

ORIGINAL

OPEN MEETING AGENDA ITEM



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BEFORE THE ARIZONA CORPORATION COMMISSION

**COMMISSIONERS**

- BOB STUMP, Chairman**
- GARY PIERCE**
- BRENDA BURNS**
- BOB BURNS**
- SUSAN BITTER SMITH**

Arizona Corporation Commission  
**DOCKETED**

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AZ CORP COMMISSION  
DOCKET CONTROL  
DOCKET NO. E-01345A-13-0248

DOCKETED BY

IN THE MATTER OF THE APPLICATION OF  
ARIZONA PUBLIC SERVICE COMPANY FOR  
APPROVAL OF NET METERING COST  
SHIFT SOLUTION.

**RESPONSE OF WESTERN RESOURCE  
ADVOCATES TO COMMISSIONER  
PIERCE'S REQUEST OF OCTOBER 17, 2013**

On October 17, 2013, Commissioner Pierce requested that parties to this Docket respond to the following questions: "Of the scenarios shown in Staff's Appendix III, which is the most realistic scenario? ... What is the most realistic Assumed Utility Scale PPA Rate? What is the most realistic Assumed Retail Rate? Please keep in mind that for the purposes of this exercise, the definition of Utility Scale in the Staff report is [a] 1 to 5 MW size system interconnected at the sub-transmission level. ... Please explain, in detail, why you believe the scenario you have chosen is based on the most realistic assumptions."

Western Resource Advocates provides the following response.

1. To obtain a distributed generation premium, Staff compares the foregone revenues attributable to distributed solar generation with the costs of providing an equivalent amount of solar generation obtained from third party owned central station solar projects selling their output to APS.
2. APS's average residential revenue in 2012 was \$0.1197 per kWh.<sup>1</sup> However, it is necessary to remove revenues from the basic service charge because these revenues cannot be avoided by distributed generation customers. Basic service charges were obtained from APS's tariff sheets, annualized, and multiplied by the total number of 2012 residential customers allocated to each tariff sheet using the proportion of residential customers on each rate reported in APS's 2011 rate case filing.<sup>2</sup> The result is an adjusted residential rate of \$0.1078 per kWh.
3. Energy from the central station solar plant will be subject to losses. We increased the required solar kWh from the central station project by 5% to account for these losses.
4. There are several sources of information on prices of utility scale PV projects.
  - a. Lawrence Berkeley National Laboratory (LBNL) has estimated levelized prices of utility scale solar energy projects where the electricity is sold to the utility under a power purchase agreement (PPA).<sup>3</sup> The photovoltaic projects included in the study are typically larger than those assumed in Staff's analysis. For contracts executed in 2013, the average project size is 27 MW; for contracts executed in 2012, the average project size is 118 MW. For these projects, the average levelized contract prices are about \$55 per MWh for contracts executed in 2013 and about \$75 per MWh for contracts executed in 2012. Note that newer vintage projects tend to have lower prices. Figure 3 of the LBNL report indicates that there

<sup>1</sup> Pinnacle West 2012 Statistical Report (<http://www.pinnaclewest.com/investors/Pages/statistical-supplement-2012.aspx>), page 12.

<sup>2</sup> Pinnacle West 2012 Statistical Report, p. 25; APS 2011 rate case standard filing requirements, Schedule H-2

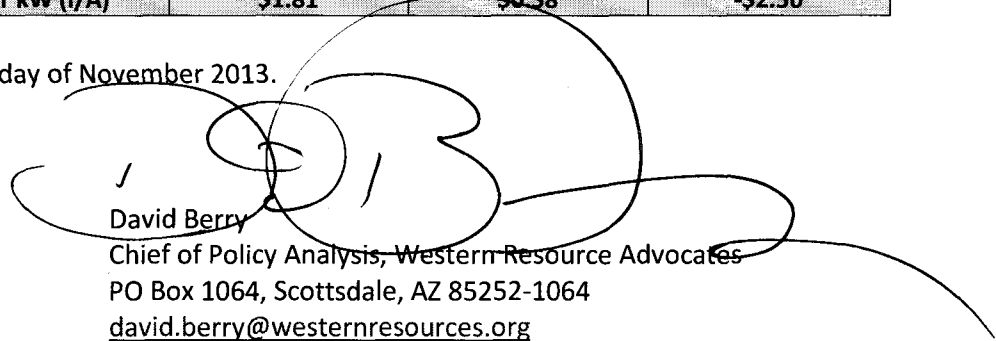
<sup>3</sup> M. Bolinger and S. Weaver, *Utility-Scale Solar 2012: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States*, Lawrence Berkeley National Laboratory, LBNL-6408E, September 2013.

is a huge range of installed prices (from about \$2.75 per watt AC to \$8 per watt AC) for utility scale photovoltaic projects less than about 5 MW installed in 2012.

- b. We also reviewed 2012 prices paid by Arizona utilities in 5 power purchase agreements for projects ranging from 2 to 10 MW that were installed in 2011 or 2012. Data are from FERC Form 1. The average price in 2012 for these 5 power purchase agreements is \$120/MWh and the standard deviation is  $\pm$  \$16.69/MWh.
  - c. Given the small size of PV projects assumed by Staff (which tend to have higher prices) and recent declines in prices, we conclude that a realistic utility scale PPA rate for a project of 1 to 5 MW is between the average of the 2012 prices paid for projects installed in 2011 and 2012 and about one standard deviation below the average, i.e., about \$100/MWh to \$120/MWh. We also examine a PPA rate of \$90/MWh.
5. Using Staff's method, the distributed generation premium is shown below for a range of PPA rates. See Rows H through J. Row E represents foregone revenues attributable to distributed generation and Row G represents the cost of utility scale solar energy adjusted for losses.<sup>4</sup> The range of premiums reflects uncertainty about PPA rates and the wide variation in rates experienced in the market. Note that a negative premium is plausible, indicating that, under Staff's approach, there is no subsidy to customers with distributed solar generation. Further, the actual foregone revenues may be less than shown in rows D and E because of demand (kW) charges on some rate schedules. **We conclude that this method is very imprecise and that any changes in rate design should be considered only in a rate case where better data would be available.**

Steps in Staff's Procedure	Assuming PV PPA rate is \$90/MWh	Assuming PV PPA rate is \$100/MWh	Assuming PV PPA rate is \$120/MWh
A. Customer DG system size kW	6.4	6.4	6.4
B. Assumed annual DG kWh/kW	1,641	1,641	1,641
C. Calculated annual DG kWh (A x B)	10,502.4	10,502.4	10,502.4
D. Residential retail rate \$/kWh adjusted to remove basic service charge revenues	\$0.1078	\$0.1078	\$0.1078
E. Annual foregone revenues due to DG (C x D)	\$1,131.68	\$1,131.68	\$1,131.68
F. Assumed utility scale PPA rate \$/kWh	\$0.09	\$0.10	\$0.12
G. Annual PPA cost of production (C x F x 1.05)	\$992.48	\$1,102.75	\$1323.30
H. Annual DG premium (E - G)	\$139.20	\$28.93	-\$191.62
I. Monthly DG premium (H/12)	\$11.60	\$2.41	-\$15.97
J. Monthly LFCR DG premium per kW (I/A)	\$1.81	\$0.38	-\$2.50

Respectfully submitted this 4<sup>th</sup> day of November 2013.



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<sup>4</sup> Both distributed generation and an equivalent amount of utility scale solar energy will avoid the same amount of fuel and purchased power costs. Thus, the table does not offset the rates in Rows D and F by avoided fuel and purchased power costs -- those fuel and purchased power costs cancel in the calculation of the premium. APS's 2012 fuel and purchased power costs were \$0.0307/kWh (Pinnacle West 2012 Statistical Report, pp. 18, 24).