



ARIZONA PUBLIC SERVICE COMPANY

**2009 RENEWABLE ENERGY STANDARD
COMPLIANCE REPORT**

April 1, 2010

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I. Executive Summary

Pursuant to the Arizona Corporation Commission's ("Commission") Renewable Energy Standard ("RES") Rule R14-2-1812, Arizona Public Service ("APS" or "Company") is providing its RES Annual Compliance report covering the period from January 1, 2009 through December 31, 2009.

In 2009, APS's customers embraced renewable energy at record levels despite the difficult economic times. The Company had its strongest year since the inception of the RES, exceeding the 2009 RES requirement by 5 percent.

At the end of 2009, APS customers received 653,800 megawatt-hours ("MWh") – or 2.3 percent of the total generation mix – from renewable energy sources. These were obtained through Purchase Power Agreements ("PPAs"), APS-owned and -operated projects, and Distributed Energy ("DE") sources sited at the customer's property.

Procurement efforts initiated in prior periods and completed in 2009 added 103 megawatts ("MW") of new renewable energy capacity to the APS system. Specifically, two new sources of renewable energy were added to APS's generation mix:

- The High Lonesome Wind Ranch ("High Lonesome"), based in Torrance County, New Mexico, came online in July 2009, adding 100 MW of renewable energy capacity. High Lonesome provided 107,838 MWh from July through the balance of the year. Its annual output is expected to be 300,000 MWh.
- The 2.8 MW Glendale Landfill Biogas facility was completed at the end of 2009. Although it did not begin operation until 2010, APS did receive a small amount of test energy in 2009. The expected annual output of the facility is 21,000 MWh.

With energy from these new projects APS's renewable generation from utility-scale projects totaled 604,414 MWh.¹ This was 126 percent of the RES renewable generation requirement of 478,946 MWh.

The Company continues to engage the energy markets to identify new renewable resource opportunities. In March, APS initiated a Request for Proposal ("RFP") for utility-scale projects. This RFP resulted in several small photovoltaic ("PV") projects located across Arizona.

While APS made great strides with utility-scale renewable generation during the year, 2009 will most notably be remembered as the year APS customers fully embraced the Company's distributed solar energy programs. APS customers installed more solar

¹ This includes a multiplier of 50 percent for the output of in-state solar resources that were installed prior to December 31, 2005.

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panels on their homes and businesses in 2009 (1,396) than in the last eight years combined (1,286).

Residential customers generated 31,227 MWh from distributed sources in 2009 versus 11,438 MWh in 2008, a 173 percent increase.

Non-residential DE saw explosive growth as well. APS received 18,158 MWh of non-residential customer sited generation in 2009 compared to 5,887 kW in 2008, a 208 percent increase year-over-year.

APS continues to regain ground on meeting the cumulative DE goal of 84,520 MWh. Because APS surpassed its incremental residential yearly goal for DE by 17%, the Company was within 5 percent of meeting the overall yearly goal. Given strong program growth in the fourth quarter of 2009, forecasts have APS surpassing the DE goal sometime in 2010, a remarkable feat considering 2008 ended 66 percent behind the cumulative DE goal.

The increases described above can be attributed to a number of factors, including the natural progression for the marketplace to embrace a new product or service and the elimination of the \$2,000 cap on the 30 percent investment tax credit for adding DE to a customer's home or business.

Customer awareness of Commission-approved DE programs resulting from ongoing APS marketing efforts was also a factor. Over 66% of residential customers and 63% of non-residential customers were aware of available DE programs as a result of the Company's advertising efforts. Radio and television advertisements featuring Phoenix Suns All-Star Steve Nash aired more than 10,000 times in 2009, and cooperative print ads were seen by more than 4.6 million consumers. Related areas on the Company's website (aps.com) received more than 200,000 hits.

APS also launched several new initiatives in 2009, including:

- The Community Power Project – Flagstaff Pilot, where APS would own, operate and receive energy from solar panels on customer rooftops that are suitable for the project. Customers would receive a long-term Community Power Rate for the solar portion of their bill. This filing is pending Commission approval.²
- The Distributed Energy Public Assistance Program, which helps limited income, non-profit and governmental customers with acquiring solar and other renewable energy systems.

² Filed May 11, 2009 in Docket No. E-01345A-09-0227.

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- An online reservation system, which streamlines the incentive fund reservation and allocation process. The system awards incentives in order, starting with distributed projects that provide the most energy at the lowest cost.

- A study completed on 100 residential PV systems found the typical solar installation in the APS service territory produces 1,694 kWh/kW, slightly higher than reported in 2008.

In addition to APS's efforts under the RES requirements, APS also offers its customers renewable pricing plans such as the Green Choice Rate program and the Total Solar Rate.

APS experienced significant growth within its renewable energy programs during 2009 and anticipates this trend will continue through 2010.

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II. 2009 Renewable Energy Standard Results

A. Compliance with Renewable Energy Standard Requirements

For the calendar year 2009, the Commission established an annual Renewable Energy Standard (“RES”) requirement of 2.0 percent of a utility’s 2009 total retail kWh sales, with 15 percent of that requirement to be satisfied through energy received from DE resources.³ For APS, these percentages equate to a total 2009 RES requirement of 563,466 MWh, of which 84,520 MWh are to be derived from DE resources.

The Company’s 2009 renewable portfolio equaled 653,800 MWh, which corresponds to approximately 2.3 percent of the Company’s total 2009 retail sales, exceeding the Company’s overall 2009 RES requirements. However, despite a marked increase in customer interest in DE resources, renewable energy generated through DE installations fell short of the 2009 RES DE requirement, as the Company received a total of 49,386 MWh from DE resources located on customers’ property. Although APS did not meet the 2009 absolute DE requirement, it is important to note that the targeted year-over-year DE growth rate included in the RES requirements (i.e., the 2009 incremental annual DE requirement) was achieved.⁴ This accomplishment highlights the success of the Company’s Renewable Energy Incentive Program (“REIP”) even during a year in which the nation’s economic downturn restricted customer ability to take advantage of incentive programs.

The detailed derivation of the Company’s overall total RES compliance is shown in Table 1. The net renewable portfolio position includes annualization of DE resources, the effect of in-state solar installation multipliers, and an adjustment made for energy sales supported through the Company’s Green Choice program.^{5,6}

³ A.A.C. R14-2-1804(B) and R14-2-1805(B).

⁴ The 2009 year-over-year DE requirement within the RES for APS was 33,940 MWh (the 2009 APS DE requirement of 84,520 MWh less the 2008 APS DE requirement of 50,580 MWh), while the Company’s actual increase in DE between 2008 and 2009 was 32,061 MWh (2009 achieved DE of 49,386 MWh less the 2008 achieved DE of 17,325 MWh).

⁵ Pursuant to AAC R14-2-1806, a multiplier of .5 is used in the RES for in-state solar installations prior to December 31, 2005.

⁶ Green Choice sales are not counted towards compliance with the Company’s RES requirements pursuant to A.C.C. Decision No. 70313.

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Table 1:

2009 Overall Renewable Portfolio Results

	<u>MW</u> <u>(capacity)</u>	<u>MWh</u> <u>(energy)</u>
Renewable Generation		
Wind ¹	215.0	427,470
Biomass	14.5	93,890
Landfill Gas	2.8	700
Geothermal	10.0	67,290
Solar ²	6.6	10,043
Renewable Generation	248.9	599,393
Multiplier ³	-	5,021
<i>Renewable Generation Total</i>	248.9	604,414
Distributed Energy^{4,5}		
Solar Electric	21.1	34,228
Wind	0.1	121
Biogas	0.3	3,929
Solar Space Heating	n/a	159
Solar Water Heating	n/a	8,561
Solar Pool Heating	n/a	72
Geothermal Space Heating	n/a	674
Solar HVAC	n/a	726
<i>Subtotal: Distributed Energy</i>	21.5	48,472
Multiplier ³	-	914
<i>Distributed Energy Total</i>	21.5	49,386
Renewable Portfolio Position		
<i>Total Renewable Portfolio (Including Multipliers)</i>		653,800
Less Green Choice Rate Sales ⁶		(63,219)
Net Renewable Portfolio Position (including all adjustments)		590,581
	RES Compliance Requirement (2.00% of retail sales) ⁷	563,466
	<i>% Achievement of Overall RES Goal</i>	105%
	<i>Renewable Portfolio Position (+/-) relative to RES Compliance</i>	27,115

Notes to Table 1:

¹ Includes short term wind contract for period of Mar - May 2009.

² Actual MWh generation.

³ RES multiplier for in-state solar installations prior to December 31, 2005.

⁴ Annualized energy production capacity.

⁵ Approximately 31,227 MWh Residential, 18,158 MWh Non-Residential.

⁶ APS does not count Green Choice sales towards the RES pursuant to Commission Decision No. 70313.

⁷ Based on 2009 retail sales of 28,173,296 MWh.

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B. Renewable Energy Standard Budget

A total of \$9.9 million dollars has been carried forward to the 2010 RES budget. Of that amount, \$5.4 million was carried over from pre-2009 budget years. While the amount of pre-2009 uncommitted funds originally equaled \$8.3 million, the Company utilized \$2.9 million dollars of this amount in 2009 to supplement customer sited distributed incentives. Additionally, approximately \$4.5 million in funds collected through the RES adjustor in 2009 has been carried forward to the 2010 RES budget. Of this \$4.5 million, approximately \$3.2 million dollars was not spent due to delays in commercial operation of new renewable utility scale facilities scheduled in the original budget. Small variances in Non-Energy Costs contributed to the remaining \$1.3 million of 2009 funds available for rollover.

Table 2.

Uncommitted funds included in the APS 2010 RES Implementation Plan:

\$ 8.3 million	(pre-2009 uncommitted funds)
<u>\$ 2.9 million</u>	<u>(rollover utilized in 2009)</u>
\$ 5.4 million	(remaining pre-2009 uncommitted funds) ⁷
\$ 3.2 million	(2009 renewable generation purchased power)
<u>\$ 1.3 million</u>	<u>(2009 other non-energy costs)</u>
\$ 4.5 million	(2009 uncommitted funds)
\$ 9.9 million	(net funds to apply toward 2010 compliance)

Revenues and expenditures associated with the RES for the year 2009 are outlined in Table 3.

⁷ The \$5.4 million has been proposed to be used for the Community Power Project – Flagstaff Pilot, Docket No. E-01345A-0227.

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Table 3:

2009 RES Associated Revenues and Costs

Collected (Revenues)	
System Benefit Charge (SBC) Revenue ¹	\$ 6,000,000
Renewable Energy Standard (RES) Revenue	73,454,150
Green Choice Revenue	504,489
Solar Partners Revenue	182,999
Miscellaneous Revenue	-
2008 Committed Accrual ²	12,194,529
Funds from 2008 - Uncommitted Carry forward	8,296,109
Total: Collected	\$ 100,632,276
Spent / Committed (costs)	
<i>Energy/ Incentives</i>	
Renewable Generation Purchased Power	\$ 6,429,090
APS-owned Solar Maintenance	112,250
Distributed Incentives:	
Paid	\$ 32,498,223
Annual Commitment ³	38,701,289
Total Distributed Incentives	\$ 71,199,512
Subtotal: Energy and Incentives	\$ 77,740,851
<i>Non-Energy Costs</i>	
Administration & Implementation	5,353,455
Information Services ⁴	800,091
Commercialization & Integration ⁴	1,500,000
Marketing & Outreach ⁴	5,400,000
Subtotal: Non-Energy Costs	\$ 13,053,546
Total: Spent / Committed	\$ 90,794,397
Net Adjustor Balance	\$ 9,837,879

Notes to Table 3:

¹ Collected from base rates.

² Funds collected in 2008 that were committed to cover customer reservations and short-term purchases, but not spent by 12/31/2008.

³ Includes utilization of pre-2009 uncommitted funds.

⁴ Includes contractual milestone payments that were not actualized in calendar year 2009.

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C. Renewable Energy Credit Bank Reconciliation

As discussed in the Company's approved 2008 RES Implementation Plan, APS will use RES eligible banked energy to fill compliance shortfalls from time to time. APS expects these shortfalls may occur as production from generation currently under contract fluctuates and new projects experience construction or operational delays. Some of the renewable generation bank was established using RES eligible energy procured prior to the effective dates of the RES rules.⁸ After that date, changes to the bank are expected withdrawals to meet compliance and deposits from excess generation in any given year. In other words, withdrawals of the entire bank will be made first to meet compliance, then the current year's eligible renewable generation will be used to meet any remaining compliance amount. Any remainder after all compliance goals are met shall be the current year's ending bank balance. A table detailing the banking reconciliation is provided in Attachment 1.

⁸ The RES rules became effective on August 14, 2007.

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III. APS's Renewable Energy Standard Efforts

A. Renewable Generation Efforts

As outlined in the RES rules, a subset of the total RES requirement can be derived from non-distributed renewable energy resources (referred to in this report as "Renewable Generation"). For the calendar year 2009, this Renewable Generation requirement translated to 478,946 MWh of the Company's total RES requirement of 563,466 MWh. APS achieved a total of 604,414 MWh of renewable generation energy production in 2009, exceeding the requirement by over 25 percent. The composition of the resources used to achieve this outcome is described in detail below. Table 4 summarizes the renewable resource categories which comprise the Renewable Generation portion of the Company's total 2009 RES requirement.

Table 4.

2009 Renewable Generation Resources

	Actuals	
	MWh (energy)	MW (capacity)
Wind ¹	427,470	215.0
Biomass	93,890	14.5
Landfill Gas	700	2.8
Geothermal	67,290	10.0
Solar ²	15,064	6.6
Total Renewable Generation Resources	604,414	248.9
<i>RES Requirement: Non-DE only target</i>	<i>478,946</i> ³	
<i>% Achievement of Non-DE RES Goal</i>	<i>126%</i>	

Notes to Table 4:

¹ 2009 actual wind includes a short-term purchase agreement.

² Actuals includes RES multiplier for in-state solar installations prior to December 31, 2005.

³ Reflects renewable generation requirement based on actual 2009 retail sales.

1. Small Generation Request for Proposal

In the Company's 2009 RES Implementation Plan, APS received approval to implement a one year Small Generation Pilot Program for projects producing less than 35,000 MWh per year.⁹ The program was available to all RES eligible technologies, but was limited to a total of 45,000 MWh per year. APS issued a competitive solicitation in March 2009, and a bidder's conference was held in April 2009 to provide additional information and answer questions related to the Request for Proposal. Over one hundred people attended

⁹ Decision No. 70654 (December 18, 2008).

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the bidder's conference either by phone or in person. More than 20 qualifying bids were received in June 2009, with nearly all of those bids proposing solar technologies. APS shortlisted five bidders in July 2009. APS executed agreements for photovoltaic ("PV") projects in Prescott (10 MW), Buckeye (6 MW), and Ajo (4.5 MW) in the first quarter of 2010. This competitive solicitation targeted a unique and robust market segment, which historically has been challenged in competitive solicitations by typically more economic large-scale projects. Further, the Company continues to seek opportunities to increase the development of other technologies, in addition to solar. APS currently plans to issue another Small Generation competitive solicitation in the second quarter of 2010.

2. Renewable Generation Resources

The Company's portfolio of renewable generation includes a diversity of resources which qualify as renewable facilities and whose energy is applied toward the non-DE target of the RES. These facilities, as well as future resources that are currently under contract but have not yet entered commercial operation, are described below:

a) Generation in Operation

The outputs of the following agreements are eligible for RES compliance in 2009:

Wind Resources

Aragonne Mesa

Aragonne Mesa is a 90 MW wind facility located in Guadalupe County, NM. The facility is owned and operated by Babcock and Brown. The facility went into commercial operation in December of 2006. Total output for 2009 was 266,322 MWh.

High Lonesome Wind Ranch

High Lonesome Wind Ranch ("High Lonesome") is a 100 MW wind generation facility located in Torrance County, New Mexico. The facility is owned and operated by High Lonesome Mesa, LLC. The facility entered commercial operation in July 2009 and generated a total of 107,838 MWh in 2009. Yearly output for the project is approximately 300,000 MWh.

Short-Term Wind

APS executed a PPA for 25 MW of wind energy (firmed with geothermal and hydro resources) in 2009. This unique agreement extended from March through May and provided an opportunity for a high quality resource to be integrated into the APS portfolio and generated a total of 53,310 MWh to the Company.

Geothermal Resources

CE Turbo

CE Turbo is a 10 MW geothermal facility located in Imperial County, CA owned and operated by Cal Energy. The facility began delivering power to APS in January of 2006, and output for 2009 was 67,290 MWh.

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Biomass Resources

Snowflake White Mountain Power

The Snowflake White Mountain Power facility is a 24 MW biomass facility located near Snowflake, AZ. APS has contracted for 14 MW of the facility's capacity. The facility began commercial operation in June 2008, and produced 93,890 MWh in calendar year 2009.

Biogas/Landfill Gas Resources

Sexton (Glendale Landfill)

The Sexton facility is a 2.8 MW biogas (landfill gas) facility located at the City of Glendale landfill in Glendale, AZ. The facility is owned and operated by Sexton Energy, LLC. Construction of the facility was completed in late December of 2009 and, although the facility did not officially begin commercial operation until January 2010, APS did receive "test" energy from the facility which is counted towards the RES target. The expected annual output of the facility is 21,000 MWh.

Solar Resources

Renewable Generation - APS Owned

APS owns approximately 6.6 MWdc¹⁰ of solar capacity located throughout Arizona. Approximately 1 MW of this capacity is a solar trough facility located at the Company's Saguaro Generating Station outside of Tucson. The remainder of the solar capacity is PV and includes both fixed and tracking installations. In 2009, APS-owned solar facilities generated 10,043 MWh, and applicable multipliers added 5,021 MWh of RECs toward APS's total renewable production.

b) Generation Under Contract Not Yet in Operation

APS holds a long-term PPA whose output will be eligible for inclusion under the RES standards:

Solana

The Solana generating station will be located near Gila Bend, AZ. The facility will generate 280 MW using solar trough technology with thermal storage, and will be owned and operated by Arizona Solar One, LLC. APS expects the facility to be completed in 2013, and anticipated yearly output is 903,000 MWh.

3. Contracts Terminated

Two PPAs previously executed by APS were terminated in 2009. The agreement for the Cambrian Energy 3.3 MW landfill gas project at 27th Avenue in Phoenix was terminated in April 2009 when the City of Phoenix chose to re-bid the gas rights for the site. In addition, the agreement for the 290 MW Starwood concentrated solar power ("CSP")

¹⁰ Solar nameplate capacity is commonly designated in dc (direct current) watts, while utility operations and service are provided in alternating current (ac).

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facility, which was to be located in the Harquahala Valley, 75 miles west of Phoenix was unfortunately terminated by Starwood Energy in September 2009. After the major subcontractor agreements were negotiated, Lockheed Martin, the engineering, procurement and construction firm that partnered with Starwood to develop the project, decided not to go forward due to the size and the final risk profile of the engineering procurement and construction contract.

4. Renewable Generation Costs

In 2009, all Renewable Generation energy was derived from purchased power contracts and APS-owned solar facilities already in place. Table 5 below summarizes the invoice costs associated with those purchased power renewable energy contracts.¹¹

Table 5.

2009 Renewable Generation Costs per MWh (renewable energy premium costs)

	MW (capacity)	MWh (energy)	Contract Cost	Contract Cost per MWh	RES Cost	RES Cost per MWh
Wind	215.0	427,470				
Biomass	14.5	93,890				
Landfill Gas	2.8	700				
Geothermal	10.0	67,290				
Solar (APS-owned) ²	6.6	15,064				
Renewable Generation Total	248.9	604,414				

Notes to Table 5:

¹ Redacted due to the competitively confidential nature of the contract information.

² Includes RES multiplier for in-state solar installations prior to December 31, 2005.

B. Distributed Energy Efforts

1. Distributed Energy Installations, Capacity, and Energy

In 2009, customers installed 3,070 DE systems. Among these, 3,058 received Up-Front Incentives (“UFI”) and 12 received Production-Based Incentives (“PBI”). UFI installations included 1,448 PV systems (1,396 residential and 52 non-residential), 1,559 solar hot water heaters (1,541 residential installations), 24 wind turbines (20 residential installations), 16 geothermal space heating (all 16 were residential), 10 other solar thermal technologies (i.e. solar pool heating), and one solar daylighting installation. Eight of the twelve PBI installations were PV technologies, two were solar heating and cooling installations, and two were biogas electric/thermal installations. Table 6 below highlights the capacity and energy associated with the above mentioned installations.

¹¹ Invoice costs do not include associated system integration costs for those resources.

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Table 6:

2009 Distributed Energy Installed Resources

	MWh ² (energy)	MW (capacity)
Residential		
UFI		
Solar Electric ¹	23,118	13.25
Wind	96	0.04
Biogas	-	-
Solar Space Heating	34	N/A
Solar Water Heating	7,297	N/A
Solar HVAC	9	N/A
Geothermal Space Heating	674	N/A
Total Residential	31,227	13.3
Non-Residential		
UFI		
Solar Electric ¹	2,740	2.86
Wind	25	0.01
Biogas	-	-
Solar Space Heating	125	N/A
Solar Water Heating	1,264	N/A
Solar HVAC	243	N/A
Solar Pool Heating	72	N/A
PBI		
Solar Electric ¹	9,284	4.98
Wind	-	-
Biogas	3,929	0.31
Solar Space Heating	-	N/A
Solar Water Heating	-	N/A
Solar HVAC	474	N/A
Total Non-Residential	18,158	8.2
Total Distributed Energy Resources	49,386	21.46
<i>RES requirement: DE only target</i>	84,520 ³	
<i>% Achievement of Overall DE RES Goal</i>	58% ⁴	
<i>% Achievement of Residential DE RES Goal</i>	74%	
<i>% Achievement of Non-Residential DE RES Goal</i>	43%	

Notes to Table 6:

¹ Includes RES multiplier for in-state solar installations prior to December 31, 2005.

² Annualized energy production.

³ Half of this value is required from residential installations and the second half from non-residential installations. Level determined from 2009 actual retail sales.

⁴ A more detailed analysis of the DE target achievement is outlined in Table 9.

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2. Incremental vs. Absolute Distributed Energy RES Requirements

While the absolute RES DE requirement exceeded the amount of DE APS actually received on its system through customer installations, the year-over-year or incremental growth in the DE program closely tracked the growth anticipated by the RES. Meeting the incremental DE requirement is a strong barometer of the health and overall success of the DE incentive programs. This accomplishment is an important one to note not only because of the challenges the Company faced with the administration of rapidly growing DE incentive programs in 2009, but also because of the challenges for consumers from the current economic conditions. Table 7 contains further detail on the absolute requirements and the incremental growth requirements.

Table 7:

2009 Distributed Energy Target Detail (in MWh)

	<u>Targets</u>	<u>Actuals</u>	<u>% Achievement of DE Target (Actuals Only)</u>	<u>Actuals with Reservations</u>	<u>% Achievement of DE Target (w/ reservations)</u>
<i>2008:</i>					
Residential	25,290	11,438	45%	17,074	68%
Non-residential	25,290	5,887	<u>23%</u>	21,435	<u>85%</u>
<i>Total</i>	<i>50,580</i>	<i>17,325</i>	34%	<i>38,509</i>	76%
<i>2009:</i>					
Residential	42,260	31,227	74%	40,974	97%
Non-residential	42,260	18,158	<u>43%</u>	110,672	<u>262%</u>
<i>Total</i>	<i>84,520</i>	<i>49,386</i>	58%	<i>151,647</i>	179%
YoY Incremental:					
Residential	16,970	19,789	117%	23,900	141%
Non-residential	16,970	12,271	<u>72%</u>	89,237	<u>526%</u>
<i>Total</i>	<i>33,940</i>	<i>32,061</i>	94%	<i>113,138</i>	333%

3. Small Photovoltaic Production Reporting

Residential and small non-residential PV systems installed across APS's territory vary in size, orientation, angle, regional location, and shading from installation to installation. Therefore, actual production from these systems varies as well. In early 2009, APS installed Incremental Data Recording ("IDR") meters at 100 residential locations with solar PV systems to determine the typical output for solar systems within APS's territory. Based on data collected to date, APS has determined that the average annual energy output of a typical residential solar system in 2009 was 1,694 kWh/kW. This average annual energy output was used to determine the total energy output from residential solar systems for purposes of the Company's 2009 RES Compliance Reporting.

4. Distributed Energy Costs

The cost per MWh calculations show only the cost paid by APS customers under the RES programs. The "Total Incentive (\$)" column of costs shown in Table 8 is based on the UFI and PBI paid by APS and does not include any installation costs paid by the participant.

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Table 8:

2009 Distributed Energy Incentive Costs

	Up-Front Incentives (\$/MWh) ¹				Total Incentive (\$)
Residential:					
Solar Electric	\$ 176.65				\$ 24,365,713
Wind	112.01				107,488
Geothermal Space Heating	66.69				445,737
Solar Space Heating	75.65				25,331
Solar Water Heating	73.75				3,328,083
Solar HVAC	75.66				6,845
<i>Subtotal: Residential</i>	<i>\$ 147.96</i>				<i>\$ 28,279,197</i>
	Up-Front Incentives (\$/MWh) ¹	Production Based Incentives (\$/MWh) ²	Total incentives paid in 2009(\$)	<i>Lifetime Commitment (\$)</i>	
Non-Residential:					
Solar Electric	\$ 171.30	\$ 109.24	\$ 3,537,764	\$ 196,043,653	
Wind	186.26	-	39,000		
Biogas - CHP Electric	-	7.38	-	805,745	
Biogas - CHP Thermal	-	3.80	-	292,896	
Geothermal Space Heating	-	-	-		
Solar Space Heating	45.39	-	56,442		
Solar Pool Heating	10.09	-	7,229		
Solar Daylighting	-	-	4,439		
Solar Water Heating	43.52	-	545,495	4,388,996	
Solar HVAC	-	115.57	28,657	15,242,613	
<i>Subtotal: Non-Residential</i>	<i>\$ 111.08</i>	<i>\$ 79.80</i>	<i>\$ 4,219,026</i>	<i>\$ 216,773,902</i>	
Total DE Incentive Costs			\$ 32,498,223		

Notes to Table 8:

¹ Based on expected annual system production.

² Based on contractual annual system production.

5. Up-Front Incentive Program

During calendar year 2009 several shifts of funds into and from the residential and non-residential incentive classifications were made and a new incentive classification for public schools was created.

Incentive payments from the UFI program were \$31.7 million in 2009. An additional \$38.4 million in reservations for the UFI program were taken. UFI program results and fund transfers that occurred in 2009 are outlined in Table 9 below.

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Table 9:

2009 Distributed Energy: Up Front Incentive (UFI) Budget Results

	Residential Incentives \$	Non-Residential Incentives (\$)	Schools Incentives (\$)	Total UFI Commitment (\$)
Installed \$	-	\$ 3,441,907	\$ -	\$ 3,441,907
Reserved	16,345,058	34,103,990	16,216,313	66,665,361
Total	\$ 16,345,058	\$ 37,545,897	\$ 16,216,313	\$ 70,107,268
Starting UFI Budget \$	49,300,000	\$ 1,300,000	\$ -	\$ 50,600,000
Net Budget Transfers ¹	(14,365,328) ^{(c), (d), (e)}	5,607,256 ^{(b), (e)}	16,216,313 ^(e)	7,458,242
<i>Subtotal: Updated UFI Budget</i>	<i>\$ 34,934,673</i>	<i>\$ 6,907,256</i>	<i>\$ 16,216,313</i>	<i>\$ 58,058,242</i>
Prior Year Committed Carryover				\$ 12,194,529
Total Available UFI Budget				\$ 70,252,771

Notes to Table 9:

¹ **Budget Transfer Activities:**

- (a) A budget transfer of \$3,000,000 was made from PBI to non-residential UFI.
- (b) \$2,607,256 (2008 uncommitted funds) was transferred to the non-residential UFI budget.
- (c) \$1,570,985 (cancelled commitments from prior years) was added to the residential UFI budget.
- (d) \$280,000 (2008 uncommitted funds) was added to the residential UFI budget.
- (e) Pursuant to A.C.C. Decision No. 71275, \$16,216,313 was transferred from residential UFI budget to non-residential UFI budget to accommodate K-12 public schools program.

6. Production-Based Incentive Program

In 2009, APS accepted 82 new reservations totaling approximately \$14.4 million in annual commitments for the PBI program. Of this amount, twelve reservations received in 2009 were completed during the year. Actual incentives dispersed for these completed projects equaled \$0.8 million. The projects completed in 2009 will require an annual commitment of \$1.3 million, and a lifetime commitment of \$16.1 million. Assuming all currently accepted project reservations are successfully completed, total PBI program commitment would equal \$216.7 million over the life of the agreements.¹² Table 10 below provides additional detail.

¹² Pursuant to Decision No. 71254, the total lifetime PBI budget through and including 2009 is \$220 million of total contract commitments.

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Table 10:

2009 Distributed Energy: Production Based Incentive (PBI) Budget Results

	PBI Reservations	Paid Incentive in current year	Annualized Commitment \$	Lifetime Commitment (\$)
<i>Pre-2009 Projects:</i>				
Completed	4	\$ 679,228	\$ 882,168	\$ 8,821,683
Extended Reservations	<u>3</u>	-	<u>151,189</u>	<u>1,511,888</u>
<i>Subtotal: pre-2009 Projects</i>	7	<u>\$ 679,228</u>	<u>\$ 1,033,357</u>	<u>\$ 10,333,571</u>
<i>2009 Projects Only:</i>				
Completed	12	\$ 97,892	\$ 1,294,700	\$ 16,136,603
Reserved	<u>70</u>	-	<u>13,135,718</u>	<u>190,303,729</u>
<i>Subtotal: 2009 Projects</i>	82	<u>\$ 97,892</u>	<u>\$ 14,430,418</u>	<u>\$ 206,440,331</u>
Total PBI Program	89	\$ 777,120	\$ 15,463,775	\$ 216,773,902
			<i>Starting Lifetime PBI Budget</i>	\$ 77,000,000
			<i>Lifetime PBI Budget expansion</i>	<u>\$ 143,000,000</u>
			<i>Total Lifetime PBI Budget¹</i>	\$ 220,000,000
			<i>Remaining Lifetime PBI Budget Commitments</i>	\$ 3,226,098

Notes to Table 10:

¹ Pursuant to ACC Decision No. 71254 the total PBI budget for lifetime commitments was expanded to \$220 million.

7. Residential Program

In 2009, APS experienced explosive growth in the level of interest and participation in its REIP. APS witnessed record numbers of customer inquiries, submitted applications, reservations, and installations within both the residential and non-residential customer programs. This increased activity may be attributed to a number of factors including a targeted marketing approach, the extension of federal and state tax incentives, improved project economics, increased number of developers and installers, increased awareness of local project technologies, and positive environmental impacts. The combination of these factors has created the substantial increase in volume throughout the program.

In 2009, APS processed incentive payments for a total of 2,979 residential systems which displaced 19,804,134 kWh annually.¹³ APS customers installed more systems and displaced more energy in 2009 than in the period between 2002 through 2008 combined.¹⁴

¹³ These incentives were issued for 1,396 photovoltaic systems, 1,541 solar water heaters, and 42 others (including wind, solar space heating, solar HVAC and geothermal space heating systems).

¹⁴ In 2002 through 2008, APS installed 2,343 systems and displaced an annual total of 11,290,859 kWh.

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Opportunities and Trends

The growth experienced within the 2009 DE program created many opportunities for customers and other key stakeholders:

1) Increase in the number of developers and installers.

The explosive growth in the number of customers participating in the residential program spurred growth in the number of installers and developers present in the market, which has ultimately created a more competitive landscape. In 2006, 27 PV installers and 14 solar water heater (“SWH”) installers participated in the Company’s REIP. In 2009, the number of installers present within APS’s territory increased to 197 PV installers and 110 SWH installers. This increase demonstrates a growth of approximately 630 percent in PV installers and 690 percent in SWH installers in only three years.

APS believes it necessary to continue to focus on maintaining a high quality of service with regard to customer installations, customer satisfaction, and industry integrity and the rapid growth in this market segments presents unique challenges. Therefore, APS will launch its Qualified Solar Installer Program in early 2010 to help monitor the increase of market participants while ensuring that the Company’s high level of customer service is maintained. Participating qualified solar installers will be required to complete a training curriculum including technical, administrative, utility rates, customer service, and ethics courses; meet inspection/commissioning standards; maintain Better Business Bureau ratings and customer satisfaction levels; and commit to formal dispute resolution services.

2) Increase in average system size.

APS initially began to offer incentives to customers for the installation of residential PV systems in 2002. At that time, the average grid-tied PV system was 2.5 kWdc. Since then, APS has seen the average installed PV system size increase incrementally each year to an average system size of 6 kWdc in 2009. Based on the decreasing cost of systems and solar panels, APS expects this trend to continue throughout 2010.

3) Increase in year-end commissioning.

Historically, APS has seen a steady increase in the number of monthly installations during the last four months of each year. This is caused by customers’ timing installations to the availability of corresponding tax credits. While it is expected that APS will see a slight increase in systems installed during the latter part of the year, in 2009 the installations well exceeded the Company’s expectations. Within just the last four months of 2009, APS commissioned approximately 48 percent of the total systems for the entire year (1,431 of 2,979 systems). Of the 1,431 installed systems over the last four months of 2009, 525 systems (18 percent of the total) were commissioned in December alone. For perspective, nearly the same number of PV systems were commissioned in December 2009 as were commissioned during all of 2008. As long as tax credits continue to be available, APS anticipates that the last four months of every calendar year will be the most active.

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4) Declining panel pricing resulting in lower system prices.

In 2007, it was not uncommon for systems to be installed at costs near \$9 per installed watt. Market research demonstrates that at the end of 2009, the average installed cost of residential solar electric systems is currently below an average of \$6 per installed watt. This is a result of a general decrease in the cost of both the solar equipment and installation of the equipment as installers gain greater experience. APS also believes that the 50 percent cap on incentive contribution has caused the PV market to remain artificially high.

5) Increased customer interest in leasing and financing options.

Although total system costs per kW are declining and overall economics are improving, the number one obstacle for customers is providing the up-front capital. In 2009, the number of customers interested in participating in a leasing program increased, and more providers offered a leasing option or some other financing option to their range of customer offers. APS believes that providers will continue to offer such options in order to remain competitive in the marketplace. Because of this trend, APS requested the ability to offer financial incentives to lending institutions to help facilitate such customer offerings in its 2010 RES Implementation Plan.

In November 2009 the Solar Phoenix program was announced. The program is a collaboration with the City of Phoenix, APS, National Bank of Arizona and SolarCity. This program is expected to allow up to 1,000 Phoenix homeowners to adopt solar power by the end of 2010. Through the Solar Phoenix program, National Bank of Arizona will provide \$25 million of financing to allow Phoenix homeowners to install solar systems with no upfront investment.

6) Residential funds are becoming limited.

With more than a 250 percent increase in installations in 2009, it is unclear whether the market can maintain this type of growth over an extended timeframe. However, through the first two months of 2010, APS has experienced volume consistent with the growth rate in 2009. Assuming a maintained customer interest and continued cost declines, APS projects that funding for residential DE installations at compliance levels may not be sufficient to meet customer demand.

8. Non-Residential Program

In response to some of the same market conditions described above, the non-residential demand also increased substantially in 2009. APS began 2009 with a lifetime PBI authorization of \$77 million; however, due to an overwhelming interest in the program, APS filed a request with the Commission to increase the lifetime PBI authorization to \$220 million. The Company's request was approved by the Commission in September

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2009,¹⁵ and by year end APS had committed approximately \$217 million¹⁶ in PBI customer requests.

In 2009, APS reserved 39,292 kW of non-residential customer-sited generation, compared to 5,801 kW in 2008, demonstrating nearly a 600 percent increase from 2008. Under current program rules, these projects have 365 days from the reservation confirmation date to have the requested systems commissioned. Due to the fact that approximately half of the Company's non-residential reservations in 2009 rely on the Solar Service Agreement ("SSA") model, it remains uncertain as to whether or not these projects will be developed. The outcome of the SSA model is currently pending at the Commission.

Opportunities and Trends

Similar to the residential DE program, the growth in the non-residential program created opportunities for customers and other key stakeholders:

1) Increase in average system sizes.

Similar to the residential class, APS has seen an increase in the average non-residential system size requested by customers. Prior to the increase in lifetime contract commitment from \$77 million to \$220 million, the average non-residential PV system size was 325 kW. Since that time, the average system size requested was 545 kW. As the economics continue to improve, APS expects this trend to continue. To help mitigate the concern of large projects consuming all of the available incentive funds, APS instituted several program enhancements as part of its 2010 RES Implementation Plan which limits program offerings and incentive level caps based on the size of the system.

2) Competitive allocation processes have driven down the average incentive lifetime cost per REC.

APS has seen the average lifetime cost per kWh of distributed PV projects drop from \$0.148/REC to \$0.114/REC during 2009. APS believes this drop in cost can be attributed to both the competitive allocation process and the declining cost in PV modules. APS expects to see this trend continue. To further leverage the competitive allocation process in 2010, APS created four project categories, with multiple allocation periods. This enhancement should result in the continuation of the decline in the incentive cost per REC, while ensuring projects of different sizes more clear access to incentive funding.

3) Approximately 50 percent of systems are third-party owned.

Non-residential customers face an array of issues in seeking DE solutions whether limited up-front capital or an inability to monetize tax credits. Conversely, some non-residential customers may have access to up-front capital, but may not have the expertise

¹⁵Decision No. 71254 (September 3, 2009).

¹⁶ By year end 2009, APS committed \$216,773,902. APS has not yet committed the full \$220 million in PBI authorizations because the next qualified project within the PBI queue would require incentive funding that exceeds the \$220 million.

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to manage or maintain the systems. An increasing trend to address these issues is the utilization of third-party ownership of the system through the use of an SSA, which is structured to allow customers to install a renewable system without the need to pay the up-front capital or maintain the system. Approximately half of the Company's non-residential reservations in 2009 rely on this model.

4) *Not all customers will receive incentives.*

Through the combination of growth in the level of customer interest and the annual incentive budget, some customers may not receive incentive funding through the REIP going forward.

9. Programs Introduced in 2009

Schools and Government. Renewable energy is an attractive solution to long-term, energy-related budgetary management strategies and provides an excellent learning curriculum for students and/or the general public in these settings. Typically, these entities have restricted up-front capital and do not qualify for federal or state tax incentives; therefore, many of these customers have explored the option of third party owned systems and energy purchase agreements. In 2009, due to the overwhelming demand from schools, APS filed a request with the Commission to transfer unused residential incentive funding to DE incentives for schools.¹⁷ Based on the tremendous interest in this program, only a portion of the total applications will receive funding. During the limited 2009 Schools Program, APS approved \$16,216,313 of up-front schools reservations.

In its 2010 RES Implementation Plan, APS included a Schools and Governmental Program, based on PBIs and a lifetime commitment authorization of \$15 million. Limits on system size and the number of projects were established to help distribute funding to more customers. APS still anticipates it will only be able fund a portion of the customers requested applications.

Distributed Energy Public Assistance Program. APS also initiated its Distributed Energy Public Assistance Program ("DPAP") in 2009. This program was created to help meet the unique needs of the Company's low-income customers, non-profits, and governmental customers. During its first year, APS focused its attention by partnering with Community Action Agencies to assist low-income customers by using the funds to supplement the REIP incentives and help install renewable technologies, at customer homes, therefore reducing the customer's utility bills. As a result of efforts made in 2009, a total of 49 solar hot water systems and 14 PV systems were installed on low-income residences, apartments, and shelters, displacing over 101,600 kWh and generating over 45,700 kWh. In 2010, APS will supplement this program by creating a process for non-profits to receive additional assistance for energy systems.

¹⁷ Decision No. 71275 (September 17, 2009).

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DE Request for Proposal. In order to help meet the goals of the DE targets in the RES, APS issued a DE Request for Proposal (“RFP”) in August 2008. The RFP was designed to identify projects to drive an increase in installed capacity, and to find opportunities to reduce the cost of DE resources. Through the RFP, APS sought a total of 200,000 MWh per year for projects with an in-service date between 2009 and 2012. In total, twelve developers submitted bids for projects located at nineteen different locations. The projects submitted in response to the competitive solicitation were primarily PV. APS executed two contracts and one agreement in early 2010 as a result of the DE competitive solicitation (for a total of approximately 150,000 MWh).

10. Key Learnings/Outlook/Enhancements

Over the last eight years, APS has gained valuable experience in the administration of its renewable energy customer programs. Additionally, the level of activity in 2009 has provided APS an opportunity to identify program areas to address when contemplating future program enhancements. Through key learnings in 2009, APS has identified the following key areas of focus for 2010:

1. Managing the increasing volume of customer interest in the program;
2. Overall customer and stakeholder satisfaction;
3. Number and quality of new installers and developers in the local market;
4. Level of interest from schools and governmental entities; and
5. Customers interest in lowering operating costs.

APS incorporated the following program enhancements in late 2009 and is working on full execution in 2010:

Decentralized Interconnection Applications. To date, APS has used renewable energy program personnel, and, on an as needed basis, additional staff to review residential interconnection applications. APS decided to incorporate this function into the Company’s standard business practice utilizing the knowledgeable Customer Service Representatives (“CSRs”). CSRs are located throughout the Company’s existing service territory and work with customers and contractors on service related items including new construction, service upgrades, or electrical service issues. The end result will be a faster customer/provider turn around.

Decentralized Interconnection Inspections. APS has historically used a centralized inspection team for residential interconnections. Based on the growing number of customer installations, APS determined that decentralizing this function and integrating it into the Company’s standard business operation was critical. As a result, CSRs are being trained to perform the inspections of the residential systems on a regional basis. This enhancement will dramatically reduce driving times, increase the local knowledge of system installations, lower the cost per inspection, and reduce the time needed to schedule an inspection.

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On-line Reservation System. To date, APS has processed all residential applications through a series of paper based agreements and forms. This process requires an exchange of paperwork and a series of manual entries decreasing efficiency. To address the scalability needed to support the growing program, APS is launching an on-line reservation process that will result in a streamlined electronic process allowing for real-time reservation notification, automated customer/provider communications, automated payment processing, and discrete project tracking for both customers and installers. This system will dramatically reduce the overall processing time, lower administrative costs as the program grows, and increase communications, while greatly increasing overall stakeholder satisfaction.

Qualified Solar Installer Program. APS has seen over a 600 percent growth in the number of installers/developers serving the local residential market in the last three years. The level of expertise, professionalism, and integrity of these installers ultimately affects customers, the industry, and the Company. Therefore, APS is launching a Qualified Solar Installer Program for both solar electric and solar thermal residential programs. The program will consist of a number of annual requirements including minimum customer satisfaction ratings, a series of training requirements (including technical, professional, and administrative curriculum with appropriate testing), and acceptance of a dispute resolution process.

11. RES Compliance and Distributed Energy

APS recognizes the importance of DE resources as part of the Commission's comprehensive renewable objectives. While APS was unable to meet the RES absolute DE requirement in 2009, APS continues to implement program enhancements and develop new strategies to promote a heightened pace of DE installations. Pursuant to A.A.C. R14-2-1815, this section of APS's 2009 Compliance Report serves as the Company's notice of noncompliance.

12. Cost of Residential Distributed Energy Shortfall

Of the overall 2009 DE target of 84,520 MWh, 50 percent is required from residential customers and 50 percent from non-residential customers. Utilizing the installation and reservation amounts in 2009, the total DE requirement is exceeded, with actuals representing 179 percent of the requirement. Non-residential customers taking advantage of DE far exceeded the requirement, achieving 262 percent of the non-residential DE goal. Energy from residential customers fell just short of the incremental requirement and represents 97 percent of the residential DE goal. These relationships are shown in the far right column on Table 7.

The shortfall from the DE requirement in the residential classification and the monetizing of the shortfall will be added to the funds already committed by Company. The cost of the shortfall from the residential classification up to compliance levels is outlined in Table 11.

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Table 11:

2009 Residential Distributed Energy Shortfall Costs

	<u>Residential</u>	<u>Non-Residential</u>
2009 DE Requirement (MWh)	42,260	42,260
<i>Actual Production (MWh)</i>		
UFI	31,227	4,470
PBI	-	13,688
Subtotal: Actual Production	31,227	18,158
2009 Actual Production Percentages (of target)	74%	43%
2009 DE Production Distribution (of actuals)	63%	37%
<i>2009 Reservations (MWh)</i>		
UFI	9,747	3,643
PBI	-	88,870
Subtotal: Reservations ¹	9,747	92,514
Total Distributed Energy with Reservations (MWh)	40,974	110,672
Compliance Shortfall/(Surplus) [with reservation adjustment]	1,285	(68,412)
<i>Distribution of Energy Shortfall (MWh)</i>		
UFI	1,285	-
PBI	-	-
<i>Shortfall Cost (\$/MWh)²</i>		
UFI \$	204.37	\$ -
PBI	n/a	\$ -
<i>Cost to Make Up Shortfall (\$)</i>		
UFI \$	2,604,541	\$ -
PBI	n/a	\$ -
Total Cost to of the Residential DE Shortfall	\$2,604,541	\$0

Notes to Table 11:

¹ Assumes execution of all reservations existing at 12/31/09.

² Based on 2009 Implementation Plan costs and technology mix.

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IV. Non-RES Renewable Efforts

A. Green Choice Rate Program

APS has three Green Choice rate offerings which were approved by the ACC in Decision No. 71276 on September 17, 2009. Green Choice 1 is a fixed level of “green” power that the customer subscribes to each month. Green Choice 2 varies month to month per customer and is based on a percentage of a customer’s monthly usage. Finally, Green Choice 3 is a single block of “green” power that can be used for special events.

At the close of 2009, 2,301 customers were subscribed to the family of Green Choice rates. Sales for the year were approximately 63,219 MWh and the revenue collections were slightly over \$509,000.¹⁸ The revenue associated with the Green Choice rates supplements the overall RES revenue collections, ultimately facilitating the development of additional renewable resources.

1. Green-e Certification

Green-e is a national certification and verification program for renewable energy developed and offered by the Center for Resource Solutions (“CRS”), a national nonprofit organization. This certification indicates that the renewable energy meets environmental and consumer protection standards. Through certification, the APS Green Choice program utilizes the Green-e logo on the APS website. All of APS’s Green Choice renewable energy were sold under the certification program. Green Choice Rate energy sales certification through the CRS program became effective September 26, 2008.

B. Total Solar Rate Program

Solar-3, also known as the Total Solar Rate, is designed to offer customers the option to purchase 50 percent or 100 percent of their usage from solar resources.¹⁹ The rate became available for customer subscription on April 28, 2008. Revenue received from the Solar-3 rates reimburses the RES for solar generation output from APS owned facilities.

¹⁸ Green Choice sales are subtracted from total renewable generation, and are not counted toward compliance with RES targets.

¹⁹ Approved by the Commission in Decision No. 69663 (June 28, 2007).

V. Non-Energy RES Components

A. Marketing

APS implemented an aggressive multi-faceted marketing plan in 2009 to drive solar adoption among its customer base. The marketing budget spent and/or committed in 2009 was \$5.4 million. The marketing plan for 2009 included awareness building through multiple advertising vehicles such as TV, print, radio, bill messaging, e-mail, and direct mail. Further, APS's marketing efforts included participation in more than 150 local events and the implementation of a co-operative advertising program to enable installers to partner with APS to increase their overall advertising efforts.

Significant marketing efforts during 2009 included the following.

- In total, there were more than 10,000 airings of APS's TV and radio ads airing during a wide variety of programming and time of day to maximize reach.
- In-theater and airport advertising were added to the advertising mix in the fourth quarter to leverage increased theater attendance and travel throughout the holiday season.
- APS launched a refreshed and more user friendly and informative renewables web site in October.
- APS participated in 152 events such as home shows, popular consumer events (concerts, sporting events) and green events, as well as trade shows and retail events.
- APS actively supported a cooperative advertising program in which APS co-funded installers' advertising efforts; the cooperative program generated more than 4.6 million customer contacts.
- Direct mail targeting likely buyers was sent to approximately 200,000 customers. This included testing of creative and messaging approaches and targeting as well as the impact of follow-up direct mail and e-mail.
- E-marketing efforts included both targeted e-mails promoting renewable options and inclusion in e-newsletters to the broader base of APS customers.
- The APS ENERGY STAR with Solar program was launched in April 2009. The goal of the program is for homebuilders to incorporate solar options into the new homes they build. For consumers opting not to add solar, the homes are solar ready so that a future installation will be more cost-effective.
- Messaging for renewables was also included with the APS bill throughout the year. This included on-bill messaging, stand alone bill inserts, and inclusion in our customer newsletter.
- Significant investments were made in the development of web tools that will facilitate the incentive reservation process and allow for customers to access on-going project status information.

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- In order to more actively encourage residential customers to participate in the renewable energy program, APS designed an innovative approach to meet the DE requirements for this customer segment. At the end of 2009, APS entered into a three-year contract with Smart Power, a non-profit clean energy marketing firm based in Washington D.C. Smart Power has demonstrated significant grassroots engagement of communities of people using both existing networks and creating virtual communities.

Further detail on APS's current and future marketing efforts is included in Attachment 2.

As set forth in the 2009 RES Implementation Plan, the overall objectives for APS's marketing efforts were to:

- 1) Create awareness of the Renewable Energy Incentive Program;
- 2) Deliver messaging to motivate consumers to adopt renewable energy technologies; and
- 3) Position the APS Renewable Energy Incentive Program as an option for customers to address growing energy needs and environmental concerns.

To measure the Company's performance against these objectives, specific marketing and advertising objectives were established. These included metrics and targets for advertising reach (number of customers who saw/heard APS ads), customer awareness of incentives, and traffic to the APS Web site since the call to action in APS's advertising is to visit the site.

The 2009 marketing efforts exceeded the plan design objectives. The advertising reach was 5.9 million – nearly triple the designed objective of 2 million. The advertising resulted in APS being at 120 percent of the 2009 consumer awareness target (55 percent) and at 119% of the business awareness target (53 percent). This represents a year-over-year increase in awareness of 38 percent among consumers and 66 percent among businesses. In addition, with well over 200,000 hits to the APS solar-related Web sites, the 2009 year-end target for the Web site hits (150,000) was at nearly 140 percent of objective.

APS's market research performed in 2009 has also found that advertising efforts have been highly effective at creating awareness of solar options and are well-liked and credible. The ads have been modified to strengthen the call to action and help move customers from awareness to purchase.

B. Research, Development, Commercialization & Integration

1. Studies Performed in 2009

APS began conducting multiple studies in 2009 under its Research, Development, Commercialization & Integration ("RDC&I") budget that have continued through 2010.

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a) R.W. Beck Study

In early-2009 APS completed the Distributed Renewable Energy Operating Impacts and Valuation study in partnership with R.W. Beck. The study was developed through a strong stakeholder process which focused on three technologies: residential and commercial PV, residential solar hot water, and commercial day lighting. Further, the study defined the methodologies for establishing the benefits these resources bring to the generation, transmission and distribution systems. The most substantial key learning from this study was that APS may experience the most value from distributed renewable generation in high penetration scenarios. This study was completed and filed with the Commission on January 29, 2009.

b) Navigant Study

In 2009, APS engaged Navigant Consulting, Inc. to prepare a model to be used to estimate the rooftop PV potential within APS service territory. The model distinguishes between residential and non-residential customers, with filters by county, building type, PV technology type and year of installation to provide an estimate of the MWs of electricity that could be generated if PV were installed on all available rooftops. This final product was delivered to APS in mid-2009 for use in program and study development.

c) Interval Data Recorder (“IDR”) Meter Study

In late-2008 and early-2009, APS selected 100 residential customers within its service territory to be a part of an IDR meter study. The study involved replacing the existing utility meter and PV inverter meter with IDR meters. Based on the data collected to date through the study, APS determined that the average annual energy output of a typical small solar system is 1,694 kWh/kW. This average annual energy output was used to determine the total energy output from residential and small non-residential solar systems for purposes of the Company’s 2009 RES Compliance Reporting.

d) High Penetration Photovoltaic Deployment Study

In July 2009, APS, in collaboration with The General Electric Company, Arizona State University, National Renewable Energy Laboratory and Via Sol Energy Solutions, submitted a proposal to the Department of Energy (“DOE”) to study the effects of high penetrations of distributed PV technology on a single distribution feeder, through the Flagstaff Community Power Project. In October 2009, the team received notice from DOE that the proposal was selected for negotiation of a contract for an award. APS is currently in the process of finalizing the negotiations with DOE.

e) Vehicle to Grid Study (“V2G”)

APS engaged Navigant Consulting to conduct a V2G feasibility and cost benefit study. The study has been broken into five tasks 1) define electric vehicle technology and markets, 2) determine technology penetration, 3) impacts of electric vehicle charging on the APS distribution system, and 4) define vehicle to grid, and 5) V2G market penetration

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and APS impacts. This study was completed in March 2010 and an electric vehicle readiness development program will be submitted to the Commission in April 2010.

f) Department of Energy Thermal Storage Demonstration

APS is continuing to work with U.S. Solar Power Corporation on a five-year thermal research and demonstration project at the Saguaro Solar facility. The project's primary objective is to maximize cost-effective, commercially-proven energy storage for CSP power plants. This project is in its second prototyping phase and continues to facilitate APS' understanding of alternative, economically viable storage technologies.

g) Geothermal Resource Assessment Review

APS, in partnership with Salt River Project has contracted Geologica, Inc. to perform a statewide geothermal resource assessment study. This initial study will compile information presented in previously published reports and present an assessment of existing and new geothermal technologies and their applicability to potential resource development within Arizona. APS has received this study and has learned that there may be Arizona locations with geothermal potential; however, more extensive site testing will be required to determine actual resource value.

2. Research and Development Projects in 2009

In 2009, APS initiated the following commitments for research and development projects:

a) AzSMART (Arizona State University)

AzSMART is an analysis system tailored to examine the successful roll-out of a solar energy infrastructure in Arizona and to develop the required electric grid technologies to enable such a solar infrastructure.

b) AzRISE (University of Arizona) – Compressed Air Energy Storage (CAES)

In partnership with APS, AzRISE will prepare a study addressing the potential of CAES and the possible integration of the technology with the electric distribution system. The study will include cost/benefit analyses of the available CAES technologies.

c) Distributed Wind Study (Northern Arizona University)

This study will investigate distributed residential wind energy and the existing homeowner valuation process, will establish methods to measure homeowner valuation of residential wind energy, and will develop modeling of wind energy potential for distributed small wind turbine installations.

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ATTACHMENT 1

RES Banking Reconciliation

2009 Renewable Energy Credit ("REC") Bank Reconciliation

1		(energy)	1
2		<u>MWh</u>	2
3			3
4	<i>Previous year end REC bank balance</i>	288,456	4
5			5
6	<i>RES Requirements</i>		6
7	Total RES compliance requirement	563,466	7
8	Previous years bank applied to RES requirement ¹	<u>288,456</u>	8
9	<i>Remaining RES requirement (line 7 - line 8)</i>	275,010	9
10			10
11	<i>Renewable Energy Portfolio</i>		11
12	Wind	427,470	12
13	Geothermal	67,290	13
14	Biomass	93,890	14
15	Landfill Gas	700	15
16	APS Solar ²	15,064	16
17	Distributed Energy	<u>49,386</u>	17
18	<i>Subtotal: Renewable Portfolio</i>	653,800	18
19			19
20	<i>Year End REC Bank Balance</i>		20
21	Current year renewable energy portfolio (line 18)	653,800	21
22	Less current year remaining RES requirement (line 9)	275,010	22
23	Less Green Choice energy sales	63,219	23
24	Current year ending REC bank balance (line 21 - line 22 - line 23)	315,571	24
25	REC bank balance +/- from prior year (line 24 - line 4)	27,115	25
26	¹ Note at this point the REC bank level equals line 4 - line 8, not to be less than zero.		26
27	² Includes RES multiplier for in-state solar installations prior to December 31, 2005.		27

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ATTACHMENT 2

APS's Renewable Energy – Current and Future Marketing Efforts

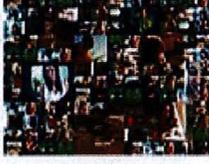
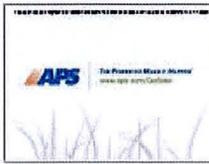
Marketing – Sample Efforts

Following are examples of APS's various marketing efforts in 2009, including TV commercials, a print ad, the enhanced APS renewable energy Web site, and direct mail.

Television

Television advertising efforts included four ads to support solar adoption. Two creative approaches were used – the first (Mosaic – featured below) included images of APS customers using electricity for a variety of applications, and the second features Steve Nash of the Phoenix Suns speaking to the benefits of solar. Within each campaign, one of the two ads focused on solar panels and one on solar water heaters.

Solar Panels - Mosaic

<p>APS_Solar TV Rev Mosaic Appliances :30</p>				
		Solar energy	can power everything	from refrigerators
				
	to plasma TVs	while dramatically	reducing your energy costs.	And, new low-profile
				
	solar PV panels	integrate well on almost	any style home.	So change to solar
				
	and change their future.	To find out how to save up to 50% on solar PV panels and installation costs	and installation costs, go to www.aps.com/GoSolar .	A better tomorrow starts today.

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Solar Water Heater – Mosaic

APS_Solar TV
 Hot Water
 Heater_
 Row Mosaic
 :30

Your water heater accounts for up to 15% of your energy costs, and that makes installing a new, energy-efficient solar water heater a smart decision, especially with APS rebates and tax incentives that make it more affordable than ever. So change to solar and change their future. Save up to 80% on a solar water heater. To find out how to save up to 80% on a solar water heater and installation costs, go to www.aps.com/GoSolar. A better tomorrow starts today.

APS The Power to Make it Happen www.aps.com

APS A better tomorrow starts today www.aps.com/GoSolar

Print Advertising

APS also ran a limited number of print ads to assess the effectiveness of print in driving demand for renewable energy technologies.

SOLAR POWER: A SOLUTION THAT WORKS TODAY

With 300 sunny days each year, it's no wonder more APS customers see solar energy as part of the solution to Arizona's energy challenges.

And APS agrees.

Today, not only does solar make environmental sense, but with substantial rebates from APS and optional low rate financing from GECOM and its partner financial services provider, for your home or business, installing renewable energy technology, such as solar panels or solar water heaters, is more affordable than ever.

In fact, when you combine APS rebates with Arizona State and Federal tax credits, you may be able to cut the cost of solar panels by up to half, even more for solar water heaters.

To find out how you can become more energy independent by taking advantage of Arizona's clean, abundant, and free sunshine, visit us online at www.aps.com/GoSolar today.

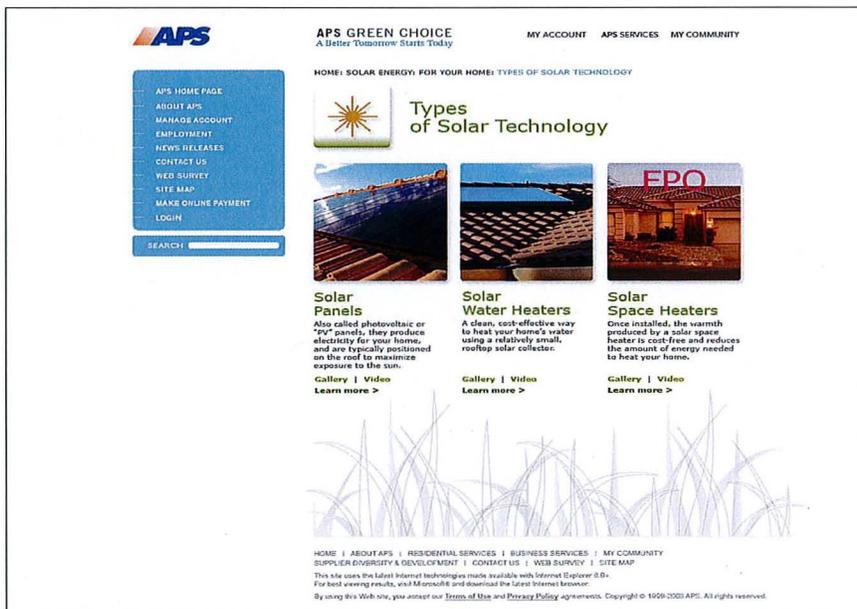
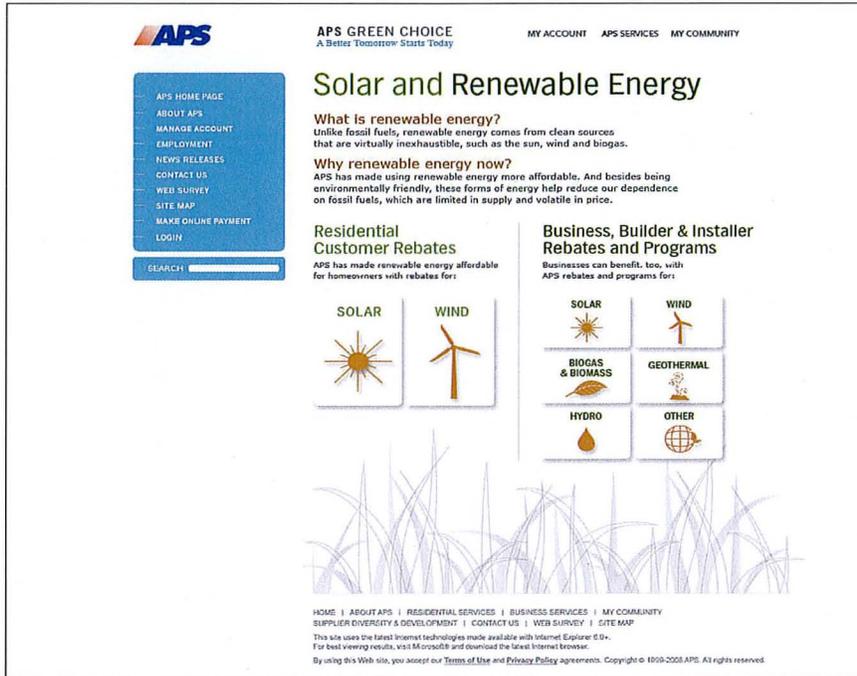
Must be in APS territory to be eligible. Limited funding is available to make your reservation today. Offer government incentives may also be available. The program is funded by APS customer rebates approved by the Arizona Corporation Commission. GECOM is an approved financing program from the Electric & Gas Industries Association (EGIA) made available to APS residential customers. For more information visit www.aps.com.

APS
 The Power to Make it Happen
 aps.com

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APS Website

Numerous enhancements were also made to the APS Website. The focus was to enhance the customer experience by including the key information that consumers seek when considering renewable energy and providing the content in easy to use formats, such as customer videos.



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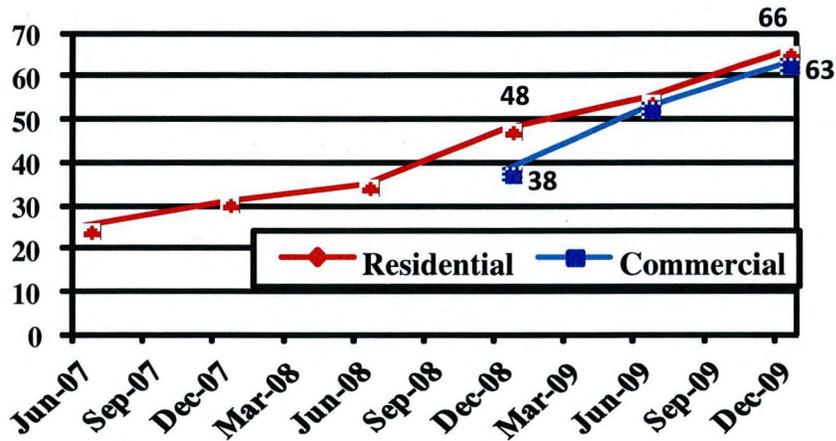
Direct Mail

Direct mail was sent to nearly 200,000 APS customers. This included testing of different creative approaches – one piece featuring Steve Nash and the other aligning with the look and feel of the Mosaic TV advertisements. In addition, there were tests of messaging and of a follow-up contact for those who did not respond to the initial mailing. Given the length of the purchase cycle, results of these efforts are currently being analyzed.

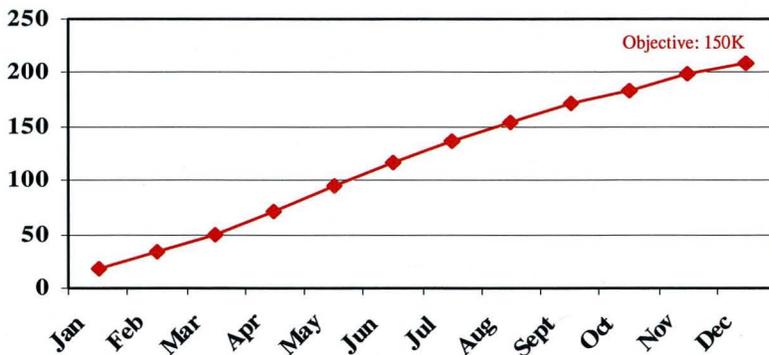
2009 Marketing Results

The 2009 marketing efforts met or exceeded reach objectives (# of customers who saw/heard APS ads), significantly heightened consumer awareness and drove large numbers to the APS web site for additional information. The advertising resulted in achievement of 120 percent of the Company’s 2009 consumer awareness target and 119 percent of the business awareness target (set by APS at 55% and 53 percent respectively). This represents a year-over-year increase in awareness of 38 percent among consumers and 66 percent among businesses. In addition, with well over 200,000 hits to the APS solar-related websites, the 2009 year-end target for the web site hits (150,000) was at 139 percent of objective.

Awareness (Percent)



2009 Web Site Hits ('000s)



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2009 Learnings & Resultant Program Enhancements

Research conducted by APS and by the industry has found several program enhancements that would help fuel the increase in DE.²⁰ In addition, APS and stakeholder audits of the Company's marketing efforts have found several areas in which APS can make enhancements. Based on the research and the audits, the key areas to focus on to drive purchases are: 1) making the solar purchase process easier, 2) addressing product affordability, and 3) refining APS's advertising efforts.

1. Make the Solar Purchase Easier

Purchasing solar panels or a solar water heater is a purchase for which customers want to make an educated decision and one for which few people have much buying experience. APS has found that consumers are typically looking for guidance on system options, potential savings, selecting an installer, and the incentives and tax credits available. APS has identified several program enhancements that will make the process less complicated for its customers. These include the following:

- **Facilitate Vendor Selection** - APS has learned that customers need guidance on the selection of a qualified installer for their DE system. The Company has experienced explosive growth in the number of solar system installers in 2009. Therefore, APS will be implementing a Qualified Solar Installer program, which will include coursework on technical issues, APS incentives, contractor program requirements, customer service, and customer care.

APS will integrate the list of Qualified Contractors across its marketing efforts. This includes prominent placement on the APS web site, as well as including the name and contact information of the qualified installers in APS's advertising efforts. APS will also provide customers with contractor referrals on an equitable rotational basis. Additionally, APS will provide cooperative advertising assistance to the Qualified Contractors to expand their supplemental marketing efforts.

- **Customer Engagement & Community Outreach - SmartPower Partnership** - To move customers from awareness to purchase, APS recognized that resources should be made available for customers to help them through the decision process.

APS has established a partnership with SmartPower, which is a national award-winning, non-profit marketing organization that specializes in clean energy and energy efficiency. Smart Power has demonstrated significant grassroots engagement of communities of people using both existing networks and creating virtual communities. APS will work with SmartPower in an effort to increase residential solar installations through community participatory engagement, such as community

²⁰ Smart Solar Marketing Strategies, Clean Energy Group and SmartPower, August 2009. U.S. Solar Market Trends 2008, Interstate Renewable Energy Council, July 2009. APS Web Usability Study, January 2010.

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competitions. The intent is for Smart Power to create an Arizona-based outreach presence to support customers in making smart energy choices including increasing the number of renewable energy installations. This innovative approach will engage both existing solar customer's interest in promoting solar, tap into their existing network of friends, neighbors and associates as well as community groups to share information about their experiences, referrals and technical information to increase the number of residential solar installations for APS customers.

2. **Develop Programs to Address Affordability**

- **Reinforce Solar Value Proposition** – Recent research efforts conducted by APS identified the need to assist customers to better understand the solar value proposition. Therefore, a solar calculator is being designed for deployment in 2010 that will help customers quantify savings potential and calculate payback for PV installations. This should provide customers with a realistic view of the financial benefits of solar and should help motivate them to solicit project estimates from contractors.
- **Financing Options** – In November 2009, the Solar Phoenix program was announced, which is a collaboration among the city of Phoenix, APS, National Bank of Arizona and SolarCity. This program is expected to allow up to 1,000 Phoenix homeowners to adopt solar power by the end of 2010.

APS is committed to finding solutions that will help reduce or eliminate the financial barriers associated with the up-front costs of installing residential DE systems. The APS web site will include details and links to financial resources that become available through these efforts. In addition, APS will inform customers that financing options exist through the Company's advertising.

3. **Refining APS's Advertising Efforts**

- **Enhance APS Web Site** – A refreshed site was launched during the fourth quarter of 2009, integrating more educational components including customer testimonials. Web usability research was conducted during the first quarter of 2010 to identify additional opportunities for further refinements. Based on this research, improvements are planned to streamline content and make site navigation easier. Specific examples of enhancements include reviewing language on the site to ensure that APS consistently uses terminology familiar to the broad base of consumers, provide separate paths for business and residential customers and add content that addresses key questions, such as cost estimates and qualified contractors.

To enhance the customer experience aspect in conjunction with the incentive reservation process, APS will be implementing enhancements throughout 2010 to enable customers to apply for incentives online and to allow contractors to complete

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interconnection applications and certifications online. Customers and contractors will have the ability to track their project status online at anytime.

- **Events participation** – APS has recently purchased a 7.2 kW solar generator that can be used to help provide power for events. The generation will help demonstrate to consumers that solar is a viable energy solution. In addition, signage has been developed for the generator that educates customers on solar options for their homes – both PV and solar water heaters. APS staffing is available at events to educate and answer questions about solar.

- **Solar Homes Program** - APS launched the APS Energy Star and Solar Homes Program in April 2009. The goal of the program is to increase the overall number of energy efficient homes being built that include renewable technologies in the most cost-effective way for end-use customers. By 2013, based on current economic forecasts, APS anticipates that over 2,700 solar-equipped and solar-ready homes will be built as a result of this program.

Initial marketing efforts focus on cooperative advertising with the builders, as well as APS advertising in publications targeting consumers in the market for a new home and real estate agents. As the number of program participants grows, APS will explore mass advertising that helps drive broader consumer awareness of the program.