

**XCEL ENERGY'S 2009
RESIDENTIAL STANDARD OFFER
PROGRAM**

AND

**HARD-TO-REACH STANDARD OFFER
PROGRAM**



April 2009

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1. Background

1.1. Texas Electric Utility Restructuring

Beginning in 2000, electric utilities in Texas began implementing energy efficiency programs under new rules developed to increase the level of energy efficiency in Texas. In 2007, House Bill 3693 increased the energy efficiency savings goals from 10% of its projected growth and demand, as previously set by Senate Bill 7, to 20% by December 31, 2009. Xcel Energy will implement its energy efficiency programs under the guidance of the Energy Efficiency Rule.

1.2. New Approach to Energy-Efficiency Programs

Here are some of the highlights of the Energy Efficiency Rule:

Each electric utility will provide, through market-based standard offer programs, incentives sufficient for retail electric providers and competitive energy service providers to acquire additional cost-effective energy efficiency for residential and commercial customers equivalent to at least:

-10% of the electric utility's annual growth in demand of residential and commercial customers by December 31, 2007

-15% of the utility's annual growth in demand of residential and commercial customers by December 31, 2008

-20% of the electric utility's annual growth in demand of residential and commercial customers by December 31, 2009

Each investor-owned electric utility is required to achieve an energy efficiency program goal. Xcel Energy's goal is equal to 12% of its projected growth in demand by January 2010.

On a statewide basis, this represents a significant increase in the amount of resources allocated to energy efficiency programs. Collectively, electric utilities in Texas will be spending over \$70 million per year on energy efficiency programs in order to achieve that goal.

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 defined as customers with an annual household income at or below 200% of federal poverty guidelines, or who meet certain other qualifications. Project Sponsors can provide energy-efficiency services to HTR customers under the HTR SOP.

In order to achieve its energy savings goal, Xcel Energy will be implementing "Standard Offer

Programs,” and “Market Transformation Programs.”

In a Standard Offer Program (SOP), project sponsors will propose to deliver certain levels of peak demand savings (measured in kilowatts, or kW) and annual energy savings (measured in kilowatt-hours or kWh). Xcel Energy will pay a fixed price for each kW and kWh of savings. This fixed price is substantially higher in the HTR SOP than in the Residential SOP. There are standard offer programs for all customer classes.

Who can submit an application to be a Project Sponsor?

The Residential and HTR SOPs are open to a wide range of contractors, service companies, and community agencies. No individual residential Project Sponsor may receive more than 20% of the available program funding per year. This will allow numerous businesses and organizations the opportunity to participate as Project Sponsors. Project Sponsors can submit applications for projects with as little as \$250 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 potential Project Sponsors.

2. Program Design

2.1. Program Description

The Residential Standard Offer Program was developed by Xcel Energy to provide an incentive to suppliers of energy services to implement electric energy-efficiency projects at Xcel Energy residential customers' facilities. The Hard-to-Reach SOP was developed by Xcel Energy for Project Sponsors who are interested in providing comprehensive energy efficiency retrofits for single- and multi-family customers who meet the income guidelines of the program. The primary objective of these SOPs is to achieve cost-effective reduction in peak summer demand.

Additionally, the SOPs are designed to:

- Encourage private sector delivery of energy efficiency products and services
- Achieve comprehensive energy retrofits that result in customer energy and cost savings
- Significantly reduce barriers to participation by streamlining program procedures and measurement and verification (M&V) requirements
- Encourage participation by a wide range of Project Sponsors

These performance-based programs offer incentive payments for "deemed" or "measured" energy savings, based on dollars-per-kilowatt and per kilowatt-hour incentive rates.

Xcel Energy has designed the SOPs to encourage electric energy-efficiency improvements that go above and beyond the efficiency gains typically achieved in replacement-on-burnout (ROB) 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 credits will be based on efficiency improvements relative to typical efficiencies in like circumstances (subject to other limitations as specified herein).

One of the features of the SOPs is that Xcel Energy will rely upon the marketing capabilities of Project Sponsors to sell projects to Xcel Energy's residential customers. Xcel Energy will not directly market any energy efficiency-related product or service to its customers. Entering into an agreement with Xcel Energy as a Project Sponsor does not imply Xcel Energy's endorsement or approval of any company, product, or service.

Participants in the SOPs must meet minimum eligibility criteria, comply with all SOP rules and procedures, submit Project Application forms and supplemental documentation describing their projects, and execute Xcel Energy's SOP Agreement. Xcel Energy also requires that Project Sponsors include in their host customer agreements a consumer protection provision, and a provision allowing Xcel Energy and the statewide Measurement and Verification (M&V) auditor access to the host's facility and access to the host's measure installation records. Xcel Energy has developed a template host customer agreement that may be downloaded from the www.xcelenergyefficiency.com Website.

Definitions for common terms used throughout this document are contained in the Glossary (Appendix B).

The SOP programs involve three types of entities: the program administrator (Xcel Energy), Project Sponsors, and host customers.

Xcel Energy's responsibilities include:

- Providing information for potential project sponsors,
- Reviewing all Project Applications,
- Approving plans for the M&V of energy savings at participating customer sites if a measured savings approach is adopted,
- Performing certain inspection activities¹, and
- Authorizing and issuing incentive payments.

A Project Sponsor's responsibilities include:

- Identifying potential project opportunities;
- Developing project documentation in accordance with SOP procedures and deadlines;
- Verifying the income eligibility of hard-to-reach customers according to procedures established by the Public Utility Commission of Texas (PUCT);
- Completing the installations within the 30-day incentive reservation period;
- For Measured Savings projects:
 - Developing plans for the measurement and verification (M&V) of energy savings at participating customer sites;
 - Performing M&V activities; and
 - Submitting periodic implementation reports and invoices.

A participating host customer's responsibilities include:

- Committing to an energy-efficiency project;
- Entering into an agreement with the selected Project Sponsor; and
- Providing Xcel Energy, and any statewide M&V contractor, access to project facilities both before and after project completion for installation inspection.

Xcel Energy views the preparation of the project documentation as crucial to the success of the SOP. Xcel Energy will provide resources to acquaint potential Project Sponsors with program requirements. Xcel Energy's Website will provide the key informational resource. The Website should be checked regularly for any program updates (please visit www.xcelenergyefficiency.com). Company representatives will respond to questions posted on

¹ Xcel Energy reserves the right to contract with a third party to monitor and verify energy savings from the SOP on its behalf.

the Web site.² Xcel Energy hopes that this collaborative approach will help Project Sponsors to gain a clear understanding of the SOP requirements, thereby allowing Xcel Energy to more quickly grant approval of Project Sponsors' submittals.

2.2. Additional Xcel Energy Programs for 2009

The Residential and HTR SOP programs are among several that Xcel Energy is offering in an effort to provide energy efficiency services to all customers. In addition to these two programs, Xcel Energy will be offering the following program in 2009:

- ◆ Commercial Standard Offer Program

² Xcel Energy will require that all applications be made via the Internet. Xcel Energy will attempt to answer telephone inquiries, but no response will be considered formal unless the question has been posted and responded to on the official Xcel Energy energy efficiency program Website.

3. Project Sponsor, Participant, Measure, and Project Eligibility

The Residential and HTR Standard Offer Programs were designed to enable Project Sponsors to deliver cost-effective energy efficiency measures to a wide range of residential customers.

The table on the following page summarizes the targeted customer classes, eligible measures and other features of these two programs.

Xcel Energy Hard-to-Reach, Residential 2009 Standard Offer Programs			
<i>Hard-to-Reach (HTR) SOP</i>		<i>Residential SOP</i>	
<i>Single Family</i>	<i>Multi-family</i>	<i>RES Single Family</i>	<i>RES Multi-family</i>
\$155,362 Total HTR Incentives		\$447,271 Total Res Incentives	
<p>Eligible Sites</p> <ul style="list-style-type: none"> ◆ 1-4 unit residences only <p>Incentives</p> <ul style="list-style-type: none"> ◆ \$501/kW, \$0.17/ kWh ◆ Project Sponsor may submit multiple project requests, up to the Max HTR Project Sponsor Limit of \$31,072 ◆ Minimum \$250 per site. ◆ Funds reserved for 30 days <p>Measures</p> <ul style="list-style-type: none"> ◆ Project must include at least one of the primary measures per home (See Section 3.3.1) ◆ Screw-in CFLs allowed <p>M&V Options</p> <ul style="list-style-type: none"> ◆ Deemed savings only <p>Application Date/Time</p> <ul style="list-style-type: none"> ◆ Submit Sponsor qualifications beginning 4/15/2009 @ 2:00 PM CDT 	<p>Eligible Sites</p> <ul style="list-style-type: none"> ◆ Multi-family project of more than 4 units ◆ Must identify Project Site and measures to be installed in advance <p>Incentives</p> <ul style="list-style-type: none"> ◆ \$501/kW, \$0.17/ kWh ◆ For an approved multi-family project, sponsor can reserve up to the Max HTR Sponsor Limit of \$31,072 ◆ Minimum \$250 per unit. ◆ Funds reserved for 30 days <p>Measures</p> <ul style="list-style-type: none"> ◆ Project must include at least one of the primary measures per unit or building, as applicable (See Section 3.3.1) ◆ Screw-in CFLs allowed <p>M&V Options</p> <ul style="list-style-type: none"> ◆ Deemed savings only <p>Application Date/Time</p> <ul style="list-style-type: none"> ◆ Submit Sponsor qualifications beginning 4/15/2009 @ 2:00 PM CDT 	<p>Eligible Sites</p> <ul style="list-style-type: none"> ◆ 1-4 unit residences only <p>Incentives</p> <ul style="list-style-type: none"> ◆ \$278/kW, \$0.095/ kWh ◆ Project Sponsor may submit multiple project requests, up to the Max Sponsor limit of \$89,454 ◆ Minimum \$250 per site. ◆ Funds reserved for 30 days <p>Measures</p> <ul style="list-style-type: none"> ◆ Any approved measure <p>M&V Options</p> <ul style="list-style-type: none"> ◆ Deemed savings only <p>Application Date/Time</p> <ul style="list-style-type: none"> ◆ Submit Sponsor qualifications beginning 4/15/2009 @ 10:00 AM CDT 	<p>Eligible Sites</p> <ul style="list-style-type: none"> ◆ Multi-family project of more than 4 units ◆ Must identify Project Site and measures to be installed in advance <p>Incentives</p> <ul style="list-style-type: none"> ◆ \$278/kW, \$0.095/ kWh ◆ For an approved multi-family project, sponsor can reserve up to the Max Sponsor Limit of \$89,454 ◆ Minimum \$250 per unit. ◆ Funds reserved for 30 days <p>Measures</p> <ul style="list-style-type: none"> ◆ Any approved measure <p>M&V Options</p> <ul style="list-style-type: none"> ◆ Deemed Savings ◆ Measured Savings ◆ Simplified M&V <p>Application Date/Time</p> <ul style="list-style-type: none"> ◆ Submit Sponsor qualifications beginning 4/15/2009@ 10:00 AM CDT

3.1. Project Sponsor Eligibility

A Project Sponsor is any organization, group, or individual who contracts with Xcel Energy to provide energy savings under the SOP. The following types of organizations are eligible to participate as Project Sponsors:

- Energy services companies, including unregulated utility subsidiaries
- Local contractors
- Not-for-profit housing or social service organizations
- National or local companies that provide energy-related products (e.g., lighting or HVAC)
- Retailers are also eligible if they install the particular energy-efficient products sold as part of this program

Xcel 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. This requirement is described in further detail in Chapter 6. Xcel Energy also requires Project Sponsors and their subcontractors to carry all insurance as described in Article IX of the Standard Offer Program Agreement.

A contractor must be the project sponsor. Project sponsors may not subcontract any work performed without the written consent of Xcel Energy. Project sponsors cannot share, lease, loan, contract or shuffle employees between different companies.

3.1.1. Incentive Budget and Project Funding Limits

Xcel Energy has allocated a total of \$602,633 in incentives for Residential and Hard-to-Reach (HTR) energy efficiency projects. To ensure that funding will be available to multiple participants, Xcel Energy has set the following maximum incentive amounts that will be paid to any one Project Sponsor (including Project Sponsor's Affiliates) for the following projects:

- \$89,454 per Project Sponsor Residential Projects
- \$31,072 per Project Sponsor HTR Projects

A Project Sponsor may participate in each of the separate components (Residential, and HTR) up to their individual maximum incentive amounts. A Project Sponsor may submit multiple applications, and participate in multiple projects, as long as the total incentive received under each allocation does not exceed the maximum amounts listed above for each category. These limits may be waived if Xcel Energy determines that they would prevent it from achieving its energy efficiency goal. Such a waiver may require PUCT approval. No Project Sponsor has unconditional entitlement to the SOP incentive funds.

3.2. Participant Eligibility

Residential customers (see definition above) are eligible to have measures installed at their homes as part of this Program.

For projects in the Single-Family Hard-to-Reach and Single-Family Residential Categories, participants must be residential customers living in residences of four units or less.

3.2.1. 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**. Income guidelines are updated every April. Project Sponsors should use the updated guidelines after they are published by the PUCT. Annual updates are posted on <http://www.puc.state.tx.us/>

To document a single-family customer's hard-to-reach status, the Project Sponsor should have the host customer complete and sign the *Public Utility Commission's Customer's Self Certification of Income Eligibility Form*. If the Project Sponsor is implementing a project at a multi-family building, the Project Sponsor must complete a *Public Utility Commission of Texas Property Owner Certification Form of Tenant Income Eligibility*. Both forms are available on the SOP Website (www.xcelenergyefficiency.com). For multi-family residences of five or more dwelling units, 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. For multi-family residences of 2-4 units, the entire building qualifies if at least half of the residents qualify as HTR.

3.3. Energy-Efficient Measure Eligibility

Energy-efficient retrofit measures in residential applications that reduce electric energy consumption and system peak demand as defined in the glossary at the host customer site(s) are eligible for the SOP. Eligible measures do not include repair or maintenance activities, or behavioral changes. In addition, all measures eligible for SOP incentive funds must exceed applicable current federal minimum efficiency standards. Appendix A contains a list of deemed savings values for most common energy-efficiency measures. A list of minimum efficiency standards is provided in Appendix A. All energy and peak demand reductions must be measurable and verifiable.

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 has been installed prior to the execution of the SOP Agreement, the project, or the affected portions thereof, will be disallowed.

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

Any Commission-approved measure included in the statewide Residential template, or any measure assigned a deemed savings value by the Commission is eligible under Xcel Energy's SOP. Table 1 provides examples of eligible measures. Table 2 provides a list of ineligible measures. Xcel Energy will consider any measures that are not listed in Table 1 for SOP eligibility on a case-by-case basis. If a Project Sponsor proposes measures for which deemed savings values have not been assigned, then it will be the Project Sponsor's responsibility to develop and implement a Measurement and Verification (M&V) Plan which meets Xcel Energy's SOP requirements. A copy of M&V requirements and procedures may be downloaded from the program Website. Xcel Energy has also provided the *M&V Guidelines for Retrofit and New Construction Projects* document – hereinafter "*M&V Guidelines*" – that contains the PUCT-approved protocols for several common measures to assist in preparing and carrying out the M&V Plan.

3.3.1. Additional Requirements for HTR Projects

For HTR projects, Project Sponsors must install one or more *Primary Measures* at each site, in order for any measure installation at that site to be eligible for the higher HTR incentive levels. The Primary Measures are:

- ◆ Air Infiltration Control
- ◆ Wall, Ceiling, or Floor Insulation
- ◆ Duct Sealing
- ◆ HVAC System Replacement
- ◆ Water Heater Replacement
- ◆ ENERGY STAR[®] windows
- ◆ ENERGY STAR[®] refrigerators

For multi-family HTR buildings, the Project Sponsor must install at least one of the above measures in each applicable unit. As an example, if ceiling insulation is chosen by the Project Sponsor and property manager, then it must be installed in each unit in the multi-family building that has an unconditioned space above it. If wall insulation is to be installed, then it must be installed in the uninstalled exterior walls of each unit in that particular building.

For the air infiltration control, duct sealing, and wall insulation measures, there is a minimum post-retrofit CFM ventilation rate that must be maintained, and there is a maximum allowable post-retrofit carbon monoxide (CO) level. Please refer to the web site for more information on these requirements, and for additional measure specifications and installation standards.

In addition to the above requirement, all multi-family (five or more dwelling units) projects must be submitted to Xcel Energy for approval prior to the installation of any energy efficiency measure at that site. Once a multi-family property has been submitted by a Project Sponsor for

approval, Xcel Energy may:

- ◆ review the project to verify that the property was not retrofitted under a prior Xcel Energy efficiency program,
- ◆ review the proposed measures to determine if a the program's comprehensiveness goals are being met,
- ◆ determine if the deemed savings values for proposed measures are reasonable
- ◆ perform an on-site inspection and/or interview with property manager

Xcel Energy reserves the right to exclude showerhead and aerator replacement measures from any Hard-to-Reach multi-family project that has previously been retrofitted under any prior Xcel Energy program (Showerheads and aerators are ineligible measures for non-HTR projects). Once a multi-family project has been submitted, Xcel Energy will notify the Project Sponsor of approval or disapproval of the proposed project within ten days.

Table 1
Examples of Eligible Measures and Projects

Envelope Measures

- **Insulation: ceiling, wall and floor**
- **ENERGY STAR® windows**
- **Infiltration control**
- **Duct sealing**

Cooling and Ventilation Measures/Projects

- **High efficiency air conditioning replacements**
- High efficiency gas air conditioning replacing electric
- Variable speed drive applications for HVAC equipment

Heating Measures/Projects

- Standard-efficiency heat pump to high-efficiency heat pump conversion

Electric Water Heating Measures

- Energy and water-efficient clothes washers
- **High efficiency gas water heater replacing electric resistance water heaters**

Other Measures/Projects

- **ENERGY STAR® refrigerators**

Renewable Energy Measures

- Water heating
- PV or other distributed generation

The following measures are eligible only in The Hard-to-Reach Program:

- *Showerheads and aerators*
- *Screw-in compact fluorescent lamps*
- *Window unit air conditioners*
- *Solar screens*

Primary HTR Measures appear in boldface. (See Section 3.3.1)

Table 2
Examples of Ineligible Measures and Projects

- Measures that do not raise efficiency above current standards
- Measures with an expected life of less than 10 years
- Cogeneration and self-generation projects
- Load shifting/load management measures
- Load reductions caused by building vacancies
- 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 Xcel Energy program
- Repair and maintenance projects
- Energy-efficient gas measures when replacing non-electric technologies
- Measures that result in negative environmental or health effects
- Measures installed in new residential construction

3.3.2. Energy-Efficiency Measures

Project Sponsors may propose innovative or non-traditional energy efficiency measures. Equipment in all end uses (e.g., lighting, refrigeration, cooling, and water heating) is eligible for the SOP. Proposed energy efficiency measures must meet the following requirements:

- Measure must produce a measurable and verifiable electric demand reduction during the peak period or produce electricity consumption savings (the Project must produce 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).
- Renewable energy measures meeting the requirements of the Public Utility Commission's Energy Efficiency Rule (Substantive Rule 25.181) may qualify for an incentive.
- Measure must have a minimum useful life of 10 years.
- Measure must meet or exceed minimum equipment standards as provided in the program manual.

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 the Project Sponsor pursues measures for which deemed savings values have not been approved by the PUCT, then the Project Sponsor must follow either the current International Performance Measurement and Verification Protocol (IPMVP) or the Measurement and Verification Guidelines adopted by the PUCT, which are a simplified version of the IPMVP. The *M&V Guidelines* document contains the PUCT-approved protocol and can be downloaded from www.xcelenergyefficiency.com. For single-family Projects and multi-family Projects in the HTR SOP, only Measures with approved Deemed savings are eligible.

3.3.3. Limitation on Lighting Incentives

A maximum of 65% of a project's kW and kWh incentive payments may come from energy-efficient lighting equipment and/or lighting controls (except daylighting).

3.4. Project Size Eligibility

3.4.1. Residential Projects

For Residential projects, the minimum project size is \$250 per individual site and the maximum incentive payable to any one Project Sponsor (including affiliates) is \$89,454 for residential projects.

For single-family projects, Project Sponsors may reserve funds in blocks of up to \$20,000 until they reach the project sponsor's incentive limit. A single-family project may consist of measures installed at multiple homes. For an approved multi-family project, Project Sponsors may reserve up to the project sponsor maximum incentive limit.

3.4.2. Hard-To-Reach Projects

For HTR projects, the maximum incentive payable to any one Project Sponsor (including affiliates) is \$31,072 for HTR projects .

For single-family projects, Project Sponsors may reserve funds in blocks of up to \$20,000 until they reach the project sponsor's incentive limit. A single-family project may consist of measures installed at multiple homes. For an approved multi-family project, Project Sponsors may reserve up to the project sponsor maximum incentive limit.

The limits outlined above may be waived if Xcel Energy determines that these limits would prevent it from achieving its energy efficiency goal.

4. Program Incentives

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

4.1. Incentives

Incentive rates for Residential projects are based on 50% of avoided cost benefit. Hard-to-Reach incentive rates are based on 90% of avoided cost benefit. Demand (kW) payment is based on Peak Demand Savings.

	Residential	Hard-to-Reach (HTR)
kW	\$278	\$501
kWh	\$0.095	\$0.17

4.2. Limits on Incentive Payments

An important objective of the Standard Offer Programs is to encourage projects that:

- Provide a comprehensive range of energy efficiency measures, and
- Allow Xcel Energy to achieve significant summer peak demand reduction.

In order to accomplish this, Xcel Energy will institute:

- Limits on the amount of lighting savings that may count towards total project savings, and
- Load factor caps, which limit the incentive amounts paid for projects that provide relatively little summer peak demand reduction.

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.

Appendix C contains an explanation of how the lighting adjustment factors are calculated, and an example.

For projects implemented under this SOP, there is a limit on the ratio of kWh payment to kW payment. This is to discourage projects that produce relatively little of their annual energy savings during Xcel Energy's peak summer demand period.

For example, in residential projects the maximum total payment (kWh and kW payments combined) is \$650 per kW of peak summer demand savings. The following table lists the load factor cap maximum incentive paid per kW saved for the different Programs.

	Max. Incentive per kW saved
Residential	\$650
Hard-to-Reach	\$1,394

Here are two examples:

Example 1

An HVAC project saved 25 kW of summer peak demand and 50,000 annual kWh. The unadjusted incentive payment for this project would be:

$$(25 \times \$278) + (50,000 \times \$0.095) = \$11,700$$

The maximum allowable incentive for this project is 25 kW multiplied by \$650, or \$16,250.

This project would not be subject to the load factor cap.

Example 2

A variable-speed motor retrofit saves 20 kW of summer peak demand and 150,000 annual kWh. The unadjusted incentive payment for this project would be:

$$(20 \times \$278) + (150,000 \times \$0.095) = \$19,810$$

The maximum allowable incentive for this project is 20 kW multiplied by \$650, or \$13,000.

This project would be subject to the load factor cap.

The load factor caps are applied to the total project's kW and kWh incentive payments and not to individual measures. As a result a Project Sponsor may receive full payment for measures with high load factors, as long as the average load factor for the project does not exceed the cap.

5. Program Process and Timeline

This Chapter contains a brief description of the key steps necessary for participation in the Program. Detailed descriptions of these steps can be found in their respective Chapters Six through Eight. Figures 5.1 and 5.2 show flowcharts of the respective Stipulated Savings/Simplified M&V and the Measured Savings/Full M&V approaches. Shaded boxes with bold borders denote required submittals.

5.1. Application Process

Submittal of Project Applications will be via a designated Website, and Project Applications will be considered on a first-come, first-served basis. Chapter Six contains a detailed description of the application process. The Project Application forms page will be available on April 8, 2009. Project Sponsors may submit their applications on April 15, 2009 in accordance with the project application schedule detailed in Section 6.2. Project Applications will be accepted until the funding has been committed, or until November 15, 2009, whichever comes first.

A copy of the SOP Agreement that will be executed by Xcel Energy and the Project Sponsor prior to the project implementation may be generated from the online database tracking system. A blank copy of the SOP Agreement may be downloaded from www.xcelenergyefficiency.com. Project Sponsors are urged to review the SOP Agreement before submitting a Project Application. *Once the application period has begun, Xcel Energy will not entertain proposed modifications to the SOP Agreement.*

At the time the application is submitted online, the following hardcopy documents must be received by the program manager within 5 business days.

- A signed SOP Agreement
- All insurance certificates
- Sponsors will be required to provide insurance effective and expiration dates in application. Failure to provide insurance coverage renewal will cause sponsor to be locked out of program until coverage is confirmed.
- A copy of all industry licenses and certifications such as HVAC, electrical or plumbing licenses and other certifications such as HERS, HERO, insulation installation, etc.
- A completed Supplier Information Form (available for download from website)

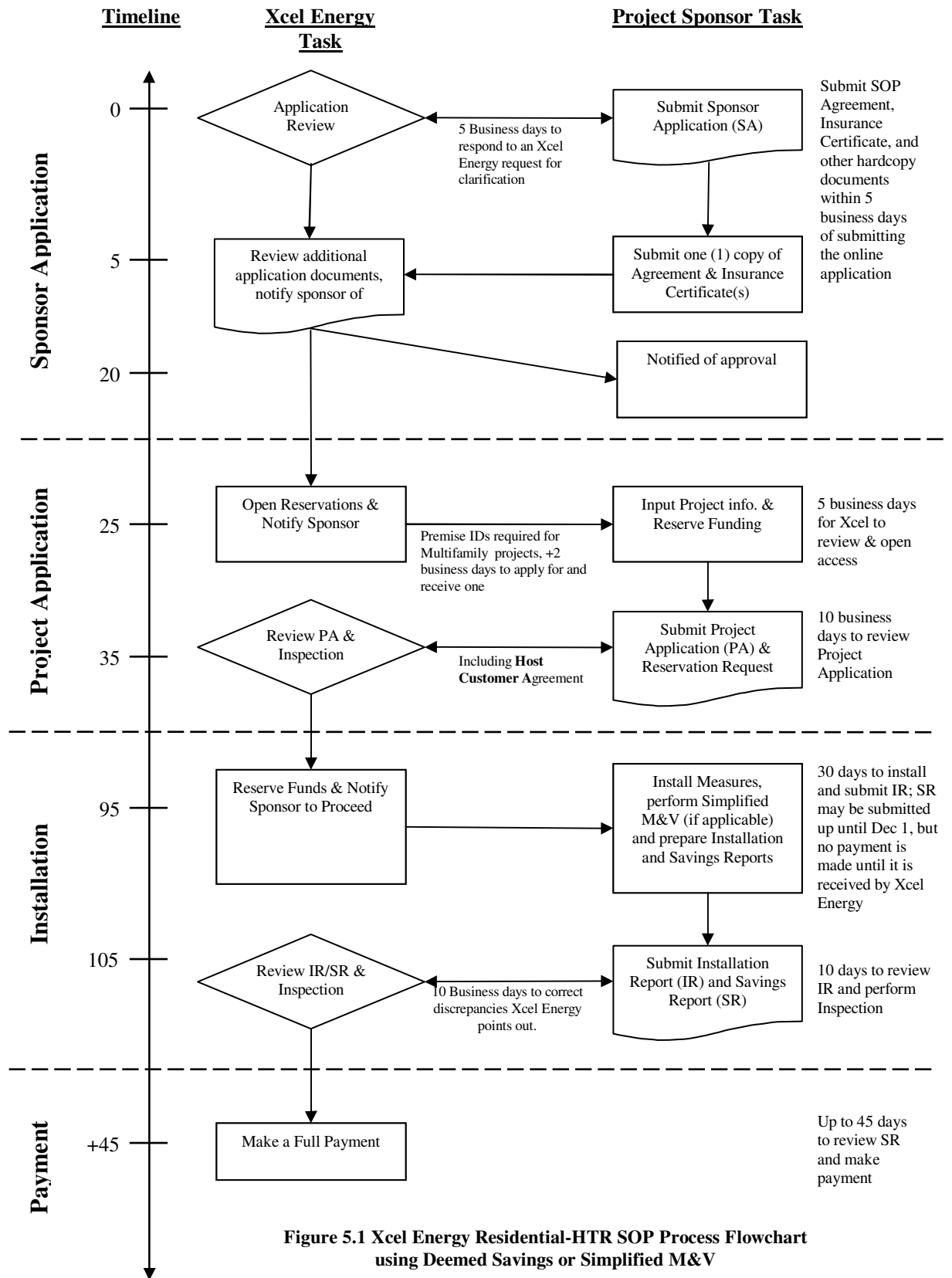
Failure to provide required documents within five business days will result in automatic rejection of sponsor application.

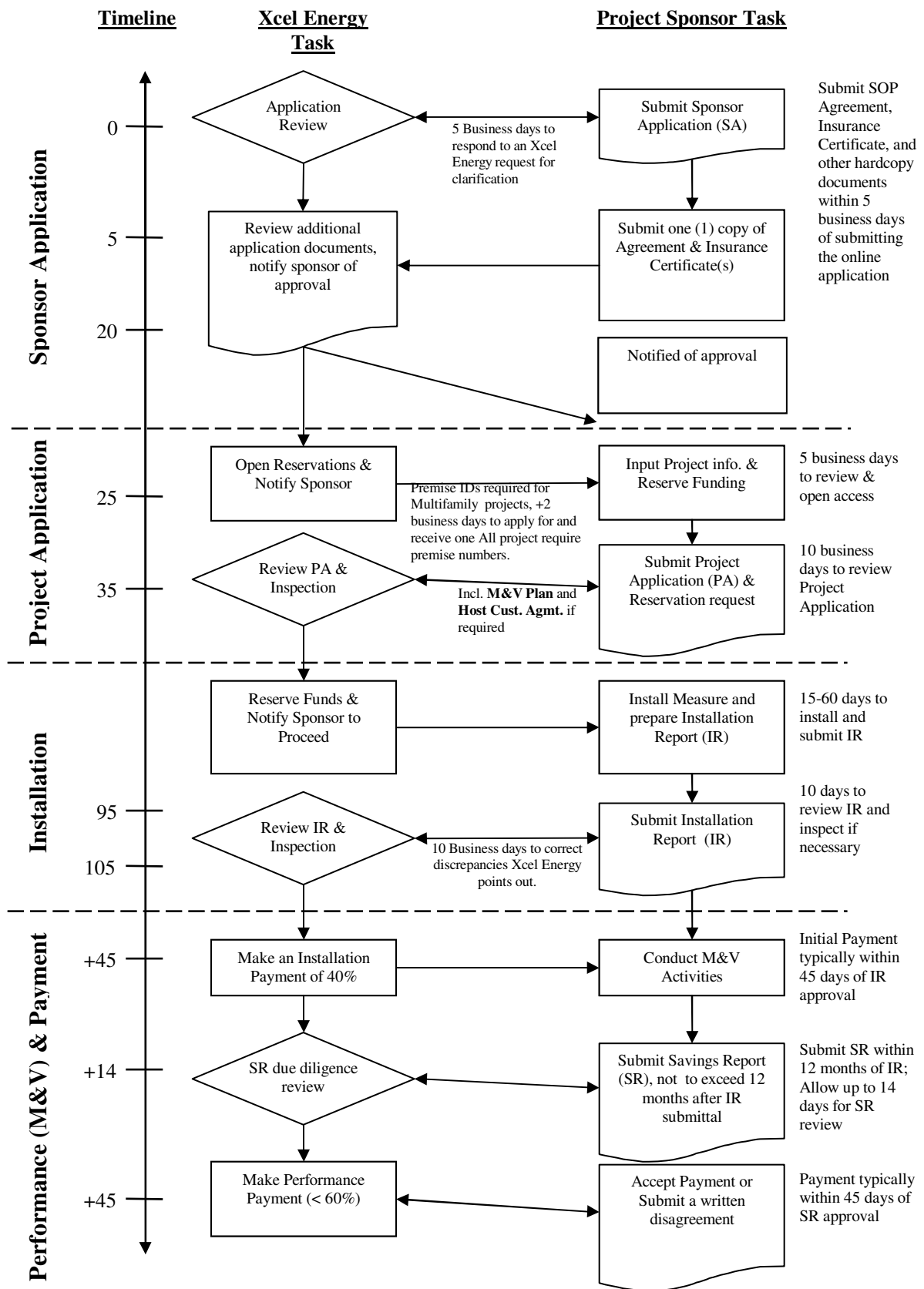
5.2. Implementation Period

Due to the requirement that Xcel Energy achieve specified levels of kW savings for this program within each budget cycle, it is important that projects be completed within the period during which incentive funds are reserved. For single-family projects, incentive funds are reserved for 30 days. For multi-family projects, the incentive funds are reserved for 30 days. Once incentive funding has been reserved, the project sponsor must complete the installations *and* report installation data within the 30-day period. After that time, project sponsors will not be able to access the web pages that allow project sponsors to enter installation data and submit reports.

5.3. Performance Period (Measured Savings Projects Only)

During the Performance Period it is Xcel Energy's and the Project Sponsor's responsibilities to verify that the energy-efficiency measures have been installed properly and are capable of performing their intended function. Xcel Energy's and Project Sponsor's responsibilities during the Performance Period will vary depending upon the number and types of host sites, the type and number of measures installed, and whether the measured savings or deemed savings option is selected. A detailed discussion of the tasks to be performed during this period is included in Chapter Eight.





6.

Figure 5.2 Xcel Energy R/SC-HTR SOP Process Flowchart using Measured Savings

Project Application

6.1. General Application Guidelines

Xcel Energy has determined that the fairest and least-cost way for Project Sponsors to submit application is via the Internet. The application forms will be accessible at www.xcelenergyefficiency.com (From the home page, click on “Xcel Energy’s Standard Offer Program Description and Application”). The Project Application forms page will be available on April 8, 2009 and Project Applications may be submitted on April 15, 2009. Xcel Energy will continue accepting applications through November 15, 2009 or until all funds have been reserved, whichever is earlier.

There are two separate application processes:

- HTR
- Residential

Project Sponsors may participate in both programs, but must submit separate applications and qualifications for each. Xcel Energy will update its application Web pages at the times listed below to include a “submit button” for the different application processes. Once the submit buttons are active, potential Project Sponsors may send their qualifications to Xcel Energy. The Company will utilize its mail server’s time stamp to determine the order of receipt. Confirmation of the receipt of the Project Sponsor’s qualifications will be sent via return e-mail, within one business day.

6.2. Project Application Schedule

The following is a schedule of dates and times for the Residential, and HTR SOP application processes:

<i>Date</i>	<i>Time</i>	<i>Event</i>
April 15, 2009	10:00 AM CDT	Residential Project Sponsors may submit applications
April 15, 2009	2:00 PM CDT	HTR Project Sponsors may submit applications

6.3. Sponsor Application (SA)

6.3.1. General Project Sponsor Information

The information listed below is required of all Project Sponsors:

- Project Sponsor name
- Federal tax identification number of Project Sponsor
- Names, addresses, etc., of Parent company, subcontractors and/or Affiliates (if any)
- Contact name
- Contact title
- Contact address

- Contact phone number
- Contact fax number
- Contact e-mail address

6.3.2. Project Sponsor Qualifications and Experience

Xcel Energy requires Project Sponsors to demonstrate their financial, technical, and managerial 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. Project Sponsor's application should include the following:

- A brief statement of the Project Sponsor's technical and managerial 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
- Up to three client/customer references for projects similar in nature to that proposed in this application (include contact name, address, and phone number)
- Evidence of the Project Sponsor's financial strength and capability. This may include company description, approximate annual revenues, trade references, and/or other information deemed appropriate by Project Sponsor.
- Disclosure of any legal judgments pending, or entered in the previous two years, against Project Sponsor, as well as a current list of pending litigation filed against Project Sponsor

6.3.3. Sponsor Application Review

All sponsor applications will be reviewed on a first-come, first-served basis. Xcel Energy may reject an Application if any of the following conditions occurs:

- The Application is received after November 15, 2009, or the Application is received after the SOP has been fully subscribed;
- Any of the required information specified in Sections 6.3.1. and 6.3.2. has not been submitted with the Application;
- The Project Sponsor fails to meet program eligibility requirements;
- 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 Residential or Hard-to-Reach SOP; or
- Xcel Energy, in its sole judgment, determines that the Project Sponsor is incapable of fulfilling the terms and conditions of the SOP Agreement.
- Failure to provide required documents within five business days of application submittal

Xcel 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, Xcel Energy 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.

Once a Project Sponsor has submitted the application, the signed SOP Agreement, insurance requirements and any other required hardcopy documents such as licenses and certifications, must be received by the program manager within 5 days of the application submission.

Signed contracts, along with any other required documentation should be mailed or delivered to:

Mail Address	Delivery
Xcel Energy	Xcel Energy
P. O. Box 1261	600 S Tyler, Suite 600
Amarillo TX 79105-1261	Amarillo TX 79101
Attn: Mr. Doug Maxey	Attn: Mr. Doug Maxey
806-378-2887	806-378-2887

Approval of the Project Sponsor's qualifications and execution of the Project Sponsor Agreement does not result in any incentive money being allocated to the Project Sponsor.

Once the approval process has been completed, Project Sponsors will be given access to the Web site pages that will allow them to reserve incentive funds for single-family (up to four units) projects, or submit site ID (premise number) and proposed measure data for multi-family projects. The Incentive Reservation Menu page contains latest information on total funds available, any currently-reserved incentive amounts, and the total amount available remaining under the Project Sponsor's incentive limit.

6.4. Project Application (PA)

6.4.1. Project Application (PA) for Single-Family Projects

For single-family projects the Project Application is essentially an incentive reservation request. From the Incentive Reservation Menu page of the Program's HTR or Residential Web site, Project Sponsors may reserve incentive funds for an energy efficiency project involving the installation of eligible measures at one or more single-family residences. Project, customer, and measure eligibility are subject to the provisions outlined elsewhere in this Manual. The Project Sponsor will estimate the total kW and kWh savings of the measure or measures to be installed. Project Sponsors may use the excel worksheet *deemedavingshelper.xls* to calculate kW and kWh savings for various energy efficiency measures. (This file may be downloaded from the Website). The total incentive amount payable for the installations at the site(s) will be calculated based on these savings. The minimum incentive for single-family Residential and single family HTR projects is \$250 per site, or dwelling unit. HTR program requires the installation of at least one of the "Primary Measures" per home (see Section 3.3.1). The maximum incentive reservation per project is \$20,000. Project Sponsors are not required to provide the customer name, address, or Premise ID at the time of single-family budget reservation.

No further approvals are required from Xcel Energy to have the incentive funds reserved for this Project.

The Project Sponsor will have 30 days to complete the installations *and* add the required installation data via the Web site. After the 30-day period, the Project Sponsor will not be able to access this Project record to add installation data. After this time period, incentive funds reserved for this specific project will be withdrawn if the installation has not been completed and reported to Xcel Energy.

6.4.2. Project Application (PA) for Multi-family Projects

Project Sponsor is required to identify the Project Site (only one site per project) as part of the incentive reservation process. Xcel Energy will review each proposed project and approve or disapprove it. Incentive funds are not reserved until Xcel Energy approves the proposed project. The incentive funds may only be used for project specified. Project Sponsor incentive limits apply to any multi-family incentive request.

6.4.2.1. Project Application for Multi-family Projects in the HTR or Residential Programs

When requesting an incentive budget reservation for any multi-family project of five or more units, the Project Sponsor must provide:

- Customer name, address, and contact information
- Premise ID number (see Section 6.6.3.)
- Results of any pre-installation air leakage, duct leakage, and/or CO test measurements
- Proposed measures to be installed
- Estimated kW and kWh impacts

Xcel Energy will review this information, and if necessary, contact the customer or conduct a site inspection. The review process will take up to ten days.

Upon approval, Xcel Energy will reserve the incentive funds for the Project, up to the Project Sponsor maximums outlined above. The time period to complete measure installations and report measure installation data is 30 days.

6.4.3. Reservation Penalty

The reservation penalty goes into effect if the amount invoiced on a project is **less than 80%** of the originally reserved amount for that project. The value of the penalty is determined by the degree to which the Project Sponsor's initial reservation exceeds the amount invoiced.

Example:

A Project Sponsor reserves \$5,000 for a single-family residential project and later only submits an invoice for **50%** of that, or \$2,500. 50% is below the threshold value of 80%, so the Project Sponsor is subject to the reservation penalty. As a result the Project Sponsor will only be able to reserve **50%** of the amount of that previous reservation of \$5,000, or \$2,500.

Another Example:

If the submitted invoice is 75% of the reservation for the project, then the next reservation would

be limited to 75% of the previous reservation amount. If a sponsor continues to submit invoices for less than 80% of the incentive reservation, they may be disallowed from participating in the SOP program.

6.4.4. Project Application Review

All project applications will be reviewed on a first-come, first-served basis. Xcel Energy may reject an Application if any of the following conditions occurs:

- The Application is received after November 15, 2009, or the Application is received after the SOP has been fully subscribed;
- Any of the required information specified in Sections 6.4.1. and 6.4.2. has not been submitted with the Application;
- 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 Residential or Hard-to-Reach SOP; or
- Xcel Energy, in its sole judgment, determines that the Project Sponsor is incapable of fulfilling the terms and conditions of the SOP Agreement.

Xcel Energy may also 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, Xcel Energy 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. The Project Sponsor will, however, lose its initial position in the order of submittal.

6.4.5. Obtaining Premise ID Numbers From Xcel Energy

If the Premise ID (not the same as the account number) is not known, Project Sponsors may request Premise ID Numbers through the Web site. There is a Premise Number Request button on the Add Customer form. Clicking on that button brings up the premise number request form, which can be used to request a single or multiple Premise ID numbers. Xcel Energy will email the Premise ID(s) to the Project Sponsor within 48 hours.

6.4.6. Estimated Program Impacts

If the Project Sponsor intends to use the deemed savings option exclusively, 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 www.xcelenergyefficiency.com) to create estimates of average kW and kWh savings per installation site. **For HTR and single-family Residential projects, deemed savings must be used for all measure installations.** On projects utilizing only deemed savings, Sponsors may not install measures for which deemed savings values have not been approved by the PUCT.

If using the measured savings or simplified M&V option, enter your estimate of kW and kWh savings per site.

6.4.7. Measurement and Verification Plans

If the Project Sponsor selects the deemed savings option for all measures, then it is not necessary to provide an M&V plan. On projects utilizing only deemed savings, Sponsors may not install measures for which deemed savings values have not been approved by the PUCT. If the Project Sponsor intends to utilize the measured savings either as an alternative, or in addition to the deemed savings option, then a detailed M&V plan must be provided.

However, for certain lighting measures, Project Sponsors have the option of utilizing a simplified M&V procedure in lieu of providing a detailed M&V plan.

6.4.8. Detailed M&V Plan Guidelines

If utilizing the measured savings option, Project Sponsors must indicate that they will submit a detailed M&V plan as part of their supplemental documentation. The M&V plan must conform to the International Performance Measurement and Verification Protocol (IPMVP). More information on M&V plans may be downloaded from www.xcelenergyefficiency.com.

6.5. Other Important Program Information

6.5.1. Application and SOP Materials Preparation Costs

Xcel 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.

6.5.2. Application Confidentiality

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

7. Implementation and Reporting Procedures

7.1. Implementation Period

Project Sponsors have 30 calendar days for all single-family projects, 30 calendar days for all multi-family projects to report installation data via the online database system, otherwise, the incentive reservation is released.

Prior to commencing any installation activities, Project Sponsors shall submit an insurance certificate, an M&V plan (if the Project Sponsor elected a measured savings approach), and a draft of its Host Customer Agreement template to Xcel Energy for its approval. Xcel Energy has developed a draft host customer agreement that Project Sponsors may use. Copies of this agreement may be downloaded from the program Website under “Downloads.”

7.2. Required Submittals

The primary reporting instrument during the Program Implementation Period is the Project Implementation Report. The implementation information required as part of this report is input via the Program Web site.

If installing air infiltration control, wall insulation, or duct sealing measures, the Project Sponsor should perform pre and post installation blower door, duct leakage, or CO tests as outlined in Appendix A guidelines for “Duct Efficiency Improvements” and “Air Infiltration” and note the readings for each site. All duct leakage testing must be conducted as **leakage-to-outside** using the combination Duct Blaster (or equivalent) and blower door method. This procedure is detailed in Chapter 7 (pressurization) or Chapter 11 (depressurization) of the Duct Blaster manual, and is available for download from the Energy Conservatory Web site at www.energyconservatory.com/support/support5.htm.

Once the entire month’s implementation data has been input and reviewed, the Project Sponsor follows the “process invoice” procedures to submit this data to Xcel Energy.

7.2.1. Customer Certifications

Hard copies of Customer Certifications shall be included with each monthly report. Among other things, the certification provides the Project Sponsor with a release for Xcel Energy, allowing energy use and billing information to be provided to the Project Sponsor, which may be used for measurement and verification (M&V). The certification also provides Xcel Energy with permission to inspect the installation, which may be required before incentive payments are approved. Copies of the Customer Certification are included on the program Website.

7.2.3. Project Invoices

Project Sponsors shall submit a hard copy of any invoices after all measure installations have been completed. The following information must accompany the invoice:

- A hardcopy of the Project Implementation Report
- Copies of the Customer Certifications
- HTR Certification forms (if applicable)

For installations involving Measured Savings, the Project Sponsor may request payment for 40% of the Estimated Measured Savings kW and kWh after submittal of the monthly invoice. Invoicing for “Post Performance Period” Measured Savings may be submitted after the Performance Period. (The length of the Performance Period will vary according to the types of measures installed and the Project Sponsor’s M&V Plan.) This invoice shall be for 60% of the Estimated Measured Savings kW and kWh, or for the balance of savings identified through measurement and verification, whichever is less. (Note: the Estimated Savings, expressed as the initial Estimated Incentive Payment, shall always be the cap for incentive payments.) Project Sponsors shall refund any payments made in excess of the M&V-determined incentive amount that may have been paid upon initial measure installation reporting via the Project Implementation Report.

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

Payment terms are net 45 days.

7.3. Review Procedures

7.3.1. Administrative Review

Once the Project Implementation Report is submitted to Xcel Energy, it will be reviewed for accuracy. If any discrepancies are found in any of the reports, Xcel Energy will notify the Project Sponsor. The Project Sponsor shall have 10 business days from the date of Xcel Energy’s notification to correct any discrepancies.

7.3.2. Installation Inspections

During the review process, Xcel Energy will take a random sample of customer sites and verify installations to determine if each measure has been installed properly, and is capable of performing its intended function. All measures installed in the Residential and HTR SOPs 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:

$$\text{Adjustment Factor} = \frac{\text{Total incentives for measures that pass inspection}}{\text{Total incentives for all measures selected for inspection}}$$

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

In the event the Project Sponsor disagrees with the payment adjustment, the Project Sponsor may request that all information be reviewed again after providing additional clarifying information.

8. Performance Period

Please note: Chapter Eight provides information to Project Sponsors who are installing measures for which the Measured Savings Option has been selected. Project Sponsors who are installing measures entirely under the Deemed Savings or Simplified M&V Options do not need to follow any of the procedures outlined in this chapter.

8.1. Introduction

If the Project Sponsor specified the Measured Savings option in the project application, it must perform measurement and verification (M&V) procedures that are specified in the current International Performance Measurement Verification Protocol (IPMVP). Further, these M&V procedures must conform to the M&V plan that was submitted with the Sponsor's Project Application and as approved by Xcel Energy as part of the Project Application review process.

The Project Sponsor who chooses the Measured Savings Option may request the M&V option be changed from the Measured Savings Option to the Deemed Savings Option within the first three months of the Project Implementation Period.

This protocol contains four methodologies that the Project Sponsor can use to perform the necessary M&V.

8.2. The Performance Report

The Project Sponsor must submit a Performance Report within 45 days after the Performance Period has ended. The length of the Performance Period will vary based on the types of measures installed--generally one year for HVAC or building envelope measures, with shorter Performance Periods possible for non weather-dependent measures. This report must contain the following components.

8.2.1. M&V Methodology Description

This is a description of the particular analysis technique (IPMVP Option A, B, C or D) used to determine baseline and post-installation energy consumption. The information should summarize the Project Sponsor's M&V Plan. This report should be formatted so as to facilitate Xcel Energy's review.

8.2.2. Performance Payment Calculations

Provide pre- and post-installation energy use calculations, including a complete description of any adjustments to baseline energy use, including all variables and assumptions used in baseline adjustment calculation methodology. Include results of metering, billing data analysis, or other calculations.

The performance payment will be equal to the performance incentive payments minus payments made during the implementation period. This payment will also take into account any needed adjustments Xcel Energy identified during site inspections. The performance payments and implementation payments cannot exceed payments for incentives applied for under the project application and specified in the program agreement. When the Project Sponsor determines the

kW and kWh savings for all the approved measures by the specified M&V analysis, the result is multiplied by the appropriate incentives to determine the performance period incentive payment. Payments will be based on verified savings analysis and weighted-average incentive rates that reflect incentive rates for the project's actual mix of measures. Refer to Section 4.1 for incentive levels.

Xcel Energy will review the Performance Report's measured kW and kWh savings, and incentive amounts. These figures will be compared to those figures provided in the Project Implementation Reports to ensure all figures are reasonable and consistent with the Project Application.

Xcel Energy will determine the approved performance payment by adding the performance year savings incentive for the measures installed, and subtracting all payments made for the Implementation Period.

Total Incentive payments cannot exceed the total eligible payments that are estimated in the Project Sponsor's Project Application and SOP Agreement.

If there are any adjustments to be made to kW or kWh savings or incentive payments, Xcel Energy will notify the Project Sponsor in writing and provide the necessary supporting documentation. If the Project Sponsor disagrees with the adjustments, it must notify Xcel Energy in writing and request a meeting between the two parties be conducted to resolve the disputed adjustment(s). If the two parties cannot resolve these issues, the dispute resolution process provided in the Residential SOP Agreement must be utilized.

8.3. Performance Period Invoice

Project Sponsors may submit their Performance Period Invoice along with the Performance Report, as specified above. Xcel Energy will review the Performance Report and pay any undisputed performance period incentive amounts within 45 days.

Appendix A
Deemed Savings
Installation & Efficiency Standards

DEEMED SAVINGS

All Residential Measures for Xcel Energy Programs

Introduction

This document contains all of the approved energy and peak demand deemed savings values established for energy efficiency programs in Texas. The figures correspond with the set of residential sector deemed savings values approved by the Public Utility Commission of Texas in Project No. 22241. A more detailed description of the methodology used to calculate these savings is found in the Petitions, which may be found at: www.puc.state.tx.us/electric/projects/22241/22241.cfm.

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.

For climate-sensitive energy efficiency measures, separate calculations have been performed for four different regions of the state:

- **Panhandle Region - using typical weather information for Amarillo or Oklahoma City (for windows only). This is the region used for all Xcel Energy projects in their Texas service territory.**
- North Region - using typical weather information for Dallas or Fort Worth.
- South Region - using typical weather information for Houston or San Antonio (for windows only).
- Valley Region - using typical weather information for Corpus Christi or Brownsville (for windows).

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.

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 with a new central air conditioning system (packaged unit, or 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 the Residential Standard Offer Program, the baseline is assumed to be a new central air conditioning system with an ARI-listed Seasonal Energy Efficiency Ratio (SEER) rating of 13.

Installation & Efficiency Standard

Air conditioning equipment shall be properly sized to dwelling based on American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) or Air-Conditioner Contractors of America (ACCA) Manual J standards.

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

The central air conditioning equipment must have a minimum ARI-listed SEER rating of 14.00 for the Residential Standard Offer Program (Res SOP).

Deemed Savings

Residential Standard Offer Program

Demand Savings (kW) – All Climate Zones

Central Air Conditioner Replacement – Res SOP Demand Savings, All Climate Zones							
Size (tons)	ARI Rated BTU/Hr		SEER Range				
	Minimum	Maximum	14.00-14.99	15.00-15.99	16.00-16.99	17.00-17.99	18+
1.5	15,000	20,999	0.17	0.20	0.23	0.26	0.29
2.0	21,000	26,999	0.23	0.27	0.31	0.35	0.38
2.5	27,000	32,999	0.28	0.34	0.39	0.43	0.48
3.0	33,000	38,999	0.34	0.40	0.46	0.52	0.58
3.5	39,000	44,999	0.40	0.47	0.54	0.61	0.67
4.0	45,000	50,999	0.45	0.54	0.62	0.69	0.77
4.5	51,000	56,999	0.51	0.60	0.70	0.78	0.86
5.0	57,000	62,999	0.57	0.67	0.77	0.87	0.96

Residential Standard Offer Program Energy Savings (kWh)

Climate Zone 1: Panhandle Region

Central Air Conditioner Replacement – Res SOP Demand Savings, All Climate Zones							
Size (tons)	ARI Rated BTU/Hr		SEER Range				
	Minimum	Maximum	14.00-14.99	15.00-15.99	16.00-16.99	17.00-17.99	18+
1.5	15,000	20,999	134	209	275	333	385
2.0	21,000	26,999	179	279	367	444	514
2.5	27,000	32,999	223	348	458	555	642
3.0	33,000	38,999	268	418	550	667	771
3.5	39,000	44,999	313	488	641	778	899
4.0	45,000	50,999	358	557	733	889	1,027
4.5	51,000	56,999	402	627	825	1,000	1,156
5.0	57,000	62,999	447	697	916	1,111	1,284

Window Air Conditioners (Hard-to-Reach Template Only)

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

Window Air Conditioners – Demand Savings, All Climate Zones					
	Federal	10%Above	kW	15%Above	kW
Size(BTU/Hr)	Standard(EER)	Standard(EER)	Savings	Standard(EER)	Savings
Lessthan6,000	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
20,000andabove	8.5	9.4	0.257	9.8	0.368

Energy Savings (kWh)

Climate Zone 1: Panhandle Region

Window Air Conditioners – Energy Savings, Climate Zone 1					
	Federal	10%Above	kWh	15%Above	kWh
Size(BTU/Hr)	Standard(EER)	Standard(EER)	Savings	Standard(EER)	Savings
Lessthan6,000	9.7	10.7	51	11.2	73
6,000-7,999	9.7	10.7	54	11.2	78
8,000-13,999	9.8	10.8	104	11.3	149
14,000-19,999	9.7	10.7	140	11.2	201
20,000andabove	8.5	9.4	240	9.8	345

Heat Pump Replacement

Measure

Heat pump savings listed below are for the heating side of the heat pump only. The following tables provide annual demand and energy savings.

Only installations, which replace an existing central heat pump with supplemental electric resistance heat or existing central electric resistance heating systems are eligible to receive the annual heat pump deemed demand and energy savings.

Baseline

Baseline is assumed to be a new heat pump system with a SEER of 13.0 and an HSPF of 7.7.

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 HSPF of 8.2.

Deemed Savings**Demand Savings (kW) – All Climate Zones**

Central Heat Pump Replacement – Cooling Demand Savings, All Climate Zones							
Size (tons)	ARI Rated BTU/Hr		SEER Range				
	Minimum	Maximum	14.00-14.99	15.00-15.99	16.00-16.99	17.00-17.99	18+
1.5	15,000	20,999	0.15	0.17	0.18	0.20	0.21
2.0	21,000	26,999	0.20	0.22	0.24	0.27	0.29
2.5	27,000	32,999	0.25	0.28	0.31	0.33	0.36
3.0	33,000	38,999	0.30	0.33	0.37	0.40	0.43
3.5	39,000	44,999	0.35	0.39	0.43	0.46	0.50
4.0	45,000	50,999	0.40	0.44	0.49	0.53	0.57
4.5	51,000	56,999	0.45	0.50	0.55	0.60	0.64
5.0	57,000	62,999	0.50	0.56	0.61	0.66	0.72

Climate Zone 1: Panhandle Region

Heat Pump Replacement – Cooling Energy Savings, Climate Zone 1							
Size (tons)	ARI Rated BTU/Hr		SEER Range				
	Minimum	Maximum	14.00-14.99	15.00-15.99	16.00-16.99	17.00-17.99	18+
1.5	15,000	20,999	134	209	275	333	385
2.0	21,000	26,999	179	279	367	444	514
2.5	27,000	32,999	223	348	458	555	642
3.0	33,000	38,999	268	418	550	667	771
3.5	39,000	44,999	313	488	641	778	899
4.0	45,000	50,999	358	557	733	889	1,027
4.5	51,000	56,999	402	627	825	1,000	1,156
5.0	57,000	62,999	447	697	916	1,111	1,284

Heat Pump – Energy Savings (Heating kWh Only), Climate Zone 1						
HSPF Range						
Size (tons)	8.0 - 8.1	8.2 - 8.3	8.4 - 8.5	8.6 - 8.7	8.8 - 8.9	9.0 - 9.1
1.5	172	269	365	460	554	648
2.0	229	358	486	613	739	864
2.5	286	448	608	767	924	1,080
3.0	344	537	730	920	1,109	1,295
3.5	401	627	851	1,073	1,293	1,511
4.0	458	717	973	1,226	1,478	1,727
4.5	515	806	1,094	1,380	1,663	1,943
5.0	573	896	1,216	1,533	1,848	2,159

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. Deemed savings values are calculated based on replacement of an existing 13 SEER air source heat pump with minimum 8.0 HSPF.

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 1 – Panhandle Region

Ground Source Heat Pumps – Climate Zone 1		
Climate Zone 1 - with desuperheaters		
GSHP Efficiency	Energy savings [kWh/ton]	Demand savings [kW/ton]
Low (less than 17 EER)	1,083	0.46
High (17 EER and above)	1,309	0.51
Climate Zone 1 - without desuperheaters		
Low (less than 17 EER)	469	0.01
High (17 EER and above)	699	0.08

Split System and Single-Package Air Conditioners Between 65,000 BTU/H and 240,000 BTU/H

Measure

The following deemed savings values could be used to calculate an incentive for replacing an existing central air conditioner with a premium efficiency central air conditioner through a standard offer program.

Baseline

Baseline is assumed to be a new central air conditioning system with an EER of 8.9 for units up to 135,000 Btu/h, and 8.5 for units between 135,000 Btu/h and 240,000 Btu/h.

Installation & Efficiency Standard

Minimum standard for units up to 135,000 Btu/h is 10.0 EER and 9.5 EER for units between 135,000 Btu/h and 240,000 Btu/h.

Deemed Savings

Units greater than 65,000 Btu/h and less than 135,000 Btu/h

For units greater than 65,000 Btu/h and less than 135,000 Btu/h							
Zone 1		Zone 2		Zone 3		Zone 4	
kW per	kWh per	kW per	kWh per	kW per	kWh per	kW per	kWh per
EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton
0.10	202	0.10	309	0.11	392	0.11	440

Units greater than 135,000 Btu/h and less than 240,000 Btu/h

For units greater than 135,000 Btu/h and less than 240,000 Btu/h							
Zone 1		Zone 2		Zone 3		Zone 4	
kW per	kWh per	kW per	kWh per	kW per	kWh per	kW per	kWh per
EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton	EER-Ton
0.12	151	0.12	242	0.12	284	0.12	324

Deemed Savings Example

New unit is a 10-ton package rooftop unit with an EER of 10.5 installed in Zone 2. Baseline EER is 8.9 for units less than 135,000 Btu/h.

From the table above, select deemed savings values of 0.10 kW/ton and 309 kWh/ton.

$$\text{KW savings} = 0.10 * (\text{Unit EER} - \text{Baseline EER}) * \text{tons}$$

$$\text{KW savings} = 0.10 * (10.5 - 8.9) * 10 = 1.6 \text{ kW}$$

$$\text{KWh savings} = 309 * (\text{Unit EER} - \text{Baseline EER}) * \text{tons}$$

$$\text{KWh savings} = 309 * 1.6 * 10 = 4,944 \text{ kWh}$$

Split System and Single Package Heat Pump Systems Between 65,000 BTU/H AND 240,000 BTU/H

Measure

The following tables provide annual heating kWh energy savings. Additional cooling savings are based on the heat pump's EER, and are the same values as for an air conditioning system of the

same cooling capacity and EER. Please refer to the Split System and Single-Package Air Conditioning System Measure for those values.

Only installations which replace an existing split system or single package heat pump system or other electric heating system are eligible to receive this annual heating savings component of the deemed energy savings.

Baseline

Baseline is assumed to be a new rooftop package or split system heat pump system. For units with cooling capacities between 65,000 Btu/h and 135,000 Btu/h, the baseline is a coefficient of performance (COP) of 3.0 (current ASHRAE 90.1 standard). For units with cooling capacities between 135,000 Btu/h and 240,000 Btu/h, the baseline is a coefficient of performance (COP) of 2.9 (current ASHRAE 90.1 standard).

Installation & Efficiency Standard

For units with cooling capacities between 65,000 Btu/h and 135,000 Btu/h, there are two efficiency levels for which deemed energy savings have been calculated:

- 3.2 is the ASHRAE 90.1-1999 / Consortium for Energy Efficiency (CEE) Tier 1 Standard.
- 3.4 is the ASHRAE 90.1-1999 / CEE Tier 2 Standard.

For units with cooling capacities between 135,000 Btu/h and 240,000 Btu/h, the two efficiency levels for which deemed energy savings have been calculated are as follows:

- 3.1 is the ASHRAE 90.1-1999 / Consortium for Energy Efficiency (CEE) Tier 1 Standard.
- 3.3 is the ASHRAE 90.1-1999 / CEE Tier 2 Standard.

Deemed Savings – Heating

Energy Savings

Units greater than 65,000 Btu/h and less than 135,000 Btu/h

Annual Heating Savings:

For units greater than 65,000 Btu/h and less than 135,000 Btu/h				
COP	Zone 1	Zone 2	Zone 3	Zone 4
	kWh per Ton	kWh per Ton	kWh per Ton	kWh per Ton
3.2	342	121	53	38
3.4	674	232	101	72

Ton = Cooling Ton

Units greater than 135,000 Btu/h and less than 240,000 Btu/h**Annual Heating Savings:**

For units greater than 135,000 Btu/h and less than 240,000 Btu/h				
	Zone 1	Zone 2	Zone 3	Zone 4
COP	kWh per Ton	kWh per Ton	kWh per Ton	kWh per Ton
3.1	372	79	30	20
3.3	730	132	58	39

Ton = Cooling Ton

Demand Savings

For this measure, the deemed kW savings are based on the heat pump's EER, and are the same values as for a split system or single-package air conditioning system of the same capacity and EER. Please refer to the Split System and Single-Package Air Conditioning System Measure for those values.

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

Climate Zone 1 - Panhandle Region					
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	0.86	9.99	5.04	0.000973	0.000973
R-1 to R-4	0.52	6.43	3.14	0.000608	0.000622
R-5 to R-8	0.24	3.19	1.48	0.000297	0.000311
R-9 to R-14	0.11	1.67	0.76	0.000153	0.000153
R-15 to R-22	0.05	0.71	0.31	0.000068	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.

Deemed Savings

Climate Zone 1: Panhandle Region

Wall Insulation – Climate Zone 1				
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
0.33586	11.014	6.496	0.0005892	0.0005892

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 1: Panhandle Region

Floor Insulation - Climate Zone 1				
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	0.000199
Electric Heat	5.00054	0.000216	4.98271	0.000199
Heat Pump	2.59838	0.000216	2.51197	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/ft².

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

ENERGY STAR® WINDOWS		
	kWh Savings per sq. ft.	kW Savings per sq. ft.
Climate Zone 1: Panhandle Region		
Installed in home with non-electric heating	2.68	0.0033
Installed in home with electric resistance heating	9.50	0.0033
Installed in home with heat pump	6.85	0.0033

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 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. 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 CFM₅₀ (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 CFM₅₀ (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
Panhandle	1.25	0.96
North	0.94	0.49
South	0.86	0.54
Valley	0.95	0.94

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 multi-family 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:

Region	KWh Impact per CFM_{50} Reduction			KW Impact per CFM_{50} Reduction
	Gas Heat	Resistance Heat	Heat Pump Heat	
Panhandle	0.1262	1.6673	0.7933	0.00024

Solar Screens (Hard-to-Reach Template Only)

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 ft² 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 RESFEN¹ (0.76) and the NFRC² 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.
1	4.22938	0.45208	1.91859	0.000954

Duct Efficiency Improvement

Measure

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

¹ Residential Fenestration software for calculating heating and cooling energy use in residential buildings.

² National Fenestration Research Council.

or heat pumps. 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: Xcel Energy 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, Xcel Energy may inspect for adequate treatment, or may conduct a standard (e.g., Duct Blaster™) 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. Leakage-to-outside must be conducted using the combination Duct Blaster (or equivalent) and blower door method. This procedure is detailed in Chapter 7 (pressurization) or Chapter 11 (depressurization) of the Duct Blaster manual, and is available for download from the Energy Conservatory Web site at www.energyconservatory.com/support/support5.htm. Xcel Energy 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 definition of “unconditioned space.”*

Definitions:

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). 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·ft²) or is capable of maintaining a space drybulb 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·ft²) 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 all-inclusive.

Single-family dwellings (defined as dwelling units in buildings with fewer than 3 dwelling units) can be treated without pre-qualification by Xcel Energy. Regardless of pre-qualification, Xcel Energy will not pay incentives for installations that do not meet the standards as described herein.

Multi-family units (defined as buildings with 3 or more dwelling units), must be pre-qualified for installation. Prior to beginning installation, Project Sponsor must contact Xcel Energy with a property description. Xcel Energy may pre-qualify, or may require an Xcel Energy site inspection in order to determine eligibility. Regardless of pre-qualification, Xcel Energy will not pay incentives for installations that do not meet the standards as described herein.

Examples of Systems in Conditioned and Unconditioned Spaces

The following examples are intended to illustrate some of the situations that will be found in the field. It is not all-inclusive.

- Return/evaporator is in a closet with ceiling. The entire enclosure is considered conditioned space. This is a common installation in older homes in which central air was a post-construction retrofit, but is also utilized in new construction.
- Duct is contained within, or consists of, a stud-cavity, joist cavity, or enclosed chase; evaporator is in the attic. The portion of the duct within the cavity is located within a conditioned space.
- Return/evaporator in a sealed closet without ceiling that is left open to supply combustion air for a gas/propane furnace. The entire closet is considered unconditioned space.
- Supply ducts are within a furr-down. This is considered indirectly conditioned space.
- Supply ducts within an attic separated from the conditioned space by an insulated ceiling. This is considered an unconditioned space.
- Supply ducts within an attic with finished floor, insulated roof and openings to the conditioned space. This is considered an indirectly conditioned space.
- Return or supply ducts located in joist cavity in a floor over a crawlspace. If the floor under the ducts (the crawlspace ceiling) is insulated, the ducts are in a conditioned space. If the floor and walls of the crawlspace are insulated and sealed, the ducts are in a conditioned space. If the floor, walls and ceiling of the crawlspace are uninsulated, the ducts are located in an unconditioned space.

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.

Under the Hard-To-Reach template, duct efficiency improvements reduce 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.

Duct Improvement Air Flow Requirements

Measurements to determine whether the air-flow requirements are met must be performed in accordance with Xcel Energy-approved procedures. In applications where a majority of the ducts is 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 Xcel Energy's sole option.

In applications where duct leakage to outside must be directly measured, the Project Sponsor must use the combination Duct Blaster (or equivalent) and blower door method. This procedure is detailed in Chapter 7 (pressurization) or Chapter 11 (depressurization) of the Duct Blaster manual, and is available for download from the Energy Conservatory Web site at www.energyconservatory.com/support/support5.htm. Other tests may be accepted at Xcel Energy's sole option.

The Project Sponsor may be required to provide Xcel Energy with evidence of competency such as HERS or HERO certifications.

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

Air Flow Requirements for Duct Efficiency Measure		
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

Duct Efficiency Improvement				
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
1	0.42092	3.73605	1.97773	0.000486

Duct Improvement Air Flow Requirements

Air Flow Requirements for Duct Efficiency Measure		
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

Duct Efficiency Improvement				
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
1	0.42092	3.73605	1.97773	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:

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

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

Efficiency Standard

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

Deemed Savings**Energy Savings - Electric Water Heater Replacements**

Electric Water Heater Replacements - Energy Savings			
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.

Gas Water Heater Replacements - Energy Savings			
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.

Electric Water Heater Replacements - Demand Savings			
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

Water Heater Jacket	
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 (Hard-to-Reach Template Only)

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.³ 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.

³ 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

Low Flow Showerheads	
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:

kWh savings	Showerheads per Household			
	One	Two	Three	Four
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 (Hard-to-Reach Template Only)

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, 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

ENERGY STAR® Refrigerators					
Replace on Burnout kWh Savings	Replace on Burnout Peak kW Savings	Multi-family Retrofit kWh Savings	Multi-family 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

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

Multi-family 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. To be eligible, the source of the water for the dishwasher must be an electric water heater.

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) ⁽¹⁾⁽²⁾	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.

Modified Energy Factor, MEF (lbs. /kWh)	Unit Energy Consumption (kWh/cycle)	Annual energy consumption (kWh) ⁽¹⁾⁽²⁾
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	298	0.036
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	59	0.007
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 (Hard-to-Reach Only)

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

Compact Fluorescent Lamps					
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

Solar Water Heating Demand Savings	kW
	0.42

Energy Savings

Water Heating Replacements – Solar Water Heating Energy Savings			
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".
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.

Deemed Savings

Energy Savings

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

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

Demand Savings

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

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

⁴ Watts DC_{STC} refers to the system's factory rated output at standard test conditions, which assumes 1,000 w/m² of solar radiation and 25 degree Celsius cell operating temperature.

Appendix B Glossary

- A -

Affiliate: As adopted by the PUC, 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 for equipment replacement projects implemented 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 reflects 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 Xcel Energy sets aside during the project implementation phase for a given Project Sponsor who has submitted a successful application prior to Xcel Energy'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 SOP Agreement 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 Measures to that of an appropriate Baseline.

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 Xcel Energy 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. A Project Sponsor may submit an invoice for this payment following Xcel Energy's approval of the Project Sponsor's Project Implementation Report (PIR).

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 -

Measure: The new equipment, material, or systems that, when installed and used at a Project Site, improve the electrical efficiency of existing and ongoing electricity-consuming end uses which meet the requirements of the Contract Documents. Measures do not include equipment, material or systems that are installed as a part of new construction or major rehabilitation.

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 Performance Period, 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: The electrical demand at the time of the highest annual demand on the utility's system, measured in 15 minute intervals.

Peak Demand Savings: For purposes of the Xcel Energy 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, for weather-dependent measures or shorter for non weather-dependent measures, following the approval of a Project Sponsor's Project Implementation Forms. It is during this period that measurement and verification is to take place.

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 Xcel Energy's M&V Report and may be up to 60% of the total estimated incentive included in the SOP Agreement.

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

Project: The sum of all activities required to achieve the Estimated Energy Savings and Estimated Peak Demand Savings included in the Project Sponsor's application.

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: The location of a Host Customer's facilities where approved Measures will be installed and from which Peak Demand Savings and Energy Savings will be obtained. A single Project may include Measures installed at multiple Project Sites.

Project Sponsor: Any organization, group, or individual who contracts with Xcel Energy 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 -

SOP Agreement: A contract entered into by the Project Sponsor and Xcel Energy following the approval of the Project Sponsor's project application (PA) and Xcel Energy'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.

Appendix C Lighting Adjustment Factors

For projects where lighting kW % or kWh % is greater than 65%, the incentive payments shall be adjusted based on the following formulas:

$$\text{Adjusted kW savings} = (\text{Total kW} * 0.65) + \text{Non-lighting kW}$$

$$\text{Adjusted kWh savings} = (\text{Total kWh} * 0.65) + \text{Non-lighting kWh}$$

Incentive payments to Project Sponsor are based upon adjusted kW and kWh savings.

Examples:

The value of adding non-lighting measures to a lighting-only project is demonstrated below. The incremental increase in adjusted kW is higher than the incremental increase in total kW.

Lighting kW	Non-ltg. kW	Total kW	Lighting %	kW Adj. Factor	Adjusted kW
20	0	20	100%	0.65	13.0
20	1	21	95%	0.70	14.7
20	2	22	91%	0.74	16.3
20	3	23	87%	0.78	18.0
20	4	24	83%	0.82	19.6
20	5	25	80%	0.85	21.3
20	6	26	77%	0.88	22.9
20	7	27	74%	0.91	24.6
20	8	28	71%	0.94	26.2
20	9	29	69%	0.96	27.9
20	10	30	67%	0.98	29.5
20	11	31	65%	1.00	31.0
20	12	32	63%	1.00	32.0

Sample Calculation

A project to be implemented at an office building (given as an example – office building to not apply to HTR or Residential SOPs) is projected to result in 15 kW of lighting savings and 4 kW of HVAC savings. In addition to the demand savings, the lighting measures will provide 60,000 kWh of annual energy savings, and the HVAC measures will provide 8,000 kWh of annual energy savings.

Adjusted Demand (kW) Payment Calculation:

Percentage of kW savings from lighting = $15/19 = 78.9\%$

Adjusted kW = $(19 * 0.65) + 4$

Adjusted kW savings = $12.35 + 4 = 16.35$ kW

kW payment = $16.35 * \$278 = \$4,545.30$

Adjusted Energy (kWh) Calculation:

Percentage of annual kWh savings from lighting = $60,000/68,000 = 88.2\%$

Adjusted kWh = $(68,000 * 0.65) + 8,000$

Adjusted kWh savings = $44,200 + 8,000 = 52,200$ kWh

kWh payment = $52,200 * \$0.095 = \$4,959.00$

Appendix D PUCT-Approved Customer Eligibility Forms

(see www.xcelenergyefficiency.com)

Public Utility Commission of Texas

Self-Certification Form of Income Eligibility for Full Incentive Energy Efficiency Services

This statement is made to verify my household income. The Public Utility Commission of Texas has authorized energy efficiency programs to reduce the utility bills of income eligible households. Contractors participating in the programs receive higher incentive payments when you are income eligible. The purpose of the higher payment is to enable the contractor to provide the improvements at very low cost or at no cost to you.

Name			
Street Address		Apartment Number	
City		TX	Zip Code
Area Code ()	Phone Number	Number of Persons in Household	

I currently qualify in one of the following categories. Check the appropriate category box.

Category 1

I receive benefits from one or more of the programs listed below (check each box that applies):

<input type="checkbox"/> Food Stamps	<input type="checkbox"/> Medical Assistance	<input type="checkbox"/> Temporary Assistance to Needy Families
<input type="checkbox"/> Supplemental Security Income	<input type="checkbox"/> Children’s Health Insurance Program	<input type="checkbox"/> Qualified Medicare Beneficiary
<input type="checkbox"/> Public Housing, Section 8 Housing, or Other Housing Authority Assistance		

Participating in this program will not affect your eligibility for other program benefits. If you checked one or more of the boxes in Category 1, please sign and date the form

Category 2

My total household income before taxes is at or below the amount shown in the table below as determined by completing the Income Calculation Worksheet at the bottom of this form. **(Do not check this box before completing the worksheet.)**

INCOME CALCULATION WORKSHEET

Step 1-Fill out the Income Calculation Worksheet.

Instructions: **Do not** complete this worksheet if you checked any of the boxes in Category 1. To accurately determine your **household income** you must include the income of all persons residing in your home from all sources. To determine the amount of income in each category enter the amount(s) on the check or benefit statement.

Amount per week / month / year

(circle one)

Wages from full or part-time employment as shown on paystub or W-2 form _____

Unemployment or Worker’s Compensation _____

Social Security _____

Retirement Income _____

Child Support and/or Alimony _____

All other earnings _____

TOTAL HOUSEHOLD INCOME _____

(Add the amount entered on each line to figure your total household income.)

Step 2. Compare your total household income per week, month or year to the amount shown in the table below for the number of persons in your household. If your total household income is equal to or less than the amount shown in the table you are income eligible. Please check the box next to Category Two and sign and date the form.

Household Size	200% Eligibility Guideline		
	Annual Income	Monthly Income	Weekly Income
1	\$21,660	\$1,805	\$417
2	\$29,140	\$2,428	\$560
3	\$36,620	\$3,052	\$704
4	\$44,100	\$3,675	\$848
5	\$51,580	\$4,298	\$992
6	\$59,060	\$4,922	\$1,136
7	\$66,540	\$5,545	\$1,280
8	\$74,020	\$6,168	\$1,423
For each additional person, add	\$7,480	\$623	\$144

Notice: Income ceilings listed here are for **April 1, 2009 -March 31, 2010**. Income ceilings must be calculated based on the federal poverty guidelines as published annually in the *Federal Register*. Annual updated forms are posted on www.puc.state.tx.us

Under penalty of perjury, I certify that the above declaration is true and correct. I understand that the information is subject to audit and investigation by the Public Utility Commission of Texas.

Applicant signature	Date	Contractor signature	Date

The information provided on this form will be used solely for the purpose of determining whether your household is eligible for this program and will be kept confidential by the contractor and by the Public Utility Commission of

Texas. It will not be sold or provided to any other party. Keep a copy of this form for your records.

PUBLIC UTILITY COMMISSION OF TEXAS

Property Owner Certification Form of Tenant Income Eligibility

For Full Incentive Energy Efficiency Services

This form is to verify that at least 75 percent of the units: (1) are rented by income eligible customers, and (2) have a separate electric meter. The Public Utility Commission of Texas has authorized energy efficiency programs to reduce the utility bills of income eligible tenant households. Contractors participating in the programs receive higher incentive payments when at least 75 percent of the tenants qualify as income eligible. The purpose of the higher payment is to enable the contractor to provide the improvements to 100 percent of the units at a cost that will provide the benefit of lower electric bills to tenants with a very low or no increase in rent. One form must be filled out for each qualifying multi-family apartment complex.

Name of applicant (property owner or agent)		Name of property owner	
Address			Suite number
City		State: TX	Zip Code
Area Code ()	Phone Number	Area Code ()	Fax Number

Name of multi-family apartment complex		Number of units in complex	
Name of management company		Name of on-site property manager	
Street address			
City		State: TX	Zip Code
Area Code ()	Phone Number	Area Code ()	Fax Number

The multi-family apartment complex qualifies in one of the following categories. Check the appropriate category box.

Category 1

The multi-family apartment complex participates in one or more of the programs listed below (check each box that applies):

<input type="checkbox"/> Public Housing Authority	<input type="checkbox"/> Housing Trust Fund
<input type="checkbox"/> Multi-family Bond Program, with less than 25% units at market rate	<input type="checkbox"/> Low-Income Housing Tax Credit Program, with less than 25% units at market rate
<input type="checkbox"/> Project based Section 8	<input type="checkbox"/> Affordable Housing Disposition Program
<input type="checkbox"/> HOME Rental Housing Development	<input type="checkbox"/> Rural Rental Section 515 (FMHA)

If you checked one or more of the boxes in Category 1, please sign and date the form. **You must attach documentation such as the land use restriction agreement, showing participation in the above checked programs.**

Category 2

At least 75 percent of the tenant household incomes before taxes are at or below 200% of the Federal Poverty Guidelines. ***(Do not complete the worksheet on the reverse side of this form if you checked any of the boxes in Category 1. Do not check this box before completing the worksheet)*** To accurately determine tenant household income you may use the tenant rental application showing the number of individuals residing in the unit and the household income dated from within the past 18 months. If the rental application does not show the required information or the information is over 18 months old, then the tenant(s) must fill out a Commission approved Self-Certification Form. Compare the tenant total household income per week, month or year to the amount shown in the table below for the number of persons residing in the unit. If the total household income is equal to or less than the amount shown in the table the unit is income eligible for the full incentive. If the unit is not income eligible, the units is eligible for the residential incentive level. Please check the box next to Category Two and sign and date the form. **Copies of the worksheet(s) and Self Certification Forms must be attached to this form. You may attach copies of the rental applications in lieu of the work sheet.**

Number of income eligible units _____

Number non-income eligible units, including vacant units _____

Total number of units: _____

Percent of income eligible units (income eligible units divided by the total number of units) % _____

Household Size	200% Eligibility Guideline		
	Annual Income	Monthly Income	Weekly Income
1	\$21,660	\$1,805	\$417
2	\$29,140	\$2,428	\$560
3	\$36,620	\$3,052	\$704
4	\$44,100	\$3,675	\$848
5	\$51,580	\$4,298	\$992
6	\$59,060	\$4,922	\$1,136
7	\$66,540	\$5,545	\$1,280
8	\$74,020	\$6,168	\$1,423
For each additional person, add	\$7,480	\$623	\$144

Notice: Income ceilings listed here are for April 1, 2009 -March 31, 2010. Income ceilings must be calculated based on the federal poverty guidelines as published annually in the Federal Register.

Annual updated forms are posted on www.puc.state.tx.us

Under penalty of perjury, I certify that the above declaration is true and correct. I understand that the information is subject to audit and investigation by the Public Utility Commission of Texas upon reasonable notification and during normal business hours.

Applicant signature (property owner or agent)	Date	Contractor signature	Date
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The information provided on this form will be used solely for the purpose of determining whether the complex is eligible for this program and will be kept confidential by the contractor and by the Public Utility Commission of Texas. It will not be sold or provided to any other party.

