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BEFORE THE ARIZONA CORPORATION COMMISSION

MIKE GLEASON  
Chairman  
WILLIAM A. MUNDELL  
Commissioner  
JEFF HATCH-MILLER  
Commissioner  
KRISTEN K. MAYES  
Commissioner  
GARY PIERCE  
Commissioner

Arizona Corporation Commission

DOCKETED

SEP 27 2007

DOCKETED BY nr

IN THE MATTER OF THE APPLICATION  
OF SOUTHWEST GAS CORPORATION -  
FILING FOR APPROVAL OF ITS  
DISTRIBUTED GENERATION PROGRAM

DOCKET NO. G-01551A-04-0876

DECISION NO. 69917

ORDER

Open Meeting  
September 18 and 19, 2007  
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

1. Southwest Gas Corporation ("Southwest") is engaged in providing natural gas within portions of Arizona, pursuant to authority granted by the Arizona Corporation Commission.

2. On June 26, 2006, Southwest Gas Corporation ("Southwest") filed an application for approval of its Distributed Generation ("DG") program, as required by Decision No. 68487. Decision No. 68487 required that the Company file detailed descriptions of its demand-side management programs within 120 days of the Commission's February 23, 2006 Order approving rate changes effective March 1, 2006.

3. The proposed program would be newly-implemented. The DG program is one of seven DSM programs included in Southwest's 2006 Arizona Demand Side Management Program Plan.

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1           4.     Under the proposed DG program, Southwest would provide incentives to  
2 commercial and industrial customers installing on-site power generation with a focus on combined  
3 heat and power ("CHP") technologies. CHP technologies capture byproduct heat created during  
4 electric power generation and use it for heating and cooling, or to generate additional electricity.  
5 To be eligible for incentives, a CHP program would have to achieve 60-70% fuel efficiency.  
6 Southwest indicates that natural gas savings would be generated through a combination of therms  
7 saved on-site through heat recovery and energy saved through avoided electricity transmission and  
8 distribution losses ("line losses").<sup>1</sup> Southwest estimates that, under the DG program, from one to  
9 four projects will receive incentives each year.

10           5.     In order for a CHP project to be cost-effective, a CHP unit must generate the right  
11 electrical and thermal loads to meet a specific facility's needs. A primary consideration is whether  
12 or not the facility can use the waste heat generated by the CHP unit. For example, at a facility  
13 utilizing boilers, heat that would otherwise be wasted would be used, instead, to offset the amount  
14 of natural gas needed to run the boilers. Southwest has indicated that the types of facilities that are  
15 best able to meet these parameters include the following:

- 16           a.     Hospitals with central boilers;
- 17           b.     Hotels and apartments with central boilers;
- 18           c.     Manufacturing or processing facilities with central boilers or the need for process  
19               heat; and
- 20           d.     Universities/colleges with central heating and cooling.

21           6.     Although CHP technologies are the focus of the DG program, Southwest states that  
22 peak-shaving and new natural gas technologies may be included as well. (New natural gas  
23 technologies would include fuel cells and microturbines.) Neither peak-shaving technologies nor  
24 new natural gas technologies would be subject to fuel efficiency standards, but both must displace  
25 thermal energy during system operations to be eligible for participation.

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28     <sup>1</sup> Lines losses are avoided because of on-site generation.

1           7.     If the DG program is approved, Staff has recommended that Southwest restrict  
2 participation to projects that Southwest can demonstrate are cost-effective under the Societal Test,  
3 and which offer the greatest potential for natural gas savings, in addition to the kWh savings  
4 typically provided by such projects. Given the high cost of DG projects and the individual  
5 requirements of each facility seeking to install distributed generation, each project needs to be  
6 evaluated to confirm that cost-effective natural gas savings are available. Staff has recommended  
7 that energy savings from each project be documented and included with Southwest's semi-annual  
8 DSM reports.

9           8.     Staff has recommended that peak shaving technologies not be funded through  
10 Southwest's DG program; the savings from peak shaving technologies are generally confined to  
11 avoided line losses, do not involve heat recovery, and would result in limited or no natural gas  
12 savings. Staff also recommends that neither fuel cells nor microturbines be funded through  
13 Southwest's DG program at this time. The above technologies may have value as distributed  
14 generation, but Staff considers them more as supply resources, rather than as DSM. Another  
15 consideration is that Southwest indicates in its program plan that commercial fuel cells and  
16 microturbines are more expensive than other distributed generation technologies. In its response to  
17 Staff's data requests Southwest goes on to describe these technologies as "generally not cost-  
18 effective." Should new technologies become available that would provide natural gas DSM  
19 savings in a cost-effective manner, Southwest could submit the programs utilizing these  
20 technologies to the Commission for approval.

21           9.     Participation would be restricted to Southwest customers in Arizona. Most  
22 participants would be Southwest's general service or transportation tariff customers.  
23 Municipalities, schools, restaurants, hospitals, hotels and multi-family buildings are among the  
24 customers who could benefit from existing CHP technologies. As stated elsewhere, to benefit  
25 economically from installation of a CHP unit, a facility must have a use for the waste heat captured  
26 by the CHP unit.

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## Estimated Participation

Year 1	1-2 installations, 700 kW
Year 2	1-3 installations, 700 kW
Year 3	2-4 installations, 700 kW

10. The DG/CHP program would be marketed primarily through the recently approved Technology Information Center ("TIC") program, as well as through existing Southwest resources. Targeted participants will receive emailed TIC newsletters with information on distributed energy. There will also be direct contacts by Southwest personnel, direct mailings to energy representatives at government facilities, and seminars or workshops.

11. Under the proposed DG program, incentives would be provided to users and developers of CHP and other DG projects. The program incentives are intended to reduce payback investment periods. Below are the incentives proposed by Southwest:

SYSTEMS	INCENTIVES
CHP system with 70% fuel efficiency	\$500 per kW, up to 50% of installed cost
CHP system with 65% fuel efficiency	\$450 per kW, up to 50% of installed cost
CHP system with 60% fuel efficiency	\$400 per kW, up to 50% of installed cost
Peak-shaving systems demonstrating thermal displacement <sup>2</sup>	\$400 per kW
New natural gas technologies demonstrating thermal displacement <sup>3</sup>	\$400 per kW

12. Staff has recommended that the incentives be reviewed by Southwest no less than annually to determine whether program participation can be maintained with the incentives either reduced or eliminated.

13. Initial information concerning Southwest's DG program would be emailed, in the TIC newsletter, as stated above. During the implementation process, Southwest Key Account Management engineers would work with the customers, and will verify energy savings and demand reductions. Incentive payments would be processed by Southwest or its contractor, and Southwest Key Account Management engineers would oversee delivery of the incentives. In addition, Southwest would retain the services of a design consultant to perform energy studies. The design consultant would work with Southwest and potential program participants to determine whether proposed projects would be economical.

<sup>2</sup> Staff has recommended that peak shaving technology projects not be funded through Southwest's DG program.

<sup>3</sup> New natural gas technologies are not recommended for inclusion in Southwest's DG program at this time.

1 14. Southwest will track and verify energy savings and demand reductions resulting  
 2 from the DG program. Southwest will also track the number of installations and technological  
 3 information. In addition, Staff has recommended that energy savings for individual projects be  
 4 determined and documented, and that this documentation be included in Southwest's semi-annual  
 5 DSM reports.

6 15. Southwest proposes a \$400,000 annual budget. Most of the budget is allocated to  
 7 incentives, while the proposed marketing, administration and implementation costs are  
 8 comparatively low at 12.5% of the total.

9 Annual Budget proposed by Southwest, 2007-2009

Category	Amount	Percentage
Implementation: Outside contractors	\$ 22,000 <sup>4</sup>	5.5%
Communication: Brochures/Printing/Design	\$ 8,000	2.0%
Training and Education: Seminars/workshops	\$ 10,000	2.5%
Incentives	\$350,000	87.5%
Measurement/Evaluation: Outside contractors	\$ 8,000	2.0%

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 15 16. Southwest supplied a case model, for a 700 kW CHP engine with 50% heat  
 16 recovery, also assuming a 2,000 kW customer with a 50% load factor, 25,000 therms per month  
 17 natural gas usage, and a 33% efficient central power plant with 7.5% in line losses. Based on this  
 18 model, as modified during Staff's analysis, the cost-effectiveness ratio for a project similar to the  
 19 model would be: 3.79. Staff notes that the benefits and costs of each CHP project would be  
 20 different and that energy savings, cost-effectiveness or even the overall suitability of a facility for  
 21 CHP can not be assumed without individual analysis.

22 17. Although cost-effective, many, if not most, CHP projects would produce significant  
 23 electric savings at the cost of a net increase in the amount of natural gas used on-site. A natural  
 24 gas-fueled CHP unit that both generates on-site electricity and saves waste heat for boilers, may  
 25 use more natural gas to perform these two functions than it saves through capturing the waste heat.

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 28 <sup>4</sup> The Implementation budget covers the cost of energy studies to be done by design consultants. See discussion in this report, under "Delivery Strategy."

1 A net decrease in the amount of natural gas used on-site is possible in some cases, in addition to  
 2 the electric savings; one example would be a CHP project that replaces incorrectly-sized boilers  
 3 with boilers appropriate to the facility's needs. As stated earlier, Southwest should select CHP  
 4 projects that are not only cost-effective, but which demonstrate the greatest potential for natural  
 5 gas savings, in addition to kWh savings.

6 18. Off-site, or system-wide, savings provided by CHP projects should also be taken  
 7 into account in evaluating CHP projects. Avoided line losses are savings of electricity at the  
 8 margin, and electric savings at the margin are usually savings of electricity that would have been  
 9 generated through the burning of natural gas. This means that, on a system-wide basis, on-site  
 10 generation of electricity through a CHP unit generates natural gas savings as well as electric  
 11 savings.

12 19. Staff has recommended that the status of the DG program, and the documented  
 13 energy savings for each funded project, be reported in Southwest's semi-annual DSM reports. The  
 14 information should include: (i) the number of installations; (ii) a description of the specific project  
 15 or projects; (iii) energy savings in therms and kWh, both on-site and from transmission and  
 16 distribution savings; (iv) demand reductions resulting from the project or project; and (v) the  
 17 results of Southwest's incentive review.

18 20. Environmental benefits for each CHP project will vary according to facility and  
 19 project. Southwest estimated environmental benefits for a 700 kW CHP project, which Staff has  
 20 modified based on its research. Staff research indicates that emission savings from CHP projects  
 21 are generally very large on a per-project basis.

ENVIRONMENTAL BENEFITS

Annual Savings	CO <sub>2</sub> (lbs)	NO <sub>x</sub> (lbs)	SO <sub>x</sub> (lbs)
2007	2,545,453	477	12
2008	2,545,453	477	12
2009	2,545,453	477	12
<b>Lifetime Savings</b>	152,727,160	28,620	720

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 25 21. Because they are on-site, CHP projects are less vulnerable to outages and increase  
 26 the reliability of the energy supply for the facilities where they are located. In addition, each CHP  
 27 project, by reducing overall demand, contributes to the reliability of local electrical grids.

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Summary of Staff Recommendations

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2           22. Staff has recommended that Southwest restrict participation to projects that  
3 Southwest can demonstrate are cost-effective under the Societal Test, and which offer the greatest  
4 potential for natural gas savings, in addition to the kWh savings typically provided by such  
5 projects.

6           23. Staff has recommended that peak shaving technologies not be funded through  
7 Southwest's DG program; the savings from peak shaving technologies are generally confined to  
8 avoided line losses, do not involve heat recovery, and would result in limited or no natural gas  
9 savings. Staff also recommends that neither fuel cells nor microturbines be funded through  
10 Southwest's DG program at this time. The above technologies may have value as DG, but Staff  
11 considers them more as supply resources, rather than as DSM. Another consideration is that  
12 Southwest indicates in its program plan that commercial fuel cells and microturbines are more  
13 expensive than other distributed generation technologies. In its response to Staff's data requests  
14 Southwest goes on to describe these technologies as "generally not cost-effective." Should new  
15 technologies become available that would provide natural gas DSM savings in a cost-effective  
16 manner, Southwest could submit the programs utilizing these technologies to the Commission for  
17 approval.

18           24. Staff has recommended that the incentives be reviewed by Southwest no less than  
19 annually to determine whether program participation can be maintained with the incentives either  
20 reduced or eliminated.

21           25. Staff has recommended that the status of the DG program, and the documented  
22 energy savings for each funded project, be reported in Southwest's semi-annual DSM reports. The  
23 information should include: (i) the number of installations; (ii) a description of the specific project  
24 or projects; (iii) energy savings in therms and kWh, both on-site and from transmission and  
25 distribution savings; (iv) demand reductions resulting from the project or projects; and (v) the  
26 results of Southwest's incentive review

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CONCLUSIONS OF LAW

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2 1. Southwest is an Arizona public service corporation within the meaning of Article  
3 XV, Section 2, of the Arizona Constitution.

4 2. The Commission has jurisdiction over Southwest and over the subject matter of the  
5 application.

6 3. The Commission, having reviewed the application and Staff's Memorandum dated  
7 September 5, 2007, concludes that it is in the public interest to approve the DG program.

ORDER

8  
9 IT IS THEREFORE ORDERED that the DG program be and hereby is approved, as  
10 recommended by Staff.

11 IT IS FURTHER ORDERED that Southwest restrict participation to projects that it can  
12 demonstrate are cost-effective under the Societal Test, and which offer the greatest potential for  
13 natural gas savings, in addition to the kWh savings typically provided by such projects.

14 IT IS FUTURE ORDERED that peak shaving technologies not be funded through  
15 Southwest's DG program.

16 IT IS FURTHER ORDERED that neither fuel cells nor microturbines be funded through  
17 Southwest's DG program at this time.

18 IT IS FURTHER ORDERED that the incentives be reviewed by Southwest no less than  
19 annually to determine whether program participation can be maintained with the incentives either  
20 reduced or eliminated.

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 2 energy savings for each funded project, be reported in Southwest's semi-annual DSM reports. The  
 3 information should include: (i) the number of installations; (ii) a description of the specific project  
 4 or projects; (iii) energy savings in therms and kWh, both on-site and from transmission and  
 5 distribution savings; (iv) demand reductions resulting from the project or projects; and (v) the  
 6 results of Southwest's incentive review.

7 IT IS FURTHER ORDERED that this Decision shall become effective immediately.

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9 **BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION**

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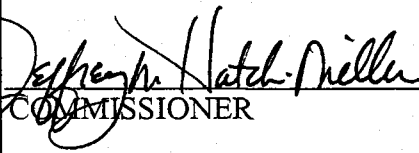
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CHAIRMAN

COMMISSIONER

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COMMISSIONER



COMMISSIONER



COMMISSIONER

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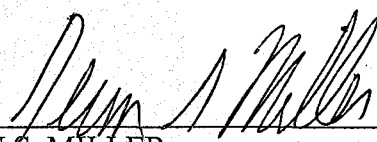
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IN WITNESS WHEREOF, I DEAN S. MILLER, Interim  
 Executive Director of the Arizona Corporation Commission,  
 have hereunto, set my hand and caused the official seal of  
 this Commission to be affixed at the Capitol, in the City of  
 Phoenix, this 27<sup>th</sup> day of September, 2007.

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DEAN S. MILLER  
 Interim Executive Director

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DISSENT 

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DISSENT: \_\_\_\_\_

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EGJ:JMK:tdp\JMA

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