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BEFORE THE ARIZONA CORPORATION COMMISSION

BOB STUMP,  
Chairman  
GARY PIERCE,  
Commissioner  
BRENDA BURNS,  
Commissioner  
ROBERT L. BURNS,  
Commissioner  
SUSAN BITTER SMITH,  
Commissioner

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AZ CORP COMMISSION  
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Arizona Corporation Commission  
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SEP 18 2013

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IN THE MATTER OF THE APPLICATION )  
OF ARIZONA PUBLIC SERVICE COMPANY) Docket No. E-01345A-13-0248  
FOR APPROVAL OF NET METERING )  
COST SHIFT SOLUTION )

Comments of First Solar

First Solar, Inc. ("First Solar") respectfully submits these Comments to the Arizona Corporation Commission ("ACC") to provide its perspective on the Arizona Public Service Company ("APS") net metering cost shift solution application.

On November 1, 2006, after a three-year review process, the ACC adopted a renewable energy standard ("RES"). The RES requires Arizona's regulated utilities to generate 15 percent of their energy from renewable resources by 2025 in order "to generate 'clean' energy to power Arizona's future."<sup>1</sup> Given Arizona's potential renewable generation resources, it was clear that this RES goal was likely to be met largely by solar electricity generation.

Adopting the RES was a forward-looking step. In 2006, the solar industry was still nascent. There was very little experience to guide predictions of solar cost reduction trajectories, solar's growth path, the capabilities of specific solar technologies, or solar applications that made the most sense to meet policy goals.

At the time, only 140 MW of solar photovoltaic ("PV") installations had been installed in the U.S. as a whole, of which 50 megawatts ("MW") was considered residential and 90 MW non-residential (including government buildings, retail stores, utility installations,

<sup>1</sup> Arizona Corporation Commission (ACC). "Commissioners Approve Rules requiring 15 Percent of Energy from Renewables by 2025." Press Release. 1 Nov 2006.

and military installations)<sup>2</sup>. The largest PV systems in the U.S., all located in California, were no larger than 1 MW in size. Even Germany, which led the world in PV in 2006, had not yet reached 1,000 MW of total installations. In Arizona, just over 2 MW of PV capacity was installed in 2006, for a total of 19 MW of PV installed in Arizona by the end of that year.<sup>3</sup>

The cost of PV in 2006 was on the order of \$8-9.00/ installed watt,<sup>4</sup> and “utility scale” PV systems effectively did not exist.

Given the relative inexperience with solar and its high cost both in general and in Arizona specifically, it made sense at the time to adopt policies and initiate a range of programs and generous subsidies to gain experience across a variety of solar options. These included a 30% distributed generation (“DG”) carve-out as part of the RES, an upfront subsidy from APS of \$3.00/ watt installed for rooftop systems, and net energy metering (“NEM”). Since 2006 the Commission has adopted new rate basing methods which have helped facilitate new solar resources.

The solar industry has matured significantly since 2006 and installations in Arizona have grown exponentially: 1,097 MW of solar-generating facilities were installed in Arizona by the end of 2012,<sup>5</sup> making Arizona second in the nation only to California. Even more significantly, the price of PV has fallen precipitously. Recently released data by the Solar Energy Industry Association and GTM Research show an average cost/installed watt for residential rooftop PV of \$4.81 and the average cost/installed watt for utility scale systems as \$2.10.<sup>6</sup> No one could have predicted these cost reductions two, much less seven, years ago. First Solar has consistently said that as the cost of solar comes down, so must solar subsidies. For the solar industry to be sustainable and maintain its public and political support, subsidies should be appropriate to the economic, environmental and societal value provided by solar energy. In locations where it is not yet possible to compete entirely without subsidies, we should aim to achieve solar policy goals at the lowest overall cost with the intent of creating a level playing field with other energy sources over time.

In light of the experience gained over the past seven years and the significant cost reductions during that time period, it is appropriate to review and revise the programs and

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<sup>2</sup> U.S. Department of Energy. Energy Efficiency & Renewable Energy (EERE) Network News. “Report: U.S. Solar Cell Market Increased 33 Percent in 2006”. 28 March 2007. Web. 19 September 2013.

<sup>3</sup> Sherwood, Larry. “US Solar Market Trends 2007.” Interstate Renewable Energy Council. August 2008: pp. 15 & 9. In 2006, a 1 MW solar thermal electric plant was constructed in Arizona. This was the first new U.S. solar thermal power plant to be constructed in 15 years. Nine solar thermal electric plants with a capacity of 354 MW were constructed in California from 1985 to 1991.

<sup>4</sup> Barbose, Dargouth, Weaver and Wiser. “Tracking the Sun IV, An Historical Summary of the Installed Price of Photovoltaics from 1998 to 2012.” *Lawrence Berkeley National Laboratory*. July 2013.

<sup>5</sup> Solar Energy Industries Association (SEIA). “U.S. Solar Industry Year in Review 2009.” 15 April 2010.

SEIA/GTM Research. “U.S. Solar Market Insight® Report: 2012 Year in Review: Executive Summary.” 2013.

<sup>6</sup> SEIA/GTM Research. “U.S. Solar Market Insight® Report: Q2 2013: Executive Summary.” 2013: pp. 14-15. It should be noted that these figures represent national averages based on data collected by SEIA and GTM Research, which likely does not include all price points in the market. Further, as noted in the report, actual pricing will vary by geography and jurisdiction.

subsidies put in place in 2006 in order to reflect current market realities and to provide both value and continued solar growth for Arizona, and it is reasonable for the ACC to conduct such a review.

For example, in 2006, when the ACC proposed a distributed generation carve-out, community solar programs that achieve most, if not all, of the DG policy goals were not even an option for consideration. While there are several models of community solar programs, in general they are smaller installations (<10MW) that are connected to the distribution or sub-transmission systems. Customers can either directly purchase energy from these facilities or customers can own a share of the installed capacity. These community solar programs allow all electricity consumers, not just those who actually own suitable rooftops, to participate in and take advantage of solar generation. In addition to being available to a broader range of ratepayers than physical rooftop PV installations, these “community” installations can be strategically sited in locations to address distribution and/or transmission constraints and also can take advantage of the benefits of scale typically associated with “utility-scale” systems. And yet, notwithstanding these benefits, community solar programs have not been as popular as rooftop solar options because, in most instances, they do not benefit from NEM. This asymmetric treatment of community solar and rooftop solar should be remedied—for example by revising rooftop NEM programs—so that they both compete on a level playing field. Only then will all solar resources be developed on a least-cost basis.

Both community solar and rooftop solar have enjoyed huge cost reductions during the past several years. Yet, in contrast to community solar development, the growth of the rooftop segment has far exceeded expectations. This difference in growth rates has been primarily due to new financing models and the generous embedded subsidies asymmetrically provided to rooftop solar in NEM, which has now become the principal policy driver of rooftop PV. As a result, the total cost of rooftop PV on the utility system has become much higher than could have been foreseen, placing an unanticipated burden on utilities and ratepayers.

Since 2006, we have also gained significant experience with utility-scale solar programs. Whereas in 2006 the largest ground mounted PV projects in the country were no larger than 1 MW in size, today First Solar alone has commissioned over 1600 MW of grid-connected PV systems in North America and is advancing a 3,000 MW pipeline of U.S. projects, including the 290 MW Agua Caliente project, in Yuma County, which will be completed this year. First Solar’s systems range in size from relatively small, 10 MW facilities to two 550 MW facilities located in California. The utility-scale power plants that First Solar constructs today support grid stability and reliability through grid-friendly features such as voltage regulation, active power control, ramp-rate control, fault ride-through, frequency control and others—benefits that can also be provided by smaller-scale community power plants. A plant-level control system that controls a large number (in the hundreds) of individual inverters to affect plant output at the grid connection point

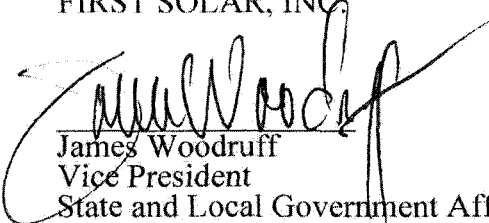
is a key enabler. These grid benefits of larger scale solar were certainly not foreseen in 2006. In addition, increasingly reliable forecasting also makes solar from utility-scale systems a much more predictable generator of electricity. Furthermore, these larger scale systems can provide all of these attributes, as well as the environmental benefits associated with all solar applications, at a significantly lower cost per kilowatt hour due to the cost economies associated with large scale.

The 2006 RES and the policies adopted to achieve the RES mandate have successfully facilitated the growth and maturation of solar in Arizona. The past seven years have also provided valuable experience to help guide today's decisions about the next phase of RES-related policies. The ACC can now use real experience and data to evaluate the various solar options available and their costs and benefits, something that was not possible in 2006, and use that information to guide its decision about NEM.

The objective of this next phase of solar policy should be to maximize the solar benefit per dollar spent; fairly compensate for solar generation without discriminating among various solar applications; increase access to green electricity for all ratepayers; and reduce the cost of achieving Arizona's renewable energy goals. The current review and proposed revision of NEM have been criticized by some as anti-solar. We believe just the reverse to be true. Unless the regulatory structure is adjusted to incorporate current market realities, the unforeseen economic impact of NEM may result in an indiscriminate backlash against solar of all sizes and types. The issue is not *whether* Arizona should continue to develop large amounts of new solar generation but rather *how* Arizona should shape and fine-tune its policies to achieve this objective equitably and at lowest cost. The ACC needs to take the lead to develop a solar plan that will create a robust and sustainable solar industry by developing the appropriate solar regulatory structure for the future, not the past. This plan should consider all the salient operational, financial, market and resource planning factors in order to meet customers' solar needs at the lowest average cost for ALL customers. We believe that the ACC has the full range of information needed to make a decision now. It is important that this review of policy proceed expeditiously and not be deferred.

Sincerely,

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ORIGINAL and thirteen (13) copies of the foregoing filed this 18<sup>th</sup> day of September, 2013, with:

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COPY of the foregoing hand delivered this 18<sup>th</sup> day of September, 2013, to:

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