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The Annan Group
The Arizona Solar Energy Industries Association
The Greater Tucson Coalition for Solar Energy
The Solar Alliance
The Vote Solar Initiative

COMMENTS ON ARIZONA PUBLIC SERVICES' RENEWABLE ENERGY STANDARD IMPLMENTATION PLAN
Docket No. E-01345A-07-0468

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I. Summary

In this filing, The Annan Group, The Arizona Solar Energy Industries Association, The Greater Tucson Coalition for Solar Energy, The Solar Alliance, and The Vote Solar Initiative[1] (collectively, the 'Solar Advocates), wish to provide comments to Arizona Public Service Company's Renewable Energy Standard Implementation Plan, as filed (and modified) in Docket No. E-01345A-07-0468.

Our primary concern is that APS is proposing a renewable energy adjustor at a higher level than what was recommended in the RES Order. While we believe that the majority of ratepayers would support raising the adjustor's caps in order to secure the benefits of renewable energy, we also believe that the goals of the RES can be achieved for less cost than proposed by APS in their filing.

Because APS redacted some key financial data from their public filing, we conducted two analyses. First, we examined the costs APS made publicly available concerning the distributed energy (DE) program, and it is our determination that these costs can be reduced.

Second, we prepared an alternative analysis of how the entire RES might be funded and implemented. The result of this analysis indicates that compliance can be achieved with fewer ratepayer funds. In its filing, APS provided information on the costs of direct incentives and internal overhead, which further break down into the following four categories:

- Administration
- Implementation
- Marketing and Outreach
- Commercialization and Integration

The incentives budget proposed by APS appears reasonable and appropriate. However, we believe that significant cost reductions can be found in the rest of the filing. Over the five year period projected in the filing, APS's numbers indicate overhead in excess of 20%. For the key year in this proceeding, the proposed budget for overhead exceeds 30%. This is far more than successful utility programs in other states have required. Accordingly, we recommend that the 2008 overhead budget be limited to 10% of total costs, as reflected in Table 1.

Further, we would like to note that from the perspective of the ratepayer, the costs and benefits of the RES will be the same regardless of where the funds come from. An alternative would be to collect the funds in base rates.

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[1] The Solar Alliance (www.solaralliance.org) is an industry association comprised of the largest photovoltaic companies working in the United States. Members include American Solar Electric, BP Solar, Conergy, DT Solar, Energy Innovations, Evergreen Solar, First Solar, Kyocera, Mitsubishi Electric, MMA Renewable Ventures, REC Solar, Sanyo, Schott Solar, Sharp, SolarWorld, SPG Solar, SunEdison, SunPower, Suntech, and Uni-Solar.

Total RES Costs with 10% Recommended Limit on Overhead – Table: 1

($ mil)	2008
Renewable Generation Purchase	5.3
Renewable Generation Overheads	0.6
Green Power Revenue	(1.0)
Total Renewable Generation Costs	4.9
Distributed Energy Incentives	28.7
Distributed Energy Overheads	3.2
Total Distributed Energy Costs	31.9
Total REST Costs	36.8

Finally, we would like to emphasize that the success of the Distributed Energy component of the RES depends on more elements than contained in APS's Implementation Plan. As we have indicated many times before the Commission, net metering, interconnection standards and fair tariff structures are crucial to developing a robust, self-sustaining solar industry in the State of Arizona. These policies are in various stages of development and are addressed in a number of open ACC dockets[2]. Without these market-enabling regulations, sales of solar systems could stagnate, limiting market penetration.

II. APS Proposed Costs

APS's proposed costs are outlined in the following table.

Distributed Energy Budget - Table: 2

	2008	%	2009	%
Administration	1.6	3.8%	1.6	4.0%
Implementation	5.2	12.3%	3.1	7.8%
Marketing & Outreach	6.3	14.9%	5.1	12.8%
Commercialization & Integration	0.5	1.2%	0.5	1.3%
Total Overhead	13.6	32.2%	10.3	25.8%
Incentives	28.7	67.8%	29.6	74.2%
Total DE Program	42.3	100.0%	39.9	100.0%

[2] Net Metering (E-00000A-99-0431), E-57 Rate Plan (E-01345A-05-0816), Interconnection (E-00000A-99-0431)

The total DE budget declines from year one to year two not because program incentives are coming down – in fact these costs increase year over year – but rather because the overheads are reduced from one-third of the budget to one-quarter.

III. The Solar Alliance's response to APS REST comments

Administration and Implementation

Implementation and Administration costs described by APS include the following:

1. Fixed payroll personnel required to
    a. Administer the reservation and interconnection applications and agreements
    b. Review system design for conformance with DEAP and interconnection requirements,
    c. Process incentive payments,
    d. Answer customer and installer questions about the program, and
    e. Perform field inspections
2. Variable payroll personnel required to
    a. Program ad install bi-direction and performance meters,
    b. Tag utility equipment to identify potential backfeed sources,
    c. Provide billing support to partial requirements customers
3. Personnel required to
    a. Manage the execution of the program
    b. Develop and execute the marketing and advertising programs, and
    c. Provide ongoing program monitoring and compliance reporting.
4. Materials costs
    a. Incremental cost of bi-directional meter
    b. System locks, tags, inspection tools, and transportation for inspection personnel
    c. Interval recording meter to collect data for research
5. Technology tools
    a. Online form management tool
    b. Billing system integration for energy "sold back" to APS
    c. Tool to "assist" customer in projecting energy savings from typical DE system (not from customer's actual system)
    d. Reporting and maintenance tool

The above list, according to APS, will cost customers about $8 million ($1.1 million for non-DE plus $6.8 million for DE). However, the filing does not provide any detail connecting the activities with the costs and we question whether the costs are necessary and justified.

In order to evaluate whether these costs are necessary and justified, we suggest the Commission require APS to show the development of the proposed costs tied back to these individual cost items. Identify the specific personnel required to perform each of the tasks in sections 1 and 3, and explain why these tasks can't be performed by existing personnel or by existing APS organizational units. Identify each of the personnel in section 2 and provide a derivation of the incremental cost for non-salaried employees.

Also, to the extent that the Commission allows any of these costs, APS should be required to track the costs and perform a benefit to cost test to demonstrate the advantage of APS's program execution.

Second, we question the necessity for some of these items. For example, APS would like to collect interval data to conduct studies and plans to charge the incremental cost of an interval meter to the program (4c). We have no problem with the concept, but it is not a necessary part of the program. In addition, APS thinks customers will be interested in tracking total kWh generated by their system (page 14 of 17). We believe APS is right--however virtually all residential PV systems today come with a datalogger option that feeds actual output directly into a home computer. Commercial systems are likewise designed with built in monitors, as real time knowledge of the output is far more important to the customer than it is to APS. APS should spend no money developing such a system for customers, unless requested by an individual customer in which case that customer can pay the incremental cost. APS also wants to spend money to develop a tool to estimate "typical" energy savings from DE systems (5c). We don't believe that this is necessary. For PV systems there are numerous free tools already available on the internet, and project developers themselves can and do provide far more accurate information to their customers.

Third, we are concerned about the descriptive language that notes the importance of identifying energy "sold back to APS" on page 14 of 17. For PV systems under 100 kW, the net metering rules only allow this to happen once per year. Larger systems may sell energy back to APS if the E-57 rate is approved as filed. This rate has been challenged by members of the DE community, and the Commission has yet to act on the filing as of the date of these comments. In the end, there are a relatively few transactions that will occur, and the efficacy of spending large amounts of money on the billing system should be examined.

Marketing and Outreach

Marketing is the largest part of the non-incentive budget in APS's plan, representing 15% of the total proposed DE budget in 2008.

While we appreciate APS's desire to market its program, we don't believe that the proposed program is strictly necessary to achieve compliance. The primary reason is that experience in other states has shown that once the correct conditions for success are established—that is to say, the right level of incentives, and enabling regulations such as 2 MW net metering, interconnection standards that allow for safe and easy interconnections, and fair tariff designs that allow renewable system owners to appropriately enjoy the economic return of their investment—then robust renewable distributed energy markets have developed. If APS were to focus its efforts on removing current barriers to the point that renewable energy developers are convinced that the state is open for business, then the necessary marketing will be done by the private sector. Working to remove existing barriers is a cheaper and more effective way to ensure program success, and leverages private investment appropriately. We respectfully suggest that if the barriers are not removed, then the funds spent on marketing a non-workable program will be wasted.

Commercialization and Integration

These costs represent a relatively small fraction of the total overhead proposed by APS for the DE program. However, in the interest of keeping the RES-specific budget as small as possible, we question whether the costs of these studies should be born exclusively by the RES program. The subjects explored by the proposed studies are things that any prudent utility might be expected to investigate as part of their fiduciary responsibility to ratepayers, even absent a renewable mandate. To wit, APS is already pursuing the following studies:

- Arizona Renewable Resource Study: analysis of potential renewable resources in Arizona to establish a baseline understanding of renewable energy resources presently perceived as available within Arizona.
- APS Wind Integration Study: evaluation of wind integration costs for Arizona wind sites.
- Joint Utility Market Study: evaluation of consumer receptiveness to the installation of DE, and in particular, PV.
- Concentrating Solar Power Project Studies: Studies related to project siting and support for RFP development.

We believe that these are things that a prudent utility should be investigating as a normal part of their operations. Investigating the availability, practicality, and impact of resources--whether they be coal, natural gas, nuclear, or renewable--is a normal part of utility operations and need not be considered under a separate program. The choice to invest in coal and nuclear generation was not charged to a coal or nuclear specific adjustor, and we see no reason why necessary work to evaluate renewables should not be treated the same way. We urge caution in allocation of any costs between the general body of ratepayers and the RES program budget.

APS describes three functional areas for future studies. While we have nothing against APS conducting investigations in these areas *per se*, if RES costs are a concern we believe that some of these may bear more scrutiny. Placing the 10% limit on overhead costs plus allowing ex post facto recovery on costs should drive APS to limit studies to only those that are the most critical to the success of the RES.

IV. Experience in Other States, As a Test of Reasonableness

We believe that it is useful to benchmark what has happened in other states that have recently implemented distributed generation programs.

Colorado adopted a renewable energy standard in 2004, and developed the implementation rules in 2005 to early 2006. It includes a carve-out for solar electric resources, of which a minimum of 50% must come from customer-sited systems (DE in Arizona parlance). Utilities in Colorado expressed similar concerns about implementing solar resources on the premises of its customers over which they had little control. Public Service Company of Colorado (PSCo – the largest utility in the state) decided to leverage resources by partnering with the solar developers in the state. The developers (residential and commercial) find the customers, the utility provides the rebates, and once a month a

meeting is held among the developers and the utility to review issues and challenges and ultimately to improve the program. As a result of this structure, the Company is well ahead of its solar targets. PSCo's overall budget and administrative costs are shown in the following chart derived from Revised Table 6-7, page 1 of 5, in Public Service Company of Colorado's Compliance Plan filing, Docket No. 06A-478E:

Program & Administrative Costs for Colorado's Renewable Energy Program – Table: 3

	Incremental Renewable Energy Costs	Program & Admin Costs	Total Budget	Program & Admin Cost %
2006	$ 7,768,627	$685,106	$ 8,453,732	8.1%
2007	$14,475,528	$893,035	$15,368,563	5.8%
2008	$12,431,636	$659,702	$13,091,338	5.0%
2009	$12,673,483	$829,911	$13,503,394	6.1%
2010	$11,298,999	$632,086	$11,931,085	5.3%
2011	$15,721,923	$659,563	$16,381,486	4.0%
2012	$15,728,289	$889,860	$16,618,148	5.4%
2013	$15,665,686	$687,336	$16,353,022	4.2%
2014	$15,617,439	$708,630	$16,326,070	4.3%
2015	$19,412,042	$971,862	$20,383,904	4.8%
2016	$19,352,316	$758,392	$20,110,708	3.8%

PSCo accomplished all of the necessary administrative responsibilities, including online application forms, billing, meter swap-out, program promotion, and compliance and reporting with two incremental employees. Overall, Colorado's costs for administering its Renewable Energy Program range from 4%-8% of the total budget.

California, with the largest and most successful solar program in the country to date, limits utilities's administrative budget, including implementation administration, marketing and outreach, and evaluation, to 10% of the budget for incentives.[3]

[3] See CPUC Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues, Rulemaking O6-03-004, May 2, 2006. http://www.cpuc.ca.gov/word_pdf/FINAL_DECISION/63031.pdf

Given the precedent in other states, we believe APS's proposed DE budget could be significantly reduced, with a maximum of 10% for all overhead costs.

V. REST Incentive Costs

One of the key outcomes in this proceeding is to determine the appropriate APS tariff for 2008 that will collect sufficient funds to allow the Company to purchase resources and renewable energy credits sufficient to meet its obligations under the REST. APS's five year view of both its compliance requirements and the associated costs is helpful and informative. However, in light of the rapidly changing electric generation marketplace, and in particular that of solar generation, we believe that the relevant timeframe to be examining in this proceeding is 2008 with some thought given to 2009, at least in terms of the proposed tariff.

APS makes the claim that the sample tariff included in the REST rules will result in insufficient funds for it to comply with the REST in 2008 and beyond. It has further indicated that the sample tariff would collect about $37 million in 2008. In its REST filing, the Company projected the following costs necessary for 2008 REST compliance:

APS Estimated REST Compliance – Table: 4

APS Estimates ($ mil)	2008
Renewable Generation Purchase	$5.3
Renewable Generation Overheads	$1.6
Green Power Revenue	($1.0)
Total Renewable Generation Costs	$5.9
Distributed Energy Incentives	$28.7
Distributed Energy Overheads	$13.6
Total Distributed Energy Costs	$42.3
Total REST Costs	$48.2

Focusing now on the APS estimates for the costs of acquiring energy and credits under the distributed energy program, our analysis indicates that these costs can vary quite dramatically depending upon the mix of distributed resources assumed in the determination. Our initial review utilized the payment schedules identified in the current draft of the UCPP, and assumed a 50/50 split between residential and non-residential, and a further 50/50 split within the residential sector between solar PV and solar hot water. The resulting costs were as follows:

Cost of DE Compliance (UCPP Assumptions) – Table: 5

($000)	2008
Distributed energy requirement (MWh)	51,619
Existing eligible DE resources (MWh)	14,034
Net distributed energy requirement (MWh)	37,585
Cost of residential solar water heating	$7,047
Cost of residential solar PV	$14,094
Cost of commercial solar PV	$3,383
Total Cost of DE Compliance	$24,524

It's important to note that while the residential sector costs appear large, these are one time payments (up-front incentives or UFI), whereas the commercial PV program utilizes production-based incentives (PBI) with 20 year contracts that result in annual payments tied to the energy produced for the contract period.

Next, we take a closer look at the non-residential sector, continue to assume 100% PV within this group, but utilize reduced costs. The costs assumed for 2008 were based upon the 2006 contract for the utility scale PV project of SunEdison in the San Luis Valley in Colorado (22.4¢/kWh), adjusted to reflect reduced economies of scale. Thus a starting point of 25¢/kWh was utilized. The net cost for DE-eligible RECs would be 15¢/kWh netting out estimated retail rates. The results are as follows:

Cost of DE Compliance (PBI Sensitivity) – Table: 6

($000)	2008
Distributed energy requirement (MWh)	51,619
Existing eligible DE resources (MWh)	14,034
Net distributed energy requirement (MWh)	37,585
Cost of residential solar water heating	$7,047
Cost of residential solar PV	$14,094
Cost of commercial solar PV	$2,819
Total Cost of DE Compliance	$23,960

As this chart shows, the cost of compliance in 2008 is not very sensitive to the PBI payments due to the fact that they are spread out over 20 years. However, it should be noted that these estimates may themselves be too high. Media reports have indicated that the worldwide shortage of silicon (Si) should return to balance in 2008. Furthermore, other non-Si PV technologies are reaching commercialization. For example, Arizona-based First Solar recently announced CdTe solar panel prices below $2 per Watt –

roughly half of the current price of Si-based products. This additional competition from the thin film market should drive PV costs down as early as 2008.

In sum, the APS incentive cost projections, while higher, are within the realm of reasonableness. However, combined overhead costs of nearly 31% in 2008 (23% for renewable generation and 32% for distributed energy) are quite excessive. The real world experience of utilities in other states such as California and Colorado has shown that overhead costs are much lower than those projected by APS –below ten percent— and in the case of Colorado, between eight and four percent.

Given that 2008 is a ramp-up year from the existing EPS program, there may be some additional one-time start-up and implementation costs experienced during the year. We urge the Commission to limit overhead costs to ten percent, and allow APS *ex post facto* to seek recovery of verifiable prudently incurred costs explicitly related to REST implementation. The following chart utilizes APS projections for procurement of energy and credits necessary for compliance and add ten percent overhead costs.

Total REST Costs with 10% Limit on Overhead (re-referencing Table 1)

($ mil)	2008
Renewable Generation Purchase	5.3
Renewable Generation Overheads	0.6
Green Power Revenue	(1.0)
Total Renewable Generation Costs	4.9
Distributed Energy Incentives	28.7
Distributed Energy Overheads	3.2
Total Distributed Energy Costs	31.9
Total REST Costs	36.8

Interestingly, this analysis results in almost precisely the projected revenue to be collected under the sample REST tariff of $37 million. Thus, the sample tariff in the REST rules should be sufficient for 2008 to allow APS to comply with the requirements of the REST including the distributed energy standard.

VI. Ratepayer Support for Renewable Energy Investment

Arizona ratepayers overwhelmingly support investment in renewable energy in the state. Over 10,000 Arizonans either signed petitions or sent letters or emails to the Commission in support of establishing the RES—which, as far as we can tell, sets a record for communication on any single issue to the Commission. And this desire is backed up by a willingness to pay, if necessary. According to a poll conducted February 20-22, 2007 by Public Opinion Strategies, a well-respected firm, "A stunning 87% of the electorate

prefers to address Arizona's current energy situation by 'increasing energy efficiency and using more clean energy sources like wind and solar power."

Respectfully submitted on September 26, 2007

By

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The original and 13 copies
of the foregoing have been filed
as of September 26, 2007 with:

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