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BEFORE THE ARIZONA CORPORATION COMMISSION

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COMMISSIONERS
KRISTIN K. MAYES - CHAIRMAN
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IN THE MATTER OF THE APPLICATION OF
TUCSON ELECTRIC POWER COMPANY FOR
APPROVAL OF ITS DEMAND-SIDE
MANAGEMENT PROGRAM PORTFOLIO PLAN.

DOCKET NO. E-01933A-07-0401

**REQUEST FOR APPROVAL OF
MODIFICATION AND
EXPANSION OF RESIDENTIAL
HVAC RETROFIT PROGRAM**

**(Expedited Review and Approval
Requested)**

Tucson Electric Power Company ("TEP" or "Company"), through undersigned counsel, hereby requests the Arizona Corporation Commission ("Commission") to approve its proposed modification and expansion of the Residential HVAC Program, which is now called the "Existing Homes Program" (the "Program").¹ A detailed description of the Program is provided in Attachment 1 which is incorporated herein by this reference.

In Decision No. 70376 (June 13, 2008), the Commission approved the Program for TEP and stated:

IT IS FURTHER ORDERED that TEP review the energy savings from the program in order to determine whether a contractor qualification and incentive component, similar to that in place for the Arizona Public Service (APS) Residential HVAC DSM program, would help to ensure cost-effective energy savings.

IT IS FURTHER ORDERED that by September 30, 2009, that Tucson Electric Power Co. shall submit data to Docket Control demonstrating the cost

¹ The name of the Program was changed because it is expanding beyond just an HVAC program.

1 effectiveness of the 16 SEER and above units and Staff shall review and report on
2 this by November 15, 2009.

3 TEP reviewed the Arizona Public Service (APS) Residential HVAC Demand-Side
4 Management ("DSM") program and on September 30, 2009 submitted information demonstrating
5 the cost effectiveness of 16 SEER and above units in compliance with Decision No. 70376. As a
6 result of these efforts, TEP now proposes to re-design and offer a more comprehensive Program
7 that will increase energy efficiency ("EE") opportunities for the residential existing-homes sector.
8 The expanded Program will address areas of building comfort, safety, and durability, as well as EE
9 equipment upgrades. The Program will be available to all TEP residential customers who own
10 single-family detached homes, town homes and other attached residential buildings with up to four
11 units. The Program will focus on two goals: 1) retrofitting existing structures to be more energy
12 efficient through proper sizing and quality installation of high-efficiency HVAC equipment,
13 sealing leaky duct work and installation of thermal shell measures, such as insulation, air sealing,
14 thermal air barriers and shade screens; and 2) working with the development community and to
15 encourage training, mentorship, and heightened attention to quality assurance and quality control,
16 leading to eventual Building Performance Institute ("BPI") certification for participating
17 contractors. As a result of the expanded activities, TEP is requesting an increased budget to cover
18 the expanded offerings. The incremental increase to requested budgets for 2010 through 2012 are
19 shown in the table, below.

20
21 **Incremental Increase in Program Budget**

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	2010	2011	2012
Original Program Budget	\$530,450	\$546,364	\$562,754
Expanded Program Budget	\$1,122,520	\$2,096,167	\$2,903,952
Incremental Increase in Program Budget	\$592,070	\$1,549,803	\$2,341,198

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1 As indicated in the table above, the first year budget has been reduced in 2010 to account
2 for only a partial year ramp-up. Budget projection for 2011 also anticipates a partial year ramp-
3 up, as TEP concentrates on more contractor recruitment and training necessary to support the full
4 Program offering. For informational purposes, it is anticipated that the incremental increase in the
5 DSM adjustor to provide budgets necessary for this Program will be approximately 000167 in
6 2011 and \$0.000252 in 2012 based on forecasted retail sales.

7 WHEREFORE, TEP respectfully requests that the Commission approve its proposed
8 modifications to its Program and approve the proposed increase to the Program's budget.

9 RESPECTFULLY SUBMITTED this 2^d day of April 2010.

10 ROSHKA DEWULF & PATTEN, PLC

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By 

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Original and 13 copies of the foregoing
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Tucson Electric Power Company: Existing Homes Program

Attachment 1

Residential HVAC Program

Expanded and Redesigned as:

Existing Homes Program

Tucson Electric Power Company: Existing Homes Program

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Tucson Electric Power Company: Existing Homes Program

Program Concept and Description

Tucson Electric Power (“TEP”) proposes to re-design the Residential HVAC program into a more comprehensive and re-branded “Existing Homes Program” (the “Program”) to increase energy efficiency (“EE”) opportunities for the residential existing-homes sector. The expanded Program will address areas of building comfort, safety, and durability, as well as EE equipment upgrades. The Program, by design, is intended to be a precursor to the eventual launch of the statewide Arizona Home Performance program that is currently being researched by a collaborative of Arizona utilities through a grant from the Department of Energy. After design is complete, the Arizona Home Performance Program will be submitted to Environmental Protection Agency (“EPA”) with a request to utilize EPA labeling as Home Performance with Energy Star.

Core components of TEP’s Existing Homes Program will be as follows:

- Qualifying efficiency measures are aimed at improving the building’s efficiency through improvements in the building’s thermal envelope (the walls, ceilings, floors, doors and windows that separate outdoor air from indoor conditioned air) and mechanical equipment;
- All installations will be completed by pre-qualified contractors who are certified by TEP. TEP will establish a list of qualified contractors and will outline requirements for inclusion on this list. These requirements will ramp up over time, resulting in a requirement that contractors receive certification by the Building Performance Institute (“BPI”). The list will be posted on TEP’s website providing a source of referrals for qualified contractors. Participating contractors must be licensed, insured, and agree to abide by Program terms/conditions, and take required training and orientation classes to remain on the TEP list of qualified contractors. While TEP will assist with contractor training and education, the utility will not be liable for any work completed by participating contractors, be they BPI certified or not. Participating contractors who are non-BPI certified will receive heightened mentorship, oversight, and training as they work toward becoming BPI certified;
- TEP will sponsor building science training and support to participating trade allies with the intention of improving the quality and availability of EE contracting work being performed throughout the region;
- TEP will also implement various education and outreach strategies to raise consumer awareness of the benefits and availability of EE improvements to their homes;
- Incentives for the purchase of qualifying high-efficiency equipment and/or home performance services, such as insulation and air-sealing, will be paid directly to contractors, with a requirement that the customer invoice clearly shows the utility rebate and customer discount. TEP believes this approach of paying the incentive directly to the contractor will assist with overall Program promotion and contractors agreeing to abide by the new required terms and conditions, and heightened standards of professional installation that TEP will be requiring; and

Tucson Electric Power Company: Existing Homes Program

- TEP will provide consumer education on the benefits of qualifying equipment and home performance services, and will promote the Program through TEP promotional events, participating contractors, the TEP website, and print advertising.
-

Program Objectives

The Program will focus on two core goals: 1) proper sizing and quality installation of high efficiency HVAC equipment, sealing leaky duct work and installation of thermal shell measures such as insulation, air sealing, thermal air barriers and shade screens; and 2) advancing the building science skills of participating contractors through contractor training, mentorship, and heightened attention to quality assurance and quality control, leading to eventual BPI certification for participating contractors. The Program will achieve energy and demand savings from the installation of these measures and contribute toward transforming the industry to emphasize best practice building science principles. The Program will invest in training and mentorship of participating contractors to understand the “house as a system” building science and to achieve BPI certification in advance of an anticipated Arizona statewide Home Performance program.

Program Rationale

The rationale for this Program is to produce long term electric savings in the residential sector. The Program will assist participants in identifying cost-effective EE opportunities, and provide incentives to make recommended home improvements. In addition, the Program seeks to transform the existing homes residential market to one where consumers understand and value: 1) the advantages that an EE home provides; 2) the numerous EE product choices; and 3) the experienced contractors available to perform the work. The Program will also meet the longer-term objective of market transformation by expanding the network of qualified, experienced contractors to perform EE retrofit work. The Program will work to provide an educational resource to consumers and make it easy for them to take action to capture the significant savings potential in the existing homes market.

Target Market

Because of the high cost associated with new HVAC equipment and modifications to the structure, this Program is targeted to TEP residential customers, primarily owners of single family detached homes, town homes and other attached residential buildings with up to four units who are considering home maintenance, repair, remodeling, or are experiencing high energy bills or comfort issues. This Program is only available to existing homes and is not applicable for residential new construction or multi-family apartment structures with more than four units.

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Program Eligibility

The Program is available to all TEP residential customers who own single family detached homes, town homes and other attached residential buildings up to four units even if the building is being rented to an alternate party.

Customer eligibility –

- Program participants must be in existing residential homes currently served by TEP.

Contractor eligibility –

- Participating contractors will be rigorously screened for inclusion on a list of qualified contractors. Criteria for inclusion will include training requirements that results in successful BPI certification in the respective work areas (shell, HVAC, etc.) as determined by TEP.
 - Within one year of participation in the Program, or before the statewide Arizona Home Performance with Energy Star Program is launched, contractors must obtain BPI certification.
 - All contractors must sign a Program participation agreement which acknowledges their adherence to all Program policies and procedures.
 - Contractors must be licensed, bonded and insured.
 - Contractors must maintain a good standing with the better business bureau.
-

Current Baseline Conditions

Currently, TEP offers a residential HVAC incentive program that pays \$200 for 14 SEER and higher and \$250 for 16 SEER and higher HVAC equipment. The incentive is based strictly on equipment installed and requires submission of a Manual J sizing calculation. TEP has found that the HVAC incentive, as currently designed, is not achieving desired cost-effective savings, and is not contributing significantly toward transforming the Tucson marketplace to one that is focused on quality installation of high-efficiency technologies and services. Significant energy and demand savings opportunities exist to achieve residential EE savings through this proposed Program.

Products and Services

The Program will offer incentives for the measures detailed in Table 1, below. Note: for all HVAC measures, quality installation and duct-sealing is required. Additionally, depending on the diagnostic equipment used for duct-sealing, and the reported savings, the incentive will vary with two options: 1) a prescriptive incentive, which is based on visual inspection and corrections to ducts; and 2) a performance incentive, which is based

Tucson Electric Power Company: Existing Homes Program

on the use of diagnostic equipment and measured reduction in duct-leakage, and associated calculated incentive per cubic foot per minute at 25 pascals ("pa") pressure ("CFM-25") reduced.

Table 1: Incentive Schedule

Measure No.	Measure	Eligibility	QI Incentive	Downsizing Incentive (must be at least \$1,000)	HVAC Required Duct Test/Repair Incentive	Equipment Incentive	Maximum Total Incentive	Incentive as % of Ins. Costs
1	ROB HVAC with QI and Duct Sealing (Prescriptive)	ENERGY STAR Packaged or Split A/C and Heatpumps, with QI and Duct Sealing	\$150	\$150	50% of installed cost up to \$350	\$200	\$850	59%
2	ROB HVAC with QI and Duct Sealing (Performance)	ENERGY STAR Packaged or Split A/C and Heatpumps, with QI and Duct Sealing	\$150	\$150	\$3/CFM 25 reduced up to 50% of installed cost capped at \$650	\$50	\$1,000	70%
3	Early Retirement HVAC with QI and Duct Sealing (Prescriptive)	Base: Operable HVAC unit <=9.0 SEER; New: ENERGY STAR Packaged or Split A/C and Heatpumps with QI and Duct Sealing	\$150	\$150	50% of installed cost up to \$350	\$850	\$1,500	61%
4	Early Retirement HVAC with QI and Duct Sealing (Performance)	Base: Operable HVAC unit <=9.0 SEER; New: ENERGY STAR Packaged or Split A/C and Heatpumps with QI and Duct Sealing	\$150	\$150	\$3/CFM 25 reduced up to 50% of installed cost capped at \$650	\$750	\$1,700	69%
5	Duct Sealing (Prescriptive)	Ducts are repaired in compliance with program requirements. Contractor does not need to use diagnostic equipment, but will be required to attend training on identifying common air leaks and repair methods. Subject to pre and post inspection and on-going QA/QC; TEP's IC will conduct field inspections and sample pre-post testing.	n/a	n/a	n/a	n/a	50% of installed cost up to \$350	37%
6	Duct Sealing (Performance)	Duct test & repair in compliance with program requirements. Contractor tests ducts, repairs and seals, testing in/out and reporting pre and post leakage results to TEP. Subject to pre and post inspection and on-going QA/QC;	n/a	n/a	n/a	n/a	\$3/CFM 25 reduced up to 50% of installed cost capped at \$650	70%
7	Air Sealing	Blower door guided air sealing in compliance with program requirements. Contractor tests-in, repairs and seals, testing in/out and reporting pre and post leakage results to TEP. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required.	n/a	n/a	n/a	n/a	50% of installed cost up to \$250	68%
8	Air Sealing & Attic Insulation	Blower door guided air-sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-13, increasing insulation to >=R-38.	n/a	n/a	n/a	n/a	50% of installed cost up to \$800	69%
9	Shade Screens/Window Film	Solar shade screens/window film for South and West exposure of home. Must have a shading coefficient of <=0.40. Industry jargon "blocks 80% of sun's heat".	n/a	n/a	n/a	n/a	\$1/sqft installed up to \$250	35%

ROB – replace on burnout
IC – implementation contractor

QI – quality installation
QA/QC – quality assurance/quality control

CFM – cubic feet per minute

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1. HVAC Replace on Burnout:

The Program will offer incentives for installation of HVAC equipment (Central A/Cs and Heat Pumps- split or packaged) that are ENERGY STAR qualified. For simplicity in marketing and communications to participating contractors and the general public, TEP is proposing that the efficiency eligibility criteria be based solely on HVAC equipment meeting minimum ENERGY STAR efficiency standards by equipment type (AC or Heat pump) and by configuration (split or packaged). The Program will make customers aware of the energy savings associated with higher efficiency equipment, however, no premium incentives will be offered for higher performance equipment. Part of the justification for this approach to incent design is for simplicity and to address the reality that, given current costs, higher efficiency equipment does not perform as well given current benefit-cost test results.

The incentive is available for “replace on burnout” system replacements in existing homes. The incentive will be paid to participating contractors upon submission of required application forms and will be based on complying with core eligibility criteria detailed below.

- ENERGY STAR equipment – See Section 1 (a), below, for incentive detail.
- Quality Installation – See Section 1(b), below, for incentive detail.
- Equipment Downsizing – See Section 1 (c), below, for incentive detail.
- Duct Sealing – See Section 3, below, for incentive detail.

Incentive Eligibility Requirements:

a) **ENERGY STAR HVAC Equipment Incentive:** Equipment must meet or exceed minimum ENERGY STAR requirements, as detailed below, and will be eligible for a \$200 incentive:

System Type	SEER	EER	HSPF
Central A/C –Split	>=14.5	>=12.0	n/a
Central A/C- Packaged	>=14.0	>=11.0	n/a
Heat Pump- Split	>=14.5	>=12.0	>=8.2
Heat Pump- Packaged	>=14.0	>=11	>=8.0

b) **Quality Installation Incentive:** Equipment must be installed in accordance with Program defined “quality installation” criteria. Quality Installation includes proper sizing and matching of system condenser and coil, correct refrigerant charge, and proper air-flow. Completion of a Manual J system sizing test is required and will be collected and reviewed by the Program manager. The incentive for quality installation and completion of the Manual J form is \$150.

c) **HVAC Equipment Downsizing Incentive:** If the participating contractor demonstrates that the new system installed is at least 0.5 tons smaller than the

Tucson Electric Power Company: Existing Homes Program

system being replaced, yet still within the recommended sizing guidelines per the Manual J test then an additional proper sizing incentive of \$150 is available.

d) Duct Sealing Incentive: To optimize equipment efficiency, the Program will require that duct-sealing be completed on all jobs as a requirement for incentive eligibility. For duct work that is inaccessible, effort must be focused on sealing air leaks directly around the HVAC equipment and at sheetrock-to-boot connections. The incentive associated with the duct-sealing requirement will be the same as that outlined in Section 3 on duct sealing, below.

2. HVAC Early Retirement:

In addition to capturing HVAC energy and demand savings from replace on burn-out in existing homes, TEP proposes to offer an “HVAC Early Retirement” incentive. The early retirement incentive is targeted only for existing HVAC systems that are fully operational and have a nameplate SEER rating that is ≤ 9.0 . The early retirement incentive requires that contractors provide TEP a 72 hour advance notice, which will allow TEP the option and discretion to perform spot checks to ensure systems being reported as eligible early retirement jobs actually conform to Program requirements, or participating contractors risk removal from the participating contractors list.

Similar to the HVAC ROB incentive, the early retirement incentive, will offer incentives for installation of HVAC equipment (Central A/Cs and Heat Pumps- split or packaged) that are ENERGY STAR qualified. For simplicity in marketing and communications to participating contractors and the general public, TEP is proposing that the efficiency eligibility criteria be based solely on HVAC equipment meeting minimum ENERGY STAR efficiency standards by equipment type (AC or Heat pump) and by configuration (split or packaged).

The incentive will be paid to participating contractors upon submission of required application forms and will be based on complying with four core eligibility criteria:

- ENERGY STAR equipment – See Section 1 (a), above, for incentive detail.
- Quality Installation – See Section 1(b), above, for incentive detail.
- Equipment Downsizing – See Section 1 (c), above, for incentive detail.
- Duct Sealing – See Section 3, below, for incentive detail.

3. Duct Sealing

Repairing leaky HVAC duct-work represents one of the most important and cost-effective energy saving opportunities for the existing homes market. As such, TEP is offering a duct test and repair incentive for those TEP residential customers who have not participated in TEP’s HVAC replace on burnout or early retirement incentive program. If customers take advantage of the duct sealing incentive, and subsequently apply for an HVAC related incentive, they will be ineligible for additional incentive dollars associated with duct sealing requirements. If customers live in a home where duct sealing was completed during initial construction, such as TEP Guarantee Homes and/or Energy Star

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Homes, they will be ineligible for additional incentive dollars associated with duct sealing requirements.

The incentive associated with the duct-sealing requirement will be based on two tiers, depending on how the effectiveness of the duct-sealing is reported. Contractors will have a choice of applying for either the prescriptive or performance incentive.

Prescriptive Duct Sealing: The prescriptive duct sealing approach requires contractors to complete a duct-sealing check-list that identifies typical high-duct-leakage locations and identify actions taken to repair/seal leaks. This approach does not require the use of diagnostic testing equipment such as a duct-blaster. As part of quality assurance/quality control, TEP will randomly sample installations to confirm contractors are complying with the prescriptive duct sealing requirements. Given the prescriptive duct sealing approach is not performance tested, the incentive for this component will be less than the performance incentive. The prescriptive duct sealing incentive is 50% of installed cost up to \$350. Through post-installation quality assurance, TEP will be able to identify areas of duct-work that received treatment (e.g., evidence of recently applied duct-sealing mastic, etc.).

Performance Duct Sealing: The performance duct sealing approach is similar to the prescriptive duct sealing method, requiring a contractor check-list of work completed, however, the incentive is based on performance tested pre and post duct-sealing leakage reductions as measured in CFM-25. The performance incentive is \$3/CFM 25 reduced up to a maximum of \$650. This performance-based incentive option is available only for participating BPI certified contractors.

4. Air Sealing and Thermal Air Barrier

TEP will pay an incentive of 50% of installed costs up to \$250 for blower door guided whole –house air-sealing and thermal air barrier repair. Blower door guided whole house air sealing and air barrier repair is typically one of the most cost effective measures in existing homes. To ensure estimated savings are being achieved, a Blower Door Test by a trained and participating contractor shall be required with reported air leakage numbers in CFM-50 before air sealing and thermal air barrier measures are implemented, and CFM-50 after air sealing has been completed. A summary showing net air leakage reduction and methods used to achieve the reduction will be required to receive an incentive. Combustion safety testing is required. Participating contractors will be required to attend orientation and training classes sponsored by TEP, and required to obtain BPI certification within one year of participation in the Program or before the launch of the statewide Arizona Home Performance program.

5. Air Sealing, Thermal Air Barrier & Insulation

TEP will pay a combined incentive of 50% of installed costs up to \$800 for blower door guided whole –house air-sealing, air barrier repair and attic insulation. Homes are eligible for this joint air-sealing and attic insulation incentive only if the existing attic insulation is \leq R-13 (or upon Program approval is equivalent or less than R-13 due to

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improper installation) and the insulation upgrade is $\geq R-38$. Participating contractors will be required to use a Blower Door Test and report pre and post air-leakage reductions recorded in CFM-50. Combustion safety testing is required. Participating contractors will be required to attend orientation and training classes sponsored by TEP, and required to obtain BPI certification within one year of participation in the Program or before the launch of the statewide Arizona Home Performance program.

A prerequisite for the insulation rebate is a Blower Door Test by a trained and certified contractor. If the Blower Door Test shows building air leakage is >0.35 ACH, then air-sealing and thermal air barrier repair must be completed prior to the installation of new insulation.

6. Solar Shade Screens/Window Film

TEP will pay an incentive of \$1 per square foot of shade screen/window film up to \$250 for installation of solar shade screens or window film. The Program requires that shade screens/window film are installed at a minimum on the South and West exposure of the home. Shade screens and window film must have a shading coefficient of ≤ 0.40 or equivalent to blocking "80% of the sun's heat." Participating contractors who only install shade screens/window film will not be required to obtain BPI certification.

Combustion Safety Testing

All Program-approved HVAC, duct sealing, air sealing, and insulation contractors must be able to perform a combustion appliance safety test for all dwellings with a combustion appliance (i.e., an appliance that employs direct combustion of its fuel source) and notify customer of any deficiency(ies) that are identified. All Combustion Appliance Safety Test deficiency(ies) (e.g., draft deficiencies, high CO levels) must be corrected before duct system repairs or air leakage and insulation measures are performed.

Program Delivery Strategy and Administration

The strategy for Program delivery and administration is as follows:

- TEP will provide Program management oversight and marketing and rebate processing. Field delivery and implementation of the Program, including responsibilities for recruitment, training, and mentorship of participating contractors, will be outsourced to a competitively selected third party provider. This third party implementation contractor will also be responsible for data tracking, technical support and for participating contractors. The actual direct delivery of efficiency services to residential customers will be by participating independent contractors.
- Key partnering relationships will include:
 - HVAC, insulation, and air sealing training professionals;

Tucson Electric Power Company: Existing Homes Program

- Community interest groups;
- HVAC, insulation, and air sealing contractors trained in Program procedures; and
- The Arizona Energy Office and local community colleges, or other industry experts and institutions to provide training, education and awareness.
- **Building Performance Institute Certification:**
 - TEP will require BPI certification for participating contractors within one year of enrolling in the Program or before the launch of the statewide Arizona Home Performance program. The BPI certification will be required of at least one technical supervisory manager representative from each participating contractor firm. The specific BPI certification credential must be in the core competency area(s) of the participating firm. As such, consumer marketing and contractor training in 2010 and beyond will emphasize the importance of BPI certification;
 - TEP will begin an extensive campaign to recruit contractors interested in receiving BPI certification. TEP will capitalize on existing resources and specialty associations to spread the word;
 - TEP will organize and deliver BPI certification classes for contractors; and
 - TEP will help to subsidize training costs associated with BPI certifications (and ownership of Program required diagnostic equipment (e.g., blower doors / duct blasters). Partial reimbursement for BPI training and diagnostic equipment will be paid after the contractor receives BPI certification and completes a minimum number of qualifying jobs as specified by the Program.

Contractor Training and Certification

The Program will initially recruit local contractors, and those with existing BPI certified technicians and Home Energy Rating System (“HERS”) certifications, encouraging them to become participating contractors. By virtue of securing these certifications, these organizations have made a commitment to EE and are the best candidates for initial Program recruitment. Partnering with these contractors will help to ensure an immediate launch of the Program. An extensive marketing campaign will be implemented to recruit contractors capitalizing on existing resources, such as the Arizona Heat Pump Council and other specialty associations, to spread the word. Currently, there are more than 60 BPI certified technicians in the state of Arizona and several more contractors are in the process of obtaining certification, however, very few of these contractors are located in Tucson.

TEP’s implementation contractor will provide an orientation of the Program which will outline Program requirements and contractors responsibilities, as well as discuss reporting and data collection procedures. Contractors interested in participating in the Program must attend the orientation as well as meet all Program requirements for training, technician certification, and Program mentoring. The quality assurance process begins with TEP’s implementation contractor who is responsible for providing training and mentoring to all participating contractor(s). The Program will provide leads to

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participating contractors. TEP's Program manager and/or the IC contractor will review documents, and may mail the homeowner a survey or perform random sampling and field inspections of work completed. TEP's Program manager will also document contractor deficiencies, track homeowner complaints, issue corrective action, and provide constructive feedback to ensure Program quality.

After successful completion of the general TEP Program participation class, contractors wishing to join the Program will be enrolled in a "mentor" phase. During the "mentor" phase, the contractor will receive a ride-a-long for their first three jobs. At that time, the mentor will complete a contractor assessment to determine if the work the contractor is conducting complies with minimum Program standards. If so, they will exit the mentoring phase, but the next five jobs completed will be inspected. If the mentor determines that the contractor is not yet ready to start delivering services in compliance with Program guidelines, the mentor will recommend up to three more ride-alongs. If the contractor is still not ready to deliver services in compliance with Program guidelines after these additional ride-alongs, the contractor will be placed on hold for six months before they can reapply for participation in the Program.

This mentorship review process will be used for both BPI certified and non-BPI certified contractors, with a heightened level of expectation for BPI contractors.

Participating contractors must employ properly trained staff, and must allow inspection of work performed by the Program manager or the implementation contractor to ensure that all measures are properly installed and safety precautions are observed. Only contractor firms with BPI certified technicians on staff may take advantage of any "performance based" incentive options which are currently restricted to the duct sealing component of the Program.

This accreditation requirement provides assurance to customers and to TEP that comprehensive savings have been assessed, and that any health and safety considerations are also included in the report of recommended actions. Participating contractors must guarantee all work, and participating contractor companies must agree to abide by BPI standards governing health and safety, work quality, insurance coverage, customer service, and complaint resolution.

Rebate Processing

Rebate processing may be completed in-house but otherwise will be provided by an outsourced Program implementation contractor. Rebate application forms will be available for printing online at tep.com. Applications must be submitted by mail, along with supporting documentation and proof of paid invoices for all work conducted. All applications received will go through a quality control review for completeness, accuracy and consistency of data. In some cases, where questions are identified, processing staff will call the customer or installation contractor for verification. In addition, random inspections will be conducted to verify proper installation of all measures, as indicated on the rebate application form(s)

Tucson Electric Power Company: Existing Homes Program

Program Marketing and Communication Strategy

The marketing and communications strategy will include the following components:

- TEP will provide Program marketing and customer awareness-building through a range of strategies including:
 - Promotions on the TEP website about the benefits of purchasing high-efficiency equipment;
 - Promotion through community interest groups;
 - Advertising in major newspapers and other selected print media in TEP's service territory to raise awareness of the availability of the Program;
 - Providing information through TEP's customer care center;
 - Developing marketing pieces, including brochures and other collateral pieces, to promote the benefits of qualifying equipment, air sealing and duct sealing;
 - Assistance with responding to customer inquiries about the Program and how to purchase qualifying equipment; and
 - Training and seminars for participating trade allies; and
 - The advertising campaign will communicate that high-efficiency systems and home performance services will help reduce customer energy bills, provide equal or better comfort conditions, and are beneficial for the environment.
-

Program Implementation Schedule

TEP will issue a request for proposal ("RFP") to select an implementation contractor for the new Program in the third quarter of 2010, pending Program approval by the Arizona Corporation Commission (the "Commission"). TEP anticipates it will take two months to complete the RFP process to select and hire an implementation contractor and three months for the contractor to complete final Program operational design to introduce the Program to the general public.

Measurement, Evaluation and Research ("MER") Plan

TEP will adopt a strategy that calls for integrated data collection, which is designed to provide a quality data resource for Program tracking, management and evaluation. This approach will entail the following primary activities:

- **Database management:** As part of Program operation, TEP will collect the necessary data elements to populate the tracking database and provide periodic reporting;

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- **Integrated implementation data collection:** TEP will establish systems to collect the data needed to support effective Program management and evaluation through the implementation and customer application processes. The database tracking system will be integrated with implementation data collection processes;
- **Field verification:** TEP and/or the MER contractor will conduct field verification of the installation of a sample of measures throughout the implementation of the Program; and
- **Tracking of savings using deemed savings values:** TEP will develop deemed savings values for each measure and technology promoted by the Program and the MER contractor will periodically review and revise the savings values to be consistent with Program participation, and accurately estimate the savings being achieved by the Program.

This approach will provide TEP with ongoing feedback on Program progress and enable Program management to adjust or correct the Program so as to be more effective, provide a higher level of service, and be more cost beneficial. Integrated data collection will also provide a high quality data resource for evaluation activities.

Program Budget

Due to the expanded list of equipment and home performance services, the Program budget is expected to increase, as detailed in Tables 2 and 3, below. A comparison to the original Program design budget and the incremental increase in budget, and necessary DSM adjutor to provide this expanded Program offering is included in Table 3.

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Table 2. Existing Homes Budget (2010-2012)

TEP Existing Homes Program (2010-2012)									
Incentive Category	Description	Maximum Incentive / Measure	Units (Estimated)			Annual Budget			TOTAL (2010-2012)
			2010	2011	2012	2010	2011	2012	
Incentives									
ROB HVAC with QI and Duct Sealing (Prescriptive)	ENERGY STAR Packaged or Split A/C and Heatpumps, with QI and Duct Sealing	\$850	150	300	400	\$127,500	\$255,000	\$340,000	\$722,500
ROB HVAC with QI and Duct Sealing (Performance)	ENERGY STAR Packaged or Split A/C and Heatpumps, with QI and Duct Sealing	\$1,000	50	100	200	\$50,000	\$100,000	\$200,000	\$350,000
Early Retirement HVAC with QI and Duct Sealing (Prescriptive)	Base: Operable HVAC unit <=9.0 SEER; New: ENERGY STAR Packaged or Split A/C and Heatpumps with QI and Duct Sealing	\$1,500	100	200	250	\$150,000	\$300,000	\$375,000	\$825,000
Early Retirement HVAC with QI and Duct Sealing (Performance)	Base: Operable HVAC unit <=9.0 SEER; New: ENERGY STAR Packaged or Split A/C and Heatpumps with QI and Duct Sealing	\$1,700	25	50	100	\$42,500	\$85,000	\$170,000	\$297,500
Duct Sealing (Prescriptive)	Ducts are repaired in compliance with program requirements. Contractor does not need to use diagnostic equipment, but will be required to attend training on identifying common air leaks and repair methods. Subject to pre and post inspection and on-going QA/QC; TEP's IC will conduct field inspections and sample pre-post testing. 50% of installed cost up to \$350	\$350	150	300	400	\$52,500	\$105,000	\$140,000	\$297,500
Duct Sealing (Performance)	Duct test & repair in compliance with program requirements. Contractor tests ducts, repairs and seals, testing in/out and reporting pre and post leakage results to TEP. Subject to pre and post inspection and on-going QA/QC; Incentive is based on \$3/CFM 25 reduced up to \$650; 50% of installed cost up to \$650	\$650	100	200	400	\$65,000	\$130,000	\$260,000	\$455,000
Air Sealing	Blower door guided air sealing in compliance with program requirements. Contractor tests-in, repairs and seals, testing in/out and reporting pre and post leakage results to TEP. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required. 50% of installed cost up to \$250	\$250	50	100	150	\$12,500	\$25,000	\$37,500	\$75,000
Air Sealing & Attic Insulation	Blower door guided air sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-13, increasing insulation to >=R-38. 50% of installed cost up to \$800	\$800	50	100	150	\$40,000	\$80,000	\$120,000	\$240,000
Shade Screens	Solar shade screens for South and West exposure of home. Must have a shading coefficient of <=0.40. Industry jargon "blocks 80% of sun's heat". Rebate \$1/sq foot installed, up to \$250	\$250	150	300	500	\$37,500	\$75,000	\$125,000	\$237,500
Subtotal Incentives						\$1,172,500	\$2,345,000	\$3,057,500	\$6,575,000
Program Delivery						\$187,500	\$386,250	\$397,838	\$971,588
Rebate Processing, Data Tracking						\$33,000	\$74,250	\$127,500	\$234,750
Trade Ally Training & Certifications						\$97,500	\$100,425	\$103,438	\$301,363
Subtotal Program Delivery						\$318,000	\$560,925	\$628,776	\$1,507,701
Program Marketing						\$134,325	\$257,389	\$359,441	\$751,155
Subtotal Program Marketing						\$134,325	\$257,389	\$359,441	\$751,155
Utility Program Administration						\$60,000	\$61,800	\$63,654	\$185,454
Subtotal Utility Program Administration						\$60,000	\$61,800	\$63,654	\$185,454
Evaluation						\$32,695	\$61,053	\$84,581	\$178,329
Subtotal Evaluation						\$32,695	\$61,053	\$84,581	\$178,329
Total Incentive						\$577,500	\$1,155,000	\$1,767,500	\$3,500,000
Total Non-Incentive						\$545,020	\$941,167	\$1,136,452	\$2,622,639
TOTAL						\$1,122,520	\$2,096,167	\$2,903,952	\$6,122,639
Equivalent % of Total Budget						51%	53%	51%	57%

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Table 3. 2010 – 2012 Comparison of Program Budgets

	2010	2011	2012
Original Program Budget	\$530,450	\$546,364	\$562,754
Expanded Program Budget	\$1,122,520	\$2,096,167	\$2,903,952
Incremental Increase in Program Budget	\$592,070	\$1,549,803	\$2,341,198
Incremental Increase in Expanded Program Adjustor Mechanism	\$0.000064	\$0.000167	\$0.000252
*Forecasted Retail Sales TME May 31, 2011			9,263,626,812

Estimated Energy Savings and Environmental Benefits

Annual energy savings goals for the expanded Program are presented in Table 4, below. Appendix 1 (attached) provides further information about estimated energy savings for each measure category, including the measure and Program level benefit/cost analysis.

Table 4. Projected Energy and Demand Savings for Expanded Program

Energy and Demand Savings	2010	2011	2012	Total
Annual (kW)	859	1,718	2,629	5,207
Annual (MWh)	1,026	2,053	3,131	6,210
Lifetime (MWh)	18,560	37,119	56,221	111,899
Annual (Therms)	1,425	2,850	4,275	8,550
Lifetime (Therms)	28,500	57,000	85,500	171,000

After the 2010 ramp up of the expanded Program, energy savings is expected to significantly surpass energy savings expectations from the original Program design.

As a result of the energy savings shown in Table 4, it is estimated that the Program will produce environmental benefits through avoided CO2 emissions shown in Table 5, below.

Table 5. Projected Environmental Benefits, 2010 – 2012

CO2 Reductions	2010	2011	2012	Total
Annual (Metric Tons)	624	1,249	1,904	3,777
Lifetime (Metric Tons)	11,304	22,608	34,237	68,149

Program Cost Effectiveness

The cost effectiveness of HVAC system replacements and home performance services were assessed using the Total Resource Cost (“TRC”) test and the Societal Cost test (“SCT”). A summary of the measure level cost-effectiveness is included in Table 6, below. The detailed measure analysis worksheets showing energy savings, cost and cost-effectiveness calculations for each individual measure are included in Appendix 1.

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The cost effectiveness analysis requires estimation of:

- Net energy savings attributable to the Program;
- Net incremental cost to the customer of purchasing qualifying equipment or services;
- TEP's Program administration costs; and
- The present value of Program benefits, including TEP avoided costs over the life of the measures.

For the SCT, TEP included an estimated externality cost associated with avoided carbon emissions starting in 2012 as identified in the Power Market Advisory Service "Electricity and Fuel Price Outlook for the WECC Region / Spring 2009" provided by Ventyx Energy, LLC.

Although Staff advised TEP to include a valuation of CO₂ in the benefit/cost calculations, Staff and TEP also understand it is up to the Commissioners to accept or deny this value. Until the Commission provides a formal acceptance regarding inclusion of CO₂ in the calculation of the SCT, TEP will continue to provide results of the TRC test for Commission review.

The benefit cost-test results detailed below present results according to "low, medium, or high" values which represent the low, medium and high forecasted values for estimated avoided cost per ton of carbon.

For comparison purposes, included as another version of a benefit-cost test is the "E-TRC", which is simply the TRC test with incorporation of the avoided cost benefits from the monetized value of carbon reductions starting in the year 2012.

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Table 6. Measure Level Benefit-Cost Analysis Results

	TRC	SCT Lo	SCT Med	SCT Hi	E- TRC Lo	E- TRC Med	E- TRC Hi
ROB Equip + QI + Ducts- Prescriptive	1.48	1.29	1.35	1.41	1.61	1.66	1.72
ROB Equip + QI + Ducts- Performance	1.48	1.29	1.35	1.41	1.61	1.66	1.72
ER Equip + QI + Ducts- Prescriptive	1.36	1.16	1.21	1.27	1.46	1.51	1.57
ER Equip + QI + Ducts- Performance	1.36	1.16	1.21	1.27	1.46	1.51	1.57
Duct Test & Repair - Prescriptive	1.97	1.68	1.74	1.81	2.12	2.19	2.26
Duct Test & Repair - Performance	1.97	1.68	1.74	1.81	2.12	2.19	2.26
Air Sealing & Thermal Air Barrier ¹	1.81	1.66	1.73	1.82	1.99	2.07	2.16
Air Sealing, Thermal Air Barrier + Attic Insulation	1.09	1.09	1.16	1.23	1.24	1.31	1.37
Shade Screens/ Window Films	1.45	1.24	1.29	1.36	1.54	1.60	1.66

*Note: SCT results and overall Program level benefit/cost results were calculated in Analytica software program, file named "Existing Homes Benefit Cost Model.ANA".

Table 7, below, provides a summary of the benefit/cost analysis results at the Program level according to the TRC and the SCT using the methodology and avoided cost information required by Staff.

Table 7. Program Benefit-Cost Analysis Results

Benefit Cost Tests	
TRC	1.32
SCT Low	1.23
SCT Med	1.28
SCT High	1.34
E-TRC Low	1.44
E-TRC Med	1.50
E-TRC High	1.56

¹ Air Sealing & Thermal Air Barrier and Air Sealing & Thermal Air Barrier + Attic Insulation Benefits include savings from gas in addition to electricity.

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In addition to estimating the savings from each measure, this analysis relies on a range of other assumptions and financial data provided in Table 8, below.

Table 8. Other Financial Assumptions

Financial Assumptions	
Conservation Life (yrs):	20
Program Life (yrs):	3
Incentives as Percent of Total Budget over Three Years (2010-2012)	57.0%
TRC Discount Rate per Commission Staff	7.00%
Social Discount Rate per Commission Staff	7.00%
Weighted Averages Net-to-Gross Ratio per Commission Staff	100%

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Appendix 1 – Measure Level Energy Savings and Benefit/Cost Analysis

	Annual Demand Savings (kW)	Annual Energy Savings (kWh)	Lifetime Energy Savings (kWh)	Annual Gas Savings (Therms)	Lifetime Gas Savings (Therms)	Annual CO2 Reductions (Tons)	Lifetime CO2 Reductions (Tons)	Incremental Cost (\$/unit)	Incentive (\$/unit)
ROB Equip + QI + Ducts- Prescriptive	1.1	1,349	26,146	0	0	0.81	15.69	\$1,433	\$850
ROB Equip + QI + Ducts- Performance	1.1	1,349	26,146	0	0	0.81	15.69	\$1,433	\$1,000
ER Equip + QI + Ducts- Prescriptive	1.7	2,123	40,763	0	0	1.27	24.46	\$2,470	\$1,500
ER Equip + QI + Ducts- Performance	1.7	2,123	40,763	0	0	1.27	24.46	\$2,470	\$1,700
Duct Test & Repair - Prescriptive	1.0	1,031	20,620	0	0	0.62	12.37	\$935	\$350
Duct Test & Repair - Performance	1.0	1,031	20,620	0	0	0.62	12.37	\$935	\$650
Air Sealing & Thermal Air Barrier Repair	0.3	415	8,300	8.8	176	0.30	6.02	\$370	\$250
Air Sealing & Thermal Air Barrier Repair + Attic Insulation	0.4	1,075	21,500	19.7	394	0.76	15.22	\$1,165	\$800
Shade Screens	0.8	1,060	10,600	0	0	0.64	6.36	\$708	\$250