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BEFORE THE ARIZONA CORPORATION COMMISSION

Arizona Corporation Commission

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ARIZONA CORPORATION COMMISSION
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IN THE MATTER OF THE APPLICATION OF)	DOCKET NO. G-04204A-07-0274
UNS GAS, INC. FOR APPROVAL OF ITS)	
PROPOSED DEMAND-SIDE MANAGEMENT)	UNS GAS, INC.'S AMENDED
("DSM") PORTFOLIO FOR 2008-2012)	REQUEST FOR APPROVAL TO
)	REDESIGN AND ENHANCE ITS
)	EFFICIENT HOME HEATING
)	PROGRAM
)	
)	(Expedited Review and Approval
)	Requested)

UNS Gas, Inc. ("UNS Gas" or "Company"), through undersigned counsel, hereby respectfully requests approval of the amended application to update and re-design its Efficient Home Heating Program that was filed on September 2, 2009¹. UNS Gas also requests that the Commission issue an order approving this new application to enhance the UNS Gas Efficient Home Heating Program, which is now called the "Existing Homes Program" (the "Program"). UNS Gas is submitting this amended filing to ensure consistent program offerings throughout the service territories of UNS Electric, Inc. ("UNS Electric"), UNS Gas and Tucson Electric Power Company ("TEP"). UNS Gas requests that this new application be placed on the same review schedule as concurrent filings from UNS Electric and TEP for expansion of their similar programs.²

In Decision No. 70180 (February 27, 2008), the Commission approved the UNS Gas Demand-Side Management ("DSM") Portfolio for 2008 through 2012 (the "DSM Portfolio"). The approved DSM Portfolio included the Program.

¹ UNS Gas is providing both a red-lined version of the September 2, 2009 filing and a clean copy of the new version.

² Those applications are filed in Docket Nos. E-01933A-07-0401 and E-04204A-07-0365.

1 In Decision No. 70376 (June 13, 2008) and Decision No. 70377 (June 13, 2008), the
 2 Commission ordered TEP and UNS Electric to *“review the energy savings from the program in*
 3 *order to determine whether a contractor qualification and incentive component, similar to that in*
 4 *place for Arizona Public Service (“APS”) Residential HVAC DSM Program, would help to ensure*
 5 *cost-effective energy savings.”*

6 After careful consideration and review of the APS program, UNS Electric, UNS Gas and
 7 TEP have decided to expand their Residential HVAC DSM Programs. New program designs
 8 include a quality install component, a contractor qualification component, and a duct sealing
 9 component similar to those offered by APS in its Residential HVAC DSM Program, in addition to
 10 air sealing and insulation. To maintain consistency in program offerings with UNS Electric and
 11 TEP, it is necessary for UNS Gas to amend its Program offering for UNS Gas.

12 The expanded program provides incentives not only for high-efficiency HVAC equipment,
 13 but also provides incentives for sealing leaky duct work, installing insulation, air sealing, and
 14 thermal air barriers in existing buildings and includes incentives for high efficiency storage water
 15 heaters. As a result of the expanded activities, UNS Gas is requesting an increased budget to cover
 16 the expanded offerings. The incremental increase in requested budgets for 2010 through 2012 are
 17 shown in the table, below.

Incremental Increase in Program Budget		2010	2011	2012
Original Program Budget		\$318,270	\$327,818	\$337,653
Expanded Program Budget		\$394,191	\$856,393	\$1,080,767
Incremental Increase in Program Budget		\$75,921	\$528,575	\$743,114

23 As indicated in the table above, the first-year budget has been reduced to account for only a
 24 partial year ramp-up. The budget projection for 2011 also anticipates a partial year ramp-up as
 25 UNS Gas concentrates on more contractor recruitment and training necessary to support the full
 26 program offering.

1 For informational purposes, UNS Gas anticipates that the incremental increase in the DSM
2 adjutor to provide budgets necessary for this Program will be approximately \$0.000387 in 2011
3 and \$0.000545 in 2012 based on forecasted retail sales.

4 Wherefore, for all the foregoing reasons, UNS Gas respectfully requests the Commission to
5 approve the proposed modifications to the Program and approve the proposed increase to the
6 Program's budget in order to enhance Program offerings to customers in the UNS Gas service
7 territory.

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

9
10 UNS Gas, Inc.

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26 Original and 13 copies of the foregoing
27 filed this 2nd day of April 2010 with:

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32 Copy of the foregoing hand-delivered/mailed
33 this 2nd day of April 2010 to:

34 Lyn Farmer, Esq.

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CLEAN
VERSION

UNS Gas, Inc.'s Existing Homes Program

Attachment 1

Efficient Home Heating Program

Expanded and Redesigned as:

Existing Homes Program

UNS Gas, Inc.'s Existing Homes Program

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UNS Gas, Inc.'s Existing Homes Program

Program Concept and Description

UNS Gas, Inc.'s ("UNS Gas") Existing Homes Program, an expansion of the Efficient Home Heating Program, promotes the installation of high-efficiency gas-fueled furnaces and water heaters in existing homes, as well as home performance services that provide insulation, air sealing and duct sealing in UNS Gas's service region. The expanded program will address areas of building comfort, safety, and durability, as well as energy efficient ("EE") equipment upgrades. The Program will be available to all UNS Gas residential customers who own single-family detached homes, town homes and other attached residential buildings with up to four units. 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 EPA with a request to utilize EPA labeling as Home Performance with Energy Star.

Core components of UNS Gas' 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 UNS. UNS 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 UNS Gas' 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 UNS Gas list of qualified contractors. While UNS Gas 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;
- UNS Gas 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;
- UNS Gas 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. UNS Gas believes this approach of paying the incentive directly to the contractor will assist with overall Program promotion and

UNS Gas, Inc.'s Existing Homes Program

contractors agreeing to abide by the new required terms and conditions, and heightened standards of professional installation that UNS Gas will be requiring; and

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

UNS Gas will provide consumer education on the benefits of qualifying equipment and home performance services, and will promote the Program through UNS Gas promotional events, participating contractors, the UNS Gas 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 and air sealing; 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 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 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.

Water and space heating are important end uses in UNS Gas' high country climate and account for an estimated 90% or more of the total gas used by the residential market sector. UNS Gas' residential customers can realize significant savings on their energy bills by not only replacing old, inefficient equipment with high-efficiency equipment, but also by improving the energy performance of the building so that less energy is required

UNS Gas, Inc.'s Existing Homes Program

to maintain desired temperatures. Home performance services, to improve thermal performance, to reduce infiltration through air sealing and to reduce duct leakage through duct sealing, will also optimize the available savings from installing high-efficiency heating equipment. Therefore, it is important to promote these energy saving opportunities as a package, and to encourage customers to improve the building shell and seal the ducts before installing high-efficiency furnaces.

Because Arizona Public Service ("APS") serves electric services in much of the UNS Gas service territory, and APS also offers incentives to customers for home performance services, such as duct-sealing, it is possible for customers of UNS Gas to have air sealing and duct sealing completed through the APS program offering. However, APS does not offer incentives to promote high-efficiency gas equipment. Therefore, UNS Gas chooses not to make duct-sealing a requirement for customers to receive equipment incentives offered through UNS Gas. It is the intent of UNS Gas to promote comprehensive repairs to each home to maximize savings for those customers who have not already taken steps to improve the building shell and seal ducts.

Target Market

The Program is targeted at UNS Gas customers who are in the market to replace their existing space or water heating equipment and/or increase the thermal efficiency of their home through insulation, air sealing and duct sealing. This Program is not applicable for residential new construction or multi-family apartment structures with more than four units.

Program Eligibility

The Program is available to all UNS Gas residential customers who own single family detached homes, town homes, manufactured homes and other attached residential buildings with 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 UNS Gas.

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 UNS Gas.
- 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.

UNS Gas, Inc.'s Existing Homes Program

- 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.

If a comparable Program is offered in the UNS Gas service territory by another utility, customers must choose which utility program they will participate. Customers will not be allowed to receive rebates from both the UNS Gas Existing Homes Program and another utility program for the same EE measure.

Current Baseline Conditions

The average lifetime of residential heating equipment is approximately 18 years, and it is estimated that most of the equipment that will be installed under this Program will replace standard 80% efficient furnaces. The average lifetime of residential water heating equipment is approximately 13 years, and it is estimated the most of the equipment that will be installed under this Program will replace 0.59 EF water heaters. This Program will also include selected thermal shell insulation, air sealing and duct sealing measures intended to improve thermal performance, reduce air infiltration and reduce duct leakage.

Products and Services

The Program provides rebates for the installation of EE measures in existing residential facilities. The Program will offer incentives for the measures detailed in Table 1. 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; and 2) a performance incentive, which is based on use of diagnostic equipment and measured reduction in duct-leakage.

The products and services provided by the Program include:

- **High Efficiency Furnace Incentive:** Incentives for the installation of qualifying high-efficiency furnaces for end of life replacement applications. All equipment shall be installed according to manufacturer's specifications;
- **High Efficiency Storage Water Heater Incentive:** Incentives for the installation of qualified EE storage water heaters;
- **Air Sealing Incentive:** Program requirements for the air sealing incentive include the following:
 - Blower door guided whole house air sealing is typically one of the most cost effective measures. To ensure estimated savings are being achieved, a Blower

UNS Gas, Inc.'s Existing Homes Program

Door Test by a trained and certified contractor¹ shall be required with reported air leakage numbers in cubic feet per minute at 50 pascals (“pa”) pressure (“CFM-50”) before air sealing 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;

- **Duct Sealing Incentive:** 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 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. If customers live in a home where duct sealing was completed during initial construction, such as Energy Star Homes, they will be ineligible for additional incentive dollars associated with duct sealing requirements.
- *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, UNS Gas 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.
- *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. This performance based incentive option is available only to participating BPI certified contractors;
- **Attic Insulation Incentive:** Program requirements for attic insulation incentive include the following:
 - Base case attic insulation levels must be less than R-19. Insulation improvements must increase the total attic insulation from its existing value up to at least R-30; and
 - 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 must be completed prior to the installation of new insulation and a Combustion Safety test must be completed after air-sealing is

¹ All BPI duct sealing and air sealing 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 measures are performed.

UNS Gas, Inc.'s Existing Homes Program

complete. Incentives and qualifying criteria are summarized in Table 1, below; and

- **Education and Promotion:** Education and promotional efforts designed to inform customers about the benefits of improved thermal efficiency, air sealing, duct sealing and high-efficiency space and water heating, including educational brochures, Program promotional material, and UNS Gas website content.

Table 1. Incentives Schedule

Measure	Qualifying Criteria	Incentive
High Efficiency Furnace (Replacement/New)	>=90% AFUE	\$300
High Efficiency Furnace (Replacement/New)	>=92% AFUE	\$450
High Efficiency Furnace (Replacement/New)	>=94% AFUE	\$550
Energy Efficient Storage Water Heater	Minimum EF of 0.62	\$50
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 UNSG. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required. Incentive is 50% of installed cost up to \$250.	50% of installed cost up to \$250
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; IC will conduct field inspections and sample pre-post testing. 50% of installed cost up to \$350	50% of installed cost up to \$350
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 UNSG. Subject to pre and post inspection and on-going QA/QC; Incentive is based on \$3/CFM 25 reduced up to \$550; 50% of installed cost up to \$550	\$550
Attic Insulation & Air Sealing	Blower door guided air-sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-19, increasing insulation to >=R-38. 50% of installed cost up to \$800	50% of installed cost up to \$800

QA/QC – quality assurance/quality control

Program Delivery Strategy and Administration

The strategy for Program delivery and administration is as follows:

- The Program will be managed in-house by UNS Gas staff;
- UNS Gas will provide overall Program management, marketing, planning and coordination of customer and contractor participation.
- UNS Gas may use a third party implementation contractor for assistance with rebate processing, data tracking, technical support and for trade ally management. The actual direct delivery of efficiency services to residential customers will be by participating trade allies. UNS Gas will work closely with the implementation

UNS Gas, Inc.'s Existing Homes Program

contractor to recruit, train and manage trade allies to ensure optimum effectiveness in Program delivery.

- Key partnering relationships will include:
 - HVAC, insulation, and air sealing training professionals;
 - Community interest groups;
 - HVAC, insulation, and air sealing contractors trained in Program procedures; and
 - The Arizona Energy Office and Coconino County Community College, or other industry experts to provide training, education and awareness.
- Building Performance Institute Certification:
 - UNS Gas will work to standardize on a requirement to utilize BPI accredited contractors for HVAC and building shell work. As such, consumer marketing and contractor training in 2010 and beyond will emphasize the importance of BPI certification;
 - UNS Gas will not require BPI certification for the initial Program redesign launch. However, this requirement will be added to the Program within 1 year of Program participation or prior to the launch of the Arizona Statewide Home Performance program;
 - To prepare for the future, UNS Gas will begin an extensive campaign to recruit contractors interested in receiving BPI certification. UNS Gas will capitalize on existing resources and specialty associations to spread the word;
 - UNS Gas will organize and deliver BPI certification classes for contractors; and
 - UNS Gas will help to subsidize training costs associated with BPI certifications (up to 50% of the cost) 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 HVAC and weatherization 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 the UNS Gas service territory.

UNS Gas, Inc.'s Existing Homes Program

UNS Gas' 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 UNS Gas' implementation contractor who is responsible for providing training and mentoring to all participating contractor(s). The Program will provide leads to participating contractors. UNS Gas' 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. UNS Gas' 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 UNS Gas 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-a-longs. If the contractor is still not ready to deliver services in compliance with Program guidelines after these additional ride-a-longs, 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 UNS Gas 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.

UNS Gas, Inc.'s Existing Homes Program

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 UNS.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).

Program Marketing and Communication Strategy

The marketing and communications strategy will include the following components:

- UNS Gas will provide Program marketing and customer awareness-building through a range of strategies including:
 - Promotions on the UNS Gas website about the benefits of purchasing high-efficiency equipment;
 - Promotion through community interest groups;
 - Advertising in major newspapers and other selected print media in UNS Gas service territory to raise awareness of the availability of the Program;
 - Providing information through UNS Gas' 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.

UNS Gas, Inc.'s Existing Homes Program

Program Implementation Schedule

UNS Gas will issue a request for proposal ("RFP") to select an implementation contractor during the 3rd quarter of 2010, pending Program approval by the Arizona Corporation Commission (the "Commission"). UNS Gas 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 and launch the Program.

Measurement, Evaluation and Research ("MER") Plan

UNS Gas 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, UNS Gas will collect the necessary data elements to populate the tracking database and provide periodic reporting;
- **Integrated implementation data collection:** UNS Gas 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:** UNS Gas 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:** UNS Gas will develop deemed savings values for each measure and technology promoted by the Program, periodically review and revise the savings values to be consistent with Program participation, and accurately estimated the savings being achieved by the Program.

This approach will provide UNS Gas 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 Table 2, below. A comparison to the original Program design budget and the incremental increase in budget, and necessary DSM adjustor to provide this expanded Program offering is included in Table 3.

UNSG Gas, Inc.'s Existing Homes Program

Table 2. Residential Gas Efficiency Program Budget (2010-012)

UNSG Residential Existing Homes Program (2010-2012)									
	Efficiency Level	Incentive / Measure	Units Rebated			Budget			Total
			2010	2011	2012	2010	2011	2012	
Incentives									
High Efficiency Furnace (New/Replacement)	>=90 AFUE	\$300	50	100	150	\$15,000	\$30,000	\$45,000	\$90,000
High Efficiency Furnace (New/Replacement)	>=92 AFUE	\$450	100	250	300	\$45,000	\$112,500	\$135,000	\$292,500
High Efficiency Furnace (New/Replacement)	>=94 AFUE	\$550	50	200	250	\$27,500	\$110,000	\$137,500	\$275,000
High Efficiency Gas Water	>=0.62 EF	\$50	100	400	600	\$5,000	\$20,000	\$30,000	\$55,000
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 UNSG. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required. Incentive is 50% of installed cost up to \$250.	\$250	50	100	150	\$12,500	\$25,000	\$37,500	\$75,000
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 ; IC will conduct field inspections and sample pre-post testing 50% of installed cost up to \$350	\$350	50	100	150	\$17,500	\$35,000	\$52,500	\$105,000
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 UNSG. Subject to pre and post inspection and on-going QA/QC; Incentive is based on \$3/CFM 25 reduced up to \$550; 50% of installed cost up to \$550	\$550	20	40	60	\$11,000	\$22,000	\$33,000	\$66,000
Attic Insulation & Air Sealing	Blower door guided air-sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-19, increasing insulation to >=R-38. 50% of installed cost up to \$800	\$800	50	100	150	\$40,000	\$80,000	\$120,000	\$240,000
Subtotal Financial Incentives						\$173,500	\$434,500	\$590,500	\$1,198,500
Program Delivery									
UNSG Program Delivery						\$75,000	\$150,000	\$154,500	\$379,500
Inspections, Rebate Processing, Data Tracking						\$18,800	\$58,050	\$90,500	\$167,350
Trade Ally Training						\$50,000	\$51,500	\$53,045	\$154,545
Subtotal Program Delivery						\$143,800	\$259,550	\$298,045	\$701,395
Program Marketing									
Program Marketing						\$31,730	\$69,405	\$88,855	\$189,990
Subtotal Program Marketing						\$31,730	\$69,405	\$88,855	\$189,990
Utility Program Administration									
UNSG Program Administration						\$30,000	\$60,000	\$61,800	\$151,800
Subtotal Utility Program Administration						\$30,000	\$60,000	\$61,800	\$151,800
Evaluation									
Measurement, Evaluation and Research						\$15,161	\$32,938	\$41,568	\$89,667
Subtotal Evaluation						\$15,161	\$32,938	\$41,568	\$89,667
Total Non-Incentive						\$220,691	\$421,893	\$490,267	\$1,132,852
Total Incentive						\$173,500	\$434,500	\$590,500	\$1,198,500
TOTAL						\$394,191	\$856,393	\$1,080,767	\$2,331,352
Incentives as % of Total Budget						44%	51%	55%	51%

UNS Gas, Inc.'s Existing Homes Program

Table 3. 2010 – 2012 Comparison of Program Budgets

Year	2010	2011	2012
Original Program Budget	\$318,270	\$327,818	\$337,653
Expanded Program Budget	\$394,191	\$856,393	\$,080,767
Incremental Increase in Program Budget	\$75,921	\$528,575	\$743,114
Incremental increase in Expanded Program Adjustor Mechanism	\$0.00056	\$0.00387	\$0.00545

*Forecasted Retail Sales (including unbilled therms)

TME May 31, 2011

136,421,531

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 Savings for Expanded Program

Energy Savings	2010	2011	2012	Total
Annual (Therms)	83,013	142,077	199,240	424,330
Lifetime (Therms)	1,518,440	2,586,780	3,630,420	7,735,640

After the 2010 ramp up of the expanded Program, energy savings is expected to significantly surpass energy savings expectations from the original Program design shown in Table 5, below.

Table 5. Annual Energy Savings Expectations from Original Program Design

Year	2010	2011	2012
Energy Savings (Therms)	100,432	103,444	106,548

As a result of the energy savings shown in Table 5, it is estimated that the Program will produce environmental benefits through avoided CO2 emissions shown in Table 6, below.

Table 6. Projected Environmental Benefits, 2010 – 2012

CO2 Reductions	2010	2011	2012	Total
Annual (Tons)	490	838	1,176	2,504
Lifetime (Tons)	8,959	15,262	21,419	45,640

Program Cost Effectiveness

The cost effectiveness of furnace and water heater 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 below in Table 7. The detailed measure analysis worksheets showing energy savings, cost and cost-effectiveness calculations for each individual measure are included in Appendix 1.

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;
- UNS Gas' Program administration costs; and
- The present value of Program benefits including UNS Gas avoided costs over the life of the measures.

For the SCT, UNS Gas included an estimated externality cost associated with avoided carbon emissions starting in 2012, with a low of \$14/ton (SCT Low), medium at \$25/ton (SCT Med), and high (SCT High) at \$43/ton, and all carbon values escalating over time.

Although Staff advised UNS Gas to go ahead and include a valuation of CO2 in the benefit/cost calculations, Staff and UNS Gas 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, UNS Gas will continue to provide results of the TRC test for Commission review.

UNS Gas, Inc.'s Existing Homes Program

Table 7. Measure Level Benefit-Cost Analysis Results

	TRC	SCT Low	SCT Med	SC High
HE Furnace 90 AFUE – NEW/ROB	2.0	2.3	2.4	2.6
HE Furnace 92 AFUE – NEW/ROB	1.9	2.2	2.3	2.4
HE Furnace 94 AFUE – NEW/ROB	1.9	2.1	2.3	2.4
EE Storage Water Heater <= 75 kBtuh	1.2	1.4	1.4	1.5
Air Sealing	1.2	1.5	1.6	1.7
Duct Sealing-Prescriptive	2.0	2.3	2.4	2.6
Duct Sealing-Performance	1.9	2.2	2.3	2.4
Air Sealing + Attic Insulation	1.9	2.1	2.3	2.4

ROB – replace on burnout

*Note: SCT results and overall Program level benefit/cost results were calculated in Analytica software program, file named “UNSG Benefit Cost Model_2010.ANA”.

UNS Gas, Inc.'s Existing Homes Program

Table 8, 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 approved by Staff.

Table 8. Program Benefit-Cost Analysis Results

Benefit Cost Tests	
TRC	1.4
SCT Low	1.6
SCT Med	1.7
SCT High	1.8

In addition to estimating the savings from each measure, this analysis relies on a range of other assumptions and financial data provided in Table 9, below.

Table 9. Other Financial Assumptions

Financial Assumptions	
Conservation Life (yrs):	20
Program Life (yrs):	5
Energy AC (\$/Therm):	0.91532
Incentives as Percent of Total Budget over Three Years (2010-2012)	51.0%
TRC Discount Rate	7.00%
Social Discount Rate	7.00%
Weighted Averages Net-to-Gross Ratio:	100%

UNS Gas, Inc.'s Existing Homes Program

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

	Annual Savings (Therms)	Lifetime Savings (Therms)	Annual CO2 Reductions (Tons)	Lifetime CO2 Reductions (Tons)	Measure Lifetime (Years)	Incremental Cost (\$/unit)	Incentive (\$/unit)
HE Furnace 90 AFUE - ROB/NEW	158	2,844	0.9	16.8	18	568	300
HE Furnace 92 AFUE - ROB/NEW	185	3,330	1.1	19.6	18	666	450
HE Furnace 94 AFUE - ROB/NEW	211	3,798	1.2	22.4	18	766	550
EE Storage Water Heater <= 75 kBtuh	14	182	0.1	1.1	13	74	50
Air Sealing	84	1,680	0.5	9.9	20	345	250
Duct Sealing-Prescriptive	146	2,920	0.9	17.2	20	770	350
Duct Sealing-Performance	146	2,628	0.9	15.5	18	770	550
Air Sealing + Attic Insulation	107	2,140	0.6	12.6	20	1,140	800

REDLINED

VERSION

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

Attachment 1

Efficient Home Heating Program

Expanded and Redesigned as:

~~Residential Gas Efficiency~~ Existing Homes Program

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

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UNS Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

Program Concept and Description

UNS Gas, Inc.'s ("UNS Gas") ~~Residential Gas Efficiency~~ Existing Homes Program, an expansion of the Efficient Home Heating Program, promotes the installation of high-efficiency gas-fueled furnaces and water heaters in existing homes, as well as home performance services that provide insulation, air sealing and duct sealing in UNS Gas's service region. The expanded program will address areas of building comfort, safety, and durability, as well as energy efficient ("EE") equipment upgrades. The Program will be available to all UNS Gas residential customers who own single-family detached homes, town homes and other attached residential buildings with up to four units. 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 EPA with a request to utilize EPA labeling as Home Performance with Energy Star.

Core components of UNS Gas' 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 UNS. UNS 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 UNS Gas' 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 UNS Gas list of qualified contractors. While UNS Gas 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;-
- UNS Gas 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;-
- UNS Gas will also implement various education and outreach strategies to raise consumer awareness of the benefits and availability of EE improvements to their homes;-

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

- 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. UNS Gas 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 UNS Gas will be requiring; and:
- UNS will provide consumer education on the benefits of qualifying equipment and home performance services, and will promote the Program through UNS Gas promotional events, participating contractors, the UNS Gas website, and print advertising.

~~Incentives for the purchase of qualifying high efficiency equipment or home performance services are paid directly to homeowners, and marketing and incentive paperwork processing sales incentives are paid directly to contractors at an amount of \$25 per unit rebated. A list of approved UNS Gas contractors will be developed who are eligible to provide qualifying equipment and home performance services to UNS Gas customers.~~

UNS Gas will provide consumer education on the benefits of qualifying equipment and home performance services, and will promote the Program through UNS Gas promotional events, participating contractors, the UNS Gas 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 and air sealing; 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 objective of the program is to promote the purchase of Energy Star qualified high-efficiency furnaces and water heaters, to promote measures that improve thermal performance, reduce unwanted air infiltration, and measures that reduce duct leakage, thereby reducing the energy demand placed on space heating equipment. The program will achieve energy 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.

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

Program Rationale

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.

Water and space heating are important end uses in UNS Gas' high country climate and account for an estimated 90% or more of the total gas used by the residential market sector. UNS Gas' residential customers can realize significant savings on their energy bills by not only replacing old, inefficient equipment with high-efficiency equipment, but also by improving the energy performance of the building so that less energy is required to maintain desired temperatures. Home performance services, to improve thermal performance, to reduce infiltration through air sealing and to reduce duct leakage through duct sealing, will also optimize the available savings from installing high-efficiency heating equipment. Therefore, it is important to promote these energy saving opportunities as a package, and to encourage customers to improve the building shell and seal the ducts before installing high-efficiency furnaces.

Because Arizona Public Service ("APS") serves electric services in much of the UNS Gas service territory, and APS also offers incentives to customers for home performance services, such as duct-sealing, it is possible for customers of UNS Gas to have air sealing and duct sealing completed through the APS program offering. However, APS does not offer incentives to promote high-efficiency gas equipment. Therefore, UNS Gas chooses not to make duct-sealing a requirement for customers to receive equipment incentives offered through UNS Gas. It is the intent of UNS Gas to promote comprehensive repairs to each home to maximize savings for those customers who have not already taken steps to improve the building shell and seal ducts.

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

Target Market

The Program is targeted at UNS Gas customers who are in the market to replace their existing space or water heating equipment and/or increase the thermal efficiency of their home through insulation, air sealing and duct sealing. This Program is not applicable for residential new construction or multi-family apartment structures with more than four units.

Program Eligibility

The Program is available to all UNS Gas residential customers. ~~All brands of equipment that meet the minimum performance standards are eligible for the program. Homeowners are eligible to receive incentives for purchasing qualifying high efficiency equipment, insulation who own single family detached homes, town homes, manufactured homes and for reducing infiltration through air sealing measures to other attached residential buildings with 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 UNS Gas.

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 UNS Gas.
- 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.

If a comparable Program is offered in the UNS Gas service territory by another utility, customers must choose which utility program they will participate. Customers will not be allowed to receive rebates from both the UNS Gas Residential Gas Efficiency Existing Homes Program and another utility program for the same energy efficiency EE measure.

UNS Gas, Inc.'s Residential Gas-Existing Homes Efficiency Program

Current Baseline Conditions

The average lifetime of residential heating equipment is approximately 18 years, and it is estimated that most of the equipment that will be installed under this Program will replace standard 80% efficient furnaces. The average lifetime of residential water heating equipment is approximately 13 years, and it is estimated the most of the equipment that will be installed under this Program will replace 0.59 EF water heaters. This Program will also include selected thermal shell insulation, air sealing and duct sealing measures intended to improve thermal performance, reduce air infiltration by approximately 50% and reduce duct leakage by approximately 60%.

Products and Services

The Program provides rebates for the installation of EE measures in existing residential facilities. The Program will offer incentives for the measures detailed in Table 1. 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; and 2) a performance incentive, which is based on use of diagnostic equipment and measured reduction in duct-leakage.

~~The Residential Gas Efficiency Program is a customer incentive program design that provides rebates for the installation of energy efficiency measures in existing residential facilities. More specifically, the products and services provided by the Program include:~~

- ~~• High Efficiency Furnace Incentive: Incentives to homeowners for the installation of qualifying high-efficiency furnaces for ~~for either end of life replacement/new construction applications. All equipment shall be installed according to manufacturer's specifications; or early retirement of working units. Program requirements for the early retirement incentive include the following:~~~~
- ~~• The eligibility criteria will include a 72 hour advance notice requirement, which will allow UNS Gas the option and discretion to perform spot checks to ensure systems being reported as eligible early retirement jobs actually conform to program requirements;~~
- ~~• In the opinion of the contractor, but subject to review and approval by UNS Gas, the existing furnace must be in satisfactory working condition or in need of less than \$500 in repairs;~~
- ~~• Existing furnace must be less than or equal to 15 years old and must be non-condensing; and~~
- ~~• If system is greater than 16 years or older, it is eligible for a replacement incentive only;~~
- ~~• High Efficiency Storage Water Heater Incentive: Incentives to homeowners for the installation of qualified energy efficient EE storage water heaters;~~

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

- Air Sealing Incentive: ~~Incentives to homeowners for air sealing.~~ Program requirements for the air sealing incentive include the following:
 - Blower door guided whole house air sealing is typically one of the most cost effective measures. To ensure estimated savings are being achieved, a Blower Door Test by a trained and certified contractor¹ shall be required with reported air leakage numbers in cubic feet per minute at 50 pascals ("pa") pressure ("CFM₅₀") before air sealing measures are implemented, and CFM₅₀ 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;
- Duct Sealing Incentive: 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 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. If customers live in a home where duct sealing was completed during initial construction, such as Energy Star Homes, they will be ineligible for additional incentive dollars associated with duct sealing requirements.
 - 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, UNS Gas 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.
 - 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. This performance based incentive option is available only to participating BPI certified contractors;
- ~~Incentives to homeowners for duct sealing.~~ Program requirements for the duct sealing incentive include the following:
 - ~~If the system is losing more than 8 % of the conditioned air, duct sealing and repair should be implemented. Duct leakage must be tested by a trained and~~

¹ All BPI duct sealing and air sealing 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 measures are performed.

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

~~certified contractor* before and after the repair with an approved testing method. Approved methods include:~~

- ~~• Duct Blaster;~~
- ~~• Blower Door Subtraction Method;~~
- ~~• Flow Hood Method; and~~
- ~~• Pressure Pan Method; and~~

- ~~• Total duct leakage to outside must be reduced by 50% or greater in order to qualify for the incentive;~~

- **Attic Insulation Incentive:** ~~Incentives to homeowners for attic insulation. Program requirements for attic insulation incentive include the following:~~

- Base case attic insulation levels must be less than R-19. Insulation improvements must increase the total attic insulation from ~~it's~~ existing value up to at least R-30; and

- 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 must be completed prior to the installation of new insulation and a Combustion Safety test must be completed after air-sealing is complete. Customer can receive up to \$500 for a combined insulation and air-sealing rebate. ~~Incentives and qualifying criteria are summarized in Table 1~~ Table 1, below; and

- **Education and Promotion:** Education and promotional efforts designed to inform customers about the benefits of improved thermal efficiency, air sealing, duct sealing and high-efficiency space and water heating, including educational brochures, Program promotional material, and UNS Gas website content.

UNSGas, Inc.'s Residential Gas Existing Homes Efficiency Program

Table 1. Incentives Schedule

Measure	Qualifying Criteria*	Incentive
High Efficiency Furnace (Replacement/New)	>=90% AFUE	\$3200
High Efficiency Furnace (Replacement/ New)	>=92% AFUE	\$45300
High Efficiency Furnace (Replacement/ New)	>=94% AFUE	\$550375
High Efficiency Furnace (Early Retirement)	>=90% AFUE	\$650
High Efficiency Furnace (Early Retirement)	>=92% AFUE	\$750
High Efficiency Furnace (Early Retirement)	>=94% AFUE	\$850
Energy Efficient Storage Water Heater	Minimum EF of 0.62	\$50
<u>Air Sealing</u> (Only)	<u>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 UNSG. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required. Incentive is 50% of installed cost up to \$250. Air sealing in compliance with program requirements up to a maximum of 0.35 ACH. Contractor performs air sealing, testing in/out and reporting performance results to UNS Gas</u>	<u>50% of installed cost up to \$250</u> <u>50% of Installed Cost up to \$250</u>
<u>Duct Sealing</u> (Prescriptive) <u>Duct Sealing</u>	<u>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; IC will conduct field inspections and sample pre-post testing. 50% of installed cost up to \$350 Duct sealing in compliance with program requirements. Contractor repairs and seals ducts, testing in/out and reporting performance results to UNS Gas</u>	<u>50% of installed cost up to \$350</u> <u>50% of Installed Cost up to \$250</u>
<u>Duct Sealing</u> (Performance) <u>Insulation & Air Sealing (Combined)</u>	<u>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 UNSG. Subject to pre and post inspection and on-going QA/QC; Incentive is based on \$3/CFM 25 reduced up to \$550; 50% of installed cost up to \$550 Eligibility is only for attic insulation, where existing condition is < R-19, increasing insulation to >=R-38. To qualify for the insulation rebate, a Blower Door Test is required. If building leakage is >.35 ACH, air sealing must also be completed and the customer can receive the air sealing rebate as well, for a total of \$500</u>	<u>\$550</u> <u>50% of installed cost up to \$500</u>
<u>Attic Insulation & Air Sealing</u>	<u>Blower door guided air-sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-19, increasing insulation to >=R-38. 50% of installed cost up to \$800</u>	<u>50% of installed cost up to \$800</u>

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

* Consortium for Energy Efficiency ("CEE") is an independent rating agency.

QA/QC - quality assurance/quality control

- ~~Marketing costs, which may include compensation up to \$25 per rebated product or service paid to contractors to encourage program promotion and offset costs associated with detailed reporting required on each project; and~~
 - ~~Education and promotional efforts designed to inform customers about the benefits of improved thermal efficiency, air sealing, duct sealing and high-efficiency space and water heating, including educational brochures, program promotional material, and UNS Gas website content.~~
-

Program Delivery Strategy and Administration

The strategy for Program delivery and administration is as follows:

- The Program will be managed in-house by UNS Gas staff;
- UNS Gas will provide overall Program management, marketing, planning and coordination of customer and contractor participation.
- UNS Gas may use a third party implementation contractor for assistance with rebate processing, data tracking, technical support and for trade ally management. The actual direct delivery of efficiency services to residential customers will be by participating trade allies. UNS Gas will work closely with the implementation contractor to recruit, train and manage trade allies to ensure optimum effectiveness in Program delivery.
- Key partnering relationships will include:
 - HVAC, insulation, and air sealing training professionals;
 - Community interest groups;
 - HVAC, insulation, and air sealing contractors trained in Program procedures; and
 - The Arizona Energy Office and Coconino County Community College, or other industry experts to provide training, education and awareness.
- Building Performance Institute ("BPI") Certification:
 - UNS Gas will work to standardize on a requirement to utilize BPI accredited contractors for HVAC and building shell work. As such, consumer marketing and contractor training in 2010 and beyond will emphasize the importance of BPI certification;
 - UNS Gas will not require BPI certification for the initial Program redesign launch. However, this requirement will be added to the Program requirements no later than June 2011 within 1 year of Program participation or prior to the launch of the Arizona Statewide Home Performance program;

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

- To prepare for the future, UNS Gas will begin an extensive campaign to recruit contractors interested in receiving BPI certification. UNS Gas will capitalize on existing resources and specialty associations to spread the word;
- UNS Gas will organize and deliver BPI certification classes for contractors; and
- UNS Gas will help to subsidize training costs associated with ~~for~~ BPI certifications (up to 50% of the cost) 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 certain number of qualifying jobs as specified by the program.

Contractor Training and Certification

The Program will initially recruit local HVAC and weatherization 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 the UNS Gas service territory.

UNS Gas' 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 UNS Gas' implementation contractor who is responsible for providing training and mentoring to all participating contractor(s). The Program will provide leads to participating contractors. UNS Gas' 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. UNS Gas' 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 UNS Gas 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-a-longs. If the

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

contractor is still not ready to deliver services in compliance with Program guidelines after these additional ride-a-longs, 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 UNS Gas 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 UNS.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).

Program Marketing and Communication Strategy

The marketing and communications strategy will include the following components:

- UNS Gas will provide Program marketing and customer awareness-building through a range of strategies including:
 - Promotions on the UNS Gas website about the benefits of purchasing high-efficiency equipment;
 - Promotion through community interest groups;
 - Advertising in major newspapers and other selected print media in the UNS Gas service ~~region~~ territory to raise awareness of the availability of the Program;
 - Providing information through UNS Gas' customer care center;

UNS Gas, Inc.'s Residential Gas Existing Homes Efficiency Program

- 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

~~Pending~~UNS Gas will issue an request for proposal (“RFP”) to select an implementation contractor during the 3rd quarter of 2010, pending Program approval by the Arizona Corporation Commission (the “Commission”). ~~UNS Gas anticipates it will take 32two months to complete the RFP process to select and hire an implementation contractor and 23three months for the contractor to complete final Program operational design and launch the Program. , UNS Gas will launch the new program effective January 1, 2010. As such, UNS Gas requests program review as quickly as possible to allow for implementation planning during the Fall 2009.~~

Measurement, Evaluation and Research (“MER”) Plan

UNS Gas 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, UNS Gas will collect the necessary data elements to populate the tracking database and provide periodic reporting;
- **Integrated implementation data collection:** UNS Gas 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:** UNS Gas 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:** UNS Gas will develop deemed savings values for each measure and technology promoted by the Program, periodically review and revise the savings values to be consistent with Program participation, and accurately estimated the savings being achieved by the Program.

This approach will provide UNS Gas with ongoing feedback on Program progress and enable Program management to adjust or correct the Program so as to be more effective,

UNSGas, Inc.'s ~~Residential Gas~~ Existing Homes ~~Efficiency~~ Program

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 ~~Residential Gas Efficiency~~ 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 adjustor to provide this expanded Program offering is included in Table 3.

UNSGas, Inc.'s Residential Gas- Existing Homes Efficiency Program

Table 2. Residential Gas Efficiency Program Budget (2010-

	Efficiency Level	Incentive / Measure	Units Rebated			Budget		
			2010	2011	2012	2010	2011	2012
Incentives								
High Efficiency Furnace (New/Replacement)	>=90 AFUE	\$200	10	20	30	\$2,000	\$4,000	\$6,000
High Efficiency Furnace (New/Replacement)	>=92 AFUE	\$300	200	250	300	\$60,000	\$75,000	\$90,000
High Efficiency Furnace (New/Replacement)	>=94 AFUE	\$375	50	100	150	\$18,750	\$37,500	\$56,250
High Efficiency Furnace (Early Retirement)	>=90 AFUE	\$650	10	20	30	\$6,500	\$13,000	\$19,500
High Efficiency Furnace (Early Retirement)	>=92 AFUE	\$750	20	40	60	\$15,000	\$30,000	\$45,000
High Efficiency Furnace (Early Retirement)	>=94 AFUE	\$850	10	20	30	\$8,500	\$17,000	\$25,500
High Efficiency Gas Water Heater	>=0.62 EF	\$50	200	400	600	\$10,000	\$20,000	\$30,000
Air Sealing	From 0.75 ACH to 0.35 ACH	\$250	100	150	200	\$25,000	\$37,500	\$50,000
Duct Sealing	262 CFM 25 to 105 CFM 25	\$250	100	150	200	\$25,000	\$37,500	\$50,000
Attic Insulation	< R-19 to >=R-30	\$250	100	150	200	\$25,000	\$37,500	\$50,000
Subtotal Financial Incentives						\$195,750	\$308,000	\$422,250
Program Delivery								
UNSG Program Delivery						\$110,000	\$113,300	\$116,699
Inspections, Rebate Processing, Data Tracking						\$63,000	\$64,890	\$66,837
Trade Ally Training						\$40,000	\$38,000	\$20,000
Subtotal Program Delivery						\$213,000	\$204,190	\$203,536
Program Marketing								
Program Marketing						\$32,700	\$41,375	\$50,063
Trade Ally Marketing						\$17,500	\$28,750	\$40,000
Subtotal Program Marketing						\$50,200	\$70,125	\$90,063
Utility Program Administration								
UNSG Program Administration						\$18,358	\$23,493	\$28,634
Subtotal Utility Program Administration						\$18,358	\$23,493	\$28,634
Evaluation								
Measurement, Evaluation and Research						\$19,092	\$24,432	\$29,779
Subtotal Evaluation						\$19,092	\$24,432	\$29,779
Total Non-Incentive						\$300,650	\$326,240	\$352,012
Total Incentive						\$195,750	\$308,000	\$422,250
TOTAL						\$496,400	\$634,240	\$774,262

2012) Incentives as % of Total Budget 59% 49% 55%

UNSG Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

UNSG Residential Existing Homes Program (2010-2012)									
	Efficiency Level	Incentive / Measure	Units Rebated			Budget			Total
			2010	2011	2012	2010	2011	2012	
Incentives									
High Efficiency Furnace (New/Replacement)	>=90 AFUE	\$300	50	100	150	\$15,000	\$30,000	\$45,000	\$90,000
High Efficiency Furnace (New/Replacement)	>=92 AFUE	\$450	100	250	300	\$45,000	\$112,500	\$135,000	\$292,500
High Efficiency Furnace (New/Replacement)	>=94 AFUE	\$550	50	200	250	\$27,500	\$110,000	\$137,500	\$275,000
High Efficiency Gas Water	>=0.62 EF	\$50	100	400	600	\$5,000	\$20,000	\$30,000	\$55,000
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 UNSG. Subject to pre and post inspection and on-going QA/QC. Combustion safety testing required. Incentive is 50% of installed cost up to \$250.	\$250	50	100	150	\$12,500	\$25,000	\$37,500	\$75,000
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 ; IC will conduct field inspections and sample pre-post testing. 50% of installed cost up to \$350	\$350	50	100	150	\$17,500	\$35,000	\$52,500	\$105,000
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 UNSG. Subject to pre and post inspection and on-going QA/QC; Incentive is based on \$3/CFM 25 reduced up to \$550; 50% of installed cost up to \$550	\$550	20	40	60	\$11,000	\$22,000	\$33,000	\$66,000
Attic Insulation & Air Sealing	Blower door guided air-sealing and insulation. Eligibility for attic insulation is only for those areas where existing attic insulation is < R-19, increasing insulation to >=R-38. 50% of installed cost up to \$800	\$800	50	100	150	\$40,000	\$80,000	\$120,000	\$240,000
Subtotal Financial Incentives						\$173,500	\$434,500	\$590,500	\$1,198,500
Program Delivery									
UNSG Program Delivery						\$75,000	\$150,000	\$154,500	\$379,500
Inspections, Rebate Processing, Data Tracking						\$18,800	\$58,050	\$90,500	\$167,350
Trade Ally Training						\$50,000	\$51,500	\$53,045	\$154,545
Subtotal Program Delivery						\$143,800	\$259,550	\$298,045	\$701,395
Program Marketing									
Program Marketing						\$31,730	\$69,405	\$88,855	\$189,990
Subtotal Program Marketing						\$31,730	\$69,405	\$88,855	\$189,990
Utility Program Administration									
UNSG Program Administration						\$30,000	\$60,000	\$61,800	\$151,800
Subtotal Utility Program Administration						\$30,000	\$60,000	\$61,800	\$151,800
Evaluation									
Measurement, Evaluation and Research						\$15,161	\$32,938	\$41,568	\$89,667
Subtotal Evaluation						\$15,161	\$32,938	\$41,568	\$89,667
Total Non-Incentive						\$220,691	\$421,893	\$490,267	\$1,132,852
Total Incentive						\$173,500	\$434,500	\$590,500	\$1,198,500
TOTAL						\$394,191	\$856,393	\$1,080,767	\$2,331,352
Incentives as % of Total Budget						44%	51%	55%	51%

UNSGas, Inc.'s Residential Gas Existing Homes Efficiency Program

Table 3. 2010 – 2012 Comparison of Program Budgets and DSM Adjustor

Year	2010	2011	2012
Original Program Budget	\$318,270	\$327,818	\$337,653
Expanded Program Budget	\$496,400 <u>394,191</u>	\$635,240 <u>856,393</u>	\$774,262 <u>,080,767</u>
Incremental Increase in Program Budget	\$178,130 <u>75,921</u>	\$307,422 <u>528,575</u>	\$436,609 <u>743,114</u>
Incremental increase in Expanded Program Adjustor Mechanism	\$0.00150 <u>.00056</u>	\$0.00260 <u>.00387</u>	\$0.00360 <u>.00545</u>

*Forecasted Retail Sales (including unbilled therms) TME
 May 31, 2010 119,932,651
 136,421,531

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 Savings for Expanded Program

Energy Savings	2010	2011	2012	Total
Annual (Therms)	83,013 <u>88,304</u>	142,077 <u>134,659</u>	199,240 <u>181,013</u>	424,330 <u>403,977</u>
Lifetime (Therms)	1,518,440 <u>1,639,480</u>	2,586,780 <u>2,491,860</u>	3,630,420 <u>3,344,240</u>	7,735,640 <u>7,477,580</u>

After the 2010 ramp up of the expanded Program, energy savings is expected to significantly surpass energy savings expectations from the original Program design shown in Table 5, below.

Table 5. Annual Energy Savings Expectations from Original Program Design

Year	2010	2011	2012
Energy Savings (Therms)	100,432	103,444	106,548

As a result of the energy savings shown in Table 5, it is estimated that the Program will produce environmental benefits through avoided CO2 emissions shown in Table 6, below.

UNSGas, Inc.'s Residential Gas- Existing Homes Efficiency Program

Table 6. Projected Environmental Benefits, 2010 – 2012

CO2 Reductions	2010	2011	2012	Total
Annual (Tons)	<u>490</u> 521	<u>838,795</u>	<u>1,176</u> 1,068	<u>2,504</u> 2,383
Lifetime (Tons)	<u>8,959</u> 9,673	<u>15,262</u> 14,702	<u>21,419</u> 19,731	<u>45,640</u> 44,106

Program Cost Effectiveness

The cost effectiveness of furnace and water heater 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 below in Table 7~~Table 7~~. The detailed measure analysis worksheets showing energy savings, cost and cost-effectiveness calculations for each individual measure are included in Appendix 1.

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;
- UNS Gas' Program administration costs; and
- The present value of Program benefits including UNS Gas avoided costs over the life of the measures.

For the SCT, UNS Gas included an estimated externality cost associated with avoided carbon emissions starting in 2012, with a low of \$14/ton (SCT Low), medium at \$25/ton (SCT Med), and high (SCT High) at \$43/ton, and all carbon values escalating over time.

Although Staff advised UNS Gas to go ahead and include a valuation of CO₂ in the benefit/cost calculations, Staff and UNS Gas 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, UNS Gas will continue to provide results of the TRC test for Commission review.

UNS Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

Table 7. Measure Level Benefit-Cost Analysis Results

	TRC	SCT Low	SCT Med	SC High
HE Furnace 90 AFUE – NEW/ROB	<u>2.0</u> 3.6	<u>2.3</u> 4.1	<u>2.4</u> 4.3	<u>2.6</u> 4.6
HE Furnace 92 AFUE – NEW/ROB	<u>1.9</u> 2.8	<u>2.2</u> 3.2	<u>2.3</u> 3.4	<u>2.4</u> 3.6
HE Furnace 94 AFUE – NEW/ROB	<u>1.9</u> 2.4	<u>2.1</u> 2.7	<u>2.3</u> 2.9	<u>2.4</u> 3.1
HE Furnace 90 AFUE – Early Retirement	<u>1.4</u> 1.2	<u>1.5</u> 1.4	<u>1.6</u> 1.4	<u>1.7</u> 1.5
HE Furnace 92 AFUE – Early Retirement	<u>1.7</u> 1.2	<u>1.9</u> 1.4	<u>2.1</u> 1.4	<u>2.2</u> 1.5
HE Furnace 94 AFUE – Early Retirement	<u>1.5</u> 1.2	<u>1.7</u> 1.3	<u>1.8</u> 1.4	<u>1.9</u> 1.5
EE Storage Water Heater <= 75 kBtuh	<u>1.2</u> 1.0	<u>1.4</u> 1.1	<u>1.4</u> 1.2	<u>1.5</u> 1.3
Air Sealing	<u>1.2</u> 1.7	<u>1.5</u> 1.9	<u>1.6</u> 2.1	<u>1.7</u> 2.2
Duct Sealing- Prescriptive Duct Sealing	<u>2.0</u> 1.3	<u>2.3</u> 1.6	<u>2.4</u> 1.7	<u>2.6</u> 1.8
Duct Sealing- Performance	<u>1.9</u>	<u>2.2</u>	<u>2.3</u>	<u>2.4</u>
Air Sealing + Attic Insulation	<u>1.9</u> 0.9	<u>2.1</u> 1.0	<u>2.3</u> 1.1	<u>2.4</u> 1.1

ROB – replace on burnout

*Note: SCT results and overall Program level benefit/cost results were calculated in Analytica software program, file named “UNSG Benefit Cost Model_2010-15.ANA”.

UNSGas, Inc.'s Residential Gas Existing Homes Efficiency Program

Table 8, 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 approved by Staff .

Table 8. Program Benefit-Cost Analysis Results

Benefit Cost Tests	
	1.4
TRC	1.4
	1.6
SCT Low	1.7
	1.7
SCT Med	1.8
	1.8
SCT High	1.9

In addition to estimating the savings from each measure, this analysis relies on a range of other assumptions and financial data provided in Table 9, below.

Table 9. Other Financial Assumptions

Financial Assumptions	
Conservation Life (yrs):	20
Program Life (yrs):	5
Energy AC (\$/Therm):	0.91532
Incentives as Percent of Total Budget over Three Years (2010-2012)	57.1%
TRC Discount Rate	7.00%
Social Discount Rate	7.00%
Weighted Averages Net-to-Gross Ratio:	100%

UNS Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

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

	<u>Annual Savings (Therms)</u>	<u>Lifetime Savings (Therms)</u>	<u>Annual CO₂ Reductions (Tons)</u>	<u>Lifetime CO₂ Reductions (Tons)</u>	<u>Measure Lifetime (Years)</u>	<u>Incremental Cost (\$/unit)</u>	<u>Incentive (\$/unit)</u>
<u>HE Furnace 90 AFUE - ROB/NEW</u>	<u>158</u>	<u>2,844</u>	<u>0.9</u>	<u>16.8</u>	<u>18</u>	<u>568</u>	<u>300</u>
<u>HE Furnace 92 AFUE - ROB/NEW</u>	<u>185</u>	<u>3,330</u>	<u>1.1</u>	<u>19.6</u>	<u>18</u>	<u>666</u>	<u>450</u>
<u>HE Furnace 94 AFUE - ROB/NEW</u>	<u>211</u>	<u>3,798</u>	<u>1.2</u>	<u>22.4</u>	<u>18</u>	<u>766</u>	<u>550</u>
<u>EE Storage Water Heater <= 75 kBtuh</u>	<u>14</u>	<u>182</u>	<u>0.1</u>	<u>1.1</u>	<u>13</u>	<u>74</u>	<u>50</u>
<u>Air Sealing</u>	<u>84</u>	<u>1,680</u>	<u>0.5</u>	<u>9.9</u>	<u>20</u>	<u>345</u>	<u>250</u>
<u>Duct Sealing-Prescriptive</u>	<u>146</u>	<u>2,920</u>	<u>0.9</u>	<u>17.2</u>	<u>20</u>	<u>770</u>	<u>350</u>
<u>Duct Sealing-Performance</u>	<u>146</u>	<u>2,628</u>	<u>0.9</u>	<u>15.5</u>	<u>18</u>	<u>770</u>	<u>550</u>
<u>Air Sealing + Attic Insulation</u>	<u>107</u>	<u>2,140</u>	<u>0.6</u>	<u>12.6</u>	<u>20</u>	<u>1,140</u>	<u>800</u>

UNS Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

HIGH-EFFICIENCY GAS FURNACE

UNSG C&I PROGRAM

PROGRAM DATA		OPERATING DATA		OTHER FACTORS	
Measure Life (yrs):	20	Htg. Season Hrs.:	2,460	Application	ROB
Program Life (yrs):	5	Htg. Season Load Factor:	0.80	Cost Basis:	Incremental equipment
Levelized \$/Therm:	\$0.84210	Peak Day Load Factor:	0.80	Weighting Factors	
Ratio of Non-inc to Incentive Costs	40.0%			AFUE -90	60%
IRP Discount Rate:	7.00%			AFUE -92	30%
Social Discount Rate	7.00%			AFUE -94	10%
NTG Ratio:	100%				

Measure	Type	DEMAND/ENERGY SAVINGS		INCENTIVE CALCULATIONS				CUSTOMER COST/SAVINGS				WGT.	% Incent	TRC					
		Base Capacity (Btuh)	Base High Eff. (Therms)	IRP PV Benefit (\$/Unit)	Social PV Benefit (\$/Unit)	IRP PV Recommended Program Incentive % PV (\$/Unit)	PV Cost NPV (\$/Unit)	Tax Credits and Other Cost	Incr. Cost (\$/Unit)	Payback (yrs)	Weighting Factor				BC Ratio				
H/E FURNACE	<300,000 Btuh	80000	0.80	2.13	219	\$1,951	\$1,951	\$200	10%	\$410	\$1,541	\$330	\$0	\$179	1.8	0.7	60%	61%	4.76
H/E FURNACE	<300,000 Btuh	80000	0.80	2.50	257	\$2,290	\$2,290	\$300	13%	\$541	\$1,750	\$421	\$0	\$210	2.0	0.6	30%	71%	4.24
H/E FURNACE	<300,000 Btuh	80000	0.80	2.86	293	\$2,615	\$2,615	\$375	14%	\$662	\$1,953	\$512	\$0	\$240	2.1	0.6	10%	73%	3.95
Weighted Average					238	\$2,119	\$2,119	\$248	12%	\$474	\$1,645	\$375	\$0	\$194	1.9	0.7	100%	66%	4.47

(1) See Energy Analysis Assumptions tab for energy calculation parameters
(2) Measure Life based on DEER 2008 Data
(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
(4) See Worksheet 'Cost Assumptions' for information of cost data.
(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009
(6) Ratio of Non-inc to Incentive Costs discounted 20% for 2008/09 program measures

UNS Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

UNSG C&I and RESIDENTIAL PROGRAMS

HIGH EFFICIENCY SERVICE HOT WATER HEATER ≤ 75,000 BTU/h

PROGRAM DATA	OPERATING DATA Commercial Based on light/moderate users	OPERATING DATA Residential Energy consumption estimated using the DOE test procedure. Based on the following formula: $(41,045 \text{ BTU/EF} \times 365) / 100,000$	OTHER FACTORS
Measure Life (yrs): 13			Application: Incremental equipment
Program Life (yrs): 5			Cost Basis: Incremental equipment
Levelized \$/Therm: \$ 0.74855			Weighting Factors
Ratio of Non-inc to Incentive Costs: 40.0%			Commercial: 25%
IRP Discount Rate: 7.00%			Residential: 75%
Social Discount Rate: 7.00%			
NTG Ratio: 100%			
RATE DATA			
\$/Therm: \$ 0.8541			
DEMAND/ENERGY SAVINGS		INCENTIVE CALCULATIONS	
Measure Type	Base Measure EF	Annual Savings (Therms)	Program Cost (\$/Unit)
Combined Commercial-Residential Water Heater Program	0.594	14.3	\$94
			IRP Social PV Benefit (\$/Unit)
			\$89
			Recommended Incentive (\$/Unit)
			\$50
			% PV
			56%
			NPV (\$/Unit)
			-\$5
			Incr. Cost (\$/Unit)
			\$74
			Customer Cost (\$/Unit)
			\$0
			Other Savings w/Inc. (yrs)
			6.1
			Payback (yrs)
			2.0
			WGT.
			100%
			% Incent
			68%
			BC Ratio
			0.95
			TRC

- (1) See Energy Analysis Assumptions tab for energy calculation parameters
- (2) Measure Life based on DEER 2008 data
- (3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
- (4) See worksheet 'Cost Assumptions' for information of cost data.
- (5) NTG Ratio and discount rate based on ACC guidance 2/20/2009
- (6) Ratio of Non-inc to Incentive Costs discounted 20% for 2008/09 program measures

UNS Gas, Inc.'s Residential Gas-Existing Homes Efficiency Program

UNSG RES PROGRAM

REDUCED INFILTRATION

PROGRAM DATA		OPERATING DATA		OTHER FACTORS										
Measure Life (yrs):	20	From 0.65 ACH to 0.35 ACH		Application	RET									
Program Life (yrs):	5			Cost Basis:	Installed Cost									
Levelized \$/Therms	\$0.84			Weighting Factors										
Ratio of Non-inc to Incentive Costs	50.0%			Flagstaff	40%									
IRP Discount Rate:	7.00%			Kingman	50%									
Social Discount Rate	7.00%			Prescott	10%									
NTG Ratio:	100%													
		RATE DATA												
		\$/Therm												
		\$ 0.88113												
DEMAND/ENERGY SAVINGS		INCENTIVE CALCULATIONS				CUSTOMER COST/SAVINGS		WGT.		% Incent		TRC		
Measure Type	Location	Base Usage (Therms/home)	Measure (Therms/home)	Annual Savgs. Per Home (Therms)	IRP PV Benefit (\$/Unit)	SEC817 PV Incentive (\$/Unit)	Recommended Program Cost NPV (\$/Unit)	Incr. Cost Incentives (\$/Unit)	Cost Savings (\$/Unit)	Payback w/ Inc. (yrs)	Weighting Factor	BC Ratio		
Reduced Infiltration	Prescott	565	481	84	\$747	\$173	23%	\$345	\$74	4.7	100%	1.73	50%	1.73
Weighted Average				84	\$747	\$173	23%	\$345	\$74	4.7	100%	1.73	50%	1.73

(1) See Energy Analysis Assumptions tab for energy calculation parameters

(2) Measure Life from UNSG TRM 2007-1

(3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab

(4) See worksheet 'Cost Assumptions' for information of cost data.

(5) NTG Ratio and discount rate based on ACC guidance 2/20/2009

UNSG Gas, Inc.'s Residential Gas- Existing Homes Efficiency Program

UNSG RES PROGRAM

REDUCED DUCT LEAKAGE

PROGRAM DATA		OPERATING DATA		OTHER FACTORS		RET												
Measure Life (yrs):	20	262 cfm 25 to 105 cfm 25		Application		Installed Cost												
Program Life (yrs):	5			Cost Basis:														
Levelized \$/Therms	\$0.84			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">Weighting Factors</th> </tr> <tr> <td>Flagstaff</td> <td style="text-align: center;">40%</td> </tr> <tr> <td>Kingman</td> <td style="text-align: center;">50%</td> </tr> <tr> <td>Prescott</td> <td style="text-align: center;">10%</td> </tr> </table>				Weighting Factors		Flagstaff	40%	Kingman	50%	Prescott	10%			
Weighting Factors																		
Flagstaff	40%																	
Kingman	50%																	
Prescott	10%																	
Ratio of Non-inc to Incentive Costs	50.0%																	
IRP Discount Rate:	7.00%																	
Social Discount Rate	7.00%																	
NTG Ratio:	100%																	
DEMAND/ENERGY SAVINGS		INCENTIVE CALCULATIONS		CUSTOMER COST/SAVINGS		WGT.		% Incent		TRC								
Measure Type	Location	Base Usage (Therms/home)	Measure (Therms/home)	Annual Savgs. Per Home (Therms)	IRP PV Benefit (\$/Unit)	Social PV Benefit (\$/Unit)	Recommended Program Cost NPV (\$/Unit)	% PV (\$/Unit)	Incentive (\$/Unit)	NPV (\$/Unit)	Incl. Cost (\$/Unit)	Tax Credits and Other Incentives (\$/Unit)	Customer Savings (\$/Unit)	Cost Savings (\$/Unit)	Payback (yrs)	w/Inc. (yrs)	Weighting Factor (%)	BC Ratio
Reduced Duct Leakage	Prescott	262 cfm 25 to 105 cfm 25	565	438	127	\$1,133	\$270	24%	\$675	\$458	\$540	\$0	\$112	4.8	2.4	100%	50%	1.68
Weighted Average				127	\$1,133	\$270	24%	\$675	\$458	\$540	\$0	\$112	4.8	2.4	100%	50%	1.68	

(1) See Energy Analysis Assumptions tab for energy calculation parameters
 (2) Measure Life from UNSG TRM 2007-1
 (3) References for Base and Measure Efficiencies provided in Energy Analysis Assumptions tab
 (4) See worksheet 'Cost Assumptions' for information of cost data.
 (5) NTG Ratio and discount rate based on ACC guidance 2/20/2009

