SOUTHWEST GAS CORPORATION

Docket No. G-01551A-10-

# 2010 ARIZONA GENERAL RATE CASE

## Arizona Energy Efficiency and Renewable Energy Resource Technology Portfolio Implementation Plan

SOUTHWEST GAS CORPORATION

# ARIZONA ENERGY EFFICIENCY AND RENEWABLE ENERGY RESOURCE TECHNOLOGY PORTFOLIO IMPLEMENTATION PLAN

## Table of Contents

# ARIZONA ENERGY EFFICIENCY AND RENEWABLE ENERGY RESOURCE TECHNOLOGY PORTFOLIO IMPLEMENTATION PLAN OVERVIEW

## INTRODUCTION

Southwest Gas Corporation's (Southwest Gas or Company) Energy Efficiency (EE) and Renewable Energy Resource Technology (RET) portfolio (Portfolio) for the initial implementation plan year consists of ten programs designed to achieve cost-effective natural gas savings, and increase customer awareness and use of energy-efficient and renewable energy practices and technologies. The Portfolio will serve to benefit Southwest Gas' Arizona residential, non-residential and low-income customers. Consistent with the draft gas energy efficiency standards (Gas EE Standard) approved by the Commission in Decision No. 71855, the proposed implementation plan for Southwest Gas' Portfolio describes only one plan year.

Southwest Gas believes the Portfolio will advance market transformation and achieve sustainable savings, reducing the need for future market interventions. The Portfolio is comprised of the following programs and targets the residential, non-residential and low-income market sectors:

**Residential Energy Management Programs**

1. *Smarter Greener Better* Residential Rebates
2. *Smarter Greener Better* Homes
3. *Smarter Greener Better* Residential Energy Assessments (Pilot)

**Non-Residential Energy Management Programs**

4. *Smarter Greener Better* Business Rebates
5. *Smarter Greener Better* Custom Business Rebates
6. *Smarter Greener Better* Business Energy Assessments (Pilot)
7. *Smarter Greener Better* Distributed Generation

**Low-Income Program**

8. *Smarter Greener Better* Low-Income Energy Conservation

**Educational Program**

9. *Smarter Greener Better* Energy Education (Pilot)

**Renewable Energy Resource Technology Program**

10. *Smarter Greener Better* Solar Thermal Rebates

The Portfolio for the initial implementation plan year includes detailed program descriptions of the ten individual programs including: program rationale and objectives, targeted market sector, level of customer participation, customer eligibility, measure specifications, proposed rebate levels, program budgets, societal benefits and savings, societal costs, environmental benefits, and cost-effectiveness.

The Company's EE and RET programs are designed to influence energy decisions by residential, non-residential and low income customers through a

combination of education, training, financial incentives, and technical assistance. The Portfolio is expected to produce long-term energy savings, monetary savings for customers, and positive environmental impacts.

The Company's Portfolio also results in energy savings and emissions reductions through energy-efficient products, services and/or practices. Overall energy savings include savings attributable to the reduction of natural gas, electricity and water usage. Southwest Gas has participated in, and plans to continue discussions with Arizona Public Service (APS), Tucson Electric Power (TEP), and Salt River Project (SRP), focusing on the potential for future collaborative efforts regarding EE and RET programs.

Southwest Gas currently offers several energy efficiency programs in Arizona, which the Company proposes to replace upon the approval of its new Portfolio. Although Southwest Gas will continue its current programs until the Portfolio receives Commission approval, the Company plans to implement its new Portfolio within 60 days of approval by the Commission.

**Portfolio Savings, Benefits and Costs**

Southwest Gas utilizes a cost-effectiveness model to determine the societal cost, as well as the societal and environmental benefits of each program. Table 1 below details the energy savings, monetary savings, societal benefits and cost-effectiveness ratios for each program in Southwest Gas' Portfolio.

**Table 1 – Portfolio Annual and Lifetime Therm Savings; Lifetime Societal Benefits, Costs and Net Benefits; and Cost-Effectiveness**

| Program | Annual Therm Savings | Lifetime Therm Savings | Societal Benefits | Societal Costs | Net Benefits | Cost-Effectiveness Ratio |
|---|---|---|---|---|---|---|
| **Residential** | | | | | | |
| Residential Rebates | 640,000 | 12,799,993 | $ 8,814,249 | $ 6,783,333 | $ 2,030,916 | 1.30 |
| Homes | 570,000 | 15,960,008 | $ 11,653,145 | $ 5,066,667 | $ 6,586,479 | 2.30 |
| Residential Energy Assessments | 19,000 | 190,000 | $ 120,432 | $ 1,050,000 | $ (929,568) | N/A[2] |
| **Total Residential** | **1,229,000** | **28,950,002** | **$ 20,587,826** | **$12,900,000** | **$ 7,687,826** | 1.60 |
| **Non-Residential** | | | | | | |
| Business Rebates | 580,000 | 8,699,997 | $ 5,788,535 | $ 2,733,333 | $ 3,055,202 | 2.12 |
| Custom Business Rebates | 18,000 | 270,000 | $ 179,644 | $ 161,250 | $ 18,394 | 1.11 |
| Business Energy Assessments | - | - | $ - | $ 1,050,000 | $ (1,050,000) | N/A[2] |
| Distributed Generation | 516,000 | 10,320,008 | $ 7,106,498 | $ 2,450,000 | $ 4,656,498 | 2.90 |
| **Total Non-Residential** | **1,114,000** | **19,290,005** | **$ 13,074,677** | **$ 6,394,583** | **$ 6,680,094** | 2.04 |
| **Low-Income** | | | | | | |
| L-I Weatherization[1] | 21,000 | 525,000 | $ 374,859 | $ 450,000 | $ (75,141) | 0.83 |
| **Education** | | | | | | |
| Energy Education | - | - | $ - | $ 550,000 | $ (550,000) | N/A[2] |
| **Total Energy Efficiency** | **2,364,000** | **48,765,007** | **$ 34,037,363** | **$20,294,583** | **$13,742,780** | **1.68** |
| **Renewable Energy Resource Technology** | | | | | | |
| Solar Thermal Rebates | 87,000 | 1,479,000 | $ 997,377 | $ 616,667 | $ 380,711 | N/A[3] |
| **Total Portfolio** | **2,451,000** | **50,244,007** | **$ 35,034,740** | **$20,911,250** | **$14,123,490** | **1.68** |

[1]L-I Bill Assistance is not included in this Table because there are no therm savings attributable to the program.
[2]Pursuant to Section R14-2-2512(G) of the Gas EE Standard, cost-effectiveness is not required for pilot programs.
[3]Pursuant to the Gas EE Standard, cost-effectiveness is not required for RET programs.

The Portfolio is targeted to save an annual 2,451,000 therms of energy. The total energy savings from energy efficiency programs of 2,364,000 is equivalent to the first-year goal set forth in the Commission's draft Gas EE Standard, of achieving energy savings from energy efficiency programs of up to 0.375 percent, relevant to the total first-year energy savings goal of 0.5 percent. The Company's RET

program, which is targeted to save an additional 87,000 therms, and Southwest Gas' efforts to support the adoption and implementation of the energy efficiency building codes, as well as the Company's involvement in the placement of non-Company sponsored RET projects that displace gas will contribute to the remaining 0.125 percent of the total first-year energy savings goal of 0.5 percent.

**Program Baseline**

Southwest Gas' Portfolio encourages energy efficiency improvements. The baseline system is the applicable code or federal minimum efficiency standards, if such standards apply. In cases where standards do not exist, the baseline is based upon standard industry practice.

Southwest Gas may adjust baseline natural gas consumption and costs to reflect any of the following: energy codes, standard practice, changes in capacity, equipment operation, changes in production or facility use, and equipment at the end of its useful life.

**Portfolio Annual Budget**

Southwest Gas proposes an annual budget of approximately $16.5 million for the initial implementation plan year. The proposed budget maximizes the amount of program funds going directly to customers through education, training, financial incentives and technical assistance. The budget also takes into account the realities of program start-up costs and the administrative oversight needed to plan, develop, deliver and evaluate the programs. Once the Portfolio is implemented, rebate levels and other program elements will be reviewed and modified as needed to maximize program participation and energy savings to customers.

The budget for the Portfolio applies to the ten aforementioned programs. Within each program description, Southwest Gas provides an estimated budget apportioning the dollars between five categories including: rebates, administration, outreach, delivery, and measurement, verification, and evaluation (MV&E). However, since Southwest Gas intends to utilize program funding where demand is highest it provides the apportioned budgets only as an approximation.

Table 2 below provides a summary of the estimated budgets for each program for the initial implementation plan year.

**Table 2 – Portfolio Annual Estimated Budget**

| Program | Rebates | Administration | Outreach | Delivery | MV&E | Program Total Cost |
|---|---|---|---|---|---|---|
| **Residential** | | | | | | |
| Residential Rebates | $ 3,850,000 | $ 41,250 | $ 30,000 | $1,196,250 | $ 82,500 | $ 5,500,000 |
| Homes | $ 3,200,000 | $ 160,000 | $ 480,000 | $ 80,000 | $ 80,000 | $ 4,000,000 |
| Residential Energy Assessments | $ 350,000 | $ 17,500 | $ 105,000 | $ 210,000 | $ 17,500 | $ 700,000 |
| **Total Residential** | **$ 7,400,000** | **$ 218,750** | **$ 915,000** | **$1,486,250** | **$ 180,000** | **$10,200,000** |
| **Non-Residential** | | | | | | |
| Business Rebates | $ 1,100,000 | $ 90,000 | $ 225,000 | $ 495,000 | $ 90,000 | $ 2,000,000 |
| Custom Business Rebates | $ 39,000 | $ 5,550 | $ 27,750 | $ 72,150 | $ 5,550 | $ 150,000 |
| Business Energy Assessments | $ 350,000 | $ 17,500 | $ 105,000 | $ 175,000 | $ 52,500 | $ 700,000 |
| Distributed Generation | $ 1,200,000 | $ 55,000 | $ 220,000 | $ 220,000 | $ 55,000 | $ 1,750,000 |
| **Total Non-Residential** | **$ 2,689,000** | **$ 168,050** | **$ 577,750** | **$ 962,150** | **$ 203,050** | **$ 4,600,000** |
| **Low-Income** | | | | | | |
| L-I Weatherization[1] | $ 373,500 | $ 67,500 | $ 9,000 | $ - | **$ -** | $ 450,000 |
| L-I Bill Assistance[2] | $ - | $ - | $ - | $ - | **$ -** | $ 200,000 |
| **Total Low-Income** | **$ 373,500** | **$ 67,500** | **$ 9,000** | **$ -** | **$ -** | **$ 650,000** |
| **Education** | | | | | | |
| Energy Education | $ - | $ - | $ 550,000 | $ - | $ - | $ 550,000 |
| **Total Energy Efficiency** | **$10,462,500** | **$ 454,300** | **$2,051,750** | **$2,448,400** | **$ 383,050** | **$16,000,000** |
| **Renewable Energy Resource Technology** | | | | | | |
| Solar Thermal Rebates | $ 350,000 | $ 15,000 | $ 60,000 | $ 67,500 | $ 7,500 | $ 500,000 |
| **Total Portfolio** | **$10,812,500** | **$ 469,300** | **$2,111,750** | **$2,515,900** | **$ 390,550** | **$16,500,000** |

[1]L-I Weatherization delivery and evaluation are performed by the Arizona Commerce Authority and community agencies and therefore, the associated costs are incorporated into the administration budget category.

[2]L-I Bill Assistance is not a rebate program and does not adhere to the above budget categories. Program administration is capped at $15,000.

The budget categories are explained in detail below:

**Rebates:** Includes any capital equipment rebates and technical services provided.

**Administration:** Includes internal administrative costs such as regulatory filings and reports, contract administration, and third-party contractor oversight.

**Outreach:** Includes all marketing and advertising costs related to: workshops, event booths, brochures (design and printing), retail store signage, and trade ally recruitment.

**Delivery:** Includes rebate processing, forms design and creation, pre-installation field and phone inspections and retailer training.

**Measurement, Verification and Evaluation:** Includes post-installation inspections performed by an independent third party. Such inspections are not associated with normal due diligence and program delivery, and instead serve as impact evaluations.

In order to ensure funding for actual program costs, Southwest Gas requests flexibility to transfer funds between the budget categories within each program, and between the programs within each customer class.

Southwest Gas anticipates varying levels of participation for individual program measures. Consistent with the draft Gas EE Standard, cost-effectiveness was performed at the portfolio and program levels. Southwest Gas requests flexibility to utilize program funding for measures in which customers express the most interest. This flexibility will be limited to each individual program budget, but will enable Southwest Gas to maximize energy efficiency benefits for customers by permitting Southwest Gas to reallocate funding to those measures where customers are responsive. Actual program costs will be tracked and reported within each individual program budget.

## Cost Recovery of Portfolio

Recovery of program costs will be done through a non-bypassable adjustable rate applicable to all customers, unless the customer class or specific customer is exempted. Low-Income program costs shall be borne by all customer classes, except where a class is specifically exempted by Commission Order.

Pursuant to Sections R14-2-2505(B)(5) and R14-2-2506(C) of the draft Gas EE Standard, Southwest Gas requests that the Commission allow the Company to utilize its current Demand-Side Management (DSM) rate adjuster to recover the costs associated with its EE and RET programs detailed in this implementation plan. Under its current DSM rate adjuster, Southwest Gas files an application in January of each year with its program costs and other data supporting the calculation of its adjustment rate per therm, to become effective with the first billing cycle the following April. Southwest Gas seeks to continue the current filing and adjustment process.

Southwest Gas requests that the Portfolio and resulting DSM rate adjuster become effective coincident with the rates approved in the general rate case. An estimated calculation of the applicable DSM rate adjuster is provided in Table 3 below.

**Table 3 – Illustrative Cost Recovery of Portfolio Costs**

| Program Costs | Applicable Volumes | Adjustment Rate |
|---|---|---|
| $16,500,000 | 601,273,772 | $0.02661/therm[1] |

[1]For illustrative purposes only. Excludes the effect of over- or under-recoveries in Southwest Gas' existing DSM rate adjuster balancing account.

## Summary of Programs

In developing its Portfolio, Southwest Gas considered programs for which energy savings could be demonstrated using industry standards, and assessed each program based on technical feasibility and estimated costs.

The Portfolio will be implemented through both internal and external resources. This approach enables the Company to utilize internal resources whenever possible and to rely on external resources when necessary. In all cases, Southwest Gas will retain responsibility for program administration and reporting activities. Below is a brief overview of each proposed program.

*Smarter Greener Better* Residential Rebates: Rebates will be offered to residential customers on qualified program measures and mailed to participating customers upon proof-of-purchase and installation. The measures include: ENERGY STAR® water and space heating measures, ENERGY STAR® clothes washers and high efficiency natural gas clothes dryers, ENERGY STAR® dishwashers, and smart low-flow showerheads. The program also offers rebates on weatherization measures such as insulation, duct sealing and high efficiency windows.

*Smarter Greener Better* Homes: Rebates will be offered to homebuilders who build ENERGY STAR® certified homes and install ENERGY STAR® water and space heating measures, ENERGY STAR® clothes washers and high efficiency natural gas clothes dryers and attic insulation. The program will be available to all builders of new single-family subdivision and custom homes and individually metered multi-family homes featuring natural gas water and space heating.

*Smarter Greener Better* Residential Energy Assessments (Pilot): Southwest Gas proposes a joint residential energy assessment (energy audit) program with APS, SRP and/or TEP. All three of these utilities serve in Southwest Gas' Arizona service territory and have already developed their own residential energy audit programs. For all participating homes with natural gas water and space heating, Southwest Gas will pay rebates to homeowners for a portion of contractor costs

and will provide direct-install measures such as smart low-flow showerheads and lavatory faucet accessories (aerators) and information for the Southwest Gas *Smarter Greener Better* Residential Rebates program.

*Smarter Greener Better* Business Rebates: Rebates will be offered to non-residential customers on qualified program measures and mailed to participating customers upon proof-of-purchase and installation. The measures include: high efficiency space and water heating units (including boilers and boiler tune-ups), clothes washers, a full suite of commercial kitchen high efficiency products (including dishwashers, natural gas fryers, griddles, steamers, conveyor, convection and combination ovens) and commercial weatherization measures.

*Smarter Greener Better* Custom Business Rebates: Rebates will be offered to non-residential customers based on achieved annual energy savings. The program does not specify eligible measures in order to provide participants maximum flexibility in identifying potential projects. Participants may propose any measure that produces a verifiable natural gas usage reduction, is installed in either existing or new construction applications, has a minimum useful life of seven years and exceeds minimum cost-effectiveness requirements. Qualifying measures include those that target cost-effective natural gas savings, such as retrofits of existing systems, improvements to existing systems and first time installations where the system's efficiency exceeds applicable codes or standard industry practice.

*Smarter Greener Better* Business Energy Assessments (Pilot): Rebates of up to $5,000 per non-residential customer will be provided to aid in offsetting the cost of conducting a comprehensive energy assessment (energy audit) for all, or a substantial portion of the customer's premises. The audit must meet or exceed the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Level 2, energy audit standards. The energy audit will study a customer's existing equipment and building envelope and identify potential energy conservation measures to reduce overall energy consumption and increase energy efficiency.

*Smarter Greener Better* Distributed Generation: The program provides rebates to non-residential customers to achieve significant fuel savings by promoting high efficiency electric generation, providing financial benefits during peak electrical demand periods, and demonstrating the use of new natural gas technologies that are being brought to market. The rebates are based upon the size and efficiency of the system being installed and range from $400 to $500 per kW.

*Smarter Greener Better* Low-Income Energy Conservation: The Low-Income Energy Conservation (LIEC) program provides income-qualified residential customers with money-saving weatherization measures that reduce energy use in their homes. The program will be available to households with annual incomes less than 150 percent of the federal poverty income guidelines, and will be administered by Southwest Gas in conjunction with the Arizona Commerce Authority (ACA – formerly dba Arizona Energy Office). The ACA manages the

Department of Energy's (DOE) statewide Weatherization Assistance Program in Arizona and sub-contracts with local community agencies to install home weatherization measures. The home weatherization measures focus on four major categories: 1) duct repair; 2) infiltration control; 3) insulation (including attic, duct and floor); and 4) repair or replacement of appliances that are not operational or pose a health hazard.

*Smarter Greener Better* Energy Education (Pilot): The Energy Education program provides customers with energy efficiency and conservation information and recommendations to encourage the utilization of energy-efficient alternatives. In particular, the program focuses on specific energy efficiency or technology information that will help customers optimize natural gas usage. Print and radio mediums will be used to educate customers on the efficient use of natural gas and energy in general.

*Smarter Greener Better* Solar Thermal Rebates: Rebates will be offered to residential and non-residential customers on qualified solar thermal systems, used for water heating or pool heating, upon proof-of-purchase and installation. The program objective is to increase public awareness of the benefits of solar thermal systems and to reduce customer natural gas usage by providing economically beneficial rebates to install the systems. Long-term customer energy savings will be realized throughout the life of the solar thermal systems.

To be eligible for participation in any of Southwest Gas' EE and RET programs, all new and existing residential, non-residential and low-income customers must have active Southwest Gas accounts, and residences and facilities must be within Southwest Gas' Arizona service territory. In addition, customers must also contribute towards the funding of these programs through the DSM rate adjuster.

**Marketing and Delivery Strategies (Outreach)**

To maximize program participation, Southwest Gas' marketing and delivery (i.e., outreach) campaign will focus on making customers and trade allies aware of the benefits of EE products and RET. Southwest Gas plans to integrate information about its programs into a wide range of communications and outreach efforts. Outreach strategies may include:

- On-line program information placed on the Southwest Gas Web site (www.swgas.com).
- Notification of program information and availability in Company newsletters and bill inserts (when applicable).
- Cross-marketing with other Southwest Gas energy efficiency programs and activities (i.e. consumer trade shows, special promotions, direct sales and rebate check inserts).
- Targeted direct mail outreach based on the age of the home and specific market segments.

- Placement of point-of-purchase brochures and advertising with applicable appliance and equipment dealers and contractors.
- Education and awareness meetings with participating trade allies on program aspects.
- Referrals and customer awareness assistance from the Southwest Gas Key Account Management and Service Planning staff (when applicable).
- Targeted outreach to trade organizations, engineers, contractors, energy service companies, and government agencies.

Outreach will include key messages effective for the appropriate target audience, dependent on the specific program. Such messages may include:

- Financial Savings: ENERGY STAR® or high efficiency products are a great investment, lowering monthly utility bills and potentially adding value to a customer's residence or business.
- Good for the Environment: Purchasing products that use less energy decreases the overall demand for energy and water resources and leads to reductions in greenhouse gas emissions.
- Enhanced Performance: Products designed to be energy-efficient frequently have more features, are of higher quality, and perform to overall higher standards by incorporating innovative technologies and designs.
- Enhanced comfort: Enjoy a home with even temperatures throughout – warmer in winter and cooler in summer.
- Peace of Mind: Relax knowing your home has been inspected, performance tested and certified by an independent, professional home energy analyst.
- Healthier Indoor Air: Tightly sealed and performance-tested duct systems help keep the air inside your home clean.
- Enhanced Reputation (as a quality builder or property owner): ENERGY STAR® offers market differentiation with a nationally recognized and trusted label for energy efficiency and quality.
- Increased Customer Satisfaction: High performance ENERGY STAR® homes offer a high quality of living and ownership experience for homebuyers, leading to repeat customers, reduced callbacks and increased referrals.
- Technical Assistance and Best Practices: Partnering with professional home energy rates and utility field staff helps builders stay abreast of best practices based on sound building science.
- Trade Ally Partnership Benefits: By partnering with this program, retailers or installation contractors can benefit from outreach efforts, training opportunities, and technical assistance.
- Environmentally Friendly Business: By selling products and services that emphasize energy efficiency, trade allies can become associated with the image of an environmentally friendly business within their industry.
- Increased Sales: Today's consumers are more knowledgeable of energy efficiency and are more likely to replace an old model product with a new energy-efficient product to benefit from the immediate and long-term

savings. Consumers also place a higher value on energy efficiency as a feature in new appliances.

Each individual program budget includes a category for outreach that will cover specific program pieces used to promote the program. Market transformation education and awareness outreach will incorporate all programs into the overall energy efficiency outreach strategies, and will be budgeted through the *Smarter Greener Better* Energy Education program budget.

**Measurement, Verification and Evaluation**

All pertinent program rebate information will be tracked in a program specific database. The database will provide a near real-time listing of current customer applications, customer information, equipment information, customer costs, savings, and rebates by measure. Program related information will be tracked and available for reporting, including the number of program participants and measure participation.

Due-diligence application review activities will include verification of a variation of the following items, depending on the program:

- Customer Data: name, site address, account number.
- Sales Data: price, quantity, purchase location.
- Equipment Data: product name, installation date, capacity, efficiency rating, manufacturer, model number, serial number.
- Rebate Data: rebate amount, denial rates.
- Deemed energy savings per installed measure.
- HERS score for ENERGY STAR® Homes.
- Trade ally information.
- Savings and cost estimates.
- Adherence of Measurement and Verification methodologies to standard industry practice.

In order to maintain quality control, Southwest Gas will augment the application process with random telephone and field inspections to ensure program integrity. These verification activities will serve to confirm the following information depending on the program:

- Installation address.
- Equipment make and manufacturer.
- Equipment model number.
- Equipment size.

The verification process will balance the need for randomness, the need to maintain a robust sample size, and the need to verify the compliance of multiple equipment installers. Southwest Gas will evaluate the success of each measure annually and propose changes to the program as necessary.

## Conclusion

Southwest Gas believes its Portfolio will benefit its customers, the general public, and the environment. Southwest Gas' Portfolio includes programs that serve all major customer classes – residential, non-residential, and low-income customers, including some hard-to-reach and underserved segments within those classes.

With increased program availability and customer outreach, Southwest Gas hopes to affect greater customer awareness and behavioral change with regard to energy efficiency and renewable energy resource technology. The estimated program results indicate cost-effectiveness and positive benefits for Southwest Gas' customers. The Portfolio is designed to achieve the draft Gas EE Standard and make a positive contribution in terms of saving energy resources, lowering customer utility bills, and improving air quality and water conservation.

# RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREENER BETTER* RESIDENTIAL REBATES

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Residential Rebates program to residential customers in the Company's Arizona service territory. Rebates will be offered to participating customers on qualified, energy-efficient program measures upon proof-of-purchase and installation.

## Program Objective

The overall objective of this energy-efficient program is to provide cost-effective savings on customer natural gas usage by offering rebates to qualifying Southwest Gas residential customers. The program seeks to increase customer awareness and the use of energy-efficient practices and new technologies in new and existing residential homes to achieve cost-effective natural gas savings. Southwest Gas projects that approximately 11,800 rebates will be paid to customers under the program.

## Qualifying Customers

All active, Southwest Gas residential customers located in the Company's Arizona service territory are eligible to participate in the program, which include single-family home customers. Owners of individually metered multi-family properties located in Southwest's Arizona service territory are also eligible.

## Qualifying Measures

Qualifying measure specifications will be reviewed annually and adjusted, as necessary, to reflect changing national efficiency standards. All measures must be natural gas equipment, or be supplied by a natural gas water or space heating unit.

Water heating is the third-largest home-energy cost, after space heating and cooling, and typically accounts for 14 to 20 percent of a residential customer's energy bill. Upgrading to high-efficient water heating measures, including measures supplied by a natural gas water heater, creates the potential for significant energy savings. Additional rebates will be offered for space heating measures, including measures supplied by a natural gas space heater, to encourage the overall use of energy-efficient measures. Rebates provided as part of the *Smarter Greener Better* Residential Rebates program will help offset the incremental costs incurred by upgrading to energy-efficient measures. Qualifying water and space heating measures and specifications are shown in Table 4 below.

**Table 4 – Qualifying Measure Specifications: Water and Space Heating Measures**

| Measure | Specification |
|---|---|
| **WATER AND SPACE HEATING MEASURES** | |
| Storage Water Heater | ENERGY STAR® qualified |
| Condensing Water Heater | ENERGY STAR® qualified |
| Tankless Water Heater | ENERGY STAR® qualified |
| Smart Low-Flow Showerhead | 1.5 gpm with ShowerStart Technology |
| Lavatory Faucet | WaterSense® qualified |
| Dishwasher - Standard Model (8+ place settings) | ENERGY STAR® qualified |
| Dishwasher - Compact Model (Less than 8 place settings) | ENERGY STAR® qualified |
| Clothes Washer | ENERGY STAR® qualified |
| Clothes Dryer | Model must have a moisture sensor |
| Furnace | ENERGY STAR® qualified |
| Boiler | ENERGY STAR® qualified |

Southwest Gas will also offer rebates on weatherization measures to encourage customers to improve the energy efficiency and comfort of their homes by sealing and insulating the shell of their homes, including the walls, ceilings, windows and floors. According to the ENERGY STAR® Web site, homeowners can save up to 20 percent on their annual heating and cooling costs (or up to 10 percent on their total annual energy bill) by implementing sealing and insulating measures. Qualifying weatherization measures and specifications are shown in Table 5 below.

**Table 5 – Qualifying Measure Specifications: Weatherization Measures**

| Measure | Specification |
|---|---|
| **WEATHERIZATION MEASURES** | |
| Window | ENERGY STAR® qualified (Southern Climate Zone) |
| Attic Insulation | Install increment of R-19 or higher (Final condition must be between R-38 and R-60) |
| Floor Insulation | Install increment of R-6 or higher (Final condition must be between R-13 and R-19) |
| Wall Insulation | Install increment of R-11 or higher |
| Duct Insulation & Duct Sealing | Duct Insulation: Install increment of R-6 or higher; Duct Sealing: Performance Tested Comfort Systems (PTCS) standards |

**Rebate Amounts, Incremental Costs and Annual Savings**

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by reviewing the best available information on incremental cost and energy savings of each measure. Rebate amounts were maintained at the minimum rebate levels needed to constitute a feasible marketing message to positively affect customer behavior and overall program cost-effectiveness. Rebate amounts, incremental costs and annual savings in therms are provided in Tables 6 and 7 below.

**Table 6 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Water and Space Heating Measures**

| Measure | Rebate | Incremental Cost | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| **WATER AND SPACE HEATING MEASURES** | | | |
| Storage Water Heater | $300 | $400 | 30 |
| Condensing Water Heater | $325 | $435 | 57 |
| Tankless Water Heater | $450 | $605 | 60 |
| Smart Low-Flow Showerhead | $30 | $40 | 21 |
| Lavatory Faucet | $50 | $75 | 17 |
| Dishwasher - Standard Model (8+ place settings) | $75 | $126 | 1.3 |
| Dishwasher - Compact Model (Less than 8 place settings) | $75 | $100 | 1 |
| Clothes Washer – Tier 1 | $180 | $240 | 12 |
| Clothes Washer – Tier 2 | $325 | $457 | 14 |
| Clothes Washer – Tier 3 | $350 | $485 | 15 |
| Clothes Dryer | $30 | $50 | 10 |
| Furnace | $400 | $550 | 25 |
| Boiler | $675 | $900 | 78 |

**Table 7 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Weatherization Measures**

| Measure | Rebate | Incremental Cost | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| **WEATHERIZATION MEASURES** | | | |
| Window | $0.95/SqFt | $1.30/SqFt | 0.1417/SqFt |
| Attic Insulation | $0.20/SqFt | $0.50/SqFt | 0.0230/SqFt |
| Floor Insulation | $0.30/SqFt | $0.42/SqFt | 0.0300/SqFt |
| Wall Insulation | $0.45/SqFt | $0.64/SqFt | 0.0230/SqFt |
| Duct Insulation & Duct Sealing | $450 | $657 | 49 |

### Program Limitations

The following requirement applies for all measures:

- Measures must be purchased new, and may not be used or leased.

### Target Audiences

Southwest Gas' primary target audience is residential customers of single-family homes and property owners of individually metered multi-family homes.

Southwest Gas' secondary target audience is trade allies including retailers, distributors, and manufacturers.

### Budget

Southwest Gas proposes a total annual estimated budget for this program of $5.5 million. Table 8 below provides the budget details by category.

**Table 8 – Total Estimated Budget**

| **Residential Energy Management Programs: *Smarter Greener Better* Residential Rebates** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $3,850,000 |
| Administration | $41,250 |
| Outreach | $330,000 |
| Delivery | $1,196,250 |
| Evaluation | $82,500 |
| **Total** | **$5,500,000** |

### Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the *Smarter Greener Better* Residential Rebates program is 1.30. Tables 9 and 10 below show the cost-benefit overview and projected lifetime savings.

**Table 9 – Cost-Benefit Overview**

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $ 8,814,249 |
| Present Value of Costs | $ 6,783,333 |
| Net social benefit | $ 2,030,916 |
| **Cost-Effectiveness Ratio** | **1.30** |

**Table 10 – Projected Lifetime Savings**

| Energy and Environmental Benefit Overview Lifetime Savings | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 12,799,993 | 74,880 |

# RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREENER BETTER* HOMES

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Homes program to increase participation of Arizona homebuilders in building more energy-efficient housing. Rebates will be offered to homebuilders for homes certified as ENERGY STAR®. Additional rebates will be offered to homebuilders for installing qualified water heating, space heating and weatherization measures.

ENERGY STAR® certified homes must meet the Environmental Protection Agency (EPA) National Program Requirements, Version 3.0, which will be implemented for all homes permitted and built on or after January 1, 2012. Homes may be certified using the ENERGY STAR® Prescriptive Path, which provides a single set of measures, or the ENERGY STAR® Performance Path, which provides flexibility to select a custom combination of measures. Mandatory requirements involve improvements in the thermal enclosure system, heating, ventilation, and air conditioning (HVAC) system, and water management system. The following checklists, along with verification by a third-party rater, will be utilized to determine completion of the program requirements:

- Thermal Enclosure System Rater Checklist;
- HVAC System Quality Installation Contractor Checklist;
- HVAC System Quality Installation Rater Checklist; and
- Water Management System Builder Checklist.

The ENERGY STAR® homes that meet Version 3.0 of the EPA's program requirements are estimated to be approximately 15 percent more energy efficient than homes built to the International Energy Conservation Code (IECC 2009).

## Program Objective

The overall objective of this energy-efficient program is to promote greater residential energy efficiency. ENERGY STAR® has identified and designed a national cost-effective and detailed path to better home performance. Additional rebates are offered to provide cost-effective savings on customer natural gas usage. The program will seek to increase customer awareness and the use of energy-efficient practices and new technologies in new residential homes to achieve cost-effective natural gas savings. Southwest Gas expects the level of participation in this program to be approximately 2,500 homes.

## Qualifying Customers

All builders of new single-family subdivision and custom homes and individually metered multi-family homes located within the Company's Arizona service territory and featuring natural gas water heating and space heating are eligible to participate in the program. Builders must register with the EPA as ENERGY

STAR® partners and agree to meet the *Smarter Greener Better* Homes program specifications.

### Qualifying Measures

Qualifying measure specifications will be reviewed annually and adjusted, as necessary, to reflect changing national efficiency standards. All measures must be natural gas equipment, or be supplied by a natural gas water or space heating unit. Qualifying measures and specifications are shown in Table 11 below.

**Table 11 – Qualifying Measure Specifications**

| Measure | Specification |
|---|---|
| ENERGY STAR® Home Certification | ENERGY STAR® qualified |
| Storage Water Heater | ENERGY STAR® qualified |
| Condensing Water Heater | ENERGY STAR® qualified |
| Tankless Water Heater | ENERGY STAR® qualified |
| Clothes Washer | ENERGY STAR® qualified |
| Clothes Dryer | Model must have a moisture sensor |
| Furnace | ENERGY STAR® qualified |
| Attic Insulation | Final condition must be between R-45 and R-60[1] |

[1]Specification is more stringent for the *Smarter Greener Better* Homes program than for the *Smarter Greener Better* Residential Rebates program to encourage the installation of more efficient attic insulation in new homes.

### Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by reviewing the best available information on the incremental cost of the ENERGY STAR® home certification and measures, maintaining the minimum rebate levels needed to constitute a feasible marketing message to positively affect customer behavior, and overall program cost-effectiveness. Rebate amounts, incremental costs and annual savings in therms are provided in Table 12 below.

**Table 12 – Rebate Amounts, Incremental Customer Costs and Annual Savings**

| Measure | Rebate | Incremental Cost | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| ENERGY STAR® Home Certification | $450 | $1,550 | 63 |
| Storage Water Heater | $300 | $400 | 30 |
| Condensing Water Heater | $325 | $435 | 57 |
| Tankless Water Heater | $450 | $605 | 60 |
| Clothes Washer – Tier 1 | $180 | $240 | 12 |
| Clothes Washer – Tier 2 | $325 | $457 | 14 |
| Clothes Washer – Tier 3 | $350 | $485 | 15 |
| Clothes Dryer | $30 | $50 | 10 |
| Furnace | $400 | $550 | 25 |
| Attic Insulation | $0.20/SqFt | $0.50/SqFt | 0.0230/SqFt |

## Program Limitations

The following requirements apply:

- Homes must meet ENERGY STAR® requirements for certification.
- ENERGY STAR® home certification must be performed by an approved Residential Energy Service Network (RESNET) rater.
- Measures must be purchased new, and may not be used or leased.

## Target Audiences

Southwest Gas' primary target audience is new construction builders of single-family homes and individually metered multi-family homes.

Southwest Gas' secondary target audience is trade allies including distributors and manufacturers to help promote the installation of high-efficient measures into residential homes.

**Budget**

Southwest Gas proposes a total annual estimated budget of $4 million. Table 13 below provides the budget details by category.

**Table 13 – Total Estimated Budget**

| **Residential Energy Management Programs: *Smarter Greener Better* Homes** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $3,200,000 |
| Administration | $160,000 |
| Outreach | $480,000 |
| Delivery | $80,000 |
| Evaluation | $80,000 |
| **Total** | **$4,000,000** |

**Cost-Effectiveness Test Results**

The cost-effectiveness test ratio for the *Smarter Greener Better* Homes program is 2.30. Tables 14 and 15 below show the cost-benefit overview and projected lifetime savings.

**Table 14 – Cost-Benefit Overview**

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $ 11,653,145 |
| Present Value of Costs | $ 5,066,667 |
| Net social benefit | $ 6,586,479 |
| **Cost-Effectiveness Ratio** | **2.30** |

**Table 15 – Projected Lifetime Savings**

| **Energy and Environmental Benefit Overview Lifetime Savings** | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 15,960,008 | 93,366 |

# RESIDENTIAL ENERGY MANAGEMENT PROGRAMS:
## *SMARTER GREENER BETTER* RESIDENTIAL ENERGY ASSESSMENTS (PILOT)

### Program Description

Southwest Gas will offer the *Smarter Greener Better* Residential Energy Assessments program to all residential customers in the Company's Arizona service territory. Energy assessments (energy audits) will be offered to customers for a nominal fee, with the additional costs of the audits, including direct-install measures, funded by Southwest Gas and other partnering utilities. Southwest Gas believes that partnering with other utilities that also serve in Southwest Gas' Arizona service territory for a residential energy audit program would prove more successful than trying to implement a stand-alone program offered only by Southwest Gas.

Southwest Gas has engaged in preliminary conversations with APS, SRP and TEP regarding partnership opportunities to implement a residential energy audit program in the Phoenix and Tucson areas. APS, SRP and TEP all serve in Southwest Gas' Arizona service territory and have already developed their own residential energy audit programs.

APS launched its Home Performance with ENERGY STAR® (HPwES) program on March 17, 2010, which provides customers with an energy audit for $99 with the remaining cost paid by APS. Along with a comprehensive home assessment, contractors also audit the A/C system, ductwork, insulation and building envelope; perform a blower door test; replace up to 10 incandescent light bulbs with energy-efficient compact fluorescent light bulbs (CFL); install a low-flow showerhead; and install three low-flow faucet aerators. Customers who participate in the HPwES program also have access to other APS residential rebate measures such as Consumer Products or Appliance Recycling, which are all recommended when appropriate as part of the energy audit. SRP expects to launch a program similar to that of APS in November 2010.

TEP developed a program similar to the HPwES program offered by APS, providing energy audits to customers for a nominal amount, which includes direct-install measures such as CFLs, power strips, low-flow showerheads and low-flow faucet aerators. The TEP Existing Homes program is currently awaiting Commission approval.

Southwest Gas proposes to partner with APS, SRP and/or TEP to implement a residential energy audit program available to the Company's residential customers, by funding a portion of contractor costs, providing direct-install measures such as low-flow showerheads and lavatory faucet accessories (aerators) and providing information for Southwest Gas' *Smarter Greener Better* Residential Rebates program for homes that have natural gas water heating and space heating.

## Program Objective

The overall objective of this energy-efficient program is to help customers improve the comfort, energy efficiency, safety and durability of their homes while also helping to preserve the environment. The program seeks to increase customer awareness and the use of energy-efficient practices and new technologies in existing homes to achieve cost-effective natural gas savings. Approximately 500 Southwest Gas customers are expected to participate in the program.

## Qualifying Customers

All active, Southwest Gas residential customers within the service territories of APS, SRP and TEP are eligible to participate in the program. Additional mutually agreed upon program terms will be further determined by Southwest, APS, SRP and TEP.

Energy audits and measure installations will only be funded by Southwest Gas for homes with gas water and space heating.

## Qualifying Measures

Qualifying measures and specifications are shown in Table 16 below.

### Table 16 – Qualifying Measure Specifications

| Measure | Specification |
|---|---|
| Smart Low-Flow Showerhead | 1.5 gpm with ShowerStart Technology |
| Lavatory Faucet Accessory (Aerator) | WaterSense® qualified |

## Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and therm savings by reviewing the best available information on incremental cost and energy savings of the measures. The measures will be installed for participating customers at no-cost. Rebate amounts, incremental costs and annual savings in therms are provided in Table 17 below.

**Table 17 – Rebate Amounts, Incremental Customer Costs and Annual Savings**

| Measure | Rebate[1] | Incremental Cost | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| Smart Low-Flow Showerhead | - | $40 | 21 |
| Lavatory Faucet Accessory (Aerator) | - | $5 | 17 |

[1]Measures will be installed for participating customers at no-cost and therefore, no rebate will be paid to customers.

## Program Limitations

The following requirements apply:

- Only one (1) energy audit will be provided per residence.
- Smart low-flow showerheads will be limited to one (1) per residence.
- Lavatory faucet accessories will be limited to three (3) per residence.

Additional mutually agreed upon program limitations will be further determined by Southwest, APS, SRP and TEP.

## Target Audiences

Southwest Gas' primary target audience is its residential consumers in the APS, SRP and TEP service territories.

## Budget

Southwest Gas proposes a total annual estimated budget for this program of $700,000. Table 18 below provides the budget details by category.

**Table 18 – Total Estimated Budget**

| **Residential Energy Management Programs: *Smarter Greener Better* Residential Energy Assessments** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates[1] | $350,000 |
| Administration | $17,500 |
| Outreach | $105,000 |
| Delivery | $210,000 |
| Evaluation | $17,500 |
| **Total** | **$700,000** |

[1]Rebates budget category for this program includes the cost of direct-install measures.

**Cost-Effectiveness Test Results**

Since this is a pilot program, Southwest Gas is not required to demonstrate cost-effectiveness test results. Notwithstanding, Southwest Gas believes participating customers will gain awareness of their energy consumption and ways to increase the energy efficiency of their homes, and will obtain information regarding all of the Southwest Gas' energy efficiency programs. As such, Southwest Gas believes that energy savings will occur as customers become more aware of how they can reduce their energy consumption by participating in any of the Company's energy efficiency programs.

# NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREEN BETTER* BUSINESS REBATES

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Business Rebates program to both new and existing non-residential customers. It is designed to encourage the purchase of high efficiency equipment to reduce energy consumption. Rebates are available for purchasing and installing qualifying natural gas high efficiency measures at individually and master metered commercial properties. Qualifying measures include those that target cost-effective natural gas savings, including retrofits of existing systems and first time installations. Rebates will be paid directly to participating customers.

The equipment utilized by non-residential customers typically uses a large amount of energy; therefore, the potential for energy savings can be significant. The increased initial cost of high efficiency products is a barrier that can often be overcome with appropriate financial incentives, coupled with education on the benefits of greater energy efficiency. Southwest Gas' *Smarter Green Better* Business Rebates combined with the overall Business Energy Management programs will achieve the necessary market transformation and greater energy savings.

## Program Objective

The overall objective of this energy-efficient program is to reduce customer natural gas usage by offering prescriptive rebates to non-residential customers in the Company's Arizona service territory. The program seeks to increase non-residential customer awareness of the benefits of using energy-efficient practices and new technologies to achieve cost-effective natural gas savings. Southwest Gas projects that approximately 700 rebates will be paid to customers under the program.

## Qualifying Customers

All active, Southwest Gas non-residential customers located in the Company's Arizona service territory are eligible to participate in the program. Owners of master metered multi-family properties located in Southwest's Arizona service territory are also eligible.

## Qualified Measures

Qualifying measure specifications will be reviewed annually and adjusted, as necessary, to reflect changing national efficiency standards. All measures must be natural gas equipment, or be supplied by a natural gas water or space heating unit.

High efficiency space and water heating units achieve greater efficiencies due to features such as: electronic ignition, which eliminates the need to have the pilot burning all the time; new combustion technologies that extract more heat from the same amount of fuel; and sealed combustion that uses outside air to fuel the burners, reducing drafts and improving safety. Qualifying water and spacing heating measures and specifications are shown below in Table 19.

**Table 19 – Qualifying Measure Specifications: Water and Space Heating Measures**

| Measure | Specification |
|---|---|
| **WATER AND SPACE HEATING MEASURES** | |
| Storage Water Heater | 90% thermal efficiency or higher |
| Tankless Water Heater | ENERGY STAR® qualified |
| Clothes Washer | ENERGY STAR® qualified |
| Non-condensing Boiler | 85% combustion efficiency or higher; must be installed with modulating burner control and O2 trim control pad (on boilers >= 10MMBtu) |
| Condensing Boiler | 92% thermal efficiency or higher; Certified by third party |
| Boiler - Tune-up | 9 point inspection |
| Boiler - Modulating Burner Control | Modulating burner control must be installed and must have a turndown ratio of 5:1 or higher |
| Boiler - O2 Trim Control Pad | O2 trim control pad must be installed |
| Boiler - Steam Trap Survey | Steam trap survey must be performed |
| Boiler - Steam Trap | Steam trap must be installed, replaced or repaired to original operating function |

Choosing high efficiency commercial food service equipment can help restaurant owners and operators improve the performance of their facilities and equipment while reducing energy costs. According to the ENERGY STAR® Web Site, restaurants that invest strategically can cut utility costs 10 to 30 percent annually without sacrificing service, quality, style or comfort – while making significant contributions to a cleaner environment. Qualifying commercial food service measures and specifications are shown below in Table 20.

**Table 20 – Qualifying Measure Specifications: Food Service Measures**

| Measure | Specification |
|---|---|
| **FOOD SERVICE MEASURES** | |
| Griddle | ENERGY STAR® qualified |
| Steamer | ENERGY STAR® qualified |
| Fryer | ENERGY STAR® qualified |
| Large Vat Fryer | ENERGY STAR® qualified |
| Convection Oven | ENERGY STAR® qualified |
| Combination Oven | 40% combustion efficiency or higher |
| Conveyor Oven | 42% energy efficiency or higher; idle energy rate of ≤ 57,000 Btu/h, utilizing ASTM Standard F1817. Multiple-deck oven configurations are paid per qualifying oven deck. |
| Dishwasher (Low Temp): Under Counter | ENERGY STAR® qualified |
| Dishwasher (Low Temp): Door Type | ENERGY STAR® qualified |
| Dishwasher (Low Temp): Single Tank Conveyor | ENERGY STAR® qualified |
| Dishwasher (Low Temp): Multi Tank Conveyor | ENERGY STAR® qualified |
| Dishwasher (High Temp/Gas Booster Heater): Under Counter | ENERGY STAR® qualified |
| Dishwasher (High Temp/Gas Booster Heater): Door Type | ENERGY STAR® qualified |
| Dishwasher (High Temp/Gas Booster Heater): Single Tank Conveyor | ENERGY STAR® qualified |
| Dishwasher (High Temp/Gas Booster Heater): Multi Tank Conveyor | ENERGY STAR® qualified |

Weatherization of business facilities leads to using less energy, and causes fewer greenhouse gas emissions. In addition, weatherized facilities are often less expensive to operate. According to the ENERGY STAR® Web site, energy use in commercial buildings and manufacturing plants accounts for nearly half of all energy consumption in the U.S. at a cost of over $200 billion per year, more than any other sector of the economy. Commercial and industrial facilities are also responsible for nearly half of U.S. greenhouse gas emissions which contribute to

global warming. Qualifying weatherization measures and specifications are shown below in Table 21.

**Table 21 – Qualifying Measure Specifications: Weatherization Measures**

| Measure | Specification |
|---|---|
| **WEATHERIZATON MEASURES** | |
| Windows | U Factor 0.29 and SHGC[1] 0.35 |
| Insulation - Roof/Ceiling | R-38 |
| Floor Insulation | R-24 |
| Air Curtain | Minimum 20 hour/week usage |

[1]Solar Heat Gain Coefficient

In addition to the measures shown in Tables 19, 20 and 21, all measures included in the *Smarter Greener Better* Residential Rebates program are available to non-residential Southwest Gas customers under the *Smarter Greener Better* Business Rebates program. This will allow Southwest Gas to pay rebates to small commercial customers that install residential-size equipment in their facilities, and to encourage participation across the entire non-residential market sector.

**Rebate Amounts, Incremental Costs and Annual Savings**

Southwest Gas determined rebate amounts, incremental costs and annual therm savings by reviewing the best available information on incremental cost and energy savings of each measure. Rebate amounts were maintained at the minimum rebate levels needed to constitute a feasible marketing message to positively affect customer behavior and overall program cost-effectiveness.

Due to the significant initial cost of high efficiency equipment, rebates equating to at least 75 percent of the incremental cost are vital to the success of this program and to the desired market transformation. Rebate amounts, incremental costs and annual savings in therms are provided in Tables 22, 23 and 24 below.

**Table 22 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Water and Space Heating Measures**

| Measure | Rebate | Incremental Customer Cost ($/unit) | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| **WATER AND SPACE HEATING MEASURES** | | | |
| Storage Water Heater | $1,100 | $1,592 | 266 |
| Tankless Water Heater | $450 | $605 - $1,635 | 78 |
| Clothes Washer | $150 | $258 | 22 |
| Non-condensing Boiler | $1/MBTUH | $500 - $30,000 | 30 - 700 |
| Condensing Boiler | $1.25/MBTUH | $1,600 - $100,000 | 94 - 2150 |
| Boiler - Tune-up | $375 | $500 | 780 |
| Boiler - Modulating Burner Control | $10,000 | $35,000 | 1,170 |
| Boiler - O2 Trim Control Pad | $10,000 | $16,000 | 780 |
| Boiler - Steam Trap Survey | $750 | $1,500 | 780 |
| Boiler - Steam Trap | $250 | $500 | 780 |

**Table 23 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Food Service Measures**

| Measure | Rebate | Incremental Customer Cost ($/unit) | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| **FOOD SERVICE MEASURES** | | | |
| Griddle | $600 | $800 | 149 |
| Steamer | $2,700 | $3,732 | 334 |
| Fryer | $1,350 | $1,800 | 360 |
| Large Vat Fryer | $1,350 | $1,800 | 360 |
| Convection Oven | $1,100 | $1,465 | 306 |
| Combination Oven | $1,100 | $1,519 | 403 |
| Conveyor Oven | $900 | $1,247 | 845 |
| Dishwasher (Low Temp): Under Counter | $750 | $1,000 | 55 |
| Dishwasher (Low Temp): Door Type | $1,500 | $2,000 | 554 |
| Dishwasher (Low Temp): Single Tank Conveyor | $2,250 | $3,000 | 520 |
| Dishwasher (Low Temp): Multi Tank Conveyor | $3,000 | $4,000 | 798 |
| Dishwasher (High Temp/Gas Booster Heater): Under Counter | $750 | $1,000 | 326 |
| Dishwasher (High Temp/Gas Booster Heater): Door Type | $1,575 | $2,100 | 608 |
| Dishwasher (High Temp/Gas Booster Heater): Single Tank Conveyor | $2,250 | $3,000 | 762 |
| Dishwasher (High Temp/Gas Booster Heater): Multi Tank Conveyor | $3,000 | $4,000 | 1,489 |

**Table 24 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Weatherization Measures**

| Measure | Rebate | Incremental Customer Cost ($/unit) | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| **WEATHERIZATON MEASURES** | | | |
| Windows | $3.00/SqFt | $4/SqFt | 0.06/SqFt |
| Insulation - Roof/Ceiling | $0.37/SqFt | $0.49/SqFt | 0.01/SqFt |
| Floor Insulation | $0.37/SqFt | $0.49/SqFt | 0.02/SqFt |
| Air Curtain | $2,625 | $2800 - $5,000 | 1,449 |

## Program Limitations

The following requirements apply:

- Measures must be purchased new, and may not be used or leased.
- Customers may receive one (1) boiler tune-up rebate per boiler during a two-year period.
- Skylights do not qualify for rebates. Site built window systems must have a non-metal frame or include a thermal break within the frame to qualify for a rebate.
- Rebates for retrofit installations of wall and roof insulation apply only to the first increment of R-10 insulation added to the wall or roof. Additional increments of R-10 beyond the first are not eligible to receive a rebate.

## Target Audiences

Southwest Gas' primary target audience is all non-residential customers located in Southwest's Arizona service territory.

Southwest Gas' secondary target audience is trade allies including retailers, distributors, and manufacturers.

## Budget

Southwest Gas proposes a total estimated annual budget for this program of $2 million. Table 25 below provides the budget details by category.

**Table 25 - Total Estimated Budget**

| **Non-Residential Energy Management Programs: *Smarter Greener Better* Business Rebates** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $1,100,000 |
| Administration | $90,000 |
| Outreach | $225,000 |
| Delivery | $495,000 |
| Evaluation | $90,000 |
| **Total** | **$2,000,000** |

## Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the *Smarter Greener Better* Business Rebates program is 2.12. Tables 26 and 27 show the cost-benefit overview and projected lifetime savings.

**Table 26 – Cost-Benefit Overview**

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $ 5,788,535 |
| Present Value of Costs | $ 2,733,333 |
| Net social benefit | $ 3,055,202 |
| **Cost-Effectiveness Ratio** | **2.12** |

**Table 27 – Projected Lifetime Savings**

| **Energy and Environmental Benefit Overview Lifetime Savings** | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 8,699,997 | 50,895 |

# NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREENER BETTER* CUSTOM BUSINESS REBATES

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Custom Business Rebates program to both new and existing non-residential customers located in the Company's Arizona service territory. The program is designed to obtain verifiable, cost-effective, and on-going natural gas savings. Program participants will provide submittals for a specific quantity of natural gas reduction through the installation of program measures in return for a fixed price per therm rebate up to a cap equal to a percentage of the eligible incurred project cost.

The program requires customers to submit specific information for each project and to conduct energy engineering and commissioning at their own cost. For purposes of this program, commissioning includes verification of the project savings and confirmation that the measures are operating as intended. All commissioning activities including verification and confirmation will be the customer's responsibility and will all be reviewed by Southwest Gas. This project information will be provided in two reports: the Pre-Installation Report (PIR) and Post-Installation Report (POR). Rebates will be paid directly to participating customers who meet the program requirements.

The program is designed to leverage the outreach and existing delivery channels of local businesses, wholesalers and retailers, as well as Southwest Gas Key Account Management and Service Planning personnel.

## Program Objective

The *Smarter Greener Better* Custom Business Rebates program seeks to increase customer awareness of energy-efficient commercial and industrial technologies and to achieve cost-effective natural gas savings. Additional objectives of the program include: encouraging private sector delivery of energy efficiency products and services; achieving customer gas and cost savings; and significantly reducing barriers to participation by streamlining program procedures and measurement and verification (M&V) requirements. Approximately 15 Southwest Gas customers are expected to participate in the program.

## Qualifying Customers

All active, Southwest Gas non-residential customers located in the Company's Arizona service territory are eligible to participate in the program.

## Qualifying Measures

Qualifying measures include those that target cost-effective natural gas savings, including retrofits of existing systems, improvements to existing systems, and first time installations where the system's efficiency exceeds applicable codes or standard industry practice. The program does not specify eligible measures in order to provide program participants maximum flexibility in identifying potential projects. Participants may propose any measure that: produces a verifiable natural gas usage reduction, is installed in either existing or new construction applications, has a minimum useful life of seven years, and exceeds minimum cost-effectiveness.

## Rebate Amounts

Subsequent to approval of a PIR, a customer will be required to enter into a Program Agreement with Southwest Gas in order to be eligible for rebates.

The program's rebate levels for the installation of measures pursuant to the Program Agreement shall be the lesser of (a) $1.00/therm per first year annual therm savings as determined solely by Southwest Gas; or (b) 50 percent of the eligible project cost as determined solely by Southwest Gas.

Commissioning Opt-Out: If a customer chooses not to conduct the commissioning activities, the annual natural gas savings and the eligible measure costs will all be reduced by 20 percent and the rebate will be re-calculated using the methodology specified above. Measures that are commissioned after a customer has "opted–out" of commissioning are not eligible for additional rebates.

## Program Limitations

Measures that are excluded from this program include those that:

- Are offered through the *Smarter Greener Better* Business Rebates program.
- Rely solely on changes in customer behavior.
- Merely terminate existing processes, facilities, or operations.
- Are not fuel neutral.
- Are required by state or federal law, building or other codes, or are standard industry practice.
- Qualify for rebates through any other EE or RET program offered by Southwest Gas.

**Project Identification (PIR)**

The first report required prior to project installation is titled the PIR. To assess projects for eligibility and program approval, the customer must submit the following information:

- Identification of the project site and account information.
- An energy analysis report submitted by the customer, adhering to industry standard practices for energy engineering and containing the following:
    - Descriptions of the proposed set of energy efficiency measures;
    - Summary of the energy savings and eligible project costs;
    - Baseline operational conditions and energy consumption data supported by spot or short-term measurements, trended data, or accepted engineering practices for each proposed measure;
    - A description of the calculations and methodologies that support the baseline, proposed operation, natural gas savings, and eligible costs;
    - Supporting documentation for the estimated eligible measure costs;
    - Any additional information necessary for the review of the project such as calculation spreadsheets, simulation models, vendor quotes, and equipment specifications; and
    - Commissioning plan for verifying the proposed measure operation and energy savings.
- Brief summary of the anticipated project timeline.

Following the submission of a PIR but prior to project installation, the Company will conduct any site inspection activities necessary to confirm the baseline conditions and anticipated project scope. Once the PIR is reviewed and approved, the Company will send an approval letter to the customer containing project review results and the anticipated rebate amount.

If the project does not meet the eligibility requirements, or if the PIR is incomplete or of insufficient quality, the PIR will be rejected. The customer may address deficiencies in the PIR and resubmit for program consideration.

The customer is responsible for submitting the PIR and allowing time for the appropriate review prior to purchasing equipment. Projects that have been purchased or installed prior to approval of the PIR will be reviewed for program eligibility and will be subject to all program requirements before becoming eligible for rebates under the program.

## Project Commissioning

This step ensures that the predicted energy savings are being achieved and that the system's operation and performance are optimized. Commissioning is the responsibility of the building owner and can be completed by the customer's internal staff or installing contractor. Commissioning is required to receive a full rebate.

Project-specific commissioning procedures may be classified according to three distinct approaches, representing increasing levels of detail and rigor.

- Deemed savings: Savings values are stipulated based on engineering calculations using typical equipment characteristics and operating schedules developed for particular applications, without on-site testing or metering.
- Simple M&V: Savings values are based on engineering calculations using typical equipment characteristics and operating schedules developed for particular applications, with some short-term testing or simple long-term metering.
- Full M&V: Savings values are estimated using a higher level of scrutiny than the deemed savings or simple M&V approaches, through the application of metering, billing analysis, and/or computer simulation.

Customers must submit a commissioning plan for each project, with the PIR. Commissioning procedures will vary in detail and thoroughness depending on the measures installed. The level of detail and rigor of the commissioning plan is determined by the project size and risk to rebates and project savings. Southwest Gas will specify the approach required in the commissioning plan.

If the customer and program administrator agree to pursue the "Full M&V" or "Simple M&V" options, the commissioning must follow the International Performance Measurement and Verification Protocol.

Commissioning must be completed when the building is fully occupied and when the system's operation can be verified. Some measures may require operation during the cooling or heating seasons and the time required to complete commissioning activities will range from a few days up to a few months.

## Project Installation (POR)

After the Company approves the PIR, the customer will install the identified measures. Upon completion of each approved project, the customer will begin the commissioning phase in accordance with the commissioning plan previously approved by the Company. Thereafter, the customer must submit a POR to the Company that includes the following:

- A report summarizing the results of the commissioning activities and as-installed operation of the measures;
- Additional information necessary for the review of the project such as final calculation spreadsheets, simulation models, invoices, and equipment specifications;
- Verified natural gas reduction;
- Verified eligible project costs; and
- Estimated rebate amount.

Once the POR is reviewed and approved, the Company will send an approval letter to the customer containing project review results and the rebate amount.

If the project does not meet the eligibility requirements, if the project is not of sufficient quality, or if the POR is incomplete, the POR will be rejected. The customer may address deficiencies in the POR and resubmit for program consideration.

**Target Audiences**

Southwest Gas' primary target audience is all non-residential customers located in the Company's Arizona service territory.

Southwest Gas' secondary target audience is trade allies including retailers, distributors and manufacturers.

**Budget**

Southwest Gas proposes a total estimated annual budget for this program of $150,000. Table 28 below provides the budget details by category.

**Table 28 - Total Estimated Budget**

| **Non-Residential Energy Management Programs: *Smarter Greener Better* Custom Business Rebates** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $39,000 |
| Administration | $5,550 |
| Outreach | $27,750 |
| Delivery | $72,150 |
| Evaluation | $5,550 |
| **Total** | **$150,000** |

## Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the *Smarter Greener Better* Custom Business Rebates program is 1.11. Tables 29 and 30 below show the cost-benefit overview and projected lifetime savings.

### Table 29 – Cost-Benefit Overview

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $ 179,644 |
| Present Value of Costs | $ 161,250 |
| Net social benefit | $ 18,394 |
| **Cost-Effectiveness Ratio** | **1.11** |

### Table 30 – Projected Lifetime Savings

| **Energy and Environmental Benefit Overview Lifetime Savings** | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 270,000 | 1,580 |

# NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREENER BETTER* BUSINESS ENERGY ASSESSMENTS (PILOT)

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Business Energy Assessments program as a pilot program for all non-residential customers in the Company's Arizona service territory. The program provides rebates of up to $5,000 per customer to aid in offsetting the cost of conducting an energy assessment (energy audit) and implementing an energy saving project identified by the audit for all or a substantial portion of the customer's premises. It is estimated that a comprehensive energy audit for some customers in the larger customer classes could cost up to $50,000, depending on the size and complexity of the customer's operation.

The purpose of the energy audit is to identify potential energy conservation measures through the study of the customer's existing equipment and building envelope. By having this type of detailed information, the customer can make informed decisions about how to reduce energy usage through conservation, employing new technologies, replacing inefficient equipment, and/or modifying business practices.

## Program Objective

The overall objective of the *Smarter Greener Better* Business Energy Assessments program is to provide rebates for non-residential customers to conduct a comprehensive energy audit that meets or exceeds the ASHRAE Level 2 standards. The ASHRAE Level 2 energy audit includes an energy survey and engineering analysis. This level of audit will educate the customer about reducing overall energy consumption and increasing energy efficiency.

The program has various benefits for commercial customers, including:

- Awareness of how the customer uses energy;
- Awareness of largest energy consuming processes;
- Information to justify energy-saving initiatives for company management;
- Awareness of new technologies;
- Reduced overall energy consumption;
- Lower energy costs to customer; and
- Lower environmental emissions.

The program seeks to increase customer awareness and use of energy-efficient practices and new technologies and will be promoted with the *Smarter Greener Better* Business Rebates program. Approximately 40 customers are expected to participate in the program.

## Qualifying Customers

All active, Southwest Gas non-residential customers located in the Company's Arizona service territory are eligible to participate in the program.

## Qualifying Measures

The scope of the audit must meet or exceed the Level 2 audit criteria set forward by ASHRAE. The audit results will be the property of the customer. However, to be eligible for the program rebate, Southwest Gas must pre-approve the auditor and the scope of the audit being performed. At the conclusion of the audit, a signed summary of the audit report must be provided to Southwest. This information will be kept confidential and will only be used by the Company as a gauge for measuring the effectiveness of the *Smarter Greener Better* Business Energy Assessments program.

## Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas will reimburse customers 25 percent, up to a maximum of $2,500, of the cost of the energy audit. For customers that implement an energy saving project or projects identified by the energy audit, Southwest Gas will reimburse an additional 25 percent, up to a maximum of $2,500, of the cost of the energy audit. The incremental cost of the energy audit will depend on the size of the facility and amount of heating and cooling equipment it has. Southwest Gas is launching the *Smarter Greener Better* Business Energy Assessments program as a pilot program with no energy savings tied to it. However, the Company anticipates that the program will serve as a tool for promoting the *Smarter Green Better* Business Rebates program, to help customers identify and achieve the greatest amount of energy savings.

## Program Limitations

The following requirements apply:

- Energy audits must be performed by a certified energy auditor or firm not affiliated with the customer.

- Energy audits and the energy auditors must be approved by Southwest Gas to qualify.

## Target Audiences

Southwest Gas' primary target audience is all non-residential customers located in the Company's Arizona service territory.

Southwest Gas' secondary target audience is commercial audit contractors.

## Budget

Southwest Gas proposes a total annual estimated budget for this program of $700,000. Table 31 below provides the budget details by category.

### Table 31 – Total Estimated Budget

| **Non-Residential Energy Management Programs: *Smarter Greener Better* Business Energy Assessments** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $350,000 |
| Administration | $17,500 |
| Outreach | $105,000 |
| Delivery | $175,000 |
| Evaluation | $52,500 |
| **Total** | **$700,000** |

## Cost-Effectiveness Test Results

Since this is a pilot program, Southwest Gas is not required to demonstrate cost-effectiveness test results. Notwithstanding, Southwest Gas believes participating customers will gain awareness of their energy consumption and ways to take advantage of many of the recommendations outlined in the energy audits, as well as obtain information regarding all of the Southwest Gas' energy efficiency programs. Ultimately, as companies replace equipment and refine business practices, many of the measures identified by the audits are likely to be implemented. Consequently, Southwest Gas believes that energy savings will occur as customers become more aware of how they can reduce their energy consumption by participating in any of the Company's energy efficiency programs.

# NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS: *SMARTER GREENER BETTER* DISTRIBUTED GENERATION

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Distributed Generation program to those large commercial and industrial customers in the Company's Arizona service territory. Distributed generation is defined as localized, on-site mechanical or electrical power generation, typically deployed through the use of modulating technologies. The *Smarter Greener Better* Distributed Generation program will encourage the installation of high efficiency Combined Heat and Power (CHP) technologies.

CHP describes any system that uses a primary energy source to simultaneously produce electric energy and useful process heat. Most CHP systems are configured to generate electricity, recapture the waste heat, and use that heat for space heating, water heating, industrial steam loads, air conditioning, humidity control, water cooling, product drying, or any other thermal need. Alternately, CHP may use excess heat from industrial processes and convert it into electricity.

## Program Objective

The overall objective of the *Smarter Greener Better* Distributed Generation program is to provide a rebate for large energy users to achieve significant fuel savings by promoting high efficiency electric generation, providing financial benefits during peak electrical demand periods, and demonstrating the use of new natural gas technologies which are being brought to market.

The market potential for CHP is substantial and could contribute significantly to energy conservation in Arizona, and could accrue significant societal and customer benefits as well. CHP is an affordable, clean, and reliable piece of the puzzle for meeting Arizona's energy needs and should be considered a key component to economic strategies.

The program has various benefits for large commercial and industrial customers, including:

- Awareness of how the customer uses energy;
- Awareness of largest energy consuming processes;
- Information to justify energy-saving initiatives for company management;
- Awareness of new technologies;
- Reduced overall energy consumption;
- Lower energy costs to customer; and
- Lower environmental emissions.

The program seeks to increase customer awareness and use of energy-efficient practices and new technologies. Southwest Gas anticipates that approximately 2 customers will participate in the program in the first year.

### Qualifying Customers

All active, Southwest Gas non-residential customers located in the Company's Arizona service territory are eligible to participate in the program, provided they contribute to the Company's DSM rate adjuster. The program will focus on large commercial and industrial customers with the potential to utilize CHP applications. Municipalities, schools, restaurants, hospitals, and hotels are all viable candidates for CHP.

To qualify for rebates, customers must complete a preliminary feasibility study. The preliminary feasibility study is necessary to identify those customers that are good candidates for a CHP system. To help customers obtain the preliminary feasibility study, Southwest Gas will be working with the U.S. Department of Energy Intermountain Clean Energy Application Center, which offers the studies at no cost.

### Qualifying Measures

The program's qualifying measures are listed below:

- $500 per kW (or equivalent for mechanical power) for CHP systems with a fuel efficiency of at least 70 percent, up to a maximum of 50 percent of the installed cost of any project;

- $450 per kW (or equivalent for mechanical power) for CHP systems with a fuel efficiency of at least 65 percent, up to a maximum of 50 percent of the installed cost of any project;

- $400 per kW (or equivalent for mechanical power) for CHP systems with a fuel efficiency of at least 60 percent, up to a maximum of 50 percent of the installed cost of any project.

Currently, the American Recovery and Reinvestment Act (ARRA) funding administered by the ACA provides an additional $300 per kW (or equivalent for mechanical power) for CHP projects. The addition of the ARRA funds has begun to generate additional interest in the Company's existing Distributed Generation program. The ARRA funds are projected to be available through 2012.

### Rebates Amounts, Incremental Cost and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by reviewing the best available information on incremental cost and average energy savings of CHP systems. The annual energy savings of a

CHP system will vary dramatically depending upon the size and efficiency of the installed system. Rebate amounts and incremental costs are provided in Table 32 below.

**Table 32 – Rebate Amounts and Incremental Customer Costs**

| Specification | Rebate[1] | Incremental Cost |
|---|---|---|
| 60% minimum fuel efficiency | $400/kW | $1,000/kW |
| 65% minimum fuel efficiency | $450/kW | $1,000/kW |
| 70% minimum fuel efficiency | $500/kW | $1,000/kW |

[1]Rebate amounts are per kW or equivalent kW for mechanical power and are up to a maximum of 50 percent of the installed cost of any project.

Additional rebates will be available for qualifying customers to perform an engineering design study. The rebate amount will be 75 percent of the cost of the engineering study, up to a maximum of $3,000.

**Program Limitations**

The following requirements apply:

- All facilities must be reviewed by Southwest Gas or its designee.
- Total rebates from Southwest Gas and ARRA funds shall not exceed 75 percent of the total installation costs.

**Target Audiences**

Southwest Gas' primary target audience is large commercial and industrial customers.

**Budget**

Southwest Gas proposes a total annual estimated budget for this program of $1.75 million. Table 33 below provides the budget details by category.

**Table 33 – Total Estimated Budget**

| **Non-Residential Energy Management Programs: *Smarter Greener Better* Distributed Generation** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $1,200,000 |
| Administration | $55,000 |
| Outreach | $220,000 |
| Delivery | $220,000 |
| Evaluation | $55,000 |
| **Total** | **$1,750,000** |

## Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the *Smarter Greener Better* Distributed Generation program is 2.90. Tables 34 and 35 below show the cost-benefit overview and projected lifetime savings.

**Table 34 – Cost-Benefit Overview**

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $ 7,106,498 |
| Present Value of Costs | $ 2,450,000 |
| Net social benefit | $ 4,656,498 |
| **Cost-Effectiveness Ratio** | **2.90** |

**Table 35 – Projected Lifetime Savings**

| **Energy and Environmental Benefit Overview Lifetime Savings** | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 10,320,008 | 60,372 |

# LOW-INCOME PROGRAM:
# *SMARTER GREENER BETTER*
# LOW-INCOME ENERGY CONSERVATION

## Program Description

Southwest Gas will offer the Low-Income Energy Conservation (LIEC) program to income-qualified residential customers in the Company's Arizona service territory. The program targets low-income customers that require weatherization for their homes and/or emergency assistance to pay their utility bills. The program assists low-income households who lack the resources to invest in energy efficiency, and uses the most advanced technologies and testing protocols available in the housing industry.

The weatherization component of the program includes both home weatherization and consumer education, in order to cost-effectively reduce energy usage in income-qualified residences. Weatherization provides a lasting solution by addressing the causes of high energy bills. Energy improvements, such as adding insulation to the walls and roofs, can last for the lifetime of the dwelling. Furthermore, energy efficiency results can be expected year after year.

Program measures fall into four major categories: 1) duct repair; 2) infiltration control; 3) insulation (including attic, duct and floor); and 4) repair or replacement of appliances that are not operational or pose a health hazard. Typical weatherization services include installing insulation, sealing, tuning and repairing cooling and heating systems, and mitigating heat gain through windows, doors, and other infiltration points.

In addition to weatherization, there is also a bill assistance component to the LIEC program. The bill assistance funding will be available for low-income customers in emergency situations and provides up to $400 per year to pay all or a portion of their natural gas bills. The bill assistance program assists households that have experienced a sudden loss of income, utility disconnection, unexpected expenses resulting in an inability to pay, or health risks associated with the non-use of gas appliances.

## Program Objective

The overall objective of this program is to reduce customer natural gas usage, and overall energy usage, by offering cost-effective weatherization measures to income-qualified residential customers. Southwest Gas also provides customer education in order to reduce energy usage and improve the health and safety of participating households.

The program seeks to increase customer awareness and use of energy-efficient practices and new technologies in existing residential homes to achieve cost-effective natural gas savings.

## Qualifying Customers

All active, Southwest Gas residential customers located in the Company's Arizona service territory, with homes that are gas heated and households with an annual income less than 150 percent of the federal poverty income guidelines (as established annually by the U.S. Department of Health and Human Services) are eligible to participate in the program. Owner-occupied or rental units (with the consent of the owner) can also be weatherized if located within the Company's Arizona service territory.

To qualify for the bill assistance component of the program, a household must be gas heated and income-qualified according to the standards set forth above. The household must not have received Southwest Gas bill assistance during the previous 12 months. In addition, the household must be facing a hardship such as a sudden loss of income, utility disconnection, unexpected expenses resulting in an inability to pay, or health risks associated with the non-use of gas appliances.

## Qualifying Measures

Qualifying measure specifications will be reviewed annually and adjusted, as necessary, to reflect changing national efficiency standards. Qualifying measures fall into four major categories: duct repair; infiltration control; attic insulation; and the repair or replacement of appliances that are not operational or pose a health hazard. Southwest Gas chose to evaluate these four measures, which are most likely to be installed utilizing Southwest Gas funds. Qualifying measures and specifications are shown in Table 36 below.

### Table 36 – Qualifying Measure Specifications

| Measure | Specification |
|---|---|
| Duct Sealing | Performance Tested Comfort System Levels (6% Leakage) |
| Infiltration Control | .37 ACH |
| Attic Insulation | Increment of R-38 or Higher |
| Appliance Replacement | SEER 12.0 "GAS PAC" |
| | Domestic Water Heater .62 EF and greater |

## Program Limitations

Costs required to complete the necessary measures (excluding all administrative costs) shall not exceed $3,000 per household, unless prior Commission approval is granted. Approval will only be granted if the total investment meets program cost-effectiveness requirements.

## Program Administration

This weatherization program will be administered by Southwest Gas, in conjunction with the ACA, community action agencies (agencies), and other Arizona utilities. The ACA manages the DOE's Weatherization Assistance Program for Arizona and leverages funding from federal, state and utility programs. For the LIEC program, the ACA will expand its current contracts with community agencies to include funding from Southwest Gas.

To participate in the program, customers must request assistance through the agencies, which screen applicants based upon program criteria. Once qualifying customers are identified, the agencies conduct energy audits to gather, record, and analyze data on the residences. While in the home, agency personnel explain the measures that will be installed and offer a variety of no-cost/low-cost energy conservation tips.

The current statewide weatherization program administered by the ACA uses very detailed guidelines to optimize investment in energy efficiency through a systems approach. The state of Arizona is divided into six climate zones. Each of these zones has a corresponding priority list of known cost-effective weatherization materials/measures that can be installed. In cases where potentially cost-effective energy upgrades are not listed or are not approved safety measures, a computerized audit must be completed to develop a ranking of the energy upgrades, based on their savings-to-investment ratio. Diagnostic tools, such as a blower door and manometer, are used to detect and mitigate air infiltration and pressure imbalances. Crews also test heating and cooling units for carbon monoxide.

The DOE requires inspections on ten percent of qualified homes. The improper installation of weatherization measures can significantly reduce potential energy savings. The ACA strongly focuses on the proper installation techniques for weatherization measures. This greatly reduces the number of "call backs" and failed inspections.

The ACA will invoice Southwest Gas monthly for the weatherization projects completed during the prior month. The ACA will also provide monthly statistics, including the number of customers served, the type of activities completed, and detailed activity costs by measure.

The Arizona Community Action Association (ACAA) partners with community-based agencies to distribute bill assistance funds throughout the Company's

Arizona service territory. These agencies provide easy access to families in need. Many of these agencies subcontract with multiple community agencies in their service territories to assist the greatest number of clients. The agencies are adept at managing a variety of assistance programs and most offer an array of services, including food, shelter, rent and mortgage assistance, clothing, job training, healthcare and other vital programs for those in need.

Southwest Gas will also request monthly reports from the ACAA for the bill assistance portion of the LIEC program. These reports, categorized by agency, will list names and account numbers of the customers receiving bill assistance money, and the amount they received. The ACAA will allocate the funds throughout its service territory in the state, based on the demographics of each area.

Both LIEC program components operate on a program year from July through June, as do the other federally-funded programs administered by the ACA.

**Program Outreach**

Southwest Gas combines the promotion and outreach activities for both the weatherization and bill assistance components of the LIEC program with its Low-Income Residential Assistance (LIRA) program. The LIRA program provides discounted rates for natural gas service to income-qualified customers from November through April, and year-round on the service establishment charge. Southwest Gas provides bill inserts in English and Spanish, provides program information on its website, meets annually with community action agencies, and attends a variety of community events. In addition, an annual supply of LIRA applications, which include LIEC program information, is sent to approximately 150 community agencies statewide.

**Budget**

Southwest Gas proposes a total estimated annual budget of $650,000. Table 37 below provides the details for both the weatherization and bill assistance program components.

## Table 37 – Total Estimated Budget

| Low-Income Energy Conservation Program | | |
|---|---|---|
| **Description** | **Program Year 1** | |
| **Weatherization/Health/Safety Components of LIEC Program** | | |
| Weatherization | $ | 200,500 |
| Health & Safety | | 93,000 |
| Special Project | | 60,000 |
| Training and Monitoring Costs | | 20,000 |
| **Subtotal** | **$** | **373,500** |
| Administration-Arizona Energy Office | $ | 22,500 |
| Community Action Agencies | | 45,000 |
| Information/Outreach – Southwest Gas | | 9,000 |
| **Subtotal** | **$** | **76,500** |
| **Total** | **$** | **450,000** |
| **Emergency Bill Assistance Component of LIEC Program** | | |
| Emergency Bill Assistance | $ | 185,000 |
| Administration-ACAA | $ | 15,000 |
| **Subtotal** | **$** | **200,000** |
| **Total** | **$** | **650,000** |

### Weatherization Special Projects Budget

The LIEC Special Projects category is designed to make funds available for large, multi-family projects. All projects must adhere to the established program guidelines. The savings from these projects will help offset the less energy-efficient health and safety measures included in the program, and assist in keeping the LIEC program cost-effective overall.

Distribution of these funds is based on a competitive basis, using the following criteria: 1) cost-effectiveness of the projects; 2) partnerships with additional entities; and 3) agency production to date. A review committee, consisting of housing professionals from ACA and Southwest Gas who are not directly administering the program, carefully reviews all applications and determines which projects will be funded each program year.

### Health and Safety Budget

In addition to the energy conservation measures, community service referrals are made to appropriate agencies to address other health and safety needs observed in the participants' homes.

The ACA requires agency personnel to conduct a thorough safety check of each home and its appliances. Agency personnel follow strict health and safety procedures while performing all weatherization activities, for the protection of the occupants and themselves.

**Cost-Effectiveness Test Results**

The cost-effectiveness test ratio for the weatherization component of the *Smarter Greener Better* LIEC program is 0.83. Tables 38 and 39 below show the cost-benefit overview and projected lifetime savings for the LIEC program.

**Table 38 – Cost-Benefit Overview**

| **Cost-Benefit Overview Lifetime Savings** | |
|---|---|
| Present Value of Savings | $374,859 |
| Present Value of Costs | $450,000 |
| Net social benefit | ($75,141) |
| **Cost-Effectiveness Ratio** | **0.83** |

**Table 39 – Projected Lifetime Savings**

| **Energy and Environmental Benefit Overview Lifetime Savings** | |
|---|---|
| Natural Gas (Therms) | $CO_2$ (tons) |
| 525,000 | 3,071 |

According to the DOE, when the energy and non-energy related benefits are combined, the cost-benefit ratio of energy reduction is $3.71 for every $1.00 invested in the program. This cost-effective approach ensures the proper investment of utility customer resources. Not only is this an investment in the lives of those in need, but an investment in the economic and environmental well-being of the community.

Energy expenses represent an economic drain on low-income communities. The DOE reports that, on average, low-income households typically spend 14 percent of their total annual income on energy, compared to 3.5 percent for other households. Since weatherization reduces home energy consumption on a continuing basis, it provides a long-lasting boost to the household's budget.

# EDUCATIONAL PROGRAM: *SMARTER GREEN BETTER* ENERGY EDUCATION (PILOT)

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Energy Education program as a pilot program to provide customers with energy efficiency and conservation information, along with recommendations to encourage the utilization of energy-efficient alternatives in the Company's Arizona service territory.

The program will provide targeted conservation and energy efficiency information of interest to all of the Company's Arizona customers. In particular, it will focus on specific energy efficiency or technology information that will help customers optimize natural gas resources. Sample education messages may include:

- Thermostat settings;
- Water heating settings;
- Household appliance efficiency;
- Commercial kitchen cooking efficiency;
- Building shell efficiency; and
- Industrial plant process efficiency.

## Program Objective

The overall objective of the *Smarter Greener Better* Energy Education program is to provide customers in Southwest Gas' Arizona service territory with information to encourage the efficient use of natural gas, and energy in general. Additional objectives of this pilot program are to instill conservation behaviors that generate savings for Portfolio objectives, and promote efficient building operations and lower energy bills for the consumer.

Technology-based energy efficiency achieves only a small amount of efficiency potential. The barriers to wider spread implementation of energy efficiency are often sociological, not technological. One of the most efficient and cost effective ways to encourage energy efficiency on a large scale is to help customers make small modifications to their daily consumption habits. According to the American Council for an Energy-Efficient Economy (ACEEE), the potential for behavior-related energy savings in the residential sector represents roughly 25 percent of the current residential sector energy consumption.

As consumer awareness regarding energy efficiency increases, larger numbers of people express a willingness to take action. However, there is often confusion about energy efficiency terms, what specific steps can be taken and how much of an impact they will have which leads to a significant gap between awareness and

action. Many people believe they are doing their part, while in reality there are many more cost effective steps that could be taken to save more energy.

In addition, positive outlooks toward energy efficiency do not necessarily translate into the purchase of energy-efficient products or a commitment to energy-efficient actions. The primary barriers to wider spread implementation of energy efficiency behaviors are:

- Uncertainty as to how to begin saving;
- Not knowing where to obtain energy-efficient products and services;
- The misconception that nothing more can be done to be energy-efficient; and
- Doubt regarding the ability to make a significant difference in energy use and cost.

**Qualifying Customers**

This program will be available to all customers located in the Company's Arizona service territory.

**Qualifying Measures**

No rebates will be offered in this program. Customers receive free energy efficiency and conservation tips.

**Program Outreach**

Southwest Gas will utilize both print and radio mediums to educate its Arizona customers on energy efficiency and conservation. Southwest Gas will utilize the medium that is most cost-effective to reach the largest audience. In addition, Southwest Gas will explore outreach collaborative with other utilities and seek innovative ways to reach each market segment.

Southwest Gas will also explore possible partnerships with other utilities to implement a Residential Conservation Behavior program. The program would drive customer conservation behavior by providing participating residential customers with periodic reports showing how their homes compare with similar homes, and recommending specific actions that the household can take to save energy. Southwest Gas is monitoring APS's recently-approved application to implement a similar program on a pilot basis.

One successful method Southwest Gas currently utilizes to reach commercial and industrial customers is the Technology Information Center (TIC). Southwest Gas will continue this program within the confines of the Energy Education program. TIC is intended primarily for industrial and large/transportation-eligible general service customers. Through the program, an e-mail newsletter containing technical information is sent to customers to provide advice on using energy

efficiently, reducing energy usage and lowering utility bills, answering questions about energy-efficient technologies, and increasing awareness of general environmental and energy issues. The newsletter also provides general natural gas information of interest to large customers, but focuses primarily on specific energy savings or technology information that will help customers optimize natural gas resources. The information may be generic or may apply specifically to customers in Southwest Gas' Arizona service territory. The newsletter also contains a link to the Company's "Ask an Expert" hotline, an electronic research library that allows customers to request a contact for a commercial audit.

**Budget**

Southwest Gas proposes a total estimated annual budget for this program of $550,000. Table 40 below provides the budget details by category.

**Table 40 – Total Estimated Budget**

| **Educational Program: *Smarter Greener Better* Energy Education** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | - |
| Administration | - |
| Outreach | $550,000 |
| Delivery | - |
| Evaluation | - |
| **Total** | **$550,000** |

**Cost-Effectiveness Test Results**

Since this is a pilot program, Southwest Gas is not required to demonstrate cost-effectiveness test results. Notwithstanding, Southwest Gas believes participating customers will gain awareness of their energy consumption and ways to implement energy efficiency measures, and will obtain information regarding all of the Southwest Gas' energy efficiency programs. As such, Southwest Gas believes that energy savings will occur as customers become more aware of how they can reduce their energy consumption by participating in any of the Company's energy efficiency programs. Southwest Gas will leverage efforts from the Energy Education program to increase participation in its Portfolio.

## Human, Economic, and Societal Benefits

As with the estimated energy savings, Southwest Gas is unable to provide an accurate estimate of related societal benefits for this program. However, programs that reduce the need for energy have an impact on the economics of energy production and delivery, as well as on the energy supply infrastructure. Reduced energy requirements slow the need for additional infrastructure and the resources required to produce and deliver energy.

Less energy production and use reduce the impact on Arizona's resources – land, water, air quality, and human health – encouraging a better quality of life for all consumers, as well as reducing Arizona's carbon footprint. By slowing the increasing demand for energy, the corresponding energy costs are also reduced. Consumers with lower energy bills have more disposable income, and spend a lower percentage of their income on energy. Reduced energy requirements resulting from energy efficiency and conservation programs also provide quantifiable societal benefits in terms of water savings and pollution reduction, thereby creating a better quality of life for Arizonans.

Further, reducing the demand for electricity can result in an incrementally lower demand for the natural gas that is increasingly used to generate it. These two forms of energy are inextricably tied together when the total energy picture is considered.

# RENEWABLE ENERGY RESOURCE TECHNOLOGY PROGRAM: *SMARTER GREENER BETTER* SOLAR THERMAL REBATES

## Program Description

Southwest Gas will offer the *Smarter Greener Better* Solar Thermal Rebates program to residential and non-residential customers in Southwest's Arizona service territory. Rebates will be offered to participating customers on qualified solar thermal systems upon proof-of-purchase and installation.

## Program Objective

The overall objective of this energy-efficient program is to increase public awareness of the benefits of using renewable energy and installing solar thermal systems and to reduce customer natural gas usage by providing economically beneficial rebates to install the systems. Long-term customer energy savings will be realized throughout the life of the solar thermal systems. Southwest Gas projects that approximately 75 rebates will be paid to customers under the program.

## Qualifying Customers

All active, Southwest Gas residential and non-residential customers located in Southwest's Arizona service territory are eligible to participate in the program.

## Qualifying Measures

Qualifying measure specifications will be reviewed annually and adjusted, as necessary, to reflect changing national efficiency standards. All measures must be supplied by a natural gas water heating unit.

According to the DOE, solar water and pool heating systems last much longer than standard gas water or pool heaters and can significantly reduce heating costs. Qualifying solar thermal measures and specifications, which are applicable to both residential and non-residential customers, are shown in Table 41 below.

### Table 41 – Qualifying Measure Specifications

| Measure | Specification |
|---|---|
| Solar Water Heating System | Collectors must be SRCC[1] OG-100 certified |
| Solar Pool Heating System | Collectors must be SRCC[1] OG-100 certified |

[1]Solar Rating and Certification Corporation

### Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the amounts and savings by reviewing the best available information on incremental cost and energy savings of the measure. Rebate amounts were maintained at the minimum rebate levels needed to constitute a feasible marketing message to positively affect customer behavior and overall program cost-effectiveness. Rebate amounts, incremental costs and annual savings in therms are provided in Table 42 below.

**Table 42 – Rebate Amounts, Incremental Customer Costs and Annual Savings**

| Measure | Rebate[1] | Incremental Cost | Unit Gross Annual Savings (therms) |
|---|---|---|---|
| Residential Solar Water Heating System | $15.00/therm | $3,850 | 75 |
| Residential Solar Pool Heating System | $15.00/therm | $3,500 | 90 |
| Non-Residential Solar Water Heating System | $15.00/therm | $9,625 | 190 |
| Non-Residential Solar Pool Heating System | $15.00/therm | $60,000 | 20,000 |

[1]Rebate amounts are per first year annual therm savings as determined by the SRCC rating and are up to a maximum of 50 percent of the installed cost of the system.

### Program Limitations

The following requirement applies for all measures:

- Measures must be purchased new, and may not be used or leased.

### Target Audiences

Southwest's primary target audience is residential and non-residential customers.

Southwest's secondary target audience is trade allies including contractors, distributors, and manufacturers of solar thermal systems.

### Budget

Southwest Gas proposes a total annual estimated budget for this program of $500,000. Table 43 below provides the budget details by category.

**Table 43 – Total Estimated Budget**

| **Residential Energy Management Programs: *Smarter Greener Better* Solar Thermal Rebates** | |
|---|---|
| **Description** | **Estimated Budget** |
| Rebates | $350,000 |
| Administration | $15,000 |
| Outreach | $60,000 |
| Delivery | $67,500 |
| Evaluation | $7,500 |
| **Total** | **$500,000** |

## Cost-Effectiveness Test Results

Since this is an RET program, Southwest Gas is not required to demonstrate cost-effectiveness test results. Notwithstanding, participating customers will be able to offset some of their energy usage by generating their own, using renewable energy such as the sun. Energy savings will therefore occur as customers reduce their net energy usage. Southwest Gas believes that participating customers will be interested in ways to increase the energy efficiency of their homes to further reduce their energy usage and will participate in any of the Company's energy efficiency programs.