

**ORIGINAL**



0000169300

1 Thomas A. Loquvam  
2 Pinnacle West Capital Corporation  
3 400 North 5<sup>th</sup> Street, MS 8695  
4 Phoenix, Arizona 85004  
5 Tel: (602) 250-3630  
6 E-Mail: [Thomas.Loquvam@pinnaclewest.com](mailto:Thomas.Loquvam@pinnaclewest.com)

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5 Raymond S. Heyman  
6 Snell & Wilmer  
7 400 E. Van Buren St. #1900  
8 Phoenix, AZ 85004-2202  
9 Tel: (602) 382-6202  
10 E-Mail: [rheyman@swlaw.com](mailto:rheyman@swlaw.com)

11 Attorneys for Arizona Public Service Company

12 **BEFORE THE ARIZONA CORPORATION COMMISSION**

13 COMMISSIONERS

14 DOUG LITTLE Chairman  
15 BOB STUMP  
16 BOB BURNS  
17 TOM FORESE  
18 ANDY TOBIN

19 IN THE MATTER OF THE  
20 COMMISSION'S INVESTIGATION OF  
21 VALUE AND COST OF DISTRIBUTED  
22 GENERATION.

DOCKET NO. E-00000J-14-0023

**ARIZONA PUBLIC SERVICE  
COMPANY'S NOTICE OF FILING  
DIRECT TESTIMONY SUMMARIES**

23 APS hereby provides notice that it is filing summaries of the Direct Testimony  
24 filed on February 25, 2016.

Arizona Corporation Commission

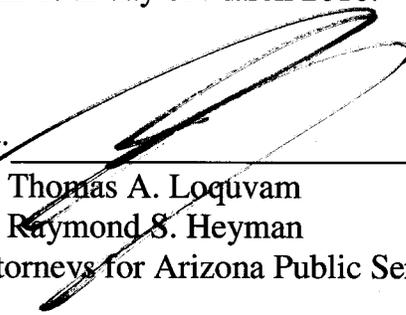
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RESPECTFULLY SUBMITTED this 29th day of March 2016.

By:   
Thomas A. Loquvam  
Raymond S. Heyman  
Attorneys for Arizona Public Service Company

ORIGINAL and thirteen (13) copies  
of the foregoing filed this 29th day of  
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ARIZONA CORPORATION COMMISSION  
1200 West Washington Street  
Phoenix, Arizona 85007

1 COPY of the foregoing mailed/delivered this  
2 29th day of March 2016 to:

3 Richard Adkerson, CEO  
4 Ajo Improvement Company  
5 333 N. Central Ave  
6 Phoenix, AZ 85004-2189

Janice Alward  
Legal Division  
Arizona Corporation Commission  
1200 W. Washington  
Phoenix, AZ 85007

6 Roy Archer  
7 Morenci Water and Electric Company  
8 and Ajo Improvement Company  
9 PO Box 68  
10 Morenci, AZ 85540

Michael Arnold, Director  
Morenci Water & Electric Company  
333 N. Central Ave  
Phoenix, AZ 85004

9 Than Ashby, Office Manager  
10 Graham County Electric Cooperative  
11 9 W. Center St  
12 PO Drawer B  
13 Pima, AZ 85543

Nancy Baer  
245 San Patricio Drive  
Sedona, AZ 86336

12 Patrick Black  
13 Attorney  
14 Fennemore Craig  
15 2394 East Camelback Road, Suite 600  
16 Phoenix, AZ 85016

Jack Blair  
SSVEC  
311 E. Wilcox Drive  
Sierra Vista, AZ 85635

16 Thomas Broderick  
17 Utilities Division  
18 Arizona Corporation Commission  
19 1200 W. Washington  
20 Phoenix, AZ 85007

Tyler Carlson  
Mohave Electric Cooperative, Inc.  
P.O. Box 1045  
Bullhead City, AZ 86430

19 Bradley Carroll  
20 Assistant General Counsel, State  
21 Regulatory  
22 Tucson Electric Power Company  
23 88 East Broadway Blvd.  
24 Mail Stop HQE910  
25 P.O. Box 711  
26 Tucson, AZ 85702

Kirby Chapman  
CFAO  
Sulphur Springs Valley Electric  
Cooperative, Inc.  
311 E. Wilcox  
Sierra Vista, AZ 85650

24 Karyn Christine  
25 Arizona Corporation Commission  
26 1200 W. Washington  
27 Phoenix, AZ 85007

Jennifer Cranston  
Gallagher & Kennedy, P.A.  
2575 East Camelback Road  
Phoenix, AZ 85016-9225

1	C. Webb Crockett Attorney	Jeffrey Crockett, Esq. Attorney
2	Fennemore Craig	Crockett Law Group PLLC
3	2394 East Camelback Road, Suite 600 Phoenix, AZ 85016	2198 E. Camelback Road, Suite 305 Phoenix, AZ 85016-4747
4		
5	Nicholas Enoch Attorney	Patricia Ferre P.O. Box 433
6	Lubin & Enoch, P.C. 349 North Fourth Ave. Phoenix, AZ 85003	Payson, AZ 85547
7		
8	Connie Fitzsimmons Arizona Corporation Commission	Jason Gellman Snell & Wilmer LLP
9	1200 W. Washington Phoenix, AZ 85007	400 E. Van Buren Street, Suite 800 Phoenix, AZ 85004
10		
11	Rick Gilliam Director of Research	Peggy Gillman Mohave Electric Cooperative, Inc.
12	Vote Solar	P.O. Box 1045
13	1120 Pearl Street, Suite 200 Boulder, CO 80302	Bullhead City, AZ 86430
14		
15	Meghan Grabel Attorney for AIC	Garry D. Hays Attorney for ASDA
16	Osborn Maledon, P.A. 2929 North Central Avenue Phoenix, AZ 85012	Law Offices of Garry D. Hays, PC 2198 E Camelback Rd, Suite 305 Phoenix, AZ 85016
17		
18	Michael Hiatt Vote Solar	Timothy Hogan Attorney
19	633 17th Street, Suite 1600 Denver, CO 80202	Arizona Center for Law in the Public Interest
20		202 E. McDowell Road, Suite 153 Phoenix, AZ 85004
21		
22	Dillon Holmes Clean Power Arizona	David Hutchens President
23	9635 N. 7th Street No 47520 Phoenix, AZ 85068	UNS Electric, Inc. 88 E. Boradway Blvd., MS HQE901 PO Box 711 Tucson, AZ 85701
24		
25		
26		
27		
28		

1	Teena Jilibian Associate Law Judge Arizona Corporation Commission 1200 W. Washington Phoenix, AZ 85007	Briana Kobor Program Director Vote Solar 360 22nd Street, Suite 730 Oakland, CA 94612
4	Charles Kretek, General Counsel Columbus Electric Cooperative PO Box 631 Deming, MN 88031	Kevin Larson, Director UNS Electric, Inc. 88 E. Broadway Blvd, MS HQE910 PO Box 711 Tucson, AZ 85701-0711
8	Ladel Laub Dixie Escalante Rural Electric Assn, Inc 71 East highway 56 Beryl, UT 84714-5197	Matthew Laudone Arizona Corporation Commission 1200 W. Washington Phoenix, AZ 85007
11	Lewis Levenson 1308 E Cedar Lane Payson, AZ 85541	Marcus Lewis Garkane Energy Cooperative PO Box 65 Loa, UT 84747
14	Steven Lunt, CEO Duncan Valley Electric Cooperative 379597 AZ Hwy 75 PO Box 440 Duncan, AZ 85534	Craig Marks Attorney AURA 10645 N. Tatum Blvd. Ste. 200-676 Phoenix, AZ 85028
17	Dan McClendon Garkane Energy Cooperative PO Box 65 Loa, UT 84747	Charles Moore Navopache Electric Cooperative 1878 W. White Mountain Blvd. Lakeside, AZ 85929
21	Vincent Nitido TRICO Electric Cooperative, Inc. 8600 W. Tangerine Road Marana, AZ 85653	Dwight Nodes Chief Administrative Law Judge Arizona Corporation Commission 1200 W. Washington Phoenix, AZ 85007
24	Paul O' Dair Navopache Electric Cooperative, Inc. 1878 W. White Mountain Blvd. Lakeside, AZ 85929	Chinyere Osuala Vote Solar 48 Wall Street, 19th Floor New York, NY 10005

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22  
23  
24  
25  
26  
27  
28

Michael Patten  
Attorney  
SNELL & WILMER L.L.P.  
One Arizona Center  
400 E. Van Buren Street, Suite 1900  
Phoenix, AZ 85004-2202

Gary Pierson  
Arizona Electric Power Cooperative  
PO Box 670  
1000 S. Highway 80  
Benson, AZ 85602

Daniel Pozefsky  
Chief Counsel  
RUCO  
1110 W. Washington, Suite 220  
Phoenix, AZ 85007

Court Rich  
Attorney  
Rose Law Group, pc  
7144 East Stetson Drive, Suite 300  
Scottsdale, AZ 85251

Maureen Scott  
Legal Division  
Arizona Corporation Commission  
1200 W. Washington  
Phoenix, AZ 85007

William Sullivan  
Attorney  
Curtis, Goodwin, Sullivan, Udall &  
Schwab, P.L.C.  
501 E Thomas Road  
Phoenix, AZ 85012

Greg Patterson  
Attorney  
Munger Chadwick  
916 West Adams Suite 3  
Phoenix, AZ 85007

Richard Pitcairn PhD, DVM  
Susan Pitcairn, MS  
1865 Gun Fury Road  
Sedona, AZ 86336

Pat Quinn  
AURA  
5521 E. Cholla St.  
Scottsdale, AZ 85254

Timothy Sabo  
Snell & Wilmer  
400 East Van Buren  
Suite 1900  
Phoenix, AZ 85004

Brian Smith  
Legal Division  
Arizona Corporation Commission  
1200 W Washington  
Phoenix, AZ 85007

Gary Yaquinto  
President & CEO  
Arizona Investment Council  
2100 N. Central Avenue, Suite 210  
Phoenix, AZ 85004



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## **APS VOS/COS Testimony Summary Document**

Testimony Submitted February 25, 2016

Docket No. E-00000J-14-0023

### **Overview**

This is a summary of the Direct Testimony of Leland R. Snook, Ashley C. Brown, Bradley J. Albert, and John Sterling submitted to the Arizona Corporation Commission on February 25, 2016.

### **APS Conclusions and Recommendations**

1. The Commission should adopt the APS cost of service study (COSS) methodology as set forth in this docket.
2. The Commission should find and conclude as a policy matter that Value of Solar methodologies will not be used in setting rates.
3. The methodology for determining Value of Solar established by the Commission as a result of this docket should be approved as an appropriate analysis tool for determining:
  - The value of solar in the resource planning context; and,
  - Calibrating the price paid for energy exported to the grid from rooftop solar arrays.

### **Individual Testimony**

**Leland R. Snook**

*APS Director of Rates and Rate Strategy*

#### **Testimony overview**

Mr. Snook's testimony first discusses the methods and results of the COSS that APS prepared in connection with this proceeding. The COSS demonstrates that residential rooftop solar customers, also referred to as Net Energy Metering ("NEM") customers, on energy-based rates pay only 36% of the cost to serve them, and that NEM customers on demand rates pay only approximately 72% of the cost to serve them. These COSS results take into account not only the costs to serve customers with rooftop solar, but also all of the demonstrable benefits supplied by rooftop solar. These benefits include all of the energy produced by the rooftop solar and a 19% credit for capacity.

These COSS results demonstrate that the cost shift is real under APS's present rate design. Whereas rooftop solar customers on energy rates pay only 36% of the costs to serve them, the typical residential

customer pays between 86% and 91% of the cost to serve. If rate design is not modernized, approximately \$67 per month in cost responsibility for solar customers on energy rates and \$29 per month for solar customers on demand rates will be shifted to residential customers without solar — to the extent these fixed costs are not already being shifted through APS's Lost Fixed Cost Recovery Mechanism.

Further, the COSS demonstrates that today, without the right price signals to incent behavior, the demand and energy usage of residential customers with rooftop solar differs significantly from residential customers without solar. These differences make it appropriate to evaluate, for ratemaking purposes, residential solar customers as a unique sub-class within the residential customer group.

Lastly, Mr. Snook discusses the implications of the COSS results. Relying on a kWh price for the bulk of cost recovery is no longer a workable solution. When customers reduce energy use only, and don't reduce fixed grid costs, current rate design shifts responsibility for fixed cost recovery to customers without rooftop solar. This cost shift will increase rates for those customers without solar, including the most vulnerable of our customers, the limited-income segment, without regard for cost causation. This is inequitable and must change for solar to be a sustainable technology for all customers over the long term. Further, volumetric rates pick which technologies win and which lose. Currently, only those technologies that reduce energy can permit customers to reduce their bills. Aligning costs with cost recovery, however, will permit different technology types to compete based on how effectively they reduce costs. The result will provide customers with more and more choices as technological innovation continues.

### **Key points**

The COSS reflects what APS believes to be the appropriate method to use in rate case proceedings for the cost of service analysis for rooftop solar customers. It also supports realigning rate design to better match the costs incurred to serve customers. Realigning rates will help ensure that:

- Customers have accurate price signals from which to make efficient energy technology decisions;
- Prices for services are equitable for all customers, including both those that adopt technology and those who do not; and,
- The pricing framework is financially sustainable for all customers over the long term.

If a customer no longer consumes significant amounts of energy but continues to use infrastructure assets, APS's pricing structure must appropriately measure and bill for this changed, but ongoing, use in a manner that is fair for all customers. The current method of collecting fixed and demand-related costs on a fluctuating kilowatt-hour ("kWh") energy basis will not achieve this critical goal.

### **Ashley C. Brown**

*Executive Director of the Harvard Energy Policy Group*

### **Testimony overview**

Mr. Brown's testimony explains why regulators should view "value of solar" (VOS) analyses with a great deal of skepticism. It is an approach to pricing that is completely inconsistent with the two tested and

proven methods of pricing electricity: costs and/or markets. Most advocates for a VOS approach do not even suggest that a value of solar pricing methodology should be broadly applied. They seek only to use it to guide (or perhaps actually set) the price of rooftop solar, while pricing every other generating resource, including large scale renewables, using the traditional basis of costs and/or market. That, of course, would result in a discriminatory and largely incoherent approach to pricing in the increasingly competitive electricity market. It would not only risk disrupting the overall efficiency of the power sector, but harm consumers simply to increase rooftop solar company profits. VOS approaches are:

- Highly subjective;
- Focused on generalities and largely lacking in the granularity demanded by the complexities of the electric sector;
- Arbitrary and policy presumptive about selecting which externalities to consider; and
- Often devoid of such critical contexts as costs, markets, technology evolution, and the full range of options in the marketplace.

In short, the value of a VOS analysis is, at best, highly marginal. It is, in the ultimate irony, eerily reminiscent of the PURPA policy mistake in the power sector less than three decades ago.

### **Key Points**

The issues below, in Mr. Brown's opinion, are some of the most fundamental conceptual problems with VOS studies:

- Often unclear about the question they are answering;
- Often struggle with how to forecast costs and benefits into the future;
- Sometimes not realistic (or even consistent) about what marginal power will be offset by rooftop solar;
- Often fail to account for costs, as well as benefits; and,
- Generally ignore the regressiveness of existing net metering policies.

### **Bradley J. Albert**

*APS General Manager of Resource Management, Power Marketing and Acquisitions*

### **Testimony overview**

Mr. Albert's testimony provides several methods for calculating the value of rooftop solar. Although these methodologies differ in several respects, the ultimate reason for conducting these types of analyses is to inform policy decisions regarding, rather than set rates for, rooftop solar.

Retail rates must be based on actual costs and the application of cost of service principles, as discussed by APS Witness Snook. However, a Value of Solar (VOS) calculation can play a valuable role for policy makers. The VOS can inform resource planning decisions and can be used to evaluate and even establish how rooftop solar is incentivized. For example, the Commission can consider the VOS in determining the amount paid to customers who export energy to the grid from their rooftop solar systems. The Commission could also use the VOS to establish additional transparent incentives, such as the up-front cash incentive that the Commission authorized for a period of time.

## Key points

In his testimony, Mr. Albert presents three different VOS methodologies:

- **Short-term avoided cost.** This would set a value for energy produced by rooftop solar based on reported market prices.
- **Long-term avoided cost.** This would begin with the methodology used in APS's 2013 SAIC study, with modifications that reflect additional information regarding system operations that APS has obtained since the SAIC study was conducted.
- **Adjusted grid-scale cost.** This methodology begins with a reported power purchase agreement (PPA) price for a grid-scale solar project, appropriately selected based on geography, timing, and other relevant factors. The methodology then adjusts the grid-scale PPA price to account for real operational differences between grid-scale and rooftop solar applications.

It is within the Commission's discretion to choose which methodology to adopt for determining the VOS. Based on the nature of the calculation, however, the price paid for a grid-scale solar PPA should be the ceiling for any VOS, after appropriate adjustments are made to reflect the operational differences between gridscale and rooftop solar applications. Because both rooftop and grid-scale solar applications contribute the same benefits to the system, the goal should be to procure solar at the least cost—the price of grid-scale PPAs. This would reduce costs to customers while still capturing the real value that solar brings to a resource portfolio.

## John Sterling

*Solar Electric Power Association Senior Director, Research & Advisory Services*

*SEPA is an educational non-profit dedicated to helping electric utilities integrate solar and other distributed energy resources into their energy portfolios in ways that benefit the utilities, their customers, and the general public. Established in 1992, SEPA now has over 530 utility and over 480 non-utility member organizations. Approximately 30 Arizona-based companies and organizations are SEPA members, including several solar developers, utilities, and government agencies.*

## Testimony overview

In 2014 and 2015, Mr. Sterling served as the stakeholder facilitator for a working group created by Tennessee Valley Authority (TVA). This working group's purpose was to provide input and feedback on the creation of a methodology to calculate the value (defined as the net of benefits and costs) of different distributed generation resources on the TVA system. Specifically, this group focused on distributed solar as the first technology under consideration. The purpose of Mr. Sterling's testimony is to present the conclusions of the working group and discuss the components of the methodology that was agreed upon. SEPA is not an advocacy organization and does not engage in advocacy discussions.

Consequently, Mr. Sterling's testimony is not meant to convey a preferred approach; rather, it is meant to provide additional information regarding the benefits and costs of distributed solar as determined by the TVA working group. This testimony is meant to serve as a reference point for the Arizona Corporation Commission.

## Key points

- TVA has had a legacy solar program for several years that was developed to stimulate solar deployment via high incentive payments.
- TVA's solar incentive program was scheduled to phase out at the end of 2015. Coupled with this, there was a growing recognition that understanding the true benefits and costs from these types of resources would be beneficial to all market participants, especially since TVA was also about to go through the creation of a new Integrated Resource Plan (IRP).
- As part of the IRP initiative, a stakeholder group had been created to provide context and feedback on how various renewable resources should be treated from a modeling perspective. TVA decided to bring together a subset of that broader stakeholder group and create a discussion around the benefits and costs of distributed generation, and (in particular) distributed solar. This initiative was dubbed distributed generation-integrated value (DG – IV).
- The final DG – IV methodology includes the following value streams:
  - Generation Deferral (Capital and Fixed O&M)
  - Avoided Energy (Fuel, Variable O&M, and Start-up)
  - Environmental (Compliance and Market)
  - Transmission System Impact
  - Distribution System Impact
  - Losses (Transmission and Distribution)