

State of Florida



# Public Service Commission

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COMMISSION  
CLERK

## -M-E-M-O-R-A-N-D-U-M-

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**DATE:** January 26, 2006

**TO:** Director, Division of the Commission Clerk & Administrative Services (Bayó)

**FROM:** Division of Economic Regulation (McRoy, Haff) *McRoy Haff*  
Office of the General Counsel (Brown) *MB*

**RE:** Docket No. 050876-EG – Petition for approval of modifications to residential heating and cooling and new construction programs, by Tampa Electric Company.

**AGENDA:** 02/07/06 – Regular Agenda – Proposed Agency Action – Interested Persons May Participate

**COMMISSIONERS ASSIGNED:** All Commissioners

**PREHEARING OFFICER:** Arriaga

**CRITICAL DATES:** None

**SPECIAL INSTRUCTIONS:** None

**FILE NAME AND LOCATION:** S:\PSC\ECR\WP\050876.RCM.DOC

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### Case Background

As part of its Commission-approved Demand-Side Management (DSM) Plan, Tampa Electric Company (TECO) offers a Residential Heating and Cooling and a Residential New Construction program. The programs provide information, education and advice to homeowners, home builders and contractors on energy-related issues and efficiency measures. The Residential Heating and Cooling program promotes the replacement of resistance heat and old heat pumps with new energy-efficient heat pumps. TECO also provides incentives of up to \$250 dollars to be paid to the contractor performing the work. The New Construction program promotes duct sealing measures, insulation, and energy-efficient electric heat pumps.

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On November 16, 2005, TECO petitioned the Commission for approval of modifications to its Residential Heating and Cooling and Residential New Construction programs. For the Residential Heating and Cooling program, TECO aimed at reducing the growth of peak demand and energy through the replacement of two types of equipment. Type one is described as a heat pump replacing resistance heat, and type two is described as a heat pump replacing a heat pump. Both types have a threshold for qualification, and TECO has a rebate for the program which is paid to the contractor performing the installation. TECO's Residential New Construction program is a conservation program designed to reduce the growth of peak demand and energy in the residential new construction market through the installation of high efficiency equipment and building envelope options. The program utilizes incentives to encourage the construction of new homes to be above the minimum energy efficiency levels required in the State of Florida Energy Efficiency Code for New Construction. Currently, TECO's minimum efficiency threshold for Heating, Ventilation and Air Conditioning (HVAC) equipment in both programs is a Seasonal Energy Efficiency Rating (SEER) value of 12.0. The federal manufacturing efficiency standard effective January 23, 2006, will increase the minimum SEER value of equipment available in the marketplace to 13.0. To keep pace with federal standards and to continue encouraging customers to cost-effectively invest in HVAC equipment with efficiencies greater than federal or state guidelines, TECO wants to increase the minimum equipment efficiency threshold for participation in its two programs to a SEER value of 14.0.

This recommendation addresses TECO's petition to modify its residential Heating and Cooling and Residential New Construction programs. The Commission has jurisdiction over this matter pursuant to Sections 366.81 and 366.82, Florida Statutes.

### Discussion of Issues

**Issue 1:** Should the Commission approve TECO's petition to modify its Residential Heating and cooling and Residential New construction programs?

**Recommendation:** Yes. TECO's proposed changes to its Residential Heating and Cooling and Residential New Construction programs are expected to continue to meet the policy objectives of the Florida Energy Efficiency and Conservation Act (FEECA), and will continue to be monitorable and cost-effective. (McRoy, Haff)

**Staff Analysis:** TECO has offered its Residential Heating and Cooling program since January 1981 and its residential new construction program since July 2000. During that time, program modifications to the Residential Heating and Cooling program have been approved by the Commission to accommodate market needs and changing manufacturing conditions. Both programs were approved by the Commission as an integral component of the company's 2005-2014 Ten Year Demand Side Management ("DSM") Plan in Docket No. 040033-EG, Order No. PSC-05-0181-PAA-EG, issued February 16, 2005. The Residential Heating and Cooling program utilizes a rebate to encourage customers to install high efficiency HVAC systems in existing single family detached dwellings. The Residential New Construction Program utilizes incentives to encourage the installation of high efficiency HVAC equipment and other construction practices that exceed the Florida Building Code requirements for new single family detached dwellings.

When the Commission reviews conservation programs, it considers three criteria:

- Whether the program advances the policy objectives of Rule 25-17.001, Florida Administrative Code, and Sections 366.80-.85, Florida Statutes, also known as the "Florida Energy Efficiency and Conservation Act" (FEECA) ;
- Whether the program is directly monitorable and yields measurable results; and
- Whether the program is cost-effective.

Currently, the minimum efficiency threshold for HVAC equipment in both of TECO's programs is a SEER value of 12.0. To keep pace with federal standards which will increase the minimum SEER value available in the marketplace to 13.0, TECO is requesting to increase the minimum equipment efficiency threshold for participation in these two programs to a SEER value of 14.0. TECO's Residential Heating and Cooling and Residential New Construction programs, as modified, will allow TECO to continue to achieve the goals of FEECA. As shown in Attachment A of this recommendation, the proposed modifications to the Residential Heating and Cooling program are expected to increase demand and energy savings. For customers with existing strip heat systems, per-customer savings are forecasted to be 2.54 kW winter peak demand, 0.15 kW summer peak demand, and 1,347 kWh of annual energy consumption. For customers with existing heat pump systems, per-customer savings are forecasted to be 0.10 kW winter peak demand, 0.15 kW summer peak demand, and 511 kWh of annual energy consumption.

Attachment B of this recommendation shows the proposed modifications to the Residential New Construction program. The incremental savings associated with the new heat pump requirement for both the Residential Heating and Cooling and Residential New Construction programs are .10 kW winter and .15 kW summer demand. The Residential New Construction program has 4 levels of participation with corresponding projected efficiency savings. Level one includes adding additional duct taping to meet TECO's allowable duct leakage standard. Level two, includes meeting level one requirements plus adding a minimum 14.0 SEER heat pump. Level three includes meeting level one and two requirements plus installing R-30 ceiling insulation. Finally, level four includes meeting level one, two and three requirements plus the installation of a heat recovery unit or a heat pump water heater. The demand and energy savings will vary depending on which level of participation the customer chooses. For customers with electric heating systems, per-customer savings are forecasted to range from a level one of 0.278 kW to a level four of 0.467 kW winter peak demand, and from a level one of 0.341 kW to a level four of 0.750 kW summer peak demand. The annual energy consumption range for these customers range from a level one of 691 kWh to a level four of 1,850 kWh. Combined with forecasted increases in customer participation, the program is expected to decrease overall peak demand and energy usage on TECO's system.

TECO's Residential Heating and Cooling and Residential New Construction programs, as modified, allow for direct monitoring and will continue to yield measurable results. TECO's programs as modified are cost-effective. The increase in the minimum SEER rating for heat pumps is expected to increase the program's cost-effectiveness, and TECO forecasts a benefit-cost ratio under the RIM test of 1.09 for the Residential Heating and Cooling and 1.24 for the Residential New Construction programs respectively. This means that, for participants and non-participants alike, the Residential Heating and Cooling and Residential New Construction programs are expected to be less costly than TECO's next identified power plant, a 180 MW combustion turbine scheduled for 2009. TECO's modified Residential Heating and Cooling and Residential New Construction programs are expected to continue to meet the policy objectives of FEECA, to continue to be monitorable and to continue to be cost-effective. Staff recommends that the Commission approve TECO's petition to modify its Residential Heating and Cooling and Residential New Construction programs.

Docket No. 050876-EG

Date: January 26, 2006

**Issue 2:** Should this docket be closed?

**Recommendation:** If no person whose substantial interests are affected by the proposed agency action files a protest within 21 days of the issuance of the order, this docket should be closed upon the issuance of a consummating order. (M. Brown)

**Staff Analysis:** At the conclusion of the protest period, if no protest is filed, this docket should be closed upon the issuance of a consummating order.

**Tampa Electric Company  
Exhibit A  
Heating & Cooling Program Description**

**Program:** Residential Heating & Cooling

**Program Start Date:** January 1981

**Program Description**

A conservation program that uses a rebate to encourage the installation of high efficiency heating and cooling systems in existing single family detached dwellings. The program is aimed at reducing the growth of peak demand and energy through two types of equipment replacement. Type one equipment replacement is defined as a heat pump replacing resistance heat and type two equipment replacement is defined as a heat pump replacing a heat pump. Both types of equipment replacement have a threshold for qualification of 14.0 SEER. Tampa Electric's rebate is paid to the contractor performing the installation.

**Program Participation Standards**

1. The residential dwelling must be an existing single family detached structure (no mobile homes or multi - family units, condominiums, apartments or townhouses) in Tampa Electric's service area.
2. The system must be ducted.
3. Effective May 1, 2006, the minimum qualifying efficiency rating (ARI rating only) is 14.0 SEER.
4. For a heat pump, the maximum supplemental strip heating physically contained in the system shall not exceed 2 kW per nominal ton. On a system less than 2.5 tons, a 5 kW heat strip will be allowed.
5. For a heat pump utilizing supplemental strip heating, a two-stage indoor thermostat is required.
6. For straight cool systems, oil or electric resistance heat cannot be the primary heat source.
7. In the situation where a heating and cooling system qualifies for two rebates (Tampa Electric and a gas company), Tampa Electric will not pay its rebate so that a double payment is avoided.
8. The contractor will subtract the rebate paid by Tampa Electric from the customer's total cost of equipment and installation. In the event of a customer installation with no contractor involvement, Tampa Electric will issue the rebate to the customer.

9. The HVAC contractor or customer submits a rebate request form to Tampa Electric. The form will be signed by the contractor or customer certifying that the equipment installed is in accordance with the program standards. The customer will sign the form verifying that the equipment was installed and that the contractor deducted the rebate amount from the total installed cost of the new HVAC unit.
10. Heating and Cooling rebate forms must be received within 30 days of installation date of the unit to assure payment to the dealer. Rebate forms must be filled out completely and correctly to be redeemed. Tampa Electric reserves the right to deny payment to contractors who fail to comply.
11. Tampa Electric will randomly perform full field verifications on a minimum of 10% of the participating homes. Forms not selected for field review will have an office verification to validate information.
12. No payment will be made until Tampa Electric verifies or validates rebate requests.
13. Rebates:
 

Type One	\$250.00
Type Two	\$100.00
14. The reporting requirements for this program will follow Rule 25-17.0021 (5), F.A.C. Additionally, program expenses will be identified in the ECCR True-Up and Projection Filings.

**Program Savings and Costs**

Historically, central A/C units with resistance heat and central heat pumps comprise 24% and 76% participation, respectively. Additionally, the analysis from DOE2 simulations of heating and cooling replacement savings for the HVAC systems is as follows:

<u>Type System</u>	<u>Winter Demand (kW)</u>	<u>Summer Demand (kW)</u>	<u>Annual Energy (kWh)</u>
Central A/C with Strip	2.54	0.15	1,347
Central Heat Pump	0.10	0.15	511

By weighting these savings across system types, the following reductions are rendered:



Winter Demand:

Strip heat	(2.54) (0.24)	=	0.609
Heat Pump	(0.10) (0.76)	=	<u>0.076</u>
Average winter demand reduction		=	0.685 kW

Summer Demand:

Straight A/C	(0.15) (0.24)	=	0.036
Heat Pump	(0.15) (0.76)	=	<u>0.114</u>
Average summer demand reduction		=	0.150 kW

Energy:

Straight A/C	(1,347) (0.24)	=	323
Heat Pump	(511) (0.76)	=	<u>388</u>
Average annual energy savings		=	711 kWh

Costs (weighted):

Rebate cost per participant:	\$136.00
Administrative cost per participant:	\$35.00

**Program Monitoring and Evaluation**

Tampa Electric utilized the engineering estimates and computer modeling from the SRC study for the demand and energy savings of the program. Tampa Electric will monitor and evaluate this program through cost-effective techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 941173-EG

**Tampa Electric Company  
Exhibit C  
Residential New Construction Program  
Description**

**Program:** Residential New Construction Program

**Program Start Date:** July 2000

**Program Description**

Residential New Construction is a conservation program designed to reduce the growth of peak demand and energy in the residential new construction market through the installation of high efficiency equipment and building envelope options. The program utilizes incentives to encourage the construction of new homes to be above the minimum energy efficiency levels required in the State of Florida Energy Efficiency Code for New Construction. This will be achieved through the actions listed below.

1. The certification of new home construction that meets or exceeds the standards used in the Environmental Protection Agency's Energy Star Program.
2. Promoting the construction and purchase of energy efficient housing by educating builders (for profit and not-for-profit), trade groups, architects, realtors, lenders and home buyers in a manner designed to transform the residential new construction market by influencing decisions toward energy efficiency in building techniques and practices.
3. Placing an emphasis on securing participation by affordable housing builders and buyers through educational efforts, coordinated through affordable housing financiers and affordable housing builders.
4. Encouraging the use of environmentally friendly building techniques.

**Program Participation Standards**

1. Incentives for qualifying levels will be offered to the home buyer for the following installations:

<u>Level</u>	<u>Incentive</u>	<u>Requirement</u>
One	\$00.00	Duct closure with mastic that meets Tampa Electric guidelines for allowable duct leakage.

<u>Level</u>	<u>Incentive</u>	<u>Requirement</u>
Two	\$100.00 (per unit)	Meet Level One requirements plus installation of a heat pump with a minimum 14.0 SEER and a minimum 7.7 HSPF. <b>OR</b> Meet Level One requirement plus installation of an air conditioning system that has a minimum 14.0 SEER and heating source must not be electric resistance heat or fuel oil.
Three	\$100.00	Meet level One and Two requirements plus install R-30 ceiling insulation.
Four	\$100.00 (per unit)	Meet level One, Two, and Three requirements plus installation of heat recovery unit or a heat pump water heater (applicable only when used with an electric water heater).

The SEER values above are effective May 1, 2006.

2. The home must be single family detached. The HVAC system must be ducted.
3. The home and equipment must be accessible during construction and after construction for verification of program standards.
4. The home must be located in Tampa Electric's service area and be metered by Tampa Electric to receive incentives.
5. Only one incentive payment will be issued per home. The payment will be based on equipment or measures purchased prior to the certificate of occupancy.
6. Equipment specifications shall be according to Air Conditioning and Refrigeration Institute ("ARI") and the Gas Appliance Manufacturers Association standards (where applicable). Heat recovery water heaters must be equipped with a circulating pump and must be certified by the Association of Refrigeration Desuperheater Manufacturers.
7. The certification of new home construction that meets or exceeds the standards used in the EPA's Energy Star Program will follow the Guidelines for Uniformity, Voluntary Procedures for Home Energy Ratings, prepared by the Home Energy Rating Systems ("HERS") Council and the Florida Addendum to the National HERS Council Guidelines, December

1998. Certification will be provided at no cost to participating builders or homeowners.
8. Tampa Electric guidelines for allowable duct leakage are based on the procedures set by the Department of Community Affairs used to measure acceptable HERS duct leakage standards. Mastic approved by the State of Florida Energy Efficiency Code for New Construction must be used on all duct closures.
  9. The homebuyer will be responsible for installation of qualifying equipment or measures as well as the correction of any items necessary to meet the program standards. The homebuyer will receive the incentive payment when program standards have been met.
  10. The builder or homebuyer submits a rebate request form to Tampa Electric. The builder will sign the form certifying that the equipment or measures installed are in accordance with the program standards. The homebuyer will sign the form verifying that the equipment and upgrades were installed and the incentive recipient's name and mailing address are correct.
  11. Tampa Electric will randomly perform full field verification on a minimum of 10% of the participating homes. Forms not selected for field review will have an office verification to validate information.
  12. All applications will receive either field verification or office validation prior to payment being made.
  13. To determine eligibility for participation, building permits must be dated subsequent to program implementation.
  14. The reporting requirements for this program will follow Rule 25-17.0021 (5), F.A.C. Additionally, program expenses will be identified in the ECCR True-Up and Projection Filings.

### **Program Savings and Costs**

Tampa Electric used the data from SRC to determine the savings for new construction. The savings for the levels of customer participation are as follows:

Savings:

**Level One**

	Summer kW	Winter kW	Annual kWh
Electric	0.341	0.278	691
Gas	0.341	0.000	518

**Level Two**

	Summer kW	Winter kW	Annual kWh
Electric	0.491	0.378	1,156
Gas	0.491	0.000	814

**Level Three**

Electric	0.559	0.467	1,300
Gas	0.559	0.000	914

**Level Four**

Electric	0.750	0.467	1,850
<b>Composite</b>	0.669	0.467	1,614

Composite cost estimates are as follows:

Administrative costs per participant:	\$166.00
Incentive costs per participant:	\$257.00

**Program Monitoring and Evaluation**

Tampa Electric utilized the engineering estimates and computer modeling from the SRC Study for the demand and energy savings. Tampa Electric will monitor and evaluate this program through cost-effective techniques approved in the company's previously filed Demand Side Management Monitoring and Evaluation Plan, Docket No. 941173-EG.