ 678
Year 2	\$ 102	\$ 1,811
Year 3	\$ 107	\$ 3,513

**R8-68(c)(2)(iii)f. Estimated Load Shape Impacts**

The focus of this program is on reducing energy consumption year-round and through decreasing system peak demands. This program is targeted system-wide and emphasizes the summer demand peak.

**R8-68(c)(2)(iv) Costs and Benefits**

**R8-68(c)(2)(iv)a. Total and Per Unit Cost and Benefit**

The Company proposes that operating and maintenance costs associated with the program be recorded on the Company’s income statement in accordance with the Uniform System of Accounts. FERC account 182.3 “Other Regulatory Assets”, would be used to defer all reasonable and prudent costs incurred with the program until recovered. These costs will include administrative costs, implementation costs, incentive payments to program participants, operating and maintenance costs, and the cost of capital and depreciation expense associated with capitalized program expenditures, to the extent any capital costs are incurred.

<b>Program O&amp;M Cost Projections by Type</b>					
<b>Year</b>	<b>Program Administration (\$000)</b>	<b>Communications (\$000)</b>	<b>Participant Incentives (\$000)</b>	<b>EM&amp;V (\$000)</b>	<b>Total (\$000)</b>
Year 1	\$948	\$664	\$4,451	\$303	\$6,366
Year 2	1,067	565	7,856	474	9,962
Year 3	1,367	555	12,274	710*	14,906
<b>Total</b>	<b>\$3,382</b>	<b>\$1,784</b>	<b>\$24,581</b>	<b>\$1,487</b>	<b>\$31,234</b>

*\* Because EM&V activities normally lag program administration activities, some portion of EM&V related costs will be incurred in a subsequent year.*

The following table contains a summary of total categorized program costs and unitized costs reported on the basis of program benefits.

<b>Cost Element</b>	<b>Cost (\$000)</b>	<b>Cost/Unit</b>
Program Administration	\$3,382	\$127
Communications	1,784	67
Participant Incentives	24,581	926
EM&V	1,487	56
<b>Total</b>	<b>\$31,234</b>	<b>\$1,176</b>

## ***R8-68(c)(2)(iv)(b) Participation Incentives***

### Equipment Incentives

The equipment approach allows the Builder or Developer to participate in the program by installing energy efficient equipment in the new home.

Measures to be incentivized include:

- High Efficiency HVAC Equipment – Encourages Builders and Developers to upgrade the SEER rating of installed heat pumps and central air conditioning units to SEER 15 or higher.
- Heat Pump Water Heater – Encourages Builders and Developers to improve the efficiency of the home by installing high efficiency water heaters with an energy factor of 2.0 or greater.

### Whole House Incentives

The whole house incentives build on the 2012 NCECC HERO standards. This HERO code is comprised of increased energy efficiency measures that are strictly voluntary at the option of the permit holder and have been evaluated by the North Carolina Building Code Council to be the most cost effective measures for achieving an additional 15-20% energy efficiency beyond the code minimums. Builders and Developers will receive incentives for building to the HERO code; those who build to even higher levels of energy performance as measured by the HERS Index, will receive larger incentives.

Financial incentives will be provided to participants for each of the efficiency measures promoted within this program. The incentive amounts vary by the type of measure. Detailed information regarding incentive structures and maximum allowable incentive levels for each measure is defined in the corresponding program tariff (See Appendix A).

## Builder and Developer Incentives

	Option 1 – Equipment Incentives		Option 2 – Whole House Incentives			
Measure	HVAC ≥ SEER 15	HPWH	HERO	HERO + HERS 70	HERO + HERS 65	HERO + HERS 55
Incentive	\$300 / unit	\$350 / unit	\$1,000 / home	\$1,750 / home	\$2,500 / home	\$4,000 / home

PEC proposes to maintain the flexibility to modify participant incentive levels. Any other program changes will be filed with the commission on an informational basis at least one week in advance of implementing the change. All program modification filings will include revised cost effectiveness test results. Pursuant to the Commission's May 19, 2009 Order in Docket No. E-2 Subs 927, 928, and 937, PEC reserves the right to modify incentive levels within the program. While subject to ongoing modification, in light of changing markets, the inventory of available measures and related incentive levels will be offered to eligible program participants on a consistent and nondiscriminatory basis. Uncertainty remains around what level of incentive will entice customers to take action and adopt energy efficiency measures, as well as which programs will achieve greater interest and market penetration. PEC contends that flexibility is key to implementing a successful program so that it can make adjustments to maximize the results of the DSM programs. PEC will seek advance Commission approval for any program changes involving (1) the termination or temporary suspension of the program, (2) any change that increases an incentive to a level 30% or more above, or reduces it to a level 30% or more below, currently approved levels, and (3) any change that increases the estimated total cost of the program to a level 20% or more above, or reduces it to a level 20% or more below, currently approved estimated total cost. Any other program changes will be filed with the commission on an informational basis one week in advance of implementing the change. All program modification filings will include revised cost effectiveness test results. PEC has based its incentive levels on criteria such as avoided cost benefits, customer payback periods, and other customer acceptance criteria. Increasing an individual incentive could be helpful to make a measure more viable if customers are not responding to current levels of incentives. Likewise, it may become evident that a lower incentive level for a given measure could be offered without affecting the participation levels of popular measures.

**R8-68(c)(2)(iv)(c) Service limitations or Conditions Imposed on Non-Participants**

The Company has not proposed any conditions or limitations for customers that do not wish to participate in the program. Participation in this program is strictly voluntary.

**R8-68(c)(2)(v) Cost-Effectiveness Evaluation**

Cost-Effectiveness Test	Benefit/Cost Ratio	NPV of Net Benefits (\$000)
RIM	0.825	(\$ 11,804)
TRC	1.490	\$ 18,327
UC	1.965	\$ 27,371
Participant	1.974	\$ 36,426

**R8-68(c)(2)(vi) Commission Guidelines Regarding Incentive Programs**

RNC does not provide any inducement or incentive affecting a residential or other customer's decision to install or adopt natural gas or electric service.

**R8-68(c)(2)(vii) Integrated Resource Plan**

PEC's 2011 Integrated Resource Plan shows a need for additional resources throughout the 15 year planning horizon. The plan also noted that PEC is actively pursuing expansion of its DSM/EE programs as one of the most effective ways to reduce energy costs, offset the need for new power plants, and protect the environment.

**R8-68(c)(2)(viii) Other**

Not Applicable.

**R8-68(c)(3) Additional Filing Requirements**

Not Applicable.



**R8-68 (c)(3)(i) Costs and Benefits**

**R8-68(c)(3)(i)a. Cost Recovery Mechanism**

The program costs to be recovered through the DSM/EE Rider will consist of eligible Operation and Maintenance (“O&M”) costs, which include but are not limited to: labor, outside contractors, maintenance of new infrastructure, computer software, telecommunications services, materials and supplies. All eligible program costs and participant incentives will be deferred and amortized through PEC’s DSM/EE Rider.

PEC is eligible to recover a return on the balance in the deferred account, net of deferred taxes, at the net-of-tax rate of return approved in PEC's most recent general rate proceeding as well as an appropriate utility incentive described later in this filing.

In summary, PEC is eligible to recover through the DSM/EE Rider:

- 1. The amortization of O&M dollars that have been deferred over a ten-year period
- 2. A return on and of the outstanding deferred balance [R8-69(b)(6)]
- 3. Plus an appropriate incentive described later in this filing

**R8-68(c)(3)(i)b. Estimate of Avoided Capacity and Energy Costs**

Estimated total avoided cost values over the initial three year program term are provided in the following table:

Year	Avoided Capacity Costs (\$000)	Avoided Capacity Cost /kW	Avoided Energy Costs (\$000)	Avoided Energy Costs / MWH	Total Avoided Costs (\$000)
Year 1	\$ 414	\$ 136	\$ 379	\$ 52	\$ 793
Year 2	1,101	139	1,013	54	2,114
Year 3	2,085	142	2,658	76	4,743

**R8-68(c)(3)(i)c. Estimate of Participation Incentives**

The Company’s estimate of participation incentives paid through program and those amounts divided by estimated energy savings, based on measure life, are provided in the following table:

Year	Participant Incentives (\$000)	Incentives per kWh Saved
Year 1	\$ 4,451	\$ 0.03
Year 2	\$ 7,856	0.04
Year 3	\$ 12,274	0.04
Total	\$ 24,581	\$ 0.04

**R8-68(c)(3)(i)d. Cost Allocation**

Program costs will be allocated as follows:

1. Jurisdictional Allocation (all costs recovered from retail jurisdiction – North Carolina and South Carolina): Energy Efficiency cost allocations will be based upon energy/sales allocation
2. Rate Class Allocation: Allocated jurisdictional costs will be assigned to PEC’s residential rate class (Schedules: RES, R-TOUD, and R-TOUE).

**R8-68(c)(3)(i)e. Proposed Capitalization Period for Long Lived Program Costs**

The Company will not be capitalizing program costs at this time. However, the Company will defer all program costs and participant incentives and amortize those amounts through the DSM/EE Rider over a ten year period.

**R8-68(c)(3)(i)f. Estimated Measurement and Verification Costs**

The Company’s estimated evaluation, measurement and verification (“EM&V”) costs for this program are provided in the following table:

Estimated EM&V Costs (\$000)	
Year 1	\$ 303
Year 2	474
Year 3	710*
Total	\$ 1,487

\* Because EM&V activities normally lag program administration activities, some portion of EM&V related costs will be incurred in a subsequent year.

## ***R8-68(c)(3)(ii) Measurement and Verification Reporting Plan***

PEC will use an independent, third-party consultant specializing in the EM&V of energy efficiency program impacts to provide the appropriate EM&V support. The evaluation plan designed to measure the demand and energy impacts of the program follows.

### **Objectives**

Impact evaluation activities verify energy and demand savings attributable to the program. Process evaluation activities assess the effectiveness of program processes and their impact on the broader program market. Specific objectives for the evaluation of the program include the following:

- Verify energy and demand savings for all incentives offered
- Evaluate effectiveness of program design and processes
- Evaluate effectiveness of program education efforts
- Evaluate effectiveness of marketing efforts
- Evaluate effectiveness of recruiting efforts
- Evaluate awareness of energy efficient building practices

## ***R8-68(c)(3)(ii)a. Measurement and Verification Methods***

### **Impact Evaluation**

The goals of the impact evaluation are to assess the gross and net energy and demand savings attributable to the program. Through the impact evaluation, PEC's independent EM&V contractor will verify the energy performance of participating homes, analyze the uncertainty associated with key energy performance variables, document key energy assumptions, and conduct the research necessary to accurately estimate net savings attributable to the program. EM&V tasks to be performed over a three-year period will consist of the following:

1. On-site data collection to verify measure installation, identify baseline home characteristics, and validate high-efficiency performance;
2. Calibrated energy simulation modeling to simulate the energy efficiency impacts of the program measures and calibrate impacts to PEC customers' actual consumption levels and home characteristics; and,

3. Billing analysis of homes receiving the whole house measures compared to similar, non-program homes.

The billing analysis inherently estimates “net” savings in that the control group will include some number of non-participating new homes that incorporate energy efficient equipment and designs independent of the program. Thus, any difference in consumption between participating and control homes can be attributed to the effect of the program. Additionally, onsite data collection and secondary research will identify baseline characteristics that can be compared to participating homes to assess free ridership; and builder and contractor interviews will address self-reported program influences and free ridership.

#### ***1. On-site Data Collection***

Data collection will consist of developing instruments and establishing an analysis approach designed to minimize uncertainty of reported savings. The evaluation will include the following on-site data collection activities.

- **Verify measure installation** to ensure compliance with program requirements and consistency with program records.
- **Validate participating home performance** by testing to assess infiltration, effective insulation values, and duct leakage along with metering of high-efficiency HVAC and water heating equipment.
- **Identify baseline characteristics** from non-participating homes for both equipment and whole house measures. Equipment measures will include metering of non-participant HVAC and water heating equipment. Whole house measures will include assessing infiltration, effective insulation values, and duct leakage through testing (blower door, infrared camera, and duct blaster).

Verification of measure installations will be used to adjust the quantity and types of high efficiency HVAC measures and the resulting savings attributable to the measures, based on engineering estimates. Validation of participating home performance will be used as an input to the simulation modeling that estimates home energy consumption and—via comparison to modeling of baseline homes—the resulting energy savings. Baseline conditions will be estimated from secondary sources for home and equipment characteristics, with the EM&V baseline assessment used as additional input.

Sampling: The initial sample sizes proposed for the Program Year 2012 evaluation are as follows:

- HVAC equipment measures: 30 participating and 30 non-participating homes
- Whole house measures: 20 participating homes and 20 non-participating homes

Sample sizes may be adjusted depending on program start date and the level of participation.

## ***2. Calibrated Energy Simulation Modeling***

Program savings estimation will utilize hourly simulation models calibrated to participants' actual consumption levels and to test data (e.g. blower door tests) collected as part of the on-site data collections. The simulation models provide a method of disaggregating savings beyond the whole house level to the specific end-use.

Sampling: The sample for the simulation modeling will encompass all participating homes in the period of evaluation.

## ***3. Billing Analysis***

A billing analysis will be conducted comparing participating and non-participating homes, with the objective of supporting the engineering estimates and capturing net program impacts, including free ridership and spillover that are not measurable from program records. Monthly billing data from the point of home construction/occupancy will be used for each individual home that is either a program participant or a member of the selected control group.

Sampling: The sample for the billing analysis will include all participating homes in the period of the evaluation. A control group will be used with a minimum sample equal to the number of participants, drawn from homes in the same zip codes and of similar size and other available characteristics available to PEC or from publicly available data.

## **Process Evaluation**

The goal of the process evaluation is to assess program design and implementation processes to improve effectiveness or operational efficiencies. Through the process evaluation, the evaluation contractor will document significant components of the program including program accomplishments, administrative processes, participant experiences, customer satisfaction, program successes and opportunities for improvement to program design and delivery. Ultimately, the process evaluation will provide guidance regarding opportunities for more effective program implementation.

## Evaluation Activities

The evaluation team will complete in-depth interviews with various market actors and program implementers to understand program processes. The following table references the interviews and details the issues to be addressed along with the intended sample size.

### Process Evaluation Interviews

Market Actor	Research Issues (Illustrative)	Approximate Sample Size
Program Implementers and Associated Staff	<ul style="list-style-type: none"> <li>• Understand program processes</li> <li>• Develop a program logic model that depicts program processes</li> <li>• Identify areas where processes could be improved</li> </ul>	3-5 Interviews
Participant Builders	<ul style="list-style-type: none"> <li>• Determine implementation challenges</li> <li>• Understand the benefits and drawbacks of the program</li> <li>• Gather recommendations for improvement the program</li> </ul>	10-15 Interviews*
Non-participant builders	<ul style="list-style-type: none"> <li>• Awareness of the program</li> <li>• Program barriers</li> <li>• Baseline building practices</li> </ul>	5-7 Interviews
HERS Raters	<ul style="list-style-type: none"> <li>• Determine implementation challenges</li> <li>• Identify areas where program process could be improved</li> <li>• Assess builders willingness to modify building techniques</li> </ul>	3-5 Interviews
Specialty Contractors	<ul style="list-style-type: none"> <li>• Understand awareness towards program requirements</li> <li>• Identify how program information flows between builders and sub-contractors</li> </ul>	10-15 Interviews
Manufacturers and Distributors	<ul style="list-style-type: none"> <li>• Identify the willingness to stock certain equipment to correspond to the program</li> </ul>	3-5 Interviews
Realtors and Sales Agents	<ul style="list-style-type: none"> <li>• Identify perceptions of the value of the program and customer demand</li> <li>• Determine awareness of the program</li> </ul>	5-10 Interviews

*\*Sample size will be determined based on the number of program participants.*

**R8-68(c)(3)(ii)b. Measurement and Verification Reporting Schedule**

PEC intends to file annual reports to update the Commission on program activity, including the number of participating customers and the estimated kW and kWh impact of the program. A tentative schedule of EM&V activities and deliverables is provided in the table below. The timeline is subject to change and is predicated upon regulatory approval being received that would allow for the program to commence no later than July 2012.

**EM&V Schedule**

<b>Activity</b>	<b>Timeframe</b>
Program review	Q3 2012
Impact Analysis:	
Onsite data collection	Q1/Q2 2013
Analysis of onsite data	Q2/Q3 2013
Simulation modeling	Q3/Q4 2013
Billing analysis	Q2/Q3 2013*
Process Evaluation:	
Program staff and implementer interviews	Q3/Q4 2012
Participant builder interviews	Q1 2013
Other interviews	Q1/Q2 2013
EM&V Report	Q4 2013*

*\* Final billing analysis and reporting may be postponed to ensure a sufficient sample size with billing data for a full 12-month period.*

**R8-68(c)(3)(ii)c. Methodologies Used to Produce Impact Estimates**

Please refer to section R8-68(c)(2)(v) which provides information regarding the methodologies used to produce impact estimates associated with this program.

**R8-68(c)(3)(ii)d. Independent Third Party Verification**

Navigant Consulting is the third party entity engaged to provide EM&V services.

**R8-68(c)(3)(iii) Cost Recovery Mechanism**

The allocated cost associated with RNC will be recovered in the annual cost-recovery rider on a uniform cents per kWh basis applicable to the benefited rate classes.

### **R8-68(c)(3)(iv) Tariffs**

PEC's proposed Residential New Construction Program Rider is attached in Appendix A.

### **R8-68(c)(3)(v) Utility Incentives**

The Company is specifically requesting the recovery of Program Performance Incentives ("PPI") and net lost revenues associated with this program. These amounts will be determined in a manner consistent with the Commission's decision in Docket No. E-2, Sub 931. The following table provides estimated recoveries of net lost revenues and PPI amounts associated with the program's initial three year forecast.

Year	Net Lost Revenue (\$000)	Program Performance Incentives (PPI) (\$000)
Year 1	\$ 166	\$ 97
Year 2	593	256
Year 3	1,217	470
Year 4	1,415	470
Year 5	988	470
Year 6	363	470
Year 7	-	470
Year 8	-	470
Year 9	-	470
Year 10	-	470
Year 11	-	374
Year 12	-	214
Year 13	-	-
Total	\$ 4,742	\$ 4,702
PV Total*	\$ 3,780	\$ 2,986

\*Discount rate of 8.8054% employed to determine present values.



RESIDENTIAL SERVICE  
RESIDENTIAL NEW CONSTRUCTION PROGRAM RNC-1

PURPOSE

The purpose of this program is to incent the installation of high-efficiency heating ventilating and air conditioning (“HVAC”) and heat pump water heating (“HPWH”) equipment in new residential construction. Additionally, the program incents new construction that falls within the 2012 North Carolina Residential Building Code to meet or exceed the whole house standards of the 2012 North Carolina Energy Conservation Code High Efficiency Residential Option (“HERO”). If elected by a builder or developer constructing to the HERO standard, the program also offers the homebuyer an incentive guaranteeing the heating and cooling consumption of the dwelling’s total annual energy costs.

AVAILABILITY

This program is available to builders and developers installing high-efficiency HVAC and HPWH equipment in new single family, manufactured, and multi-family residential housing units that are served under any of the Company’s residential schedules.

The program is also available to builders and developers of new single family and multi-family residential dwellings (projects of three stories and less) that comply with all requirements of the 2012 HERO standard and are served under any of the Company’s residential schedules. Manufactured housing, multi-family residential housing projects over three stories, and any other dwellings which do not fall within the 2012 North Carolina Residential Building Code, are not eligible for any whole house incentives.

Photovoltaic solar systems installed as part of a new home are allowed, but may not count toward the dwelling’s Home Energy Ratings System (“HERS”) Index for incentive purposes.

The program is also available to an initial homeowner served under any of Company’s residential schedules for any home constructed to meet or exceed the HERO standard when the builder or developers elects to extend a heating and cooling energy usage guarantee to the homeowner.

INCENTIVE PAYMENTS APPLICABLE TO BUILDERS AND DEVELOPERS

Builders and developers shall receive incentive(s) for either inclusion of high efficiency equipment or construction meeting the HERO standard, but not both. Upon Company’s approval of the builder’s or developer’s application, the following incentive payment(s) are applicable:

<u>Energy Conservation Measure</u>	<u>Incentive Payment</u>	<u>Eligibility Requirement</u>
<i>Equipment Measures</i>		
1. Heat Pump Water Heater	\$350	Energy Factor $\geq$ 2.0
2. High Efficiency HVAC:		
- Air-to-Air Heat Pump	\$300	Requires minimum 15 SEER
- Central Air Conditioning	\$300	Requires minimum 15 SEER
<i>Whole House Measures</i>		
1. HERO	\$1000	Meet 2012 NCECC HERO standards
2. HERO plus HERS 70	\$1750	Meet HERO standards and achieve a 70 HERS Index
3. HERO plus HERS 65	\$2500	Meet HERO standards and achieve a 65 HERS Index
4. HERO plus HERS 55	\$4000	Meet HERO standards and achieve a 55 HERS Index

## INCENTIVES APPLICABLE TO HOMEOWNERS

At the sole option of the builder or developer, homeowners may be offered an incentive guaranteeing the heating and cooling portion of the dwelling's total annual energy costs. Homeowners participating in the guarantee may receive a payment based on heating and cooling energy usage that is deemed to exceed the stated guarantee. The guarantee is applicable solely to the initial homeowner and offers payment based on annual usage that exceeds estimated usage based upon the HERO standard used in constructing the dwelling. The guarantee shall apply for no longer than three years from registration. Guarantee incentives are only available at the end of each full year of electric service. Upon Company's review of valid homeowner claims for payments, including a review of prudent energy management practices as defined in the guarantee application, a homeowner shall receive a qualifying payment.

## RESPONSIBILITY OF PARTIES

Builders and developers shall complete and submit an application with supporting documentation and, if applying for whole house incentives, a copy of the REM/Rate™ Home Summary Report issued by a third-party HERS Rater. The application for equipment incentives must include invoices. Applications for whole house incentives must include HERO compliance verification and a REM/Rate Home Summary Report as assessed by a qualified HERS rater recognized by the Residential Energy Services Network ("RESNET").

The homeowner shall complete an application, including all supporting documentation, and register the dwelling in the heating and cooling energy usage guarantee program. The homeowner agrees to exercise prudent energy management of the home, as defined in the guarantee application.

## CONTRACT TERM

The builder, developer or a designated representative shall complete and submit an application with supporting documentation, and if applying for whole house incentives, a REM/Rate Home Summary Report, no later than 6 months of completion of the dwelling established as the date the Company's electric meter is installed. Incentive application forms received after 6 months will not be subject to an incentive payment. All dwellings receiving incentives shall be subject to inspection by Company for the purpose of program evaluation, measurement, and verification.

The homeowner must complete and submit an application, with supporting documentation, for the usage guarantee within no later than 30 days following the home purchase. Applications received after 30 days will not be subject to the guaranteed usage incentive.

## COMPANY RETENTION OF PROGRAM BENEFITS

Incentives and other considerations offered under the terms of this Program are understood to be an essential element in the recipient's decision to participate in the Program. Upon payment of these considerations, Company will be entitled to any and all environmental, energy efficiency, and demand reduction benefits and attributes, including all reporting and compliance rights, associated with participation in the Program.

## GENERAL

Service rendered under this Program is subject to the provisions of the Service Regulations of the Company on file with the state regulatory commission.

Effective for service rendered on and after \_\_\_\_\_, 2012  
NCUC Docket No. E-2, Sub 1021