ORIGINAL

NEW APPLICATION

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SOUTHWEST GAS CORPORATION

May 31, 2013

Docket Control Office
Arizona Corporation Commission
1200 West Washington Street
Phoenix, AZ 85007-2996

G-01551A-13-0170

Subject: EE & RET Portfolio Implementation Plan

Southwest Gas Corporation herewith submits for filing an original and thirteen (13) copies of its Application for approval of an Energy Efficiency and Renewable Energy Resource Technology Portfolio Implementation Plan.

Should you have any questions regarding this filing, please contact me at (702) 876-7163.

Respectfully submitted,

Debra S. Gallo by cmb

Debra S. Gallo, Director
Government & State Regulatory Affairs

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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

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In the Matter of the Application of Southwest Gas Corporation for Approval of an Energy Efficiency and Renewable Energy Resource Technology Portfolio Implementation Plan.

Docket No.: G-01551A-13-_____

G-01551A-13-0170

APPLICATION FOR APPROVAL OF AN ENERGY EFFICIENCY AND RENEWABLE ENERGY RESOURCE TECHNOLOGY PORTFOLIO IMPLEMENTATION PLAN

Introduction

1. Southwest Gas Corporation hereby submits its application to the Arizona Corporation Commission ("Commission") requesting approval of its Arizona Energy Efficiency ("EE") and Renewable Energy Resource Technology ("RET") Portfolio Implementation Plan ("Years Three and Four EE & RET Plan"), which was designed in accordance with the Gas Utility Energy Efficiency Standards ("Standards") set forth in Sections R14-2-2501 through R14-2-2520 of the Arizona Administrative Code ("A.A.C.").

2. Southwest Gas is a corporation in good standing under the laws of the state of Arizona, is a corporation duly organized, validly existing, and is qualified to transact intrastate business.

3. Southwest Gas' corporate offices are located at 5241 Spring Mountain Road, P.O. Box 98510 Las Vegas, Nevada 89193-8510. Communications regarding this filing should be addressed to:

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4. Southwest Gas is a public utility subject to the jurisdiction of the Commission pursuant to Article XV of the Arizona Constitution and the applicable chapters of Title 40 of the Arizona Revised Statutes ("A.R.S."). Southwest Gas currently serves approximately 1.9 million customers in the states of Arizona, California, and Nevada. Approximately 54 percent of the Company's customers are located in the state of Arizona, including portions of Cochise, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Pima, Pinal, and Yuma counties. For operational purposes, Southwest Gas' Central Arizona division is headquartered in Phoenix and its Southern Arizona division is headquartered in Tucson.

Background

5. On or about September 13, 2011, Southwest Gas filed its initial EE & RET implementation plan (Docket No. G-01551A-11-0344). This plan was approved by the Commission on May 22, 2012 (Decision No. 73229).

6. On or about June 1, 2012, Southwest Gas filed its Plan Year Two EE & RET implementation plan (Docket No. G-01551A-12-0218). As of the date of this filing, no action has been taken on the Company's Plan Year Two EE & RET implementation plan. The Company has therefore continued its initial EE & RET implementation plan, and the programs authorized thereunder, in accordance with A.A.C. R14-2-2505(E).

Years Three and Four EE & RET Plan

7. Pursuant to A.A.C. R14-2-2501 *et seq.*, Southwest Gas hereby requests approval of its Years Three and Four EE & RET Plan, a copy of which is attached hereto as Exhibit A. The Years Three and Four EE & RET Plan consists of seven programs with annual budgets totaling $7.5 million and $6 million, respectively. These

programs are designed to achieve approximately 4,874,208 therms or therm equivalents in energy savings during the Year Three and approximately 3,863,936 therms or therm equivalents in energy savings during Year Four.

8. In developing its Years Three and Four EE & RET Plan, Southwest Gas reviewed various EE & RET programs offered by other utilities, along with its existing portfolio of energy efficiency programs. Southwest Gas submits that the proposed budgets afford the Company a level of funding adequate to sustain the programs and allow the Company to achieve the goals set forth in the Standards.

9. Southwest Gas' Years Three and Four EE & RET Plan is designed to provide benefits to all classes of customers in the Company's Arizona rate jurisdiction that participate in the Company's DSM rate adjuster. The Years Three and Four EE & RET Plan is comprised of programs that afford Southwest Gas' customers, including its low-income customers, cost-effective opportunities and resources, education, and training tools, all of which are designed to promote energy efficiency and conservation, and will result in lower energy bills for customers. A list of the proposed programs and measures, including budget levels, is included in the Years Three and Four EE & RET Plan. The Company seeks to implement the Year Three Plan within 60 days of approval by the Commission.

10. The Years Three and Four EE & RET Plan also provides sufficient information to estimate the total cost and cost per therm reduction of each program and its respective measures. Each of the proposed programs is cost-effective, as the incremental benefits exceed the incremental costs to society.

11. The Company's current DSM rate adjuster was originally approved by the Commission as part of a settlement in Decision 60352. Under the current DSM rate adjuster, Southwest Gas files program costs and other data related to the calculation of its DSM adjuster rate in January of each year, and rates become effective in the first billing cycle the following April. Southwest Gas hereby requests approval to continue using the DSM rate adjuster and the existing DSM rate adjuster process.

12. Southwest Gas submits that the Years Three and Four EE & RET Plan is consistent with the Standards.

Conclusion

13. Based upon the foregoing, Southwest Gas respectfully requests that the Commission approve the Company's proposed Years Three and Four EE & RET Plan, as well as any other relief the Commission deems just and reasonable.

Respectfully submitted this 31st day of May 2013.

SOUTHWEST GAS CORPORATION

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SOUTHWEST GAS CORPORATION

ARIZONA ENERGY EFFICIENCY AND RENEWABLE ENERGY RESOURCE TECHNOLOGY PORTFOLIO IMPLEMENTATION PLAN

June 1, 2013

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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 (EE & RET Plan) for the third (PY3) and fourth (PY4) implementation plan years consists of seven programs designed to achieve cost-effective natural gas savings, and to increase both customer awareness and the use of energy-efficient and renewable energy practices and new technologies. Consistent with the Gas Utility Energy Efficiency Standards set forth in R14-2-2501 et seq., the EE & RET Plan will serve to benefit Southwest Gas' residential, non-residential and low-income customers in Arizona.

Southwest Gas believes the EE & RET Plan will advance market transformation and achieve sustainable savings, reducing the need for future market interventions. The EE & RET Plan 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®* (SGB) Residential Rebates
2. SGB Homes

Non-Residential Energy Management Programs

3. SGB Commercial Rebates
4. SGB Custom Commercial Rebates
5. SGB Distributed Generation

Low-Income Program

6. SGB Low-Income Energy Conservation (LIEC)

Renewable Energy Resource Technology Program

7. SGB Solar Thermal Rebates

The EE & RET Plan includes detailed program descriptions of the seven 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 & 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 EE & RET Plan is expected to produce long-term energy savings, monetary savings for customers, and positive environmental impacts.

The Company's EE & RET Plan also results in energy savings and emissions reductions through the use of 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 additional future collaborative efforts regarding EE & RET programs.

The proposed program modifications for PY3 and PY4 include:

- Elimination of the SGB Residential Energy Assessments program and transfer of the proposed direct install and weatherization measures to the SGB Residential Rebates program;
- Restructuring the SGB Homes program to offer tiered rebates based on each home's Home Energy Rating System (HERS) rating (score) instead of by measure;
- Expansion of the SGB Homes program to include low-rise multi-family homes;
- Elimination of measures in the SGB Commercial Rebates Program including: griddles, O_2 trim control pads, and three categories of dish washers;
- Inclusion of new measures in the SGB Commercial Rebates Program including: boiler reset controls, an additional tier of storage water heaters, infrared broilers, and pre-rinse spray valves;
- Combination of all commercial ovens under the new ENERGY STAR® Product Specification for Commercial Ovens effective January 2014;
- Increased limitation on eligibility for modulating burner controls to existing boilers greater than or equal to 2 MMBTUH.
- Expansion of eligible prime movers available under the Distributed Generation Program;
- Increasing administrative dollars for the Bill Assistance component under the SGB Low-Income Energy Conservation program.

The Company plans to implement its new EE & RET Plan for PY3 within 60 days of approval by the Commission.

EE & RET Plan 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. Tables 1 and 2 detail the energy savings, monetary savings, societal benefits and cost-effectiveness ratios for each program in Southwest Gas' EE & RET Plan for PY3 and PY4, respectively.

Southwest Gas has gathered applicable electric savings data by kilowatt hour (kWh) for measures and programs administered by the Company, which is further detailed in the individual program sections. The kWh savings are converted into natural gas therm savings as therm equivalents for the total

lifetime and annual energy savings reported. The therm equivalent value is calculated as the source fuel feeding an electric power plant. Due to inefficiencies in power plant generation and transmission and distribution line losses, a kWh of energy at the point of consumption is an estimated 30 percent of the total energy required to provide the electric power. Therefore, to calculate the total value of natural gas energy that is saved per kWh of electricity, the kWh savings are multiplied by a factor of 3.340[1] for the purposes of the cost-effectiveness tests. Furthermore, kWh savings, in addition to therm equivalent savings, also reduce the need for costly incremental electric generation and transmission assets resulting in additional long-run savings for customers.

[1]ENERGY STAR Performance Ratings Methodology for Incorporating Source Energy Use, March 2011

Table 1 – PY3: EE & RET Plan Annual and Lifetime Therm Savings; Lifetime Societal Benefits, Costs and Net Benefits; and Cost-Effectiveness

Program	Annual Therm Savings[1]	Lifetime Therm Savings[1]	Societal Benefits	Societal Costs	Net Benefits	Cost-Effectiveness Ratio
Residential						
SGB Residential Rebates	107,002	2,026,625	$1,513,612	$1,214,694	$298,919	1.25
SGB Homes	3,070,927	92,127,806	$69,181,136	$11,412,325	$57,768,810	6.06
Total Residential	*3,177,928*	*94,154,431*	*$70,694,748*	*$12,627,019*	*$58,067,729*	*5.60*
Non-Residential						
SGB Commercial Rebates	255,157	3,922,544	$2,561,883	$715,220	$1,846,663	3.58
SGB Custom Business Rebates	1,191,903	17,481,243	$11,742,225	$703,399	$11,038,826	16.69
SGB Distributed Generation	105,853	2,117,069	$1,498,270	$678,643	$819,627	2.21
Total Non-Residential	*1,552,913*	*23,520,856*	*$15,802,378*	*$2,097,261*	*$13,705,116*	*7.53*
Low-Income						
SGB LIEC: Weatherization[2]	92,984	2,092,146	$1,748,675	$666,578	$1,082,097	2.62
SGB LIEC: Bill Assistance[3]	N/A	N/A	N/A	N/A	N/A	N/A
Total Low-Income	*92,984*	*2,092,146*	*$1,748,675*	*$666,578*	*$1,082,097*	*2.62*
Total Energy Efficiency	***4,823,826***	***119,767,433***	***$88,245,801***	***$15,390,858***	***$72,854,943***	***5.73***
Renewable Energy Resource Technology						
SGB Solar Thermal Rebates	50,382	1,007,640	$713,117	$1,136,421	($423,305)	N/A[4]
Total EE & RET Plan	**4,874,208**	**120,775,073**	**$88,958,917**	**$16,527,279**	**$72,431,638**	**5.38**

[1] These values represent a combination of therms and therm equivalents from electric savings.
[2] The Annual and Lifetime Therm Savings; Lifetime Societal Benefits, Costs and Net Benefits; and Cost-Effectiveness for the SGB LIEC: Weatherization program includes estimated savings for the additional $200,000 shareholder funds added to the program budget per Decision No. 72723.
[3] There are no therm savings attributable to the SGB LIEC: Bill Assistance program.
[4] Pursuant to the Gas Utility Energy Efficiency Standards, cost-effectiveness is not required for RET programs.

Table 2 – PY4: EE & RET Plan Annual and Lifetime Therm Savings; Lifetime Societal Benefits, Costs and Net Benefits; and Cost-Effectiveness

Program	Annual Therm Savings[1]	Lifetime Therm Savings[1]	Societal Benefits	Societal Costs	Net Benefits	Cost-Effectiveness Ratio
Residential						
SGB Residential Rebates	78,061	1,472,038	$1,124,977	$898,850	$226,127	1.25
SGB Homes	2,423,419	72,702,585	$55,145,034	$8,988,012	$46,157,022	6.14
Total Residential	*2,501,480*	*74,174,622*	*$56,270,011*	*$9,886,862*	*$46,383,149*	5.69
Non-Residential						
SGB Commercial Rebates	204,202	3,019,549	$2,008,808	$523,255	$1,485,553	3.84
SGB Custom Commercial Rebates	945,302	13,864,434	$9,661,044	$549,885	$9,111,158	17.57
SGB Distributed Generation	79,390	1,587,800	$1,167,130	$507,966	$659,164	2.30
Total Non-Residential	*1,228,894*	*18,471,783*	*$12,836,981*	*$1,581,106*	*$11,255,875*	*8.12*
Low-Income						
SGB LIEC: Weatherization[2]	92,984	2,092,146	$1,756,935	$665,399	$1,091,536	2.64
SGB LIEC: Bill Assistance[3]	N/A	N/A	N/A	N/A	N/A	N/A
Total Low-Income	*92,984*	*2,092,146*	*$1,756,935*	*$665,399*	*$1,091,536*	*2.64*
Total Energy Efficiency	***3,823,358***	***94,738,551***	***$70,863,928***	***$12,133,368***	***$58,730,560***	***5.84***
Renewable Energy Resource Technology						
SGB Solar Thermal Rebates	40,577	811,540	$596,531	$937,729	($341,198)	N/A[4]
Total EE & RET Plan	**3,863,936**	**95,550,091**	**$71,460,459**	**$13,071,097**	**$58,389,362**	**5.47**

[1] These values represent a combination of therms and therm equivalents from electric savings.
[2] The Annual and Lifetime Therm Savings; Lifetime Societal Benefits, Costs and Net Benefits; and Cost-Effectiveness for the SGB LIEC: Weatherization program includes estimated savings for the additional $200,000 shareholder funds added to the program budget per Decision No. 72723.
[3] There are no therm savings attributable to the SGB LIEC: Bill Assistance program.
[4] Pursuant to the Gas Utility Energy Efficiency Standards, cost-effectiveness is not required for RET programs.

The EE & RET Plan is targeted to result in annual energy savings of 4,874,208[2] and 3,863,936[3] therms (including therm equivalents) for PY3 and PY4, respectively. The total energy savings attributed to energy efficiency programs consists of 4,823,826[4] for PY3 and 3,823,358[5] therms for PY4. These savings exceed the third-year and fourth-year goal of achieving energy savings of up to 1.35 and 1.8 percent, respectively, from energy efficiency programs, as set forth in the Commission's Gas Utility Energy Efficiency Standards. The Company's RET program, which is targeted to save an additional 50,382 for PY3 and 40,577 therms for PY4, coupled with Southwest Gas' efforts to support the adoption and implementation of the energy efficiency building codes and the Company's involvement in the placement of non-Company sponsored RET projects that displace gas, are expected to contribute additional savings beyond the total third-year and fourth-year cumulative energy savings goal of 1.8 and 2.4 percent.

Program Baseline

Southwest Gas' EE & RET Plan 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.

EE & RET Plan Annual Budget

Southwest Gas proposes an annual budget of $7.5 million for PY3 and $6 million for PY4. The proposed budgets maximize the amount of program funds going directly to customers through education, training, financial incentives and technical assistance. The budgets also take into account the realities of program start-up costs and the administrative oversight needed to plan, develop, deliver and evaluate the programs. Once the EE & RET Plan is implemented, rebate

[2] Using Southwest Gas' 2012 Arizona retail sales of 603,223,751 therms, the Company's total third-year cumulative energy savings goal of 1.8 percent is 10,858,028 therms. The Company's initial EE & RET Plan resulted in annual savings of 1,386,573 therms for the first seven months of implementation as reported in its EE & RET Plan Progress Report filed April 1, 2013 (Docket No. G-00000G-13-0066) and the Company's EE & RET Plan for Year 2 (Docket No. G-01551A-12-0218) is targeted to save an annual 4,787,689 therms, resulting in cumulative savings of 6,174,262 therms.

[3] Using Southwest Gas' 2012 Arizona retail sales of 603,223,751 therms, the Company's total fourth-year cumulative energy savings goal of 2.4 percent is 14,477,370 therms.

[4] Using Southwest Gas' 2012 retail sales of 603,223,751 therms, the Company's total third-year cumulative energy savings goal of at least 1.35 percent from energy efficiency programs is 8,143,521 therms.

[5] Using Southwest Gas' 2012 retail sales of 603,223,751 therms, the Company's total fourth-year cumulative energy savings goal of at least 1.8 percent from energy efficiency programs is 10,858,028 therms.

levels and other program elements will be reviewed and modified as needed to maximize program participation and energy savings to customers.

The budgets for the EE & RET Plan apply to the seven aforementioned programs. Within each program description, Southwest Gas provides an estimated budget apportioning the dollars between five categories: 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.

Tables 3 and 4 below provide a summary of the estimated budgets for each program for PY3 and PY4, respectively.

Table 3 – PY3: EE & RET Plan Annual Estimated Budget

Program	Rebates	Administration	Outreach	Delivery	MV&E	Program Total Cost
Residential						
SGB Residential Rebates	$ 584,000	$ 16,000	$ 40,000	$ 144,000	$ 16,000	$ 800,000
SGB Homes	$ 3,285,000	$ 73,000	$ 146,000	$ 73,000	$ 73,000	$ 3,650,000
Total Residential	*$ 3,869,000*	*$ 89,000*	*$ 186,000*	*$ 217,000*	*$ 89,000*	*$ 4,450,000*
Non-Residential						
SGB Commercial Rebates	$ 341,000	$ 16,500	$ 44,000	$ 137,500	$ 11,000	$ 550,000
SGB Custom Business Rebates	$ 256,500	$ 9,000	$ 27,000	$ 148,500	$ 9,000	$ 450,000
SGB Distributed Generation	$ 280,000	$ 12,000	$ 32,000	$ 68,000	$ 8,000	$ 400,000
Total Non-Residential	*$ 877,500*	*$ 37,500*	*$ 103,000*	*$ 354,000*	*$ 28,000*	*$ 1,400,000*
Low-Income						
SGB LIEC: Weatherization[1]	$ -	$ -	$ -	$ -	$ -	$ 450,000
SGB LIEC: Bill Assistance[2]	$ -	$ -	$ -	$ -	$ -	$ 200,000
Total Low-Income	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ 650,000*
Total Energy Efficiency	***$ 4,746,500***	***$ 126,500***	***$ 289,000***	***$ 571,000***	***$ 117,000***	***$ 6,500,000***
Renewable Energy Resource Technology						
SGB Solar Thermal Rebates	$ 738,800	$ 15,000	$ 50,000	$ 186,200	$ 10,000	$ 1,000,000
Total EE & RET Plan	**$ 5,485,300**	**$ 141,500**	**$ 339,000**	**$ 757,200**	**$ 127,000**	**$ 7,500,000**

[1] SGB LIEC: Weatherization does not adhere to the above budget categories since it is not a rebate program. Per Decision No. 72723, Southwest Gas has augmented the $450,000 annual budget shown above with an additional $200,000 funded by shareholders. Program budget specifics may be found in the program description on page 57.

[2] SGB LIEC: Bill Assistance does not adhere to the above budget categories since it is not a rebate program.

Table 4 – PY4: EE & RET Plan Annual Estimated Budget

Program	Rebates	Administration	Outreach	Delivery	MV&E	Program Total Cost
Residential						
SGB Residential Rebates	$452,600	$12,400	$31,000	$111,600	$12,400	$620,000
SGB Homes	$2,592,000	$57,600	$115,200	$57,600	$57,600	$2,880,000
Total Residential	*$3,044,600*	*$70,000*	*$146,200*	*$169,200*	*$70,000*	*$3,500,000*
Non-Residential						
SGB Commercial Rebates	$248,000	$12,000	$32,000	$100,000	$8,000	$400,000
SGB Custom Business Rebates	$199,500	$7,000	$21,000	$115,500	$7,000	$350,000
SGB Distributed Generation	$210,000	$9,000	$24,000	$51,000	$6,000	$300,000
Total Non-Residential	*$657,500*	*$28,000*	*$77,000*	*$266,500*	*$21,000*	*$1,050,000*
Low-Income						
SGB LIEC: Weatherization[1]	$0	$0	$0	$0	$0	$450,000
SGB LIEC: Bill Assistance[2]	$0	$0	$0	$0	$0	$200,000
Total Low-Income	*$0*	*$0*	*$0*	*$0*	*$0*	*$650,000*
Total Energy Efficiency	***$3,702,100***	***$98,000***	***$223,200***	***$435,700***	***$91,000***	***$5,200,000***
Renewable Energy Resource Technology						
SGB Solar Thermal Rebates	$591,040	$12,000	$40,000	$148,960	$8,000	$800,000
Total EE & RET Plan	**$4,293,140**	**$110,000**	**$263,200**	**$584,660**	**$99,000**	**$6,000,000**

[1] SGB LIEC: Weatherization does not adhere to the above budget categories since it is not a rebate program. Per Decision No. 72723, Southwest Gas has augmented the $450,000 annual budget shown above with an additional $200,000 funded by shareholders. Program budget specifics may be found in the program description on page 57.

[2] SGB LIEC: Bill Assistance does not adhere to the above budget categories since it is not a rebate program.

The budget categories are explained in detail below:

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

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

Outreach: Includes all marketing and advertising costs related, but not limited to: workshops, events, brochures (design and printing), retail store signage, print ads and web banners, sponsorships, and trade ally recruitment.

Delivery: Includes rebate processing, forms design and creation, due-diligence program limitation reviews, pre-rebate payment field or 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.

Southwest Gas anticipates varying levels of participation for individual program measures. Consistent with the Gas Utility Energy Efficiency Standards, cost-effectiveness was considered 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 enables Southwest Gas to maximize energy efficiency benefits for customers by permitting Southwest Gas to reallocate funding to those measures where customers are most responsive. Actual program costs will be tracked and reported within each individual program budget.

Cost Recovery of EE & RET Plan

Pursuant to Sections R14-2-2505(B)(5) and R14-2-2506(C) of the Gas Utility Energy Efficiency Standards, Southwest Gas requests that the Commission allow the Company to continue 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 intends to continue the current filing and adjustment process. An estimated calculation of the applicable DSM rate adjuster is provided in Table 5 below.

Table 5 – Illustrative Cost Recovery of EE & RET Plan Costs

Program Year	PY3	PY4
Program Costs	$7,500,000	$6,000,000
Applicable Volumes	623,955,899	623,955,899
Adjustment Rate	$0.01202	$0.00962

[1] For illustrative purposes only. Excludes the effect of over- or under-recoveries in Southwest Gas' existing DSM rate adjuster balancing account. Per Commission Decision No. 72723, the DSM surcharge rate applicable to Southwest's low-income customer rate schedules will not be increased above $0.00200 per therm.

Summary of Programs

In developing its EE & RET Plan, 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 EE & RET Plan 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 only 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.

SGB Residential Rebates: Rebates will be offered to residential customers on qualified program measures upon proof-of-purchase and installation. Measures available to all residential customers include: ENERGY STAR tankless water heaters, high efficiency natural gas clothes dryers, and ENERGY STAR windows. Additional measures will be available to customers who participate in the electric utilities' Home Performance with ENERGY STAR programs. Upon completion of a successful home energy assessment, partially funded by the electric utilities, residential customers with natural gas space heating are eligible for attic and floor insulation rebates, and those with natural gas water heating may receive free direct install items including kitchen and lavatory aerators and smart low-flow showerheads.

SGB Homes: Rebates will be offered to home builders who build ENERGY STAR certified homes. Two tiers of rebates will be available to all builders of new single-family subdivision, custom homes and multi-family homes featuring natural gas water and/or space heating.

SGB Commercial Rebates: Rebates will be offered to non-residential customers on qualified program measures upon proof-of-purchase and installation. The measures include: high efficiency space and water heating units (including boilers, modulating burner controls, steam traps, reset controls, storage and tankless water heaters) and a full suite of commercial food service high efficiency products (including dishwashers, natural gas fryers, steamers, commercial ovens, infrared charbroilers and pre-rinse spray valves).

SGB Custom Commercial 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.

SGB 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.

SGB LIEC: The SGB LIEC program is comprised of two components: one provides energy-efficient home improvements such as increased insulation, duct repairs, weatherstripping, caulking, etc., otherwise referred to as weatherization; and the other provides emergency assistance to help pay household natural gas bills. 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 Governor's Office of Energy Policy (OEP) and Arizona Community Action Agency (ACAA).

SGB Solar Thermal Rebates: Rebates will be offered to residential customers on qualified solar thermal systems used for domestic water heating and non-residential customers on qualified solar thermal systems used for domestic 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 & 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 located within Southwest Gas' Arizona service territory. In addition, customers must also contribute towards the funding of these programs through the DSM rate adjuster.

Marketing 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 Southwest Gas' website (www.swgasliving.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 Energy Solutions 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 raters 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 High Efficiency Equipment/Appliance 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.

One successful method Southwest Gas currently utilizes to reach commercial and industrial customers is the monthly electronic newsletter, *EnergyLine*, which is an e-mail newsletter containing technical information including: 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. *EnergyLine* 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. Southwest Gas will continue to use *EnergyLine* to promote all of the Company's non-residential energy management programs. The Company believes that participating customers will be interested in ways to increase the energy efficiency of their facilities to further reduce their energy usage, resulting in increased participation in the Company's energy efficiency programs.

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.

Delivery Strategies

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 the following items as applicable, 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 delivery methodologies to standard industry practice.

In order to maintain quality control, Southwest Gas will augment the application process with random telephone or 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.
- Program limitations are met.

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 EE & RET Plan will benefit its customers, the general public, and the environment. Southwest Gas' EE & RET Plan 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 EE & RET Plan is designed to achieve the third and fourth-year energy savings target of the Gas Utility Energy Efficiency Standards 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

Tab

RESIDENTIAL ENERGY MANAGEMENT PROGRAMS:
SMARTER GREENER BETTER RESIDENTIAL REBATES

Program Description

Southwest Gas proposes to continue to offer the SGB 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. These measures include: ENERGY STAR tankless water heaters, high efficiency natural gas clothes dryers, and ENERGY STAR windows. Additional measures will be available to customers who participate in the electric utilities Home Performance with ENERGY STAR programs. Upon completion of a successful home energy assessment, partially funded by the electric utilities, residential customers with natural gas space heating are eligible for attic and floor insulation rebates, and those with natural gas water heating may receive free direct install items including kitchen and lavatory aerators and smart low-flow showerheads.

During PY1 (which is still ongoing as of preparation of this annual filing), Southwest Gas collaborated with APS and SRP to cost-effectively implement Southwest Gas' program alongside their existing Home Performance with ENERGY STAR (HPwES) programs within common service territories. As part of the PY1 specifications, customers are required to undergo a $99 home energy assessment performed by a participating HPwES contractor. Both APS and SRP contribute $200 directly to the contractors to buy down the real cost of the energy assessment, valued at $500. Contractors assess the air conditioning 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 kitchen and lavatory low-flow faucet aerators. As a part of this comprehensive evaluation, contractors are required to input the home data into energy modeling software provided by the electric utilities. The software models the estimated impact for each recommended measure and provides the customers with accurate information on expected savings and payback periods.

Experience has shown that attic and floor insulation, when not installed correctly, does not achieve deemed energy savings, and may not be the best energy efficiency upgrade for each customer. To address these issues, Southwest Gas proposes to limit eligibility for insulation measures to customers who undergo a $99 Home Performance with ENERGY STAR assessment. In order to qualify for an insulation rebate, customers must utilize an authorized contractor and must pay for a home energy assessment. The contractor will then identify the most cost-effective savings and guide customers to make the most impactful improvements to their homes, which may or may not include attic and floor insulation.

As in PY1, Southwest Gas proposes to continue to fund the administration, quality assurance and training of the Home Performance with ENERGY STAR contractor list via the Foundation for Senior Living (FSL). FSL also conducts field audits for each contractor and verifies proper installation on a percentage of completed jobs. FSL will also coordinate the purchase and distribution of the direct install measures to authorized contractors. Each utility will fund a portion of the direct install measures, which will be dispersed to customers (and charged back to the utility) depending on the water heating fuel source and service territory for each utility.

The remaining SGB Residential program measures including ENERGY STAR tankless water heating measures, high efficiency natural gas clothes dryers and ENERGY STAR windows, will not require participation in the electric utilities' Home Performance with ENERGY STAR home assessment program.

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 and to help customers improve the comfort, energy efficiency, safety and durability of their homes, while also helping to preserve the environment.

Qualifying Customers

All active, single family Southwest Gas residential customers, including single family detached homes, townhomes, attached homes of four or fewer units, and manufactured homes located in the Company's Arizona service territory are eligible to participate in the program. Eligibility for this customer group is limited to ENERGY STAR tankless water heaters, high efficiency natural gas clothes dryers, and windows. Upon completion and payment of a Home Performance with ENERGY STAR home energy assessment, eligibility expands to attic and floor insulation and the direct install measures including kitchen and lavatory aerators and smart low-flow showerheads.

New homebuilders constructing single and individually metered multi-family homes, and individually metered multi-family retrofit projects in Southwest Gas' Arizona service territory are also eligible to participate in the SGB Residential Rebates program. Eligibility for this customer group is limited to ENERGY STAR tankless water heaters and high efficiency natural gas clothes dryers.

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-efficiency water heating and water saving measures creates the potential for significant energy savings. Rebates provided as part of the SGB Residential Rebates program will help offset the incremental costs incurred by upgrading to energy-efficient measures. Qualifying measures and specifications are shown in Table 6 below.

Table 6 – Qualifying Measure Specifications: Water and Space Heating Measures

Measure	Specification
Tankless Water Heater	ENERGY STAR qualified and EF ≥ 90%
Clothes Dryer	Model must have a moisture sensor
Attic Insulation	Install ≥ R-19 (Final condition must be ≥ R-30)
Floor Insulation	Install ≥ R-6 (Final condition must be between R-13 and R-19)
Windows	ENERGY STAR qualified for climate zone
Direct Install - Smart Low-Flow Showerhead	Gpm[1] ≤ 1.5; ShowerStart Technology
Direct Install - Lavatory Faucet Accessory (aerator)	Gpm ≤ 1.0
Direct Install - Kitchen Faucet Accessory (aerator)	Gpm ≤ 1.5

[1]Gallons per minute.

Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by using multiple sources including: ENERGY STAR, Consortium for Energy Efficiency published energy savings, other utility energy efficiency portfolios, and manufacturer data. 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, annual savings, estimated participation and cost-effectiveness ratios are provided in Tables 7and 8 below.

Table 7 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Water and Space Heating Measures

Measure	Rebate	Incremental Cost	Unit Gross Annual Savings	
			therms	kWh
Tankless Water Heater	$450	$605	59	N/A
Clothes Dryer	$30	$50	10	N/A
Attic Insulation	$0.15/SqFt	$0.40/SqFt	0.0175/SqFt	N/A
Floor Insulation	$0.30/SqFt	$0.42/SqFt	0.05/SqFt	N/A
Windows	$1.00/SqFt	$1.30/SqFt	0.24/SqFt	N/A
Direct Install - Smart Low-Flow Showerhead	$3	$3	5	N/A
Direct Install - Lavatory Faucet Accessory (aerator)	$1	$1	9	N/A
Direct Install - Kitchen Faucet Accessory (aerator)	$25	$25	21	N/A

Table 8 – Estimated Participation and Cost-Effectiveness Ratios: Water and Space Heating Measures

Measure	Estimated Participation		Cost-Effectiveness Ratio	
	PY3	PY4	PY3	PY4
Tankless Water Heater	755	680	1.16	1.19
Clothes Dryer	755	680	1.03	1.05
Attic Insulation	650	375	1.07	1.11
Floor Insulation	150	75	2.54	2.61
Windows	150	75	2.65	2.71
Direct Install - Smart Low-Flow Showerhead	650	375	1.93	1.93
Direct Install - Lavatory Faucet Accessory (aerator)	1,300	750	2.37	2.35
Direct Install - Kitchen Faucet Accessory (aerator)	650	375	1.81	1.80
Total	**5,060**	**3,385**	**N/A**	**N/A**

Program Limitations

The following requirement applies for all measures:

- Measures must be purchased new, and may not be used or leased.
- Builders participating in the SGB Homes program are not eligible for the measures offered under the SGB Residential Rebates program.

Target Audiences

Southwest Gas' primary target audience is residential customers of single-family homes and new homebuilders constructing single and individually metered multi-family homes, and individually metered multi-family retrofit projects.

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 $800,000 and $620,000 for PY3 and PY4, respectively. Table 9 below provides the budget details by category.

Table 9– Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$584,000	$452,600
Administration	$16,000	$12,400
Outreach	$40,000	$31,000
Delivery	$144,000	$111,600
MV&E	$16,000	$12,400
Total	**$800,000**	**$620,000**

Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the SGB Residential Rebates program, along with the cost-benefit overview and projected lifetime savings, is shown below in Tables 10 and 11.

Table 10 – Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings	PY3	PY4
Present Value of Savings	$1,513,612	$1,124,977
Present Value of Costs	$1,214,694	$898,850
Net Social Benefit	$298,919	$226,127
Cost-Effectiveness Ratio	**1.25**	**1.25**

Table 11 – Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	2,026,625	1,472,038
CO_2 (tons)	11,856	8,611

RESIDENTIAL ENERGY MANAGEMENT PROGRAMS:
SMARTER GREENER BETTER HOMES

Program Description

Southwest Gas proposes to continue to offer the SGB New Home Construction program to increase participation of Arizona homebuilders in building more energy-efficient housing. As a performance-based, "whole-house" program, SGB Homes is designed to increase residential energy efficiency through improved thermal shell construction, upgraded mechanical systems, and field verification of those measures. Overall energy efficiency for participating homes must meet the ENERGY STAR Version 3 (V3) guidelines and requirements.

Builders are recruited into the program by Southwest Gas Energy Advisors. The builders then select and work closely with HERS providers who provide the actual energy savings for each participating home with the use of a home modeling software used to analyze each model. The HERS raters also provide consultation to the builders on effective construction techniques required to meet the V3 guidelines, and inspection and testing of the homes for compliance. Homes which meet the V3 guidelines are then certified as ENERGY STAR and qualify for the tier 1 rebate. Southwest Gas is also proposing to offer a tier 2 rebate amount for builders who go above and beyond the V3 guidelines and seek out technologies which make their homes even more energy-efficient. To obtain reimbursement for participation under the SGB Homes program, builders must meet program qualification criteria, complete an application with their HERS Provider, and submit it to Southwest Gas.

Program Objective

The overall objective of this energy-efficient program is to continue toward greater residential energy efficiency in the new construction market. ENERGY STAR has designed a national cost-effective and detailed path to better home performance for new homes.

Qualifying Customers

All builders of new single-family subdivisions, custom homes and low-rise multi-family homes receiving the ENERGY STAR Homes certification from the US Environmental Protection Agency (EPA), located within the Company's Arizona service territory and featuring natural gas water heating and/or space heating are eligible to participate in the program. Builders must register with the EPA as ENERGY STAR partners and agree to meet the SGB Homes program specifications. Southwest Gas continues to research and evaluate options to include high-rise multi-family builders, and will continue to monitor the EPA's Multi-Family High-Rise program development to potentially propose a new construction Multi-Family High-Rise program in future filings with the Commission.

Qualifying Measures

The ratings for the homes are performed by HERS Providers. The HERS rating (score) calculates heating, cooling, hot water, lighting, and appliance energy loads, consumption and costs for new and existing single and multi-family homes. Specific factors include:

- All exterior walls (both above and below ground)
- Floors over unconditioned spaces
- Ceiling and roofs
- Attics, foundations, and crawl spaces
- Windows and doors, vents and ductwork
- HVAC systems, water heating system and the home thermostat

Though it differs by municipality, base case homes are considered to be homes that meet International Energy Conservation Code (IECC) 2009 building code requirements for the State of Arizona and a HERS score of 100. As homes become more energy-efficient, the HERS score decreases. Upon adoption of a new ENERGY STAR Version, Southwest Gas will modify the tier levels to continue to encourage builders to exceed the adopted codes. Table 12 shows the proposed tier 1 and 2 rebate levels for the program.

Table 12 – Qualifying Measure Specifications

Measure	Specification
ENERGY STAR Certification - Tier 1	HERS Score ≥ 66
ENERGY STAR Certification - Tier 2	HERS Score ≤ 65

Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by using ENERGY STAR's published data and data certified by the HERS providers. Rebate amounts, incremental costs, annual savings, estimated participation and cost-effectiveness ratios are provided in Tables 13 and 14 below.

Table 13 – Rebate Amounts, Incremental Costs and Annual Savings

Measure	Rebate	Incremental Cost	PY 3 Unit Gross Annual Savings		PY4 Unit Gross Annual Savings	
			therms	kWh	therms	kWh
ENERGY STAR Certification – Tier 1	$450	$1,550	290,744	26,497,978	229,440	20,910,858
ENERGY STAR Certification – Tier 2	$900	$3,000	391,226	43,518,346	308,736	34,342,468

Table 14 – Estimated Participation and Cost-Effectiveness Ratios

Measure	Estimated Participation		Cost-Effectiveness Ratio	
	PY3	PY4	PY3	PY4
ENERGY STAR Certification – Tier 1	2,433	1,920	6.90	6.99
ENERGY STAR Certification – Tier 2	2,433	1,920	5.62	5.69
Total	**4,866**	**3,840**	**6.06**	**6.14**

Program Limitations

The following requirements apply:

- All homes must be ENERGY STAR certified and meet the SGB Homes program requirements.
- The ENERGY STAR certification and rating must be performed by an independent third-party HERS Provider.
- Builders participating in the SGB Homes are not eligible for the measures offered under the SGB Residential Rebates program.

Target Audiences

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

Southwest Gas' secondary target audience for the SGB Homes program is the consumer, homebuyers and realtors.

Budget

Southwest Gas proposes a total annual estimated budget of $3,650,000 and $2,880,000 for PY3 and PY4, respectively. Table 15 below provides the budget details by category.

Table 15– Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$3,285,000	$2,592,000
Administration	$73,000	$57,600
Outreach	$146,000	$115,200
Delivery	$73,000	$57,600
MV&E	$73,000	$57,600
Total	**$ 3,650,000**	**$ 2,880,000**

Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the SGB Homes program, along with the cost-benefit overview and projected lifetime savings, is shown below in Tables 16 and 17. The business relationship between the HERS raters and the builders allows Southwest Gas to maintain low delivery costs that in turn result in a successful and cost-effective program.

Table 16 – Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings	PY3	PY4
Present Value of Savings	$69,181,136	$55,145,034
Present Value of Costs	$11,412,325	$8,988,012
Net Social Benefit	$57,768,810	$46,157,022
Cost-Effectiveness Ratio	**6.06**	**6.14**

Table 17 – Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	20,459,097	16,145,280
Electricity (MWh)	2,100,490	1,657,600
CO_2 (tons)	119,686	94,450

Non-Residential Energy Management Programs

Tab

NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS:
SMARTER GREENER BETTER COMMERCIAL REBATES

Program Description

Southwest Gas proposes to continue to offer the SGB Commercial 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' SGB Commercial Rebates program combined with the overall Non-Residential Energy Management programs will achieve the necessary market transformation and greater energy savings.

Program Objective

The overall objective of this energy-efficiency program is to reduce customer natural gas usage by offering prescriptive rebates to non-residential customers in the Company's Arizona service territory.

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 Gas' 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 18.

Table 18 – Qualifying Measure Specifications: Water and Space Heating Measures

Measure	Specification
WATER AND SPACE HEATING MEASURES	
Storage Water Heater Tier 1	125,000 btu/h through 299,000 btu/h; Thermal efficiency ≥ 95%
Storage Water Heater Tier 2	> 300,000 btu/h; Thermal efficiency ≥ 95%
Tankless Water Heater	ENERGY STAR Commercial
Non-condensing Boiler	Combustion efficiency ≥ 85% and must be installed with modulating burner control; boilers ≥ 10MMBtu must also be installed with an O_2 trim control pad
Condensing Boiler	Thermal efficiency ≥ 85% and must be installed with modulating burner control; boilers ≥ 10MMBtu must also be installed with an O_2 trim control pad
Boiler – Modulating Burner Control	Available for existing boilers ≥ 2 MMBTUH only, must have a turndown ratio of ≥ 5:1
Boiler – Steam Trap High Pressure	Steam trap must be installed, replaced or repaired to original operating function (50-65 psi)
Boiler - Steam Trap Low Pressure	Steam trap must be installed, replaced or repaired to original operating function (10-15 psi)
Boiler Reset/Cut-out Controls	Available for retrofits only
Air Curtain	Must have usage ≥ 20 hours/week and must be certified by the Air Movement and Control Association (AMCA)

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 website, 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 19.

Table 19 – Qualifying Measure Specifications: Food Service Measures

Measure	Specification
FOOD SERVICE MEASURES	
Steamer	ENERGY STAR qualified
Fryer	ENERGY STAR qualified
Commercial Oven	ENERGY STAR qualified
Infrared Charbroiler	Must utilize infrared burners, excludes upright models
Dishwasher (Low Temp): Door Type	ENERGY STAR qualified
Dishwasher (Low Temp): Single Tank Conveyor	ENERGY STAR qualified
Dishwasher (High Temp): Under Counter	ENERGY STAR qualified
Dishwasher (High Temp): Door Type	ENERGY STAR qualified
Dishwasher (High Temp): Single Tank Conveyor	ENERGY STAR qualified
Pre-rinse Spray Valves	Water Sense - 1.28 ≤ GPM and cleanability performance of ≤ 26 seconds, based on ASTM[1] Standards.

[1] American Society for Testing and Materials

ENERGY STAR will implement the EPA Product Specification for Commercial Ovens on January 2014. The new product category incorporates eleven types of commercial ovens including: combination, convection, conveyor, conventional (standard), slow cook-and-hold, deck, mini-rack, rack roll-in, range, rapid-cook, and rotisserie ovens. The rebate amount is based on an average incremental cost across all eleven oven categories; however, Southwest Gas will not approve any rebates that exceed 75% of the actual incremental cost per each oven category. Southwest Gas proposes to include both ENERGY STAR qualified ovens and ovens tested and listed on the Food Service Technology Center qualifying product lists.

In addition to the measures shown in Tables 18 and 19, all appliance measures included in the SGB Residential Rebates program, excluding windows and all direct install measures, are available to non-residential Southwest Gas customers under the SGB Commercial 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 using multiple sources including: ENERGY STAR, Consortium for Energy Efficiency published energy savings, other utility energy efficiency portfolios, and manufacturer data. 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, annual savings, estimated participation and cost-effectiveness ratios are provided in Tables 20, 21, 22 and 23 below.

Table 20 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Water and Space Heating Measures

Measure	Rebate	Incremental Cost	Unit Gross Annual Savings	
			therms	kWh
WATER AND SPACE HEATING MEASURES				
Storage Water Heater Tier 1	$725	$973	340	N/A
Storage Water Heater Tier 2	$1,250	$1,728	655	N/A
Tankless Water Heater	$450	$750	1,000	N/A
Non-condensing Boiler	$1.00/MBTUH	$3,475	436	N/A
Condensing Boiler	$1.25/MBTUH	$7,500	1,418	N/A
Boiler – Modulating Burner Control	Up to $6,000	$8,422	652	N/A
Boiler – Steam Trap High Pressure	$150	$200	891	N/A
Boiler - Steam Trap Low Pressure	$150	$200	399	N/A
Boiler Reset/Cut-out Controls	$250	$612	400	N/A
Air Curtain	$2,100	$3,900	2,450	N/A

Table 21 – Rebate Amounts, Incremental Customer Costs and Annual Savings: Food Service Measures

Measure	Rebate	Incremental Cost	Unit Gross Annual Savings	
			therms	kWh
FOOD SERVICE MEASURES				
Steamer	$300	$420	1,066	N/A
Fryer	$900	$1,200	396	N/A
Commercial Oven	$1,050	$1,679	513	N/A
Infrared Charbroiler	$500	$2,173	754	N/A
Dishwasher (Low Temp): Door Type	$375	$530	562	N/A
Dishwasher (Low Temp): Single Tank Conveyor	$125	$170	527	N/A
Dishwasher (High Temp): Under Counter	$750	$1,000	330	N/A
Dishwasher (High Temp): Door Type	$375	$500	617	661
Dishwasher (High Temp): Single Tank Conveyor	$200	$270	773	5,852
Pre-rinse Spray Valves	$50	$100	734	N/A

Table 22 – Estimated Participation and Cost-Effectiveness Ratios: Water and Space Heating Measures

Measure	Estimated Participation		Cost-Effectiveness Ratio	
	PY3	PY4	PY3	PY4
WATER AND SPACE HEATING MEASURES				
Storage Water Heater Tier 1	15	10	2.60	2.77
Storage Water Heater Tier 2	15	10	2.77	2.95
Tankless Water Heater	75	50	9.01	9.84
Non-condensing Boiler	15	10	1.61	1.69
Condensing Boiler	15	10	2.32	2.44
Boiler – Modulating Burner Control	15	10	1.03	1.08
Boiler – Steam Trap High Pressure	30	25	1.94	2.17
Boiler - Steam Trap Low Pressure	30	25	4.38	4.83
Boiler Reset/Cut-out Controls	30	25	6.03	6.48
Air Curtain	5	5	4.69	5.03
Total	**245**	**180**	**n/a**	**n/a**

Table 23 – Estimated Participation and Cost-Effectiveness Ratios: Food Service Measures

Measure	Estimated Participation		Cost-Effectiveness Ratio	
	PY3	PY4	PY3	PY4
FOOD SERVICE MEASURES				
Steamer	10	10	5.94	6.58
Fryer	10	10	1.51	1.60
Commercial Oven	10	10	1.42	1.50
Infrared Charbroiler	10	10	1.76	1.86
Dishwasher (Low Temp): Door Type	5	5	5.43	5.90
Dishwasher (Low Temp): Single Tank Conveyor	5	5	12.38	13.77
Dishwasher (High Temp): Under Counter	5	5	1.51	1.60
Dishwasher (High Temp): Door Type	5	5	5.87	6.40
Dishwasher (High Temp): Single Tank Conveyor	5	5	12.09	13.44
Pre-rinse Spray Valves	30	30	2.70	3.04
Total	**95**	**95**	**n/a**	**n/a**

Program Limitations

The following requirements apply:

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

Target Audiences

Southwest Gas' primary target audience is all non-residential customers located in Southwest Gas' 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 $550,000 and $400,000 for PY3 and PY4, respectively. Table 24 below provides the budget details by category.

Table 24 - Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$341,000	$248,000
Administration	$16,500	$12,000
Outreach	$44,000	$32,000
Delivery	$137,500	$100,000
MV&E	$11,000	$8,000
Total	**$550,000**	**$400,000**

Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the *SGB* Commercial Rebates program, along with the cost-benefit overview and projected lifetime savings is shown below in Tables 25 and 26.

Table 25 – Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings	PY3	PY4
Present Value of Savings	$2,561,883	$2,008,808
Present Value of Costs	$715,220	$523,255
Net Social Benefit	$1,846,663	$1,485,553
Cost-Effectiveness Ratio	**3.58**	**3.84**

Table 26– Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	3,797,330	2,894,335
Electricity (MWh)	3,670	3,670
CO_2 (tons)	22,214	16,932

NON-RESIDENTIAL ENERGY MANAGEMENT PROGRAMS:
SMARTER GREENER BETTER CUSTOM COMMERCIAL REBATES

Program Description

Southwest Gas proposes to continue to offer the SGB Custom Commercial 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 showing 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 Energy Solutions' personnel.

Program Objective

The 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.

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.

Program Limitations

Measures that are excluded from this program include those that:

- Are offered through the SGB Commercial 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.

Post Installation Report (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 $450,000 and $350,000 for PY3 and PY4 respectively. Table 27 below provides the budget details by category.

Table 27 - Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$256,500	$199,500
Administration	$9,000	$7,000
Outreach	$27,000	$21,000
Delivery	$148,500	$115,500
MV&E	$9,000	$7,000
Total	**$450,000**	**$350,000**

Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the SGB Custom Commercial Rebates program, along with the cost-benefit overview and projected lifetime savings is shown below in Tables 28 and 29.

Table 28 – Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings	PY3	PY4
Present Value of Savings	$11,742,225	$9,661,044
Present Value of Costs	$703,399	$549,885
Net Social Benefit	$11,038,826	$9,111,158
Cost-Effectiveness Ratio	**16.69**	**17.57**

Table 29 – Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	17,481,243	13,864,434
CO_2 (tons)	102,265	81,107

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

Program Description

Southwest Gas proposes to continue to offer the SGB Distributed Generation program to commercial and industrial customers in the Company's Arizona service territory. The SGB Distributed Generation program will encourage the installation of high efficiency Combined Heat and Power (CHP) technologies.

CHP is an efficient on–site power system designed to create electric power, and thermal energy that can be used for space heating, water heating, industrial steam loads, air conditioning, humidity control, water cooling, product drying, or any other thermal need. CHP is the simultaneous production of two different forms of useful energy (heat and power), derived from a single primary fuel source, in this case natural gas.

A CHP system is usually defined by the prime mover, or the component that converts fuel to generate electricity. Energy that would typically be lost in the prime mover's hot exhaust or cooling systems is recovered to provide heat for process loads. The waste heat recovery process increases the efficiency of the CHP system, and decreases the fuel and energy consumption needed for other applications at the facility. Other benefits can include the reduction in equipment sizes, because in most cases, as fuel consumption is reduced due to the recovered heat, the size of the equipment normally used for that application may be downsized. And finally the amount of greenhouse gas emissions are generally much lower with a CHP system that utilizes the waste heat compared to purchasing power from the grid and producing heat on site with conventional systems.

Program Objective

The overall objective of the SGB 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 in Arizona is substantial and could contribute significantly to energy conservation while accruing 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;
- Reduced vulnerability to outages or transmission and distribution congestion and restraints;
- Lower energy costs to customer; and
- Lower environmental emissions.

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. Southwest Gas will be working with the U.S. Department of Energy Intermountain Clean Energy Application Center, which offers the studies at no cost. Alternatively, a customer may opt to perform a feasibility study via a third-party contractor and submit the results to Southwest Gas.

Qualifying Measures

Southwest Gas proposes to include several different types of high-efficiency prime movers in the CHP program for PY3 and PY4. Each of the below applications identified for inclusion will be required to exceed the 60 percent minimum efficiency to qualify for incentives under the program.

- **Reciprocating engines** are the most common and most technically mature of all CHP technologies. They are available from small sizes (e.g., 1 kW for residential generation) to large generators (e.g., 7 MW).
- **Combustion turbine** generators are a very mature technology. They typically range in size from about 500 kW to over 300 MW for central power generation. Gas turbines produce high-quality exhaust heat that can be used in CHP configurations to reach overall system efficiencies of 70 to 80%. The efficiency and reliability of smaller gas turbines (1 to 40 MW) are an attractive choice for industrial and large commercial users for CHP applications.

- **Recuperated microturbines** are small combustion turbines that produce between 30 kW and 200 kW of power. While most early product introductions featured un-recuperated designs, todays products are focused on recuperated systems. The recuperator recovers heat from the exhaust gas and boosts the temperature of the air stream supplied to the combustor. Microturbines can produce waste heat (or exhaust) at temperatures in the range of 400-600 degrees Fahrenheit and are suitable for supplying a variety of thermal needs.
- **Steam turbines** are widely used for CHP applications in the U.S. and Europe. The capacity of steam turbines can range from 50 kW to 1,500 MW for large utility power plants. Unlike gas turbine and reciprocating engine CHP systems where heat is a byproduct of power generation, steam turbines normally generate electricity from heat (steam). A steam turbine is captive to a separate heat source and does not directly convert fuel to electric energy. The energy is transferred from the boiler to the turbine through high pressure steam that in turn powers the turbine and generator. This separation of functions enables steam turbines to operate with a wide variety of fuels. In CHP applications, steam at lower pressure is extracted from the steam turbine and used directly in a process or for district heating, or it can be converted to other forms of thermal energy including hot or chilled water.
- **Fuel cells** are an entirely different approach to the production of electricity than traditional prime mover technologies. Fuel cell stacks available and under development are silent, produce no pollutants, have few moving parts, and have relatively high fuel efficiencies. Fuel cells produce power electrochemically from hydrogen delivered to the negative pole (anode) of the cell and oxygen delivered to the positive pole (cathode). The hydrogen is then attracted to the cathode and bonds with the oxygen. The hydrogen can come from a variety of sources, but the most economic method is by reforming of natural gas. There are several different liquid and solid media that support these electrochemical reactions - phosphoric acid (PAFC), molten carbonate (MCFC), solid oxide (SOFC), and proton exchange membrane (PEM) are the most common systems. Each of these media comprises a distinct fuel cell technology with its own performance. Fuel cell efficiencies range from 35-40 percent for the PAFC to upwards of 60 percent for the SOFC systems.

Rebate Amounts, Incremental Costs and Annual Savings

Southwest Gas determined the rebate amounts, incremental costs and annual therm savings by reviewing data from the American Gas Association, Energy Solutions Center, other utility energy efficiency portfolios, and manufacturer published case studies. The annual energy savings of a CHP system will vary dramatically depending upon the size and efficiency of the installed system.

- $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 the 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 the 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 the project.

Rebate amounts, incremental costs, annual savings, estimated participation and cost-effectiveness ratios are provided in Tables 30 and 31 below.

Table 30 – Rebate Amounts, Incremental Customer Costs and Annual Savings

CHP System	Rebate[1]	Incremental Cost	PY3 Unit Gross Annual Savings		PY4 Unit Gross Annual Savings	
			therms	kWh	therms	kWh
Fuel efficiency ≥ 60%	$400/kW	$1,000/kW	105,853	N/A	79,390	N/A
Fuel efficiency ≥ 65%	$450/kW					
Fuel efficiency ≥ 70%	$500/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.

Table 31 – Estimated Participation and Cost-Effectiveness Ratios

Measure	Estimated Participation		Cost-Effectiveness Ratio	
	PY3	PY4	PY3	PY4
CHP System	2	2	2.21	2.30

Program Limitations

The following requirements apply:

- All facilities must be reviewed by Southwest Gas or its designee.
- Total rebates from Southwest Gas funds shall not exceed 50 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 $400,000 and $300,000 for PY3 and PY4, respectively. Table 32 below provides the budget details by category.

Table 32– Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$ 280,000	$ 210,000
Administration	$ 12,000	$ 9,000
Outreach	$ 32,000	$ 24,000
Delivery	$ 68,000	$ 51,000
MV&E	$ 8,000	$ 6,000
Total	**$ 400,000**	**$ 300,000**

Cost-Effectiveness Test Results

Tables 33 and 34 below show the cost-effectiveness test ratio, cost-benefit overview and projected lifetime savings for the SGB Distributed Generation program.

Table 33– Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings	PY3	PY4
Present Value of Savings	$1,498,270	$1,167,130
Present Value of Costs	$678,643	$507,966
Net Social Benefit	$819,627	$659,164
Cost-Effectiveness Ratio	**2.21**	**2.30**

Table 34 – Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	2,117,069	1,587,800
CO_2 (tons)	12,385	9,289

Low-Income Program

Tab

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

Program Description

Southwest Gas proposes to continue to offer the SGB Low-Income Energy Conservation (LIEC) program to income-qualified residential customers in the Company's Arizona service territory. The program is comprised of two components: one provides energy efficient home improvements such as increased insulation, weatherstripping, caulking, etc., otherwise categorized as weatherization; and the other provides emergency assistance to help pay household natural gas bills.

The weatherization component of the program includes: a home energy audit to identify energy efficiency improvements and potential health and safety concerns existing in the home; home weatherization, which may also include appliance repairs or replacements resulting from health and safety concerns; and consumer energy conservation tips, commonly referred to as energy education. The combination of these measures result in cost-effective reductions in 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. This program uses the most advanced technologies and testing protocols available in the housing industry and targets households who lack the resources to invest in energy efficiency.

The bill assistance component to the LIEC program is available to income-qualifying customers in emergency situations and provides up to $400 per year to pay all or a portion of their natural gas bills. The 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.

Both LIEC program components operate on a program year from July 1st through June 30th, as do the other federally-funded programs administered by the Governor's Office of Energy Policy (OEP) and ACAA.

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 energy education in order to reduce energy usage and improve the health and safety of participating households.

Southwest Gas projects that approximately 300 homes will be weatherized and approximately 900 households will participate in the bill assistance component of the program.

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

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. Non-energy benefits that increase the comfort or health and safety of the home are installed under the Health and Safety budget category.

Due to the differences in housing stock and the varying quantity of measures installed in each household, Southwest Gas calculates the cost-effectiveness for the program based on actual energy savings achieved per household. An annual analysis is conducted on a sampling of homes weatherized utilizing APS, TEP, Unisource Gas and Electric, and Southwest Gas utility data. Southwest Gas evaluates this data, along with all approved measures, to ensure overall household energy savings are achieved.

Program Limitations

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

Weatherization Program Administration

The weatherization program will be administered by Southwest Gas, in conjunction with the OEP, community action agencies (agencies), and other Arizona utilities. The OEP manages the Department of Energy's (DOE) Weatherization Assistance Program (WAP) for Arizona and leverages funding from federal, state and utility programs. For the LIEC program, the OEP 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 OEP 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 either 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 OEP strongly focuses on the proper installation techniques for weatherization measures. This reduces the number of "call backs" and failed inspections.

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

Bill Assistance Program Administration

The bill assistance component of the LIEC program is administered by Southwest Gas in conjunction with the ACAA. The ACAA partners with the following ten community-based agencies to distribute bill assistance funds throughout the Company's Arizona service territory:

- The City of Phoenix Human Services Department
- Maricopa County Human Services Department
- Southeastern Arizona Community Action Program
- Western Arizona Council of Governments
- Community Action Human Resources Agency
- Gila County Division of Health and Human Services
- Tucson Urban League
- Pima County Community Action Agency
- City of Glendale Community Action Partnership
- A New Leaf/Mesa Can

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.

The ACAA will submit monthly reports to Southwest Gas for the bill assistance portion of the LIEC program. The reports will detail each agency's funding disbursements by customer and account number. Each of the ten approved agencies will receive base funding budgets of $5,000 each, with the remaining funding distributed according to a formula based on unemployment, customer population and state poverty levels.

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 basic service 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. Additional ongoing outreach activities include:

- Promotion of LIEC Bill Assistance and Weatherization programs on the LIRA application and swgas.com.
- Monthly mailing of *Disconnect Letter* to customers who demonstrate difficulty paying their bills. The letter includes bill assistance resources, energy conservation tips, and a LIRA application.
- Providing support to agencies via local Southwest Gas Community Affairs personnel.
- Providing LIRA/LIEC collateral at outreach events.

- Mailing LIRA/LIEC collateral to over 150 agencies throughout the Company's service territories.
- Communicating regularly with the Governor's Office on Energy Policy to explore targeted, agency requested outreach opportunities, and place ads.
- Attending the biennial Energy Out West Conference to collaborate with agencies, utilities and program managers on LIEC best practices in the Southwest.
- Partnering with schools in service territory in which natural gas efficiency, energy saving tips and LIRA/LIEC collateral is provided (Annual Career Concepts for Youth partnership with Alhambra Elementary School, support of Imago Dei Middle School).
- Supporting annual workshops at Arizona State University West for education students in which natural gas efficiency and energy saving tips are provided for development of activities in the classroom.
- Supplying energy saving tips and posters for teacher workshops hosted by the National Energy Foundation.
- Attend community events, e.g.: Resource Round-up in Casa Grande, Tucson Indian Center's Annual Diversity Career Fair, Maricopa County Mass Application Intake, and The Money Fair.

As part of the settlement agreement approved by the Commission in the Company's most recent general rate case (D. 72723) Southwest Gas developed a Plan to Enhance Customer Education and Outreach for the LIEC weatherization program. The efforts listed below augment the Company's existing outreach efforts:

- Requested agency input on events Southwest Gas can add to its existing efforts to promote LIEC and LIRA.
- Inquired with AARP on best practices to reach senior fixed-income demographic.
- Developed *Energy Saving Tip Sheet* (English/Spanish front/back) for agencies to provide to customers on their waiting list.
- Mailed *Annual Assistance Letter* each September to LIEC Bill Assistance recipients and customers who have demonstrated difficulty paying their bills. The letter includes bill assistance resources, energy conservation tips, and a LIRA application.
- Developed new LIEC Weatherization Postcard for use at events and targeted mail efforts.
- Hosted annual Low-Income Energy Assistance agency and utility collaborative workshop.

- Coordinated with Boys and Girls Clubs, YMCA's, and Arizona Head Start Agency to distribute youth oriented *Energy Saving Tip Sheets* and to make LIRA applications available on site.
- Provided slide promoting LIEC/LIRA for TV monitors in local career centers or agency waiting rooms.

In addition, Southwest Gas communicates with the two administrative agencies, OEP and ACAA, to determine the value of additional promotion of the two program components. Southwest Gas will continue to monitor the need for promotion and will place ads accordingly and with local agency agreement.

Budget

Southwest Gas proposes a total estimated annual budget of $650,000. This budget is comprised of $450,000 DSM dollars, and $200,000 of Southwest Gas shareholder dollars. Table 35 below provides the details for the weatherization program components.

Table 35 – Estimated Budget – Weatherization Component

Description	PY3	PY4
Weatherization	$351,580	$351,580
Health & Safety	$117,193	$117,193
Subtotal Weatherization	**$468,773**	**$468,773**
Special Project	$60,000	$60,000
Training and Monitoring Costs	$20,000	$20,000
Subtotal Program Supplements	**$80,000**	**$80,000**
Administration - Governor's Office on Energy Policy	$31,350	$31,350
Administration - Community Action Agencies	$46,877	$46,877
Program Communication and Outreach - SWG	$23,000	$23,000
Subtotal Program Support	**$101,227**	**$101,227**
Total LIEC Weatherization Program Budget	**$650,000**	**$650,000**
DSM Program Funding [1]	**$450,000**	**$450,000**
Southwest Gas Shareholder Funding [2]	**$200,000**	**$200,000**

[1] Southwest Gas recovers costs for DSM funding via an adjuster mechanism filed annually.
[2] Per Decision No. 72723.

Weatherization 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 OEP 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.

Funds not utilized under the Special Project or Health and Safety budget are transferred back into the overall weatherization budget and distributed to the agencies to weatherize more dwelling units. The Health and Safety budget may not exceed 25 percent of each agency's total annual budget.

Southwest Gas proposes an increase to the administrative budget from 7.5 percent to 15 percent as demonstrated in Table 36 below. ACAA will retain its current 7.5 percent allocation. The additional 7.5 percent will be divided among the ten agencies currently distributing Southwest Gas funds based upon current funding distribution levels.

Table 36 – Estimated Budget – Bill Assistance Component

Description	PY3	PY4
Emergency Bill Assistance	$170,000	$170,000
Administration - ACAA	$15,000	$15,000
Administration - Community Action Agencies	$15,000	$15,000
Total	**$200,000**	**$200,000**

Cost-Effectiveness Test Results

The cost-effectiveness test ratio for the weatherization component of the LIEC program, along with the cost-benefit overview and projected lifetime savings, is shown below in Tables 37 and 38.

Table 37 – Cost-Benefit Overview

Cost-Benefit Overview: Lifetime Savings[1]	PY3	PY4
Present Value of Savings	$1,748,675	$1,756,935
Present Value of Costs	$666,578	$665,399
Net Social Benefit	$1,082,097	$1,091,536
Cost-Effectiveness Ratio	**2.62**	**2.64**

[1] The Cost-Benefit Overview: Lifetime Savings for the SGB LIEC: Weatherization program includes estimated savings for the additional $200,000 shareholder funds added to the program budget per Decision No. 72723.

Table 38 – Projected Lifetime Savings

Energy and Environmental Benefit Overview: Lifetime Savings	PY3	PY4
Natural Gas (therms)	276,750	276,750
Electricity (MWh)	53,206	53,206
CO_2 (tons)	42,087	42,087

[1] The Energy and Environment Benefit Overview: Lifetime Savings for the SGB LIEC: Weatherization program includes estimated savings for the additional $200,000 shareholder funds added to the program budget per Decision No. 72723.

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 a significant cost to 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.

Renewable Energy Resource Technology Program

Tab

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

Program Description

Southwest Gas proposes to continue to offer the SGB Solar Thermal Rebates program to residential and non-residential customers in Southwest Gas' 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.

Qualifying Customers

All active Southwest Gas residential and non-residential customers located in Southwest Gas' 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 installed in conjunction with 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 are shown in Table 39 below.

Table 39 – Qualifying Measure Specifications

Measure	Specification
Residential Solar Water Heating Systems	Collectors must be OG-100 certified[1]
Non-Residential Solar Water Heating Systems	Collectors must be OG-100 certified[1]
Non-Residential Solar Pool Heating Systems	Collectors must be OG-100 certified[1]

[1] OG-100 certifications issued by the Solar Rating and Certification Corporation, a Southwest Gas approved Nationally Recognized Testing Laboratory, or an American National Standards Institute accredited certifying organization.

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. Rebate amounts were maintained at the minimum rebate levels needed to constitute a feasible marketing message to positively affect customer behavior. Rebate amounts, incremental costs, annual savings and estimated participation are provided in Tables 40 and 41 below.

Table 40 – Rebate Amounts, Incremental Customer Costs and Annual Savings

Measure	Rebate[1]	Incremental Cost	Unit Gross Annual Savings	
			therms	kWh
Residential Solar Water Heating Systems	$15.00/therm	$3,850	135	N/A
Non-Residential Solar Water Heating Systems	$15.00/therm	$9,625	1,286	N/A
Non-Residential Solar Pool Heating Systems	$15.00/therm	$60,000	3,750	N/A

[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.

Table 41 – Estimated Participation

Measure	Estimated Participation	
	PY3	PY4
Residential Solar Water Heating Systems	120	95
Non-Residential Solar Water Heating Systems	12	7
Non-Residential Solar Pool Heating Systems	5	5
Total	**137**	**107**

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 and non-residential customers.

Southwest Gas' 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 $1 million and $800,000 for PY3 and PY4, respectively. Table 42 below provides the budget details by category.

Table 42 – Total Estimated Budget

Description	Estimated Budget	
	PY3	PY4
Rebates	$738,800	$591,040
Administration	$15,000	$12,000
Outreach	$50,000	$40,000
Delivery	$186,200	$148,960
MV&E	$10,000	$8,000
Total	**$1,000,000**	**$800,000**

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 may participate in many of the Company's energy efficiency programs.

Human, Economic, and Societal Benefits

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 renewable programs also provide quantifiable societal benefits in terms of pollution reduction, thereby creating a better quality of life for Arizonans.