



## **2010 Hard-to-Reach Standard Offer Program**

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## 1. Background

Since 2001, Texas' electric distribution utilities have been implementing energy efficiency programs under new rules developed to increase the level of energy efficiency in Texas. Here are some of the highlights of the new rules:

*CenterPoint Energy (CNP) is required to achieve an annual energy efficiency program goal equal to 10% of its projected growth in demand. Utilities can no longer provide "competitive energy services" directly to customers.*

*In order to achieve the 10% demand reduction goal, CNP implements "standard offer programs," and "market transformation programs" as prescribed by the Public Utility Commission of Texas (PUCT).*

CNP is offering three standard offer programs: the Commercial Standard Offer Program, the Residential Standard Offer Program, and the Hard-to-Reach Standard Offer Program. CNP is also implementing the ENERGY STAR New Home market transformation program and the Multifamily Water and Space Heating market transformation program.

*Utilities are required to ensure that 5% or more of these energy savings come from "Hard-to-Reach" customers.*

Hard-to-Reach (HTR) customers are customers with an annual household income at or below 200% of federal poverty guidelines, or who meet certain other qualifications.

*Who can submit an application to be a project sponsor?*

The Hard-to-Reach Standard Offer Program (HTR SOP) is open to a wide range of contractors, service companies, community agencies and other organizations. No individual project sponsor may apply for more than 10% of the HTR SOP incentives per year, which will allow numerous businesses and organizations the opportunity to participate as project sponsors. There is also a streamlined process by which project sponsors can apply for incentives for projects with as little as \$500 in incentives.

The PUCT has issued a wide range of rules and requirements for the standard offer programs. The purpose of this manual is to identify and explain these program requirements, and act as a reference for project sponsors.

- As of November 2008, there are a number of proposals before the PUCT to alter the savings calculations for air conditioning equipment and duct sealing, and to establish estimates of the useful life or period of savings associated with various measures. CNP reserves the right to incorporate any or all of these changes resulting from this or other PUCT proceedings into CNP's 2010 programs as they are approved. Project sponsors will be provided with adequate notice of any changes affecting their projects.
- Project sponsors implementing the duct efficiency measure on mobile homes must follow the protocol for testing duct leakage to the outside
- Three or more inspection failures in one quarter will result in indefinite suspension of work regarding the failed measure. This includes sub-contractors.
- All administration questions and/or concerns should be directed to Roxanne McFarland, 713-207-3511 or roxanne.mcfarland@centerpointenergy.com



## **2. Program Design**

### **2.1. HTR Program Template**

All HTR SOPs to be implemented by the investor-owned electric utilities in Texas are required to comply with a number of program conditions approved by the PUCT. The primary objective of these program requirements is to ensure that comprehensive energy-efficiency retrofits are provided, and that the residents' health and safety are not jeopardized.

### **2.2. Program Description**

The HTR SOP was developed by CNP to provide financial incentives to suppliers of energy services for implementing electric energy efficiency projects at CNP's existing HTR single and multifamily customers' residences. New construction projects are not eligible under this program.

The primary objective of the HTR SOP is to achieve cost-effective reduction in peak summer demand.

In a standard offer program (SOP), project sponsors propose to deliver certain levels of peak demand savings (measured in kilowatts, or kW) and annual energy savings (measured in kilowatt-hours or kWh). CNP pays a fixed ("standard offer") price for each kW and kWh of savings. All payments to project sponsors are based solely on kW and kWh savings. CNP pays all incentives directly to the project sponsors, not to customers. Project sponsors are not required to provide any direct incentives to customers, but are required to execute a contract with customers which indicates that the project sponsor is participating in a CNP program and is receiving incentives for participating.

CenterPoint Energy has designed the HTR SOP to encourage electric energy efficiency improvements that go above and beyond the efficiency gains typically achieved in replacement-on-burnout projects. Consequently, energy savings credits for such measures will be based only on energy savings that exceed current federal minimum efficiency standards, if such standards apply. In cases where standards do not exist, and on early replacement or retrofit of existing equipment, demand and energy savings will be based on efficiency improvements relative to typical efficiencies in like circumstances (subject to other limitations as specified herein).

For a definition of "baseline" and other terms used in this Manual, please consult the Glossary, included as Appendix D.

### **2.3. Project Sponsor Requirements**

A project sponsor is any organization, group, or individual who contracts with CNP to provide energy savings under the HTR SOP. The following types of organizations are eligible to participate as project sponsors:

- Owners or operators of multifamily residential buildings;
- Energy service companies (ESCOs);
- Local contractors;
- Not-for-profit housing or social service organizations;

- National or local companies that provide energy-related products (e.g., lighting or HVAC); and
- Retailers are also eligible if they install the particular energy-efficient products sold as part of this program.

Project sponsors in the HTR SOP must meet eligibility criteria, comply with all HTR SOP rules and procedures, submit Project Application forms and supplemental documentation describing their projects, and execute CNP's HTR SOP Agreement. CenterPoint Energy requires project sponsors to demonstrate their qualifications as part of the application process to help ensure that the proposed projects will be successful in delivering the estimated energy savings. Project sponsors must provide specific information on their qualifications in the areas of insulation installation and duct sealing, if these measures are to be included in the proposed project. Project sponsors proposing to utilize subcontractors to provide these services are required to identify their subcontractor(s) and provide information on their qualifications. This requirement is described in further detail in Section 5. CenterPoint Energy requires project sponsors and their subcontractors to carry all insurance required by law, and all insurance as described in the Standard Offer Program Agreement.

One of the features of the HTR SOP is that CNP will rely upon the marketing capabilities of project sponsors to sell projects to CNP's residential customers. CenterPoint Energy will not directly market any energy efficiency-related product or service to its customers. **Entering into an agreement with CNP as a project sponsor does not imply CNP's endorsement or approval of any company, product, or service.**

## 2.4. Participant Eligibility

### 2.4.1. Home Eligibility

Homes built after January 2002 are not eligible.

### 2.4.2. Documenting the Eligibility of Hard-to-Reach Customers

Hard-to-Reach customers are defined as those customers with a total household income of less than 200% of current federal poverty guidelines. These income levels are as follows:

#### 2009 - 2010 HTR Annual Income Eligibility Guidelines\*

Size of Family	HTR Household Income Threshold 200% of Federal Poverty Guideline
1	≤ \$21,660
2	≤ \$29,140
3	≤ \$36,620
4	≤ \$44,100
5	≤ \$51,580
6	≤ \$59,060
7	≤ \$66,540
8	≤ \$74,020

\* Notice: Income ceilings are for **April 1, 2009 - March 31, 2010.**

Examples of target populations include:

- Apartment complexes subsidized by the U.S. Department of Housing and Urban Development that provide housing for households at or below 80% of household medium income, such as Section 8 and Public Housing Authorities.
- Households denied weatherization or utility assistance program benefits because income exceeds 125% of federal poverty guidelines.

Target populations identified above whose income are verified by an appropriate social service agency or organization would require no additional income verification effort. Project sponsors interested in serving other target populations would be responsible for verifying the customer's eligibility.

For multifamily projects, the property manager will provide eligibility information, not the individual tenants. A multifamily property automatically qualifies if the residential units are individually-metered and the property participates in one or more of the following programs:

The following is a list of eligible types of developments:

- Public Housing Authority
- Multifamily Bond Program
- Project-Based Section 8
- HOME Rental Housing Development
- Housing Trust Fund
- Low-Income Housing Tax Credit Program
- Affordable Housing Disposition Program
- Rural Rental Section 515 (FMHA)

For multi-family projects, Project sponsors are eligible to receive the higher hard-to-reach incentive payments for measures installed in all units if 75% or more of the residents qualify as hard-to-reach.

## **2.5. Income Eligibility Verification**

The PUCT has approved two forms for the purpose of verifying the income eligibility of customers:

- Property Owner Certification Form of Tenant Income Eligibility
- Self-Certification Form of Income Eligibility

These forms outline the various methods in which participants may certify their eligibility. The procedure for verifying eligibility is based on "self-certification." The project sponsor will present the form to the customer, and he/she will check appropriate boxes, provide other information where required, and sign the form. The customer needs to complete the form, and it should not be typed. It is not the project sponsor's responsibility to verify the information provided by the participants.

Copies of the income eligibility forms for individual customers and property managers are available on the program web site. With the permission of CNP, project sponsors may change

the layout of either of these documents, as long as nothing in the wording or the order of the wording is changed, and the font remains clearly legible. Project sponsors may replace page 2 of the Property Owner Certification Form of Tenant Income Eligibility with a computer printout, so long as the printout provides all the required information.

## **2.6. Multifamily Property Eligibility**

Each individually metered multifamily residence is considered a separate residential account. Common areas are classified as commercial accounts, and are not eligible under this program. Master-metered apartments are also considered as commercial accounts, and are likewise not eligible under this program. These facilities may be eligible to participate in one of CNP's other SOPs.

For multifamily properties of five or more dwelling units, the project sponsor must submit the proposed project to CNP prior to the installation of any measures. CenterPoint Energy reserves the right to conduct a pre-installation inspection of the property, and to approve the proposed project prior to the installation of any measures. CenterPoint Energy has ten days from the date of submission to approve or disapprove of the project.

### **2.6.1. Affordable Housing Single-Family New Construction**

New construction measures are not eligible for incentives under the HTR SOP, but affordable new single-family homes are eligible for incentives under the Residential SOP. For more information, please refer to the Residential SOP Manual.

## **2.7. Eligible Measures**

Energy efficiency measures in residential applications shall be evaluated by category and priority in order to reduce electric energy consumption and system peak demand at the host customer site(s).

Project Sponsors are required to adhere to the Eligible Measures and Installation Criteria (see Appendix B) when evaluating measures for applicability and cost-effectiveness. If, for example, the CO and blower door tests indicate that all measures should be considered for installation, then the Project Sponsor should evaluate the following measures:

### **1. Envelope Measures**

- Single-family dwelling insulation measures (insulate the ceiling, floor, or all exterior walls)
- Multifamily insulation measures (insulate the ceiling, floor, or all exterior walls). If an insulation measure is adopted for a particular building, that measure shall be applied to the entire building.
- Air infiltration control measures (minimum of 10% air leakage reduction, calculated from pre and post-installation blower door tests)
- HVAC duct integrity (repairs, replacements, and sealing with mastic or aerosol-based duct sealants)

*At least one of the above measures must be installed in order for any measure listed below to be eligible for incentives.*

## 2. Interior Energy Usage Measures

- Lighting
- Hard-wired replacements, or compact fluorescents (minimum 3 hour daily usage)
- Water heating
- Showerheads, aerators, pipe insulation and water heater jackets
- Refrigerator replacement (ENERGY STAR models)

## 3. HVAC Measures

- Room air conditioners
- Split system (Complete coil and compressor replacement)
- Packaged unit (Installed to manufacturer's specifications)

See Appendix B for additional details on measures and standards.

### 2.7.1. Additional Energy Efficiency Measure Eligibility

CenterPoint Energy will consider other measures not contained in Appendix B for HTR eligibility at the time a project application is submitted. Proposed energy efficiency measures must meet the following requirements:

- Measure must produce a measurable and verifiable reduction in either purchased electric energy, measured in kWh, or peak demand, measured in kW, or both.
- Measure must produce savings through an increase in energy efficiency or a substitution of another energy source for electricity (provided the substitution results in overall lower energy costs, lower energy consumption, and the installation of high efficiency equipment).
- Measure must have a minimum useful life of 10 years.
- Measure must meet or exceed minimum federal or other efficiency standards as provided in the program manual.
- On single-family detached residences, the duct efficiency and air infiltration measures must be applied to the whole home. Multiple-story homes cannot be treated on a per-story basis.
- Homes must be occupied and the HVAC equipment must be operational in order for any measure to be eligible for incentives.

As a general rule, measures involving “plug loads” (equipment or appliances that are plugged into standard electrical outlets) are not permitted. This restriction may be waived by the utility if the Project Sponsor provides the utility with reasonable assurance that the energy and/or demand savings associated with such measures are likely to persist over a 10-year period of time and that quantifiable energy and/or demand reduction meeting the requirements of the Commission's Energy Efficiency Rule can indeed be achieved through the proposed measure(s).

If any of the baseline equipment at a project site has been removed prior to the execution of the SOP Agreement, or if any of the proposed energy efficient measures have been installed prior to the execution of the SOP Agreement and applicable Host Agreement(s), the project, or the

affected portions thereof, will be disallowed.

CenterPoint Energy will be the final authority on whether any particular measure is eligible for incentives.

## 2.8. Carbon Monoxide and Blower Door Testing

Prior to the installation of any air infiltration control, duct sealing, or wall insulation measure, a pre-installation blower door test is required, and a carbon monoxide (CO) test shall also be conducted for each residence with combustion (e.g., natural gas or propane) equipment or appliances. All project sponsors that are installing air infiltration or duct efficiency measures are required to have a certified HERS rater on staff.

Project Sponsors will be required to measure and record pre- and post-installation CO readings and must not install any air infiltration control, duct sealing, or wall insulation measure that would result in the ambient air CO level exceeding 9 parts per million (ppm) at project completion. All CO measurements shall be taken with the furnace operating. Appendix C contains additional information on CO testing.

The Project Sponsor shall use the pre- and post-installation blower door air infiltration tests results to verify that the final air exchange rate of a household treated with air infiltration control, wall insulation, and/or duct sealing measures shall not be less than the standards set forth in the following table:

### Minimum Final Air Exchange Rate\*

Shielding	Single Story	Two Story	Three or More Stories
Well Shielded	1.18	0.95	0.83
Normal	0.99	0.79	0.69
Exposed	0.89	0.71	0.62

\* Measured in cubic feet per minute at 50 Pascal per square foot of conditioned area.

**Well Shielded** is defined as urban areas with high buildings or sheltered areas, and building surrounded by trees, bermed earth, or higher terrain.

**Normal** is defined as buildings in a residential neighborhood or subdivision setting, with yard space between buildings. Eighty to ninety percent of houses fall into this category.

**Exposed** is defined as buildings in an open setting with few buildings or trees around and buildings on top of a hill or ocean front, exposed to winds.

As an example, the minimum post-installation air exchange rate for an 1800 square foot, one-story home with normal shielding is 1782 CFM<sub>50</sub> (1800 x 0.99). In order to qualify for the air infiltration control deemed savings, there must be a minimum 10% reduction between the pre- and post-installation ventilation rate. Therefore, the pre-installation ventilation rate must be at least 1960 CFM<sub>50</sub> (1782 x 110%) in order to be considered for air infiltration control measures.

If the results of the pre-installation carbon monoxide or air infiltration tests indicate that the installation of air infiltration control measures, duct sealing, or wall insulation could possibly result in post-installation CO or CFM levels not meeting program standards, the Project Sponsor

should exclude these measures from the list of those to be evaluated for installation.

## **2.9. Ineligible Measures**

The following measures are ineligible to receive incentives under the HTR SOP:

- All exterior lighting measures
- Load shifting/load management measures
- Measures that rely solely on customer behavior or require no capital investment
- Measures that decrease building plug loads, such as “Green Plugs” or computer inactivity time-out controls
- Measures for which incentives were received under another utility-sponsored program
- Repair and maintenance projects
- Energy-efficient gas measures when replacing non-electric technologies
- Measures that result in negative environmental or health effects
- Envelope measures on homes that have received the ENERGY STAR label. These measures include:
  - Duct efficiency
  - Air infiltration
  - ENERGY STAR windows
  - Ceiling Insulation

## **2.10. For More Information**

The web site (<http://www.centerpointefficiency.com/>) will be the key informational resource and should be checked regularly for any program updates. Company representatives will respond to questions of general interest by posting answers on the web site.<sup>1</sup>

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<sup>1</sup> CNP will attempt to answer telephone inquiries, but no response will be considered official unless the question has been posted and responded to on the official CNP energy efficiency program web site.

### 3. Program Incentives

Note that in all cases, payment procedures and amounts specified in the SOP Agreement supersede this and any other documents.

#### 3.1. Incentive Budget and Project Funding Limits

CenterPoint Energy has budgeted a total of \$1,625,000 in incentives for the HTR SOP. The incentives will be allocated as follows:

- \$1,300,000 for Large Projects
- \$300,000 for Small Projects
- \$25,000 for Multi-Family Set-Aside

To ensure that funding will be available to multiple participants, CNP has set the maximum amount of incentives paid to any one project sponsor (including project sponsor's Affiliates) or any one customer at \$130,000 for large projects and \$30,000 for small projects (10% of each total).

CenterPoint Energy will offer a streamlined application process for small projects with incentive amounts as low as \$500. More details on the application processes for small and large projects are included in Section 5. **Large project sponsors may not participate in the small project application process.**

A project sponsor may submit multiple applications, and participate in multiple projects, subject to the project sponsor incentive limits as outlined above. No project sponsor has unconditional entitlement to the SOP incentive funds.

#### 3.2. Incentive Rates

The incentive rates for the Hard-to-Reach program are as follows:

	Incentive
Demand (kW)	\$477
Energy (kWh)	\$0.16

The kW payment is based on peak demand savings. The kWh payment is based on the first-year kWh savings.

The following table states the incentive rates by measure.

<b>Hard-to-Reach Incentive Rates</b>	Demand (kW)	Energy (kWh)
Standard (all other measures)	\$477	\$0.160
Ceiling Insulation	\$519	\$0.350
Central AC and HP Replacements	\$519	\$0.350
Window AC Replacement Only	\$519	\$0.350
Window AC Replacement + Duct Sealing	\$500	\$0.300

### 3.3. Adjustments to Incentive Payments

Incentive payments may be adjusted in any of the following instances:

- A project sponsor's incentive payments may be adjusted based on the results of CNP's site inspections as described elsewhere in this document and in the SOP Agreement.
- For compact fluorescent lamps, incentive payments shall be adjusted by a factor of 0.75 to account for the fact that the life of this measure will be less than the required 10-year minimum.
- If the fraction of a project sponsor's kW or kWh savings derived from lighting measures exceeds 65% of the total savings, the incentive amounts paid to the project sponsor for the lighting measures shall be reduced by an adjustment factor. The application of these adjustment factors to kW and kWh payments ensures that the lighting measure incentives paid shall not exceed 65% of the total incentive payable if the project had consisted entirely of non-lighting measures.
- The load factor cap will not be applied in the 2010 programs.

### 3.4. Payment Procedures

CenterPoint Energy will make the Incentive Payment within forty-five (45) days of its receipt and approval of the invoice. Sections 6 and 7 of this Manual describe the process for submitting documentation and invoices.

- Complete invoices
  - Correct information
  - All signatures
- 5 day window

Any administrative errors will be given a five (5) day correction period. Any info not received after 5 days will result in customer exclusion and not be eligible for resubmittal.

## **4. Program Process and Timeline**

### **4.1. Application Process**

Potential project sponsors may apply using the Large Project Application or the Small Project Application. The difference between the two is the amount of incentive dollars available and the length of time to utilize the funds. Section Five contains a detailed description of the application process.

A copy of the SOP Agreement may be downloaded from the program web site. Project sponsors are urged to review the SOP Agreement before submitting a Project Application. *Once the application period has begun, CNP will not entertain proposed modifications to the SOP Agreement.*

### **4.2. Implementation Period**

During the implementation period, the large project sponsor will be performing marketing and implementation activities, and reporting progress on a regular basis to CNP. Installations should be completed so that all implementation data can be reported to CNP no later than November 30, 2010.

Small project sponsors will have 30 days from the date funding has been reserved to complete installations. The small project sponsor will likely have already identified both a customer site and the measures to be installed before reserving incentive funds. The small project sponsor's implementation period responsibilities are to complete the installations and report the installation information via the program web site by the end of the 45-day period.

Installation and equipment standards are included in Appendix A.

## 5. Project Application Procedures

### 5.1. Small vs. Large Projects

The small project application process enables project sponsors to apply for as little as \$500 in incentives. While the term “small” is meant to be applied to the size of the project, and not to the size of the project sponsor, this process is targeted towards:

- Smaller HVAC dealers,
- Insulation contractors,
- Local contractors, and
- Community organizations.

The following is a comparison of small and large projects:

Small Projects	Large Projects
<ul style="list-style-type: none"> <li>• <i>Minimum project size: \$500</i></li> <li>• <i>Maximum project size: \$30,000 per request</i></li> <li>• <i>Annual incentive limit per project sponsor: \$30,000</i></li> <li>• <i>Funds reserved for 30 days</i></li> <li>• <i>No milestone schedule</i></li> <li>• <i>Subcontractors may not be used, except by community action agencies</i></li> <li>• <i>1-2 unit residential dwellings only</i></li> <li>• <i>Simplified, web-based application process</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Min. project size: 20 kW</i></li> <li>• <i>Maximum project size: \$130,000</i></li> <li>• <i>Funds reserved for up to a year</i></li> <li>• <i>Sponsors must adhere to milestone schedule</i></li> <li>• <i>Single or multifamily</i></li> <li>• <i>Detailed, web-based application process</i></li> </ul>

The small project application process is ideal for local businesses or community organizations that may want to participate on a trial basis, or who may wish to apply for incentives on an incremental basis. The disadvantages are that the incentive money is only allocated for a 30-day period, requiring project sponsors to complete installations and report installation information within a relatively short timeframe.

Project sponsors who wish to retrofit multifamily properties, or who want to ensure that

incentives will be available to them throughout the season should submit a Large Project Application.

After completing a small project, sponsors may request more incentives under the Small Project Application process or may submit an application under the Large Project Application process (if funding is still available). However, large project sponsors may not participate in the Small Project Application process.

## **5.2. General Application Requirements**

CenterPoint Energy has determined that the fairest and least-cost application procedure is to accept applications only via the Internet. The application forms, instructions, frequently-asked questions, and helper applications are accessible on CNP's web site ([www.centerpointhtrsop.com](http://www.centerpointhtrsop.com)). All applications must be completed and submitted on-line.

### **5.2.1. Project Sponsor Information**

The information listed below is required of all project sponsors:

- Project sponsor name;
- Federal tax identification number of project sponsor;
- Parent company and/or affiliated firms (if any);
- Contact name, address, phone number, fax number, e-mail address; and
- Names, addresses, etc., of all subcontractors.

### **5.2.2. Project Sponsor Requirements**

- All employees must have background check and photo ID.

### **5.2.3. Project Sponsor's Qualifications**

CenterPoint Energy requires project sponsors to demonstrate their qualifications and experience as part of the application process to help ensure that the proposed projects will be successful in delivering the estimated energy savings. The project sponsor's application should include the following:

- A brief statement of the project sponsor's capabilities and experience (500 word maximum)
- Evidence that project sponsor and any subcontractors possess all applicable licenses. Evidence includes a list of applicable licenses, license holders, and license numbers. For project sponsors proposing to install duct efficiency or air infiltration control measures, the name(s) of employee(s) with HERS certification should be included.
- Description of previous participation in other Texas utility standard offer programs. The information provided should include the utility name, contract amount, and utility contact. If the project sponsor has no prior experience with Texas standard offer programs, provide three client/customer references for projects similar in nature to that proposed in this application (include contact name, address, and phone number).

- Disclosure of any legal judgments pending, or entered in the previous two years, against project sponsor, or the designated subcontractor(s), as well as a current list of pending litigation filed against project sponsor or designated subcontractor(s).

Large project sponsors should also include evidence of their financial strength and capability. This may include company description, approximate annual revenues, trade references, and/or other information deemed appropriate by project sponsor.

#### **5.2.4. Additional Requirements for Project Sponsors Proposing to Perform Duct Sealing**

For project sponsors proposing to include duct sealing as part of their projects, the following additional information is required. Project sponsors who do not provide this information will not be allowed to include duct sealing as part of their projects.

- The project sponsor should indicate whether duct sealing will be performed by direct employees of the project sponsor, or by a subcontractor. (Only large project sponsors may use subcontractors.) . If the project sponsor intends to utilize subcontractors for any part of the implementation of this measure, then the subcontractor(s) must be identified, and the information provided in this section should pertain to the subcontractor(s). Project sponsors who do not identify their proposed subcontractor(s) as part of this application process will not be allowed to use subcontractors for this measure.
- The project sponsor should provide a description of previous experience in providing this service. This should include, if applicable, a list of other Texas utility projects completed by the project sponsor or subcontractor, including the number of homes treated with this measure. All project sponsors that are installing duct sealing are required to have a certified HERS rater on staff. Provide a listing of certifications or licenses held (e.g., HVAC license, HERS rater certification, etc.), or relevant third-party training courses completed. Also, please provide a description of the equipment and techniques to be utilized to measure duct leakage.

#### **5.2.5. Additional Requirements for Project Sponsors Proposing to Install Ceiling or Wall Insulation**

For project sponsors proposing to include ceiling and/or wall insulation as part of their projects, the following additional information is required. Project sponsors who do not provide this information will not be allowed to include ceiling or wall insulation as part of their projects.

- The project sponsor should indicate whether insulation services will be provided by direct employees of the project sponsor, or by a subcontractor. (Only large project sponsors may use subcontractors.) If the project sponsor intends to utilize subcontractors to implement any part of the insulation measure, then the subcontractor must be identified, and the information provided in this section should pertain to the subcontractor. Project sponsors who do not identify their proposed subcontractor(s) as part of this application process will not be allowed to use subcontractors for this measure.
- The project sponsor should provide a description of previous experience in providing insulation services. This should include, if applicable, a list of other Texas utility projects completed by the project sponsor or subcontractor. Provide a description of the training provided by the project sponsor or subcontractor to its installers.

### 5.3. Small Project Application Guidelines

The Small Project Application process has two steps. Beginning December 1, 2009, small project sponsors can complete their applications. On December 3, 2009 at 10:00 AM CST, small project application can be submitted via the online system. Then on January 4, 2010, reservations of funds can be made and work may begin. The initial application consists of the project sponsor's corporate information, qualifications, and references. After this information has been reviewed by CNP, the project sponsor will be notified of their application status.

### 5.4. Large Project Application Guidelines

Large project sponsors will be able to access the program application web pages beginning on October 29, 2009. CNP will update its application web page at **10:00 AM CST on November 12, 2009, to activate a "submit button" for the Large HTR program**. Once this button is active, project sponsors can submit their applications. CenterPoint Energy will continue accepting applications until all funds have been reserved, or until the end of the program year, whichever is earlier. All applications will be reviewed on a first-come, first-served basis. CenterPoint Energy will utilize its mail server's time stamp to determine the order of receipt. Confirmation of the receipt of the application will be sent via return e-mail.

Applications for the **multifamily set-aside funds can be submitted at 2:00 PM CST on November 12, 2009**.

After the application information has been reviewed by CNP, the project sponsor will be notified of its project award status.

### 5.5. Large Project Sponsor Application Requirements

In addition to the application information outlined in Section 5.2, large project sponsors will be required to provide the following information about their proposed projects. CenterPoint Energy will incorporate estimated maximum kW and kWh incentive payments into the HTR SOP Agreement.

#### 5.5.1. Project Description

Provide a description of the proposed project in the space provided. Briefly describe the proposed project, including target customers, end-uses, and marketing approach.

#### 5.5.2. Project Description – Estimated Impacts

Please refer to the deemed savings measure list (Appendix A), and/or the excel spreadsheet file named *deemed\_savings\_helper.xls* (may be downloaded from <http://www.centerpointhtrsop.com/>) to create estimates of average kW and kWh savings per installation site.<sup>1</sup> The minimum project size is 20kW of deemed or measured peak demand savings. The maximum project size is determined by the limit on incentives that can be paid to any one Project Sponsor. There is also a limit on the amount of incentive payment that can be attributable to a project's lighting savings.

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<sup>1</sup> These values are subject to modification during the 2008 program year, based on the outcome of proceedings to approve further modifications to these values.

### **5.5.3. Marketing Plan**

Describe the customer types being targeted and/or building/dwelling characteristics being targeted. Describe the marketing mechanisms to be used. Describe previous projects that were successfully completed by the Project Sponsor utilizing similar marketing methods.

Retailers should indicate how they will conduct air infiltration and carbon monoxide testing, and how they will oversee measure installations and ensure overall compliance.

### **5.5.4. Project Implementation Schedule**

On this form, a milestone date is generated for the Project. No inputs are required from the project sponsor. Measure installations resulting in at least 50% of the project sponsor's total estimated incentive payments must be completed by June 10, 2010. Measure installations resulting in at least 80% of the project sponsor's total estimated incentive payments must be completed by September 10, 2010.

CenterPoint Energy reserves the right to withdraw some or all of the project sponsor's incentive reservation for failure to achieve the applicable milestone. For project sponsors who fail to meet the milestone, but who have achieved a substantial percentage of their milestone goal, CNP may withdraw incentive reservation according to the percentage below the 50% or 80% milestone. For example, if a project sponsor has only achieved 30% of the goal by the 50% milestone date, 20% of the incentive reservation for that project sponsor may be withdrawn. However, in the event the project sponsor has achieved little or no progress toward achieving the goal by the milestone date, CNP reserves the right to withdraw the project sponsor's entire incentive reservation.

## **5.6. Customer Affidavits**

If a project sponsor anticipates requesting more than \$10,000 in incentives for measures installed at any one customer site, an affidavit of participation signed by that host customer must be submitted within ten business days of Internet application.

## **5.7. Application Review Procedures**

### **5.7.1. Application Evaluation**

CenterPoint Energy may reject a Project Application if:

- The project application is received after the Project Application period has expired;
- The project application is received after the HTR SOP has been fully subscribed;
- The project sponsor fails to meet program eligibility requirements;
- The project sponsor fails to respond to any request for additional information;
- The project sponsor is found to have made material misrepresentations in the Project Application;
- The project sponsor fails to comply with applicable federal, state and local laws and regulations;
- Changes occur in laws or regulations directly affecting the HTR SOP; and

- CenterPoint Energy, in its sole judgment, determines that the project sponsor is incapable of fulfilling the terms and conditions of the HTR SOP Agreement.

CenterPoint Energy reserves the right to limit or disqualify the participation of project sponsors who have performed poorly in previous standard offer programs.

CenterPoint Energy will notify each project sponsor of its application status within 10 to 15 business days of the submittal of the application. If a project application is found incomplete or insufficient, CNP may, at its sole discretion, reject it.

CenterPoint Energy may request clarification of, or additional information about, any item submitted as part of the project application. Project sponsors will have five business days to respond to such requests. If the clarification or additional information provided is not sufficiently responsive, CNP may, at its sole discretion, request additional information, or discontinue its evaluation of the submittal. Any project sponsor submitting an unsuccessful project application may reapply for project funding by submitting another project application. However, the project sponsor will lose its initial position in the order of submittal for budget reservation purposes.

### **5.7.2. Large Project Sponsor Approval**

If CNP approves the project application, the project sponsor will be expected to sign and return the SOP Agreement as soon as possible after notification of project application approval. (Project sponsors who have participated in a previous CNP SOP may not be required to sign an additional agreement).

### **5.7.3. Small Project Sponsor Approval**

Once a small project sponsor's application has been accepted, the CNP Program Administrator will approve the project sponsor to reserve funding in the small project sections of the program web site. From these sections, small project sponsors will be able to see how much small project incentive money is available in CNP's small project incentive budget, and sponsors will be able to reserve incentive funds for their individual projects. No further approvals are required from CNP to begin installation.

## **5.8. Program Contact**

The HTR SOP Program Manager is Ms. Yolanda Slade. All program correspondence, reports, and any other required materials should be directed to Ms. Slade at:

CenterPoint Energy  
1111 Louisiana, Houston, TX 77002  
713.207.7762  
[yolanda.slade@CenterPointEnergy.com](mailto:yolanda.slade@CenterPointEnergy.com)

## **5.9. Other Important Program Information**

CenterPoint Energy will not reimburse any project sponsor for any costs incurred by participating in the SOP, including costs of preparing the Project Application, reviewing or executing the SOP Agreement, or preparing and submitting implementation or performance reports.

CenterPoint Energy's SOP is subject to oversight by the PUCT, which may request a copy of any SOP materials that CNP receives. Sensitive information submitted by the project sponsor to CNP will be treated confidentially to the fullest extent possible, and will not be provided directly to outside parties other than the PUCT. CenterPoint Energy will have no liability to any project sponsor or other party as a result of public disclosure of any submittals.

## 6. Implementation Procedures for Small Project Sponsors

### 6.1. Required Forms

Prior to commencing any installation activities, project sponsor shall submit its insurance certificate to CNP, as well as the following required forms for approval:

1. *Host Customer Agreement (HCA)*. Project sponsors may download a pre-approved version from the web site, or may draft their own HCA. This is a standard agreement executed by the project sponsor and the host customer. It includes all the customer protection provisions and disclosures required by the PUCT. CenterPoint Energy requires that the project sponsor use an approved HCA, but does not require that copies of signed agreements be turned in to CNP.
2. *Residential Customer Acknowledgment*. This is a form in which the residential customer acknowledges that the measures described in the Host Customer Agreement have been installed to his/her satisfaction; and that CNP is allowed to access to the host customer site. Project sponsors may draft their own Customer Acknowledgement and submit it to CNP for approval, or they may download a pre-approved version from the web site. Copies of signed Customer Acknowledgements must be turned in with each installation report and invoice.

*The Host Customer Agreement and the Customer Acknowledgment may be combined into one document.*

3. *Household Income Self-Certification Form*. This form is to be used by customers to certify hard-to-reach eligibility. Copies of signed forms must be turned in with each installation report and invoice.

### 6.2. Program Implementation Timeline

#### After Project Acceptance:

SOP Agreement returned to CNP (unless instructed otherwise)

#### Prior to Marketing:

1. Certificate(s) of Insurance and proof of HERS Rating Certification (if project sponsor is proposing to install air infiltration or duct sealing measures) due
2. Submit draft Host Customer Agreement to CNP for approval, or download pre-approved Host Customer Agreement from web site.
3. Submit draft Residential Customer Acknowledgement form to CNP for approval, or download pre-approved form from web site.

#### Prior to Installation:

1. Provide a daily work schedule via the Program database by 7:00 a.m. of that day's installation appointments. For weekend installation activities, the work schedule should be submitted by 3:00 p.m. Friday. All installation appointments must be scheduled in advance, with the exception of limited "fill-in" appointments.<sup>1</sup>

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<sup>1</sup> Fill-ins only qualify if there is a work schedule for that day.

2. Determine customer eligibility, based on HTR eligibility guidelines. Complete single-family or multifamily certification form.
3. If installing air infiltration control, wall insulation, or duct sealing measures, perform pre-installation blower door, duct leakage, or CO tests, as required.
4. Have the customer sign the Host Customer Agreement

**After Installation:**

1. If air infiltration control, wall insulation, or duct sealing measures, was installed, perform post-installation blower door, duct leakage, or CO tests, as required.
2. Have residential customer the Customer Acknowledgement.
3. Report installation data and submit invoice via web site.

### 6.3. Installation Period

One of the key requirements for small project sponsors is that they perform installations and report the installation data within 30 days of the date of incentive request.

An example of the implementation of a small project is as follows:

1. A local community agency plans on weatherizing two homes during over a one-month period during the spring. The anticipated measures consist of the following:
  - Air infiltration control measures at both homes
  - High-efficiency air conditioner for one customer
  - Duct sealing for one customer
  - Attic insulation at for both customers
2. Using the deemed savings tables, the kW and kWh savings are as follows:

Measure	kW Savings	kWh Savings
1. Air infiltration	0.21	634
2. Duct Sealing	4.90	7440
3. CFL	0.06	379
<b>Totals</b>	<b>5.17 kW</b>	<b>8453 kWh</b>

3. Using the incentive rates of \$477 per kW and \$0.16 per kWh, the Project Sponsor calculates \$3,818 in incentives.
4. Project Sponsor logs on to the HTR program web site, checks available funding, and reserves \$3,818 in incentives. This funding is reserved for 30 days.
5. Project Sponsor installs these measures, and returns to the web site within 30 days to report

installation information.

6. If Project Sponsor implements other small projects during the invoice period, then these are combined on to a single report and invoice. Otherwise, Project Sponsor submits a report and invoice for this single project.
7. As the total value of incentives earned for this project approaches the amount that has been reserved, the Project Sponsor may request additional incentives from the web site, provided the Small Project incentive budget has not been fully allocated.

### **6.3.1. Frequently-Asked Questions**

*What happens if I reserve incentive funding, but don't get to do the project, or what happens if I don't report the measure installation data within the 30-day period?*

In Small Projects, reservations are limited to the project sponsor incentive limit and are reserved for 30 days. If the project is not completed and reported in the online tracking system within 30 days, the reserved funds are released and go back into the available funds for anyone to reserve. The project sponsor can find another project and reserve more funds if funds are available.

*What if the measures I actually install are slightly different from what was described in the original Small Project application?*

CenterPoint Energy will pay the project sponsor the incentive value of the measures actually installed, even if that amount is slightly higher or lower than the amount of incentive reserved. Small project sponsors may not install insulation or duct efficiency measures unless they have included the required information in their initial applications. Any lighting incentive caps or load factor limits will be based on the actual measure installations.

*Do I have to give all or part of the incentive to the customer?*

No. The project sponsor may use the incentive in any manner they see fit. In the Host Customer Agreement, the customer acknowledges that the project sponsor is receiving incentives through a ratepayer-funded program.

## **6.4. Required Submittals**

### **6.4.1. Installation and Invoice Reporting**

CenterPoint is requesting that project sponsors provide a daily work schedule via the Program database. The day's schedule must be entered in by 7:00 a.m. the morning of the installation appointment. Upon completing the installations for a small project, the project sponsor should input the implementation information on the program web site as soon as possible, due to the thirty day reservation period. The following information is required for each small project completed:

Add Customer Form

1. Group ID customer type (Single-family, mobile home)
2. ESI ID number or Meter number
3. Telephone number
4. Heating type
5. Installation type

### Customer Approval Request

1. Check the boxes next to each customer to be submitted on invoice
2. Click Send Request

If the customer site is approved you will receive an email notification indicating the customer has been approved. At this point you will be able to enter an installation for the approved customer site.

### Add Insulation

1. Complete all installation information required
2. Press submit installation button
3. If more than one measure per customer, repeat process
4. If there are equipment information changes for a particular customer, use the Edit / Delete Installation Page.

### Invoice Reporting

1. Click on Eligible Customer List – determine which customers to submit on invoice or select All.
2. Press Submit, a summary of the invoice will be provided. Enter the Invoice Number at the bottom of the page.
3. Print the Summary of the Invoice and provide a copy with the requested paperwork in the order as they appear on the summary page. Failing to do so will result in the delay of processing.
4. Invoices must be received or postmarked by the 10<sup>th</sup> of each month.

#### **6.4.2. Reporting Procedures for Ceiling Insulation**

The deemed savings associated with a base R-value of zero will only be utilized for installations where there is no existing insulation of any kind. Project sponsors will also be required to check a box to affirm that an insulation installation certificate was permanently affixed near the attic opening. These certificates must comply with the Federal Trade Commission's Home Insulation Rule 460 (16 CFR 460).

CenterPoint Energy may adjust the incentive payment based on findings from field inspections.

## 7. Implementation Period Procedures for Large Project Sponsors

All installations should be completed so that implementation data can be reported to CNP by November 30, 2009.

During the implementation period, the project sponsor will be performing marketing activities, implementation activities, and reporting progress on a regular basis to CNP. This allows CNP to monitor each project sponsor's progress in a timely manner and allows CNP the ability to reallocate program funding, if necessary, in order to achieve its overall energy savings goals.

### 7.1. Required Forms

The Public Utility Commission of Texas (PUCT) requires several forms:

1. *Host Customer Agreement (HCA)*. This is a standard agreement executed by the project sponsor and the host customer. It includes all the customer protection provisions and disclosures required by the PUCT. Project sponsors may download a pre-approved version from the web site, or may draft their own HCA and submit it to CNP for approval. CenterPoint Energy requires that the project sponsor use an approved HCA, but does not require that copies of signed agreements be turned in to CNP.
2. *Residential Customer or and Multifamily Property Manager Acknowledgment*. These are forms in which the residential customer or multifamily property manager acknowledges that: the measures described in the Host Customer Agreement have been installed to his/her satisfaction; and that CNP is allowed to access to the host customer site. Project sponsors may draft their own Acknowledgement forms and submit them to CNP for approval, or they may download pre-approved versions from the web site. Copies of signed Acknowledgements must be turned in with each installation report and invoice.

*The above two forms maybe combined into one form.*

3. *Household Income Self-Certification Form and Multifamily Certification Form*. These forms are to be used by customers and property managers to certify hard-to-reach eligibility. Both forms are available on the SOP web site ([www.centerpointhtrsop.com](http://www.centerpointhtrsop.com)). Copies of signed forms must be turned in with each installation report and invoice.

### 7.2. Program Implementation Timeline

#### After Project Acceptance:

SOP Agreement returned to CNP (unless otherwise informed, no signature is required)

#### Prior to Marketing:

1. Certificate(s) of Insurance and proof of HERS Rating Certification (if project sponsor is proposing to install air infiltration or duct sealing measures) due
2. Submit draft Host Customer Agreement to CNP for approval, or download pre-approved Host Customer Agreement from web site.
3. Submit draft Residential Customer Acknowledgement form to CNP for approval, or download pre-approved form from web site.

**Prior to Installation:**

1. Provide a daily work schedule via the Program database by 7:00 a.m. of that day's installation appointments. For weekend installation activities, the work schedule should be submitted by 3:00 p.m. Friday. All installation appointments must be scheduled in advance, with the exception of limited "fill-in" appointments. Note that all inspection fill-in appointments require at least 1 hours advance notification
2. Determine customer eligibility, based on HTR eligibility guidelines. Complete single-family or multifamily certification form.
3. If project is multifamily property of three or more dwelling units, submit proposed project to CNP for pre-approval. CenterPoint Energy will require up to ten days to approve project. No multifamily installations can occur before CNP provides its approval.
4. If installing air infiltration control, wall insulation, or duct sealing measures, perform pre-installation blower door, duct leakage, or CO tests, as required.
5. Have the customer sign the Host Customer Agreement

**After Installation:**

1. If air infiltration control, wall insulation, or duct sealing measures, was installed, perform post-installation blower door, duct leakage, or CO tests, as required.
2. Have residential customer the Customer Acknowledgement.
3. Report installation data and submit invoice via web site.

**7.3. Required Monthly Submittals****7.3.1. Installation Report and Invoice**

The primary reporting instrument is the program web site. All project sponsors shall submit monthly installation data and invoice forms (see below). Reports for each month during the implementation period shall be provided to CNP by the 10<sup>th</sup> of each succeeding month.

**Add Customer Form**

1. Group ID customer type (Single-family, mobile home)
2. ESI ID number or Meter number
3. Telephone number
4. Heating type
5. Installation type

**Customer Approval Request**

1. Check the boxes next to each customer to be submitted on invoice
2. Click Send Request

If the customer site is approved you will receive an email notification indicating the customer has been approved. At this point you will be able to enter an installation for the approved customer site.

### Add Insulation

- 1 Complete all installation information required
- 2 Press submit installation button
- 3 If more than one measure per customer, repeat process
- 4 If there are equipment information changes for a particular customer, use the Edit / Delete Installation Page.

### Invoice Reporting

- 1 Click on Eligible Customer List – determine which customers to submit on invoice or select All.
2. Press Submit, a summary of the invoice will be provided. Enter the Invoice Number at the bottom of the page.
3. Print the Summary of the Invoice and provide a copy with the requested paperwork.

### **7.3.2. Reporting Procedures for Ceiling Insulation**

The deemed savings associated with a base R-value of zero will only be utilized for installations where there is no existing insulation of any kind. Project sponsors will also be required to check a box to affirm that an insulation installation certificate was permanently affixed near the attic opening. These certificates must comply with the Federal Trade Commission's Home Insulation Rule 460 (16 CFR 460).

## **7.4. Monthly Submittal Review Procedures**

### **7.4.1. Administrative Review**

Once the monthly report is submitted to CNP, it will be reviewed for accuracy. If any discrepancies are found in any of the reports, CNP will notify the project sponsor. The project sponsor shall have 5 business days from the date of CNP's notification to correct any discrepancies.

### **7.4.2. Installation Inspections**

During the review process, CNP will take a random sample of customer sites and make field inspections to determine if each measure has been installed properly, and is capable of performing its intended function. All measures installed in the HTR SOP must conform to or exceed the standards listed in Appendix A. If measures installed do not meet these standards, they will not be eligible for incentives.

After field inspections are completed, all installations will be evaluated on a measure-by-measure basis to calculate an adjustment factor for energy savings and incentives. This adjustment factor will consider the ratio of savings of the measures that pass the inspection to the total incentive specified in the Measure Inspection Report and project application. The adjustment factor will then be applied to the incentive amount for payment. The algorithm for calculating the adjustment factor is described below:

**Adjustment Factor = Total incentives per measure that pass inspection ÷  
Total incentives for all measures selected for inspection**

This assumes all figures on the installation report are correct. Any errors will be corrected prior to finalizing the adjustment factor.

Payment terms are net 45 days.

More than 3 failures of the same measure type will result in suspension of that measure until further notice by CNP. This includes sub contractors.

## **7.5. Project Milestone**

Measure installations resulting in at least 50% of the project sponsor's total estimated incentive payments must be completed by June 10, 2010. Measure installations resulting in at least 80% of the project sponsor's total estimated incentive payments must be completed by September 10, 2010.

CenterPoint Energy reserves the right to withdraw some or all of the project sponsor's budget reservation for failure to achieve this milestone. For project sponsors who fail to meet the milestone, but who have achieved a substantial percentage of their milestone goal, CNP may withdraw Budget Reservation according to the percentage below the 50% or 80% milestone. For example, if a project sponsor has only achieved 30% of the goal by the end of the 50% milestone period, 20% of the incentive Budget Reservation for that project sponsor may be withdrawn. However, in the event the project sponsor has achieved little or no progress toward achieving the goal by the end of the milestone period, CNP reserves the right to withdraw the project sponsor's entire Budget Reservation.

**Appendix A**  
**Deemed Savings**

# **DEEMED SAVINGS**

## **Hard-To-Reach SOP Measures**

### **INTRODUCTION**

This document contains all of the PUCT-approved energy and peak demand deemed savings values established for energy efficiency programs in Texas. CNP reserves the right to incorporate additional or revised deemed savings values into its 2010 programs as they are approved.

For all envelope measures, e.g., ceiling insulation, ENERGY STAR windows, etc., the presence of electric refrigerated air conditioning is assumed. Separate deemed savings values have been calculated for homes with electric air conditioning / gas heat, for electric air conditioning / electric resistance heat, and for heat pumps.

### **GENERAL INSTALLATION STANDARDS**

Equipment must exceed applicable federal energy standards adopted at the time the Project Sponsor submits the project application.

No used or reconditioned equipment shall be qualified for incentives. All equipment shall be new.

Homes must be occupied and HVAC equipment must be operational to install measures.

Project Sponsor must follow all state and local building codes. Project Sponsor shall be responsible for licenses, building permits and inspections. Any fees/payments for licenses, building permits, and inspections shall be paid by the Project Sponsor.

### **CENTRAL AIR CONDITIONER REPLACEMENT**

#### **Measure**

Residential retrofit of an existing central air conditioning system with a new central air conditioning system in an existing building or the installation of a new central air conditioning system in a new residential construction. A new central air conditioning system includes an entire packaged unit, or a split system consisting of an indoor unit with a matching remote condensing unit. Maximum cooling capacity per unit is 65,000 Btu/hour.

#### **Baseline**

In new construction, the baseline is assumed to be a new central air conditioning system with an ARI-listed SEER rating of 13.0. For retrofit installations, the baseline is assumed to be 12.44. This value incorporates an adjustment to the baseline SEER value to reflect the percentage of current non-program replacements that do not include the installation of an ARI-matched condensing unit and evaporator coil.

## Installation & Efficiency Standard

### Installation & Efficiency Standard

Air conditioning equipment shall be properly sized to dwelling based on ASHRAE or ACCA Manual J standards.

Manufacturer data sheets on installed air conditioning equipment or ARI reference numbers must be provided.

The central air conditioning equipment must meet the following standard:

- Minimum ARI-listed SEER rating of 14.00
- Minimum ARI-listed EER of 11.5
- Heat pumps must have a minimum ARI-listed HSPF rating of 8.2.

### Central Air Conditioner

Climate Zone 3: South Region, Houston Weather Data

Demand Savings (kW) for 13.0 SEER New Construction Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	0.13	0.15	0.17	0.23	0.29	0.30
2.0	0.17	0.20	0.23	0.30	0.39	0.41
2.5	0.21	0.25	0.29	0.38	0.49	0.51
3.0	0.25	0.30	0.35	0.46	0.58	0.61
3.5	0.30	0.35	0.41	0.53	0.68	0.71
4.0	0.34	0.40	0.46	0.61	0.78	0.81
5.0	0.42	0.50	0.58	0.76	0.97	1.02

Energy Savings (kWh) for 13.0 SEER New Construction Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	361	506	650	758	1,042	1,118
2.0	481	674	867	1,011	1,389	1,490
2.5	601	843	1,084	1,264	1,737	1,863
3.0	722	1,011	1,301	1,517	2,084	2,235
3.5	842	1,180	1,518	1,770	2,431	2,608
4.0	962	1,348	1,734	2,023	2,778	2,980
5.0	1,203	1,685	2,168	2,528	3,473	3,725

**Central Air Conditioner**

Climate Zone 3: South Region, Houston Weather Data

Demand Savings (kW) for 12.44 SEER Retrofit Baseline- Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	0.19	0.22	0.24	0.29	0.36	0.37
2.0	0.26	0.29	0.32	0.39	0.48	0.50
2.5	0.32	0.36	0.40	0.49	0.60	0.62
3.0	0.39	0.44	0.48	0.59	0.72	0.74
3.5	0.45	0.51	0.56	0.69	0.84	0.87
4.0	0.52	0.58	0.64	0.79	0.96	0.99
5.0	0.65	0.73	0.80	0.98	1.20	1.24

Energy Savings (kWh) for 12.44 SEER Retrofit Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	522	667	811	919	1,203	1,278
2.0	696	889	1,082	1,226	1,604	1,705
2.5	870	1,111	1,352	1,532	2,005	2,131
3.0	1,043	1,333	1,623	1,839	2,406	2,557
3.5	1,217	1,555	1,893	2,145	2,807	2,983
4.0	1,391	1,777	2,163	2,452	3,208	3,409
5.0	1,739	2,222	2,704	3,065	4,009	4,261

**HEAT PUMP****Measure**

Residential retrofit of an existing central heat pump system with a new central heat pump system in an existing building or the installation of a new central heat pump system in a new residential construction. A new central heat pump system includes an entire packaged unit, or a split system consisting of an indoor unit with a matching remote condensing unit. Maximum cooling capacity per unit is 65,000 Btu/hour.

**All measure installation standards and baseline data from the central air conditioner measure shall apply to the heat pump measure.**

**Baseline**

In new construction, the baseline is assumed to be a new heat pump system with an ARI-listed SEER rating of 13.0 and an HSPF of 7.7. For retrofit installations, the baseline is assumed to be 12.44 SEER and 7.7 HSPF. This value incorporates an adjustment to the baseline SEER value (cooling only) to reflect the percentage of current non-program replacements that do not include the installation of an ARI-matched condensing unit and evaporator coil.

**Installation & Efficiency Standard**

Equipment shall be properly sized to dwelling based on ASHRAE or ACCA Manual J standards.

Manufacturer data sheets on installed air conditioning equipment or ARI equivalent combined compressor and coil HSPF must be provided to the utility in the Implementation Report.

Heat pumps shall have a minimum SEER of 14.00 and an HSPF of 8.2.

**Deemed Savings**

**Climate Zone 3: South Region**

Heat Pump (Cooling Only – See Separate Heating Tables)

Climate Zone 3: South Region, Houston Weather Zone

Demand Savings (kW) for 13.0 SEER New Construction Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	0.12	0.16	0.19	0.20	0.22	0.30
2.0	0.17	0.21	0.26	0.27	0.29	0.40
2.5	0.21	0.27	0.32	0.33	0.37	0.51
3.0	0.25	0.32	0.39	0.40	0.44	0.61
3.5	0.29	0.37	0.45	0.47	0.51	0.71
4.0	0.33	0.42	0.52	0.53	0.59	0.81
5.0	0.41	0.53	0.65	0.67	0.73	1.01

## Energy Savings (kWh) for 13.0 SEER New Construction Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	337	488	638	875	931	1,099
2.0	450	650	850	1,166	1,241	1,466
2.5	562	813	1,063	1,458	1,551	1,832
3.0	675	975	1,275	1,749	1,861	2,199
3.5	787	1,138	1,488	2,041	2,171	2,565
4.0	900	1,300	1,700	2,332	2,481	2,931
5.0	1,125	1,625	2,125	2,915	3,102	3,664

## Heat Pump (Cooling Only – See Separate Heating Tables)

## Climate Zone 3: South Region, Houston Weather Zone

## Demand Savings (kW) for 12.44 SEER Retrofit Baseline- Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	0.19	0.23	0.26	0.27	0.29	0.37
2.0	0.25	0.30	0.35	0.36	0.38	0.49
2.5	0.32	0.38	0.43	0.44	0.48	0.62
3.0	0.38	0.45	0.52	0.53	0.57	0.74
3.5	0.45	0.53	0.61	0.62	0.67	0.86
4.0	0.51	0.60	0.70	0.71	0.76	0.99
5.0	0.64	0.75	0.87	0.89	0.96	1.23

## Energy Savings (kWh) for 12.44 SEER Retrofit Baseline - Zone 3

Size (tons)	SEER Range					
	14.0-14.4	14.5-14.9	15.0-15.9	16.0-16.9	17.0-17.9	18+
1.5	495	645	795	1,032	1,088	1,257
2.0	660	860	1,060	1,376	1,451	1,676
2.5	825	1,075	1,325	1,720	1,813	2,095
3.0	990	1,290	1,590	2,064	2,176	2,513
3.5	1,155	1,505	1,855	2,408	2,539	2,932

4.0	1,320	1,720	2,120	2,752	2,901	3,351
5.0	1,650	2,150	2,650	3,440	3,627	4,189

Heat Pump – Energy Savings (Heating kWh Only), Climate Zone 3					
HSPF Range					
Size (tons)	8.2 - 8.3	8.4 - 8.5	8.6 - 8.7	8.8 - 8.9	9.0 - 9.1
1.5	69	93	117	141	164
2.0	92	124	156	187	218
2.5	115	155	195	234	273
3.0	138	186	234	281	327
3.5	161	217	273	328	382
4.0	184	248	312	375	436
4.5	207	279	351	422	491
5.0	230	310	390	468	546

## GROUND SOURCE HEAT PUMP

### Measure

The following tables present the deemed savings values for ground source heat pumps for each of the four climate zones. The deemed savings are dependent upon the energy efficiency rating (EER) of the equipment, and are presented as kWh and kW savings per ton installed.

### Baseline

Only ground source heat pumps that replace an existing air source heat pump, ground source heat pump system, or other combination of electric heating and cooling systems are eligible for these deemed savings. In any case, the baseline from which energy savings are measured is a 10 SEER air source heat pump in an existing dwelling.

### Installation & Efficiency Standard

The ground source heat pump must meet a minimum ENERGY STAR criteria of 14 EER (ISO/ARI 13256-1) in order to be eligible for these deemed savings.

## Deemed Savings

### Climate Zone 3 – South Region

<b>Ground Source Heat Pumps – Climate Zone 3</b>		
Climate Zone 3 - with desuperheaters		
GSHP Efficiency	Energy savings [kWh/ton]	Demand savings [kW/ton]
Low (less than 17 EER)	1229	0.60
High (17 EER and above)	1438	0.63
Climate Zone 3 - without desuperheaters		
Low (less than 17 EER)	417	0.11
High (17 EER and above)	646	0.28

## WINDOW AIR CONDITIONERS

### Measure

The following deemed savings values would be applicable in calculating an incentive for a room air conditioner replaced with a higher efficiency room air conditioner in a dwelling occupied by a residential energy consumer. Deemed savings for window air conditioners are only applicable to customers under the “hard-to-reach” template.

### Baseline

Baseline is assumed to be a new air conditioning unit with an EER rating that meets current NAECA standard. Current NAECA EER standard varies from 8.5 to 9.8 depending on the type and capacity of unit. Minimum cooling capacity is 5,000 Btu/hour, and the maximum is 25,000 Btu/hour.

### Installation & Efficiency Standard

Units meeting current ENERGY STAR specification qualify for incentive. This specification is 10% above the new NAECA standard for all categories.

### Deemed Savings

#### Demand Savings (kW) – All Climate Zones

<b>Window Air Conditioners – Demand Savings, All Climate Zones</b>					
	Federal	10% Above	kW	15% Above	kW
Size (BTU/Hr)	Standard (EER)	Standard (EER)	Savings	Standard (EER)	Savings
Less than 6,000	9.7	10.7	0.054	11.2	0.078
6,000-7,999	9.7	10.7	0.058	11.2	0.083
8,000-13,999	9.8	10.8	0.111	11.3	0.160
14,000-19,999	9.7	10.7	0.150	11.2	0.215
20,000 and above	8.5	9.4	0.257	9.8	0.368

## Energy Savings (kWh)

### Climate Zone 3: South Region

<b>Window Air Conditioners – Energy Savings, Climate Zone 3</b>					
	Federal	10% Above	kWh	15% Above	kWh
Size (BTU/Hr)	Standard (EER)	Standard (EER)	Savings	Standard (EER)	Savings
Less than 6,000	9.7	10.7	93	11.2	134
6,000-7,999	9.7	10.7	100	11.2	143
8,000-13,999	9.8	10.8	191	11.3	274
14,000-19,999	9.7	10.7	257	11.2	369
20,000 and above	8.5	9.4	440	9.8	632

## CEILING INSULATION

### Measure

Ceiling insulation savings are per square foot of treated ceiling area above a conditioned space. Ceiling insulation must be added only to homes with electric air conditioning to qualify for these deemed savings values.

### Baseline

In existing construction, ceiling insulation levels vary greatly depending on the age of the home, type of insulation, and activity in the attic (such as using the attic for storage and HVAC equipment). Deemed savings tables are based on the current level of ceiling insulation in the home from R-0 to R-22. The current insulation level of each home will be determined and documented by the insulation installer. Degradation due to age and density of the existing insulation should be taken into account.

In the event that existing insulation is or has been removed, the existing R-value will be based upon the R-value of the existing insulation prior to removal.

### Installation & Efficiency Standard

A ceiling insulation level of R-30 is recommended throughout Texas as prescribed by DOE. The combined R-values of the existing insulation and the insulation being added will total at least R-30. The R-value of the existing insulation can be no greater than R-22.

### Deemed Savings

<b>Climate Zone 3 - South Region</b>					
Ceiling Insulation					
	kWh Savings	kWh Savings	kWh Savings	Summer Peak kW Savings	
Ceiling Insulation Base R-value	Gas Heat	Electric Heat	Heat Pump	Gas Heat & Electric Heat	Heat Pump
	(per sq. ft.)	(per sq. ft.)	(per sq. ft.)	(per sq. ft.)	(per sq. ft.)

R-0	1.00	4.40	2.14	0.000973	0.000973
R-1 to R-4	0.64	2.81	1.40	0.000608	0.000622
R-5 to R-8	0.32	1.38	0.70	0.000297	0.000297
R-9 to R-14	0.17	0.72	0.36	0.000153	0.000153
R-15 to R-22	0.07	0.30	0.15	0.000074	0.000074

## WALL INSULATION

### Measure

Wall insulation savings are per square foot of treated wall area (gross wall area less window and door area), and are based on R-0 increased to R-13. Wall insulation must be added only to homes with electric air conditioning to qualify for these deemed savings values.

### Baseline

The baseline is considered to be a house with no wall insulation in the 4" wall cavity.

### Installation & Efficiency Standard

The standard throughout Texas for adding wall insulation to an existing wall cavity is R-13, as prescribed by United States Department of Energy (DOE) and Texas Department of Housing and Community Affairs (TDHCA) programs. To qualify for the incentive, there must be no existing wall insulation.

Under the Hard-To-Reach template, wall insulation reduces the ventilation rate in the home and therefore a post-installation blower door test must be conducted. Results must comply with the Minimum Final Ventilation Rate table found in the Air Infiltration section of this document.

### Deemed Savings

#### Climate Zone 3: South Region

Wall Insulation – Climate Zone 3				
Electric A/C Gas Heat kWh Savings per sq. ft.	Electric A/C Electric Heat kWh Savings per sq. ft.	Electric A/C Heat Pump kWh Savings per sq. ft.	Summer Peak kW Savings per sq. ft.	
			Gas Heat & Electric Heat	Heat Pump
0.24242	4.529	1.726	0.0006734	0.0006734

## FLOOR INSULATION

### Measure

Floor insulation savings are per square foot of treated floor area above a non-conditioned space. Floor insulation must be added only to existing homes with electric air conditioning to qualify for these deemed savings values.

## Baseline

The baseline is considered to be a house with pier and beam construction and no floor insulation against the floor of conditioned area.

## Installation & Efficiency Standard

A floor insulation level of R-19 is recommended for site-built homes throughout Texas as prescribed by DOE and TDHCA programs. To qualify for the incentive, there must be no existing floor insulation. Batt insulation is recommended in most cases and must have the vapor barrier installed facing up and against the floor or conditioned area. Insulation should be attached or secured so that it remains in place for at least 10 years.

Typical floor construction depth of manufactured homes usually does not allow R-19 batt to be installed within the floor joists so an R-15 loose-fill insulation is recommended by TDHCA.

A minimum of 24" clearance from bottom of the insulation to the ground is required by Occupational Safety and Health Association (OSHA).

## Deemed Savings

### Climate Zone 3: South Region

Floor Insulation - Climate Zone 3				
Electric A/C And Heating Type	Site Built Home		Manufactured Home	
	kWh Savings per sq. ft.	Summer Peak kW Savings per sq. ft.	kWh Savings per sq. ft.	Summer Peak kW Savings per sq. ft.
Gas Heat	No Savings	0.000216	No Savings	0.000266
Electric Heat	1.70757	0.000216	1.65891	0.000266
Heat Pump	0.58324	0.000216	0.55718	0.000266

## ENERGY STAR WINDOWS

### Measure

ENERGY STAR windows savings are per square foot of window, inclusive of frame and sash. Windows must be installed only in homes with electric air conditioning to qualify for these deemed savings values.

### Baseline

The baseline is a double-glazed (i.e., double-pane), clear window with an aluminum frame, with a U-factor of 0.87, a solar heat gain coefficient (SHGC) of 0.66, and air infiltration of 1 cfm/ft<sup>2</sup>.

### Installation & Efficiency Standard

For a window to qualify for these deemed savings, it must meet ENERGY STAR criteria anywhere in the state, it must have a U-factor less than or equal to 0.40 and a Solar Heat

Gain Coefficient (SHGC) less than or equal to 0.40.

### Deemed Savings

<b>ENERGY STAR WINDOWS</b>		
	kWh Savings per sq. ft.	kW Savings per sq. ft.
Climate Zone 3: South Region		
Installed in home with non-electric heating	3.81	0.0024
Installed in home with electric resistance heating	6.48	0.0024
Installed in home with heat pump	5.26	0.0024

### AIR INFILTRATION

#### Measure

This measure reduces air infiltration into the residence, using pre- and post-treatment blower door air pressure readings to confirm air leakage reduction. Homes treated for air infiltration reduction must have electric air conditioning to qualify for these deemed savings values.

Blower door air pressure measurements will also be used to ensure that air infiltration in a residence shall not be less than the standards set forth in the following table:

#### Minimum Final Ventilation Rate\*

Shielding	Number of Stories		
	Single Story	Two Story	3 or More Stories
Well shielded	1.18	0.95	0.83
Normal	0.99	0.79	0.69
Exposed	0.89	0.71	0.62

\* Measured in cubic feet per minute at 50 Pascal per square foot of conditioned area.

Well Shielded is defined as urban areas with high buildings or sheltered areas, and buildings surrounded by trees, bermed earth, or higher terrain.

Normal is defined as buildings in a residential neighborhood or subdivision setting, with yard space between buildings. 80-90% of houses fall in this category.

Exposed is defined as buildings in an open setting with few buildings or trees around and buildings on top of a hill or ocean front, exposed to winds.

As an example, the minimum post-installation air exchange rate for an 1800 square foot, one-story home with normal shielding is 1782 CFM<sub>50</sub> (1800 x 0.99). In order to qualify for the air infiltration control deemed savings, there must be a minimum 10% reduction between the pre- and post-installation ventilation rate. Therefore, the pre-installation ventilation rate must be at least 1960 CFM<sub>50</sub> (1782 x 110%) in order to be considered for air infiltration control measures.

## Baseline

For residential dwellings, the winter/summer air change per hour (ACH) differential was derived from ESPRE model weather data for the Panhandle (Amarillo weather), North (Dallas weather), South (Houston weather), and Valley (Corpus Christi weather) climate zones. Electric air conditioning was assumed for all homes, with gas, electric or heat pump heating.

Air Infiltration Values (ACH)		
Region	Winter ACH	Summer ACH
South	0.86	0.54

## Installation & Efficiency Standard

To qualify for an incentive, a minimum air leakage reduction of 10% of the pre-installation reading is required. Utilities may require competency testing of personnel who will perform the blower door tests.

## Deemed Savings

The following formula shall be used to calculate deemed savings for infiltration efficiency improvements. The formula applies to Residential and Hard-to-Reach single family and multifamily dwellings, and to all building heights and shielding factors. Only structures with electric refrigerated air conditioning systems are eligible.

Deemed Savings:  $CFM_{50} * V$

Where:

$CFM_{50}$  = Air infiltration reduction in Cubic Feet per Minute at 50 Pascal

V = the corresponding value in the following table:

- CNP will require that all infiltration measures require the following:
  - Weatherstrip on ALL outside doors
  - Seal all pipe penetrations
  - Gaskets on all outside walls
  - Weatherstrip attic access where applicable.

Region	KWh Impact per CFM <sub>50</sub> Reduction			KW Impact per CFM <sub>50</sub> Reduction
	Gas Heat	Resistance Heat	Heat Pump Heat	
South	0.2694	0.7945	0.4438	0.00026

## SOLAR SCREENS

### Measure

This measure is for customers with electric air conditioning under the Hard-To-Reach Program template. Solar screen must be installed on windows facing predominately east or west and receive significant direct sun exposure. Solar screens that block at least 65% of the solar heat gain qualify for deemed savings. Deemed savings are per square foot of window or door opening.

### Baseline

The baseline prototype home modeled is similar to other deemed savings models and is 1,850 ft<sup>2</sup> with window area equal to 10.2% of the floor area. This proportion represents window area equal to approximately 14% of the wall area. The base SHGC is 0.75 representing the average from RESFEN<sup>1</sup> (0.76) and the NFRC<sup>2</sup> 900 (0.74) database for a single pane, clear glass window with an aluminum frame. This includes a factor to represent statistically average solar gain reduction for a generic house from overhangs, trees, obstructions, adjacent buildings, insect screen, interior shades, dirt on glass pane, etc.

### Installation & Efficiency Standard

To qualify for solar screen deemed savings, windows must be facing predominately east or west and receive significant direct sun exposure. Solar screen material must reduce solar heat gain by at least 65%.

### Deemed Savings

Solar Screens				
Weather Zone	Electric AC Gas Heat Avg. kWh Savings per sq. ft.	Electric AC Electric Heat Avg. kWh Savings per sq. ft.	Electric AC Heat Pump Avg. kWh Savings per sq. ft.	Summer Peak Avg. kW Savings per sq. ft.
3	5.82998	3.78803	4.72758	0.001590

## DUCT EFFICIENCY IMPROVEMENT

### Measure

These deemed savings values are applicable to measures which seal leaks in supply and return ducts and repair or reinsulate ducts of existing homes that have central electric air

<sup>1</sup> Residential Fenestration software for calculating heating and cooling energy use in residential buildings.

<sup>2</sup> National Fenestration Research Council.

conditioning or heat pumps. Homes that utilize one or more window units to provide for all **or part** of their cooling are not eligible for this measure. All treated sites must have a majority of the treated ducts and returns located in an unconditioned space.

Alternatively, the utility may establish other requirements to ensure that savings result from the measure.

*Administrator Comment: CenterPoint will employ the following procedure to ensure that savings result from the duct efficiency measure:*

- 1. When a majority of the supply and return is in an unconditioned space, CenterPoint may inspect for adequate treatment, or may conduct a standard duct pressurization leakage test to verify that the total duct leakage does not exceed the applicable maximum post-installation leakage rate taken from the following table. See following definitions of “conditioned space” and “majority.”*
- 2. When a majority of ducts and returns are in a conditioned space (as defined herein), or it cannot be determined that a majority of ducts and returns are in an unconditioned space, the measure is not applicable, unless the Project Sponsor documents pre- and post-installation leakage-to-outside rates, via testing conducted and documented in accordance with one of the procedures laid out below. CenterPoint may inspect for adequate treatment, or may conduct standard leakage-to-outside tests to verify that the leakage rate from unconditioned space does not exceed the applicable maximum post-installation rate taken from the following table. See the following definitions of “unconditioned space,” and “leakage-to-outside tests.”*

**Definitions:**

*The definitions set forth below assume the structure meets the definition of a low-rise residential building as set forth in the ASHRAE Standard 90.2-2001 Scope (Section 2). ASHRAE Standard 90.1-1999 will be used for commercial applications.*

***Conditioned Space:*** cooled space, heated space, or indirectly conditioned space:

*Cooled space:* enclosed space within a building that is cooled by a cooling system whose sensible capacity exceeds 5 Btu/(h-ft<sup>2</sup>) or is capable of maintaining a space dry bulb temperature of 90°F or less at design cooling conditions.

***Heated space:*** enclosed space within a building that is heated by a heating system whose output capacity exceeds 10 Btu/(h-ft<sup>2</sup>) or is capable of maintaining a space drybulb temperature of 50°F or more at design heating conditions.

***Indirectly conditioned space:*** enclosed space within a building that is not heated or cooled space, whose area-weighted heat transfer coefficient to heated or cooled space exceeds that to the outdoors or to unconditioned

space, or through which air from heated or cooled space is transferred at a rate exceeding three air changes per hour (see heated space and cooled space).

**Majority:** For purposes of determining majority of treated ducts and returns, the proportion of surface area of plenums and ducts located in an unconditioned space shall exceed 50% of the total surface area of all ducts and plenums. Examples of systems in conditioned versus unconditioned space are provided below. These examples are not inclusive.

**Multifamily:** buildings with three or more dwelling units

**Single-family:** buildings with fewer than three dwelling units

**Unconditioned space:** space within a building that is not conditioned space. See ASHRAE 90.2-2001 (Low-Rise Residential) or 90.1-1999 (Buildings Except Residential Low Rise).

Generally, single-family dwellings can be treated without pre-qualification by CenterPoint. Upon notice, however, Project Sponsors may be required to pre-qualify households so that CenterPoint can ascertain Project Sponsor proficiency. Regardless of pre-qualification, CenterPoint will not pay incentives for installations that do not meet the standards as described herein.

Multifamily units must be pre-qualified for installation. Prior to beginning installation, Project Sponsor must contact CenterPoint with a site description for an authorization to proceed. CenterPoint may pre-qualify, or may require CenterPoint's site inspection in order to authorize eligibility. CenterPoint does not offer a "leakage to outside" testing alternative for multifamily duct sealing projects, i.e., only those units with a definite majority of ducts in an unconditioned space may be treated. Again, CenterPoint will not pay incentives for installations that do not meet the standards as described herein.

#### **Acceptable Duct Leakage to Outside Testing Methods**

The following methods may be used to demonstrate leakage to outside:

- ◆ Combination house and duct pressurization method.
- ◆ Blower door subtraction method.
- ◆ Delta-Q method.

CenterPoint will consider alternate protocols that may be proposed by the project sponsor. CenterPoint may require a demonstration of proficiency as a condition of project approval.

*Table of Accepted Projects and Methods*

	<i>Type of Residential Dwelling</i>		
<i>Duct Location</i>	<i>Mobile Home</i>	<i>Multifamily</i>	<i>Single-Family</i>
<i>Majority in Conditioned Space</i>	<i>Leakage to Outside Testing Protocol</i>	<i>Ineligible</i>	<i>Leakage to Outside Testing Protocol; Proficiency Testing may be required</i>
<i>Majority in Unconditioned Space</i>		<i>Duct Pressurization Protocol</i>	<i>Duct Pressurization Protocol</i>
<i>Location of a majority as inside or outside cannot be ascertained</i>		<i>Ineligible</i>	<i>Leakage to Outside Testing Protocol; Proficiency Testing may be required</i>

**Baseline**

This measure would be applicable if existing duct system has a leakage rate of greater than or equal to the appropriate values in the following table, as measured by a pre-retrofit duct pressurization test. The calibrated deemed savings model uses an average duct loss factor of 30%.

**Installation & Efficiency Standard**

Materials used should be long-lasting materials, e.g., mastics, tape-applied mastics, foil tape, and/or aerosol-based sealants, to reduce total leakage rates to less than 10% of total air handler fan flow, verified by post-retrofit testing.

**Duct Improvement Air Flow Requirements**

*Measurements to determine whether the air-flow requirements are met must be performed in accordance with CenterPoint-approved procedures. In applications where a majority of the ducts are in an unconditioned space, the most commonly-used acceptable test method is the Duct Blaster™ (or equivalent) total duct leakage test. Other tests may be accepted at CenterPoint's sole option. The duct efficiency measure standard requires that all registers and returns be sealed with mastic and tape prior to duct leakage testing.*

*In applications where duct leakage to outside must be directly measured, the Project Sponsor may use one of several methods, including the blower door subtraction method, the combination duct blaster (or equivalent) and blower door, or the Delta Q method. Other tests may be accepted at CenterPoint's sole option.*

*Leakage rates indicated in the following table must be measured and reported at the average air distribution system operating pressure.*

<b>Air Flow Requirements for Duct Efficiency Measure</b>		
AC Size (tons)	Minimum Pre-Installation Leakage Rate (CFM)	Maximum Post-Installation Leakage Rate (CFM)
1.5	120	60
2.0	160	80
2.5	200	100
3.0	240	120
3.5	280	140
4.0	320	160
4.5	360	180
5.0	400	200

### Deemed Savings

<b>Duct Efficiency Improvement</b>				
Weather Zone	Electric AC Gas Heat Avg. kWh Savings per sq. ft. of conditioned space	Electric AC Electric Heat Avg. kWh Savings per sq. ft. of conditioned space	Electric AC Heat Pump Avg. kWh Savings per sq. ft. of conditioned space	Summer Peak Avg. kW Savings per sq. ft. of conditioned space
3	0.74378	1.80968	1.13027	0.000486

## WATER HEATER REPLACEMENTS – HIGH EFFICIENCY AND FUEL SUBSTITUTION

### Measure

Water heating values are on a per-unit basis. Deemed savings variables include tank volume and installed-unit energy factor as rated in the Gas Appliance Manufacturers Association Directory of Certified Water Heating Products. The following table presents the energy savings for high efficiency electric water heaters meeting the required standards (based on tank size and final Energy Factor (EF)).

### Baseline

The baseline for electric and gas water heaters is the DOE energy efficiency standard (10 CFR Part 430). The method for calculating standards compliance is:

Electric:  $0.93 - 0.00132 * \text{volume}$

Gas:  $0.62 - 0.0019 * \text{volume}$

### Efficiency Standard

The efficiency threshold for new water heaters is 4% above baseline.

### Deemed Savings

#### Energy Savings - Electric Water Heater Replacements

<b>Electric Water Heater Replacements - Energy Savings</b>			
Approximate Volume (gal) ->	80	50	30
Baseline (DOE Standard) EF	0.82	0.86	0.89
Minimum EF for Incentive Qualification	kWh Savings	kWh Savings	kWh Savings
0.86	150	NAP	NAP
0.87	190	NAP	NAP
0.88	229	NAP	NAP
0.89	267	NAP	NAP
0.90	304	138	NAP
0.91	341	175	NAP
0.92	377	210	NAP
0.93	411	245	143
0.94	446	280	177
0.95	479	313	210

#### Energy Savings - Gas Water Heater Replacements

The following table presents the energy savings for high efficiency gas water heaters replacing an electric unit.

<b>Gas Water Heater Replacements - Energy Savings</b>			
Approximate Volume (gal) ER->	80	52	30
Approximate Volume (gal) Gas->	50	40	30
Federal Standard EF	0.53	0.54	0.56
4% Improvement	0.55	0.56	0.57
Annual Therms	163	160	157
Gas equivalent kWh	1,554	1,526	1,499
kWh Savings (Base less gas equivalent)	2,070	1,932	1,856

**Demand Savings**

The following table presents the demand savings for high efficiency electric or fuel-substitution units.

<b>Electric Water Heater Replacements - Demand Savings</b>			
Approximate Volume (gal)->	80	50	30
Standard EF	0.82	0.86	0.89
Minimum EF for Incentive Qualification			
0.86	0.01	NAP	NAP
0.87	0.02	NAP	NAP
0.88	0.02	NAP	NAP
0.89	0.02	NAP	NAP
0.9	0.03	0.01	NAP
0.91	0.03	0.02	NAP
0.92	0.03	0.02	NAP
0.93	0.04	0.02	0.01
0.94	0.04	0.02	0.02
0.95	0.04	0.03	0.02
All Gas Units Meeting the Gas Standards (above)	0.42	0.42	0.42

**WATER HEATER JACKETS**

**Measure**

Water heater jackets must have an R-value of at least R-6.7 and must be installed on electric water heaters. These estimates apply to all weather regions.

**Baseline**

Baseline is assumed to be the post-1991, storage-type, electric resistance water heater, with no water heater jacket.

**Installation & Efficiency Standard**

Water heater jackets must have an R-value of at least R-6.7 and must be installed on electric water heaters. Manufacturer’s instructions of the water heater jacket and the water heater itself should be followed. Thermostat and heating element access panels must be left uncovered.

**Deemed Savings**

<b>Water Heater Jacket</b>	
KWh Savings per home	Peak kW Savings per home
100	0.010

## WATER HEATER PIPE INSULATION

### Measure

Water heater pipe insulation must have a minimum thickness of 3/4". Water heaters plumbed with heat traps are not eligible to receive incentives for this measure. The pipe insulation must be installed in a home with electric water heating in order to qualify for an incentive.

### Baseline

Baseline is assumed to be the typical electric water heater with no heat traps and no insulation on water heater pipes.

### Installation & Efficiency Standard

Water heater pipe insulation must have a minimum thickness of 3/4". All hot and cold vertical lengths of pipe should be insulated, plus the initial length of horizontal hot and cold water pipe, up to three feet from the transition, or until wall penetration, whichever is less.

### Deemed Savings

Water Heater Pipe Insulation	
KWh Savings per home	Peak kW Savings per home
40	0.004

## LOW-FLOW SHOWERHEADS

### Measure

Low-flow showerheads are only eligible in the Hard-To-Reach SOP. Showerhead savings are per household and for retrofit installations only.

The retrofit low-flow showerhead installation must have a rated flow of no more than 2.0 gallons per minute (gpm) and removal of the existing showerhead with a rated flow of no less than 2.5 gpm.<sup>3</sup> The source of the heated water flowing through the showerhead must be an electric water heater. These estimates apply to all weather regions.

### Baseline

The baseline average flow rate of existing stock of showerheads is assumed to be 2.5 gpm.

<sup>3</sup> All flow rate requirements listed here are the rated flow of the showerhead measured at 80 pounds per square inch of pressure (psi).

**Installation & Efficiency Standard**

The incentive is for residential, retrofit-only installation of existing showerhead(s) with a pre-installation flow rate of no less than 2.5 gpm. Existing showerheads that have been defaced so as to make the flow rating illegible are not eligible for replacement.

Replacement showerheads shall have a rated flow of no more than 2.0 gpm. Only showerheads that are not easily modified to increase flow rate shall be allowed.

All showerheads removed shall be collected by Project Sponsor and submitted to the utility with each project implementation report.

The showerhead must be installed in a home with electric water heating in order to qualify for an incentive.

**Deemed Savings**

<b>Low Flow Showerheads</b>	
KWh Savings per home	Peak kW Savings per home
186	0.022

Deemed savings were calculated assuming that all showerheads in a home were retrofit with low-flow showerheads. Therefore, all showerheads in a home must be replaced in order to be eligible for the full deemed savings incentive.

If all showerheads in a home are not replaced, then the following table should be used to calculate the deemed savings for energy and peak demand savings:

<b>kWh savings</b>	<b>Showerheads per Household</b>			
	<b>One</b>	<b>Two</b>	<b>Three</b>	<b>Four</b>
One Showerhead	186	70	51	40
Two Showerheads		186	102	80
Three Showerheads			186	120
Four Showerheads				186

kW savings	Showerheads per Household			
	One	Two	Three	Four
One Showerhead	0.022	0.008	0.006	0.005
Two Showerheads		0.022	0.012	0.010
Three Showerheads			0.022	0.015
Four Showerheads				0.022

As examples, if a Project Sponsor retrofits one showerhead in a household with two showerheads, the deemed savings would be 70 kWh and 0.008 kW. If a Project Sponsor retrofits two showerheads in a household with four showerheads, the deemed savings would be 80 kWh and 0.010 kW.

## FAUCET AERATORS

### Measure

Faucet aerator savings are only eligible in the Hard-To-Reach SOP. Faucet aerator savings are per household and for retrofit installations only. The incentive is for residential, retrofit-only installation of a faucet aerator with a rated flow of no more than 1.5 gallons per minute (gpm). The source of the heated water flowing through the faucet must be an electric water heater. These estimates apply to all weather regions.

### Baseline

The baseline is assumed to be 2.5 gpm.

### Installation & Efficiency Standard

The incentive is for residential, retrofit-only installation of existing faucet aerator(s) with a pre-installation flow rate of no less than 2.5 gpm. Aerators that have been defaced so as to make the flow rating illegible are not eligible for replacement.

A faucet aerator installed in a retrofit situation must have a labeled maximum flow rate of 1.5 gpm at 80 psi. The aerator must be installed in a home with electric water heating in order to qualify for an incentive.

All aerators removed shall be collected by Project Sponsor and submitted to the utility with each project implementation report.

## Deemed Savings

Faucet Aerators	
KWh Savings per home	Peak kW Savings per home
48	0.0067

## ENERGY STAR REFRIGERATORS

### Measure

Retrofit replacement of an existing refrigerator in a residential application. Existing unit must be a working unit with a remaining service life of 10 years or more.

### Baseline

The baseline for refrigerators is the equivalent of the DOE minimum efficiency standards for refrigerators. Current standards have been in effect since July 1, 2001.

For an individual refrigerator retrofit program, the savings calculations are based on the following assumptions:

Application: Residential

Existing Unit Types: 50% are 22 cu. ft. top-mounted freezers with auto defrost, 50% are 23.5 cu. ft. side-by-side models with auto defrost. Unit ages are between five and fifteen years.

Baseline Consumption: Original AHAM test data, adjusted for age and other operating conditions, using methodology developed by PNNL.

For a multi-family projects, the savings calculations are based on the following assumptions:

Application: Multi-family projects

Existing Unit Types: 50% are 15 cu. ft. TF with auto defrost, 50% are 18.5 cu. ft. TF with auto defrost. Unit ages are between five and fifteen years.

Baseline Consumption: Original Association of Home Appliance Manufacturers (AHAM) test data, adjusted for age and other operating conditions, using methodology developed by Pacific Northwest National Labs.

### Installation & Efficiency Standard

Refrigerators must meet current ENERGY STAR standards.

All Project Sponsor-installed refrigerators must be connected to an adequately sized

electrical receptacle and be grounded in accordance to the National Electric Code (NEC).

All refrigerators shall replace refrigerators currently in use, and all replaced refrigerators shall be dismantled in an environmentally-safe manner, in accordance with applicable federal, state, and local regulations. Project Sponsor shall provide documentation of proper disposal of refrigerators according to all local, state and federal laws. The Project Sponsor shall not sell, trade, give away, nor export across state or international borders any turned-in refrigerator.

ENERGY STAR standards for 2001 are set at 10% more efficient than applicable DOE standard for 2001.

**Deemed Savings**

<b>ENERGY STAR Refrigerators</b>					
Replace on Burnout kWh Savings	Replace on Burnout Peak kW Savings	Multifamily Retrofit kWh Savings	Multifamily Retrofit Peak kW Savings	Single Family Retrofit kWh Savings	Single Family Retrofit Peak kW Savings
61	0.008	728	0.099	866	0.118

From the Refrigerator Energy Savings Program Analysis, developed by Battelle Labs, the peak monthly load index (ratio of peak monthly consumption to average monthly consumption) is 1.12. The average of the hourly load indices for 1300 – 1900 hours is 1.06. This produces an average load index for peak hours during August (peak month) of 1.19.

Average demand savings is calculated as:

Single Family Applications  
 $(866 / 8760) * 1.19 = 0.118 \text{ kW}$

Multifamily Applications  
 $(728 / 8760) * 1.19 = 0.099 \text{ kW}$

**ENERGY STAR DISHWASHERS**

**Measure**

Purchase ENERGY STAR dishwasher in a “new construction” or “replacement on burnout” situation.

## Baseline

Department of Energy (DOE) minimum efficiency standard for dishwashers.

Type	Energy Factor, EF (load/kWh)	Unit Energy Consumption (kWh/cycle)	Annual energy consumption (kWh) <sup>(1) (2)</sup>	Assumed demand (kW)
Standard, top loading (capacity > 1.6 cu ft.)	0.46	2.18	700	1.3

(1) Assumes annual usage of 322 cycles (Source: DOE test procedure)

(2) Annual energy consumption = Annual cycles / Energy factor

Approximately 80% of the energy used during a dishwashing cycle is used by the water heater to raise the temperature of the incoming water. DOE test procedure for dishwashers includes this energy, and assumes electrically-heated hot water.

## Installation & Efficiency Standard

According to ENERGY STAR requirement, eligible dishwashers should have an Energy Factor 0.575 or greater, effective 1/1/2001.

## Deemed Savings

ENERGY STAR Dishwashers			
w/ Electric Water Heating		w/out Electric Water Heating	
kWh Savings	Peak kW Savings	kWh Savings	Peak kW Savings
142	0.012	37	0.0032

## ENERGY STAR CLOTHES WASHERS

### Measure

Purchase ENERGY STAR or CEE-qualifying clothes washer in a “new construction” or “replacement on burnout” situation.

### Baseline

Department of Energy (DOE) minimum efficiency standard for clothes washer, effective 1/2004.

<b>Modified Energy Factor, MEF (lbs. /kWh)</b>	<b>Unit Energy Consumption (kWh/cycle)</b>	<b>Annual energy consumption (kWh) <sup>(1) (2)</sup></b>
1.04	2.84	1115

- (1) Assume standard size capacity of 2.96 cu. ft., and annual usage of 392 cycles.
- (2) Annual energy consumption includes energy consumed to heat the water (with electric water heating) and to dry the clothes (with an electric dryer).

### **Installation & Efficiency Standard**

Effective 1/1/2004, the ENERGY STAR standard for clothes washers is a minimum Modified Energy Factor (MEF) of 1.42. The Consortium for Energy Efficiency (CEE) has developed additional specifications for models which exceed ENERGY STAR specifications.

### **ENERGY STAR / CEE Clothes Washer Specifications and Deemed Savings**

#### **Units With Electric Water Heaters**

Model	Modified Energy Factor	Annual kWh	kWh Savings	kW Savings
2004 Baseline	1.04	1115		
2004 ENERGY STAR	1.42	817	<b>298</b>	<b>0.036</b>
CEE Tier 3	1.60	725	390	0.047
CEE Tier 4A	1.80	644	471	0.057
CEE Tier 4B	1.80	644	471	0.057

Notes:

Modified Energy Factor = MEF = Cubic feet of laundry that can be washed and dried per kWh

392 washer cycles per year (normalized for 2.96 cu.ft. tub volume). Source: DOE

KW demand savings based on 0.00012 peak kW per annual kWh of energy savings. Source: Bonneville Power Administration's ELCON Study.

## Units With Gas Water Heaters

Model	MEF	Adjusted MEF*	Annual kWh	kWh Savings	kW Savings
2004 Baseline	1.04	1.75	662		
2004 ENERGY STAR	1.42	1.92	604	<b>59</b>	<b>0.007</b>
CEE Tier 3	1.60	2.16	537	125	0.015
CEE Tier 4A	1.80	2.45	474	188	0.023
CEE Tier 4B	1.80	2.45	474	188	0.023

Notes:

\*Adjusted MEF based on CEE's kWh/cycle values for clothes washers with gas water heaters. Source: Consortium for Energy Efficiency Clothes Washer Initiative Program Description, Table 7.

## COMPACT FLUORESCENT LAMPS

### Measure

Compact fluorescent lamps (CFLs) must be installed in a location that gets a daily usage of at least 3 hours per day. Deemed values were calculated based on an average daily usage of 4 hours per day. CFL incentives are for customers under the Hard-To-Reach Program template only.

### Baseline

Standard incandescent lamps, with wattages of 40, 60, 75, or 100 watts.

### Installation & Efficiency Standard

The ENERGY STAR CFL specification includes:

- Starting time of approximately one second
- Efficiency level for lamps of 15 watts or more is 60 lumens/watt
- Efficiency level for lamps of less than 15 watts is 45 lumens/watt

The fixture wattage rating dictates the maximum CFL wattage installed. If there is no fixture wattage rating shown on the fixture, the fixture wattage shall be assumed to be 60 watts. For example, when replacing an incandescent lamp in a fixture rated for 60 watts, the maximum CFL wattage that may be installed is 21 watts.

“Hollywood-style” incandescent fixtures with four or more lamps may not be retrofitted with screw-in CFLs. These fixtures may be retrofitted with hard-wired fluorescent fixtures only. The addition of a disk device to a screw-in CFL to prevent its removal does not qualify it as a hard-wired fixture.

To compensate for the fact that the life of this measure is less than 10 years, the incentive amounts paid are based on 75% of the following deemed savings.

**Deemed Savings**

<b>Compact Fluorescent Lamps</b>					
Measure CFL (Watt)	Measure CFL (Range of Watts)	Comparable Incandescent Light (Watt)	Daily usage (Hrs./Day)	Annual Energy Savings (kWh)	Demand Savings (kW)
15	14-18	40	4	36.5	0.006
20	19-21	60	4	58.3	0.009
23	22-25	75	4	75.8	0.012
27	26-28	100	4	106.5	0.016

**WATER HEATING REPLACEMENTS - SOLAR WATER HEATING**

**Measure**

Solar water heating deemed savings values are calculated based on the Solar Rating and Certification Corporation’s (SRCC) test for solar water heaters (test OG-300).

**Installation & Efficiency Standard**

Only solar water heaters meeting the SRCC OG-300 standard (based on tank size and final Solar Energy Factor-SEF) qualify for these deemed savings estimates.

**Deemed Savings**

The following table presents the energy savings for solar water heaters based on tank size and final Solar Energy Factor (SEF).

**Demand Savings**

	kW
<b>Solar Water Heating Demand Savings</b>	0.42

**Energy Savings**

<b>Water Heating Replacements – Solar Water Heating Energy Savings</b>			
Approximate Volume (gal) ->	80	50	30
Baseline (DOE Standard) EF	0.82	0.86	0.89
SRCC OG-300 Solar Energy Factor	kWh Savings	kWh Savings	kWh Savings
1.0	637	471	368
1.1	909	743	640
1.2	1,135	969	866
1.3	1,326	1,160	1,057
1.4	1,490	1,324	1,221
1.5	1,633	1,467	1,364
1.6	1,757	1,591	1,488
1.7	1,867	1,701	1,598
1.8	1,965	1,799	1,696
1.9	2,052	1,886	1,783
2.0	2,131	1,965	1,862
2.1	2,202	2,036	1,933
2.2	2,266	2,100	1,997
2.3	2,325	2,159	2,056
2.4	2,379	2,213	2,110
2.5	2,429	2,263	2,160
2.6	2,475	2,309	2,206
2.7	2,518	2,352	2,249
2.8	2,557	2,391	2,288
2.9	2,594	2,428	2,325
3.0	2,628	2,462	2,359
3.1	2,660	2,494	2,391
3.2	2,691	2,525	2,422
3.3	2,719	2,553	2,450
3.4	2,745	2,579	2,476
3.5	2,771	2,605	2,502
3.6	2,794	2,628	2,525
3.7	2,817	2,651	2,548
3.8	2,838	2,672	2,569

3.9	2,858	2,692	2,589
4.0	2,877	2,711	2,608
4.1	2,895	2,729	2,626
4.2	2,913	2,747	2,644
4.3	2,929	2,763	2,660
4.4	2,945	2,779	2,676
4.5	2,960	2,794	2,691
4.6	2,975	2,809	2,706
4.7	2,988	2,822	2,719
4.8	3,002	2,836	2,733
4.9	3,014	2,848	2,745
5.0	3,027	2,861	2,758

## **SOLAR ELECTRIC (PHOTOVOLTAIC) ENERGY SYSTEMS**

### **Measure**

Solar electric (photovoltaic) energy systems deemed savings values are calculated based on the system's rated watts  $DC_{STC}^4$ . Only photovoltaic systems that result in net reductions of the customer's purchased energy and peak demand qualify for these deemed savings estimates. These deemed savings values apply to all customer classes and all weather regions in Texas.

### **Installation & Efficiency Standard**

The installation must also meet the following requirements in order to be eligible for these deemed savings values:

1. The system shall be installed by a licensed electrical contractor or, in the case of a residential installation by the homeowner, with the approval of the electrical inspector in accordance with the National Electric Code (NEC 690, "Solar Photovoltaic Systems") or local building codes.
2. If the system is utility interactive the inverter shall be listed by national testing laboratory (see, for example, UL 1741, "Static Inverters and Charge Controllers for Use in Photovoltaic Power Systems") and meet the requirements of the Institute of Electrical and Electronics Engineers (IEEE) Standard 929-2000 "Recommended Practice for Utility Interface of Photovoltaic (PV) Systems".

<sup>4</sup> Watts  $DC_{STC}$  refers to the system's factory rated output at standard test conditions, which assumes 1,000  $w/m^2$  of solar radiation and 25 degree Celsius cell operating temperature.

3. The array azimuth shall be within +/- 20 degrees of south; the tilt angle shall be between 0 (horizontal) and latitude + 15 degrees.
4. The estimated annual energy generation from the PV system shall not exceed the customer's annual energy consumption.

**Energy Savings**

The following formula calculates the energy savings for solar electric photovoltaic energy systems based on the rated watts  $DC_{STC}$ .

Deemed Energy Savings (kWh ) =  $1.6 * \text{watts } DC_{STC} \text{ installed}$

**Demand Savings**

The following formula calculates the demand savings for solar electric photovoltaic energy systems based on the rated watts  $DC_{STC}$ .

Deemed Demand Savings (kW ) =  $0.83 * \text{kW } DC_{STC} \text{ installed}$

**Appendix B**  
**Measure Eligibility and Installation Standards**

**HARD TO REACH STANDARD OFFER PROGRAM  
ELIGIBLE MEASURES AND INSTALLATION CRITERIA**

**CONTROL ENVELOPE ENERGY WASTE**

<b>MEASURE</b>	<b>MATERIAL</b>	<b>MINIMUM CRITERIA FOR INSTALLATION</b>
<b>Infiltration</b>	Acrylic Latex plus Silicone Sealing Compounds  Caulk  Polyurethane Foam  Elastomeric Sealant (including polysulfide, polyurethane and silicone) caulk	<ul style="list-style-type: none"> <li>• Conforms to ASTM C834-95 with silicone</li>   <li>• Conforms to ASTM C920-98</li>   <li>• Conforms to ASTM C920-98</li>   <li>• All visible caulk should be clear</li> <li>• A minimum 10 year life expectancy for ALL materials used.</li> </ul>
<b>Weather-stripping</b>	Rigid Gaskets	<ul style="list-style-type: none"> <li>• Must be adjustable and attached permanently.</li> <li>• Gaskets must be attached to an aluminum carrier.</li> </ul>

		<ul style="list-style-type: none"> <li>• A minimum 10 year life expectancy for ALL materials used.</li> </ul>
<b>MEASURE</b>	<b>MATERIAL</b>	<b>MINIMUM CRITERIA FOR INSTALLATION</b>
<b>Insulation</b>	Mineral Fiber Blanket Mineral Fiber Loose Fill Cellulose Vermiculite (loose fill) Perlite (loose fill)  R-Value	<ul style="list-style-type: none"> <li>• Conforms to ASTM C665-98</li> <li>• Conforms to ASTM C764-98</li> <li>• Conforms to ASTM C739-97</li> <li>• Conforms to ASTM C1149-97</li> <li>• Conforms to ASTM C516-80</li> <li>• Conforms to ASTM C549-81</li> <li>• Existing ceiling insulation level of R-22 is in compliance with program.</li> <li>• For existing ceiling insulation below R-22, added insulation must be installed to R-30 in compliance with the deemed savings standards.</li> </ul>
<b>Insulating R-values</b>	Walls Knee wall Floor (Pier & Beam)	<ul style="list-style-type: none"> <li>• Install to R-13</li> <li>• Install to R-19</li> <li>• Install to R-15</li> </ul>

MEASURE	MATERIAL	MINIMUM CRITERIA FOR INSTALLATION
<b>Duct Sealing</b>	Fiber Backed Mastic Compound  Replacement Duct	<ul style="list-style-type: none"> <li>• Apply to the duct joint</li> <li>• Replace with R-4 insulated duct.</li> <li>• A minimum 10 year life expectancy for ALL materials used.</li> </ul>

**CONTROL INTERIOR ENERGY USAGE**

MEASURE	MATERIAL	MINIMUM CRITERIA FOR INSTALLATION
<b>Lighting</b>	Compact Fluorescent Lighting	<ul style="list-style-type: none"> <li>• All CFLs to have a minimum 10,000 hour lifetime burn.</li> <li>• 82 CRI (color rendition index).</li> <li>• 2700 Kelvin (color temperature)</li> <li>• A minimum 7 year life expectancy for all CFLs</li> <li>• “Hollywood” style or other vanity bathroom fixtures with four or more lamps per fixture must be replaced with a fluorescent lamp and ballast fixture meeting the standards described in the deemed savings tables</li> <li>• Use of a disk device which prevents screw-in CFLs from being replaced with an incandescent bulb is not eligible</li> </ul>

MEASURE	MATERIAL	MINIMUM CRITERIA FOR INSTALLATION
<b>Water Savers</b>	Kitchen Aerators Bath Aerators Showerhead	<ul style="list-style-type: none"> <li>• 1.5 gallons per minute maximum</li> <li>• 1.5 gallons per minute maximum</li> <li>• 2.0 gallons per minute maximum</li> <li>• Only models which cannot be easily modified to increased flow rate may be used. Proposed showerheads and aerator replacement models must be submitted for approval prior to installations.</li> </ul>
<b>Refrigerators</b>	Two Door/High Efficiency	<ul style="list-style-type: none"> <li>• 14,16 &amp; 18 cubic feet offered</li> <li>• Maximum size 18 cubic feet</li> <li>• When the refrigerator model alone is not an adequate indicator of energy savings, the EESP has the option of metering and documenting the energy usage of the old unit.</li> </ul>

**CONTROL HVAC EFFICIENCY**

MEASURE	MATERIAL	MINIMUM CRITERIA FOR INSTALLATION
<b>Heating, Ventilation and Air Conditioning (HVAC)</b>	Window Unit  Packaged Units	<ul style="list-style-type: none"> <li>• Must comply with deemed savings values and installation standards</li>   <li>• Must comply with deemed savings values and installation standards</li> </ul>

	Split System	<ul style="list-style-type: none"> <li>Must comply with deemed savings values and installation standards</li> </ul>																
<b>DIAGNOSTIC MEASURE</b>	<b>MATERIAL</b>	<b>MINIMUM CRITERIA</b>																
<b>Health &amp; Safety</b>	CO Testing Device	<ul style="list-style-type: none"> <li>Test every housing unit that has combustion equipment.</li> <li>Ambient air CO levels must not exceed 9 parts per million at project completion.</li> </ul>																
<b>Air Infiltration/Indoor Air Quality</b>	Blower Door Testing	<p>The final air exchange rate of a household treated with infiltration measures shall not be less than the standards set forth in the following table:</p> <p><b>Minimum Final Exchange Rate*</b></p> <table border="1"> <thead> <tr> <th><u>Shielding</u></th> <th><u>Single Story</u></th> <th><u>Two-story</u></th> <th><u>3&gt; Stories</u></th> </tr> </thead> <tbody> <tr> <td><b>Well Shielded</b></td> <td>1.18</td> <td>0.95</td> <td>0.83</td> </tr> <tr> <td><b>Normal</b></td> <td>0.99</td> <td>0.79</td> <td>0.69</td> </tr> <tr> <td><b>Exposed</b></td> <td>0.89</td> <td>0.71</td> <td>0.62</td> </tr> </tbody> </table> <p>*Measured in cubic feet per minute at 50 Pascal per square foot of conditioned area.</p> <ul style="list-style-type: none"> <li><b>Well shielded</b> is defined as urban areas with high buildings or</li> </ul>	<u>Shielding</u>	<u>Single Story</u>	<u>Two-story</u>	<u>3&gt; Stories</u>	<b>Well Shielded</b>	1.18	0.95	0.83	<b>Normal</b>	0.99	0.79	0.69	<b>Exposed</b>	0.89	0.71	0.62
<u>Shielding</u>	<u>Single Story</u>	<u>Two-story</u>	<u>3&gt; Stories</u>															
<b>Well Shielded</b>	1.18	0.95	0.83															
<b>Normal</b>	0.99	0.79	0.69															
<b>Exposed</b>	0.89	0.71	0.62															

		<p>sheltered areas or buildings surrounded by trees, bermed earth, or higher terrain.</p> <ul style="list-style-type: none"><li>• <b>Normal</b> is defined as buildings in a residential neighborhood or subdivision setting, with yard space between buildings (90-90% of houses fall in this category)</li><li>• <b>Exposed</b> is defined as an open setting with few surrounding buildings or trees</li></ul>
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**Appendix C**  
**Carbon Monoxide Test Specifications**

## **Appendix C**

### **Carbon Monoxide Test Specifications**

#### **Test Equipment**

Carbon monoxide sensing device must have a range from 0-2000 ppm; accuracy +/- 5% of readout; and readout resolution = 1 ppm adjustable to 0.

#### **Ambient Air Test**

Conduct test at initial assessment. Every housing unit that has combustion equipment shall be tested prior to the installation of air infiltration control measures, duct sealing, or wall insulation. When conducting CO testing, the furnace must be operating. If more than 9 ppm CO is detected, these measures shall not be installed until the CO problem has been corrected. Host customer should always be informed of the existence of high levels of CO and advised to take precautions until abatement can be performed.

No energy efficiency measure which could result in a decreased ventilation rate for that housing unit shall be installed if the installation of such measure would or could result in ambient air CO levels exceeding 9 ppm within the housing unit.

## **Appendix D**

### **Glossary**

## Glossary

### - A -

**Affiliate:** For purposes of the CNP Standard Offer Program, an Affiliate is:

- (A) a person who directly or indirectly owns or holds at least 5.0% of the voting securities of an energy efficiency service provider;
- (B) a person in a chain of successive ownership of at least 5.0% of the voting securities of an energy efficiency service provider;
- (C) a corporation that has at least 5.0% of its voting securities owned or controlled, directly or indirectly, by an energy efficiency service provider;
- (D) a corporation that has at least 5.0% of its voting securities owned or controlled, directly or indirectly, by:
  - (i) a person who directly or indirectly owns or controls at least 5.0% of the voting securities of an energy efficiency service provider; or
  - (ii) a person in a chain of successive ownership of at least 5.0% of the voting securities of an energy efficiency service provider; or
- (E) a person who is an officer or director of an energy efficiency service provider or of a corporation in a chain of successive ownership of at least 5.0% of the voting securities of an energy efficiency service provider;
- (F) a person who actually exercises substantial influence or control over the policies and actions of an energy efficiency service provider;
- (G) a person over which the energy efficiency service provider exercises the control described in subparagraph (F) of this paragraph;
- (H) a person who exercises common control over an energy efficiency service provider, where "exercising common control over an energy efficiency service provider" means having the power, either directly or indirectly, to direct or cause the direction of the management or policies of an energy efficiency service provider, without regard to whether that power is established through ownership or voting of securities or any other direct or indirect means; or
- (I) a person who, together with one or more persons with whom the person is related by ownership, marriage or blood relationship, or by action in concert, actually exercises substantial influence over the policies and actions of an energy efficiency service provider even though neither person may qualify as an affiliate individually.

### - B -

- **Baseline:** For purposes of determining estimated and measured energy savings under the SOP, the baseline is generally defined as the energy consumed by equipment with efficiency levels that meet the applicable current federal standards and reflect current market

conditions. In certain limited circumstances, the baseline may be determined by the equipment or conditions currently in place. This is likely to occur only when federal energy efficiency standards do not apply, or when the existing equipment can be shown by the Project Sponsor to have a remaining service life of at least ten years. For determining estimated and measured savings for building shell improvements, the baseline is generally determined by the building's current condition, e.g., existing insulation r-values, air infiltration rates, etc.

- **Budget Reservation:** The amount of incentive funds CNP sets aside during the project implementation phase for a given Project Sponsor who has submitted a successful application prior to CNP's complete commitment of funds through Budget Reservations to other Project Sponsors.

## - C -

**Contracted Capacity Savings:** As defined in an SOP Agreement, the amount by which a project is expected to reduce peak demand consumption (measured in kW) at the host customer's site(s).

**Contracted Energy Savings:** As defined in an SOP Agreement, the amount by which a project is expected to reduce energy consumption (measured in kWh) at the host customer's site(s).

## - D -

**Deemed Savings:** A pre-determined, validated estimate of energy and peak demand savings attributable to an energy efficiency measure in a particular type of application that a utility may use instead of energy and peak demand savings determined through measurement and verification activities.

**Demand Savings:** The maximum average load reduction occurring during any one-hour period between 1 PM and 7 PM CDT weekdays, from May 1 through September 30 (holidays excluded). The demand savings are measured against a predetermined baseline for deemed savings measures.

## - E -

**Energy-Efficiency Measures (EEM):** Equipment, materials, and practices that when installed and used at a customer site result in a measurable and verifiable reduction in either purchased electric energy consumption, measured in kilowatt-hours (kWh), or peak demand, measured in kW, or both.

**Energy Efficiency Project:** An energy efficiency measure or combination of measures installed under a standard offer contract or a market transformation contract that results in both a reduction in customers' electric energy consumption and peak demand, and energy costs.

**Energy Efficiency Service Provider:** A person who installs energy efficiency measures or performs other energy efficiency services. An energy efficiency service provider may be a retail electric provider or a customer, if the person has executed a SOP Agreement.

**Energy Savings:** A quantifiable reduction in a customer's consumption of energy, or the amount

by which energy consumption is reduced as a result of the installation of qualifying energy-efficient equipment. Energy savings are determined by comparing the efficiency of the installed equipment to that of new standard-efficiency equipment—not to that of the customer's existing equipment (except in cases where no standards currently exist).

**Existing Equipment:** The equipment that is installed at the host customer's site prior to the customer's participation in the SOP Program.

## - H -

**Hard-To-Reach Customers:** Customers with an annual household income at or below 200% of the federal poverty guidelines, and who have properly completed a PUCT-approved income verification form.

**Host Customer or Customer:** A residential distribution customer of CNP that owns or leases facilities at a Project Site or Sites and that has entered into a Host Customer Agreement with Project Sponsor, or is a customer acting as its own Project Sponsor, for the installation of Measures as a part of Project. "Host Customer" excludes all Project Sites that are new construction or major rehabilitation projects.

## - I -

**Implementation Payment:** The first of two incentive payments made to a Project Sponsor. The implementation payment is for 40% of the total estimated incentive amount as specified in the SOP Agreement. **Incentive Payment:** Payments made to an Energy Efficiency Service Provider based on the level of approved demand and energy savings (expressed as kW and kWh). Incentive rates are based on Commission approved avoided costs and incentive caps.

**Inspection:** Onsite examination of a project to verify that a measure has been installed and is capable of performing its intended function.

## - M -

**Measurement and Verification Plan:** The Project Sponsor's specific plan for verifying measured savings estimates. The measurement and verification (M&V) plan should be consistent with the International Performance Measurement and Verification Protocol.

**Measured Capacity Savings:** The maximum average load reduction occurring during any one-hour period between 1 PM and 7 PM CDT weekdays, from May 1 through September 30 (holidays excluded), as determined in accordance with the Measurement and Verification Plan set forth in Exhibit C of the SOP Agreement.

**Measured Energy Savings:** The Energy Savings derived during a single year, from the Measures installed at the Project Site as determined in accordance with the Measurement and Verification Plan set forth in Exhibit C of the SOP Agreement.

## - P -

**Peak Demand Savings:** For purposes of the CNP Standard Offer Program, Peak Demand Savings is the maximum average load reduction occurring during any one-hour period between 1 PM and 7 PM CDT weekdays, from May 1 through September 30 (holidays excluded).

**Peak Period:** For the purposes of this program, the peak period is defined as the hours from 1 PM to 7 PM CDT weekdays, from May 1 through September 30 (holidays excluded).

**Performance Period:** The one-year period following the approval of a Project Sponsor's Project Implementation Report (PIR) during which measurement and verification are to take place. Peak demand and energy savings measured over this period form the basis of the performance payment made to the Project Sponsor at the end of the year.

**Performance Payment:** The second of two incentive payments made to a Project Sponsor under the terms of an SOP Agreement. The performance payment is based on the one-year measured energy savings documented in CNP's M&V Report and may be up to 60% of the total estimated incentive included in the SOP Agreement.

**Post-Installation Inspection:** An inspection of a project site or sites conducted by CNP after a Project Sponsor has submitted a Project Implementation Report (PIR). The purpose of the inspection is to verify that the energy-efficiency equipment specified in the SOP Agreement has been installed properly and is capable of performing its intended function. CNP's approval of the PIR is contingent upon the results of the post-installation inspection.

**Program Manual:** The complete set of CNP Residential SOP materials, including the program description, procedures and forms.

**Project:** All the energy-efficient measures and any associated equipment and/or improvements that are installed, maintained and/or operated by the Project Sponsor to achieve the energy savings claimed for the project. A project may, in some instances, consist of more than one project site.

**Project Site:** One or more adjacent buildings on a single meter owned or operated by a single CNP customer.

**Project Application:** The Project Application, comprising a set of standard forms, is submitted by an organization wanting to participate in the SOP Program as a Project Sponsor. On the Project Application, the Project Sponsor provides information about itself, the site at which the proposed project will be installed, and a general description of the proposed project.

**Project Site:** One or more adjacent buildings on a single meter owned or operated by a single CNP customer.

**Project Sponsor:** Any organization, group, or individual who contracts with CNP to provide energy savings under the SOP Program.

**Prudent Electrical Practices:** Those practices, methods, standards, and equipment commonly used in prudent electrical engineering and operations to operate electrical equipment lawfully and with safety, dependability, and efficiency and in accordance with the National Electrical Safety Code, the National Electrical Code, and any other applicable federal state and local codes. In the event of a conflict, the applicable federal, state, or local code shall govern.

## - R -

**Renewable Demand Side Management (DSM) Technologies:** Equipment that uses a renewable energy resource that, when installed at a customer site, reduces the customer's net purchases of energy (kWh), electrical demand (kW), or both.

**- S -**

**Small Commercial Customers:** Retail non-residential customers with a maximum demand that does not exceed 100 kW. Multiple-account customers, under common ownership with an aggregated load of greater than 100 kW are excluded from this definition.

**SOP Agreement:** A contract entered into by the Project Sponsor and CNP following the approval of the Project Sponsor's project application (PA) and CNP's design of a project-specific measurement and verification (M&V) plan. The SOP Agreement specifies the energy-efficiency measures to be installed, the expected energy savings, the expected total incentive payment, and the agreed-upon M&V approach.