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BEFORE THE ARIZONA CORPORATION COMMISSION

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AZ CORP COMMISSION
DOCKET CONTROL

IN THE MATTER OF THE APPLICATION OF
SULPHUR SPRINGS VALLEY ELECTRIC
COOPERATIVE, INC. FOR
ESTABLISHMENT OF JUST AND
REASONABLE RATES AND CHARGES
DESIGNED TO REALIZE A REASONABLE
RATE OF RETURN ON THE FAIR VALUE
OF THE PROPERTIES OF SULPHUR
SPRINGS VALLEY ELECTRIC
COOPERATIVE, INC. DEVOTED TO ITS
OPERATIONS IN THE STATE OF ARIZONA
AND RELATED APPROVALS.

DOCKET NO. E-01575A-15-0312

**NOTICE OF FILING
STAFF'S SURREBUTTAL TESTIMONY**

The Utilities Division ("Staff") of the Arizona Corporation Commission ("Commission") hereby files the Surrebuttal Testimony of Staff witnesses Thomas Broderick, Eric Van Epps, Ranelle Paladino, Crystal Brown, Julile McNeely-Kirwan, and Yue Liu, in the above-referenced matter.

RESPECTFULLY SUBMITTED this 6th day of May, 2016.

Arizona Corporation Commission

DOCKETED

MAY 06 2016

DOCKETED BY *KE*

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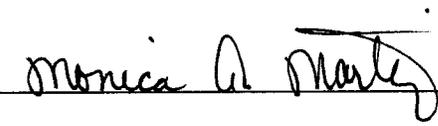
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BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
Chairman
BOB STUMP
Commissioner
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Commissioner
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Commissioner

IN THE MATTER OF THE APPLICATION OF) DOCKET NO. E-01575A-15-0312
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. FOR ESTABLISHMENT)
OF JUST AND REASONABLE RATES AND)
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REASONABLE RATE OF RETURN ON THE)
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COOPERATIVE, INC. DEVOTED TO ITS)
OPERATIONS IN THE STATE OF ARIZONA)
AND RELATED APPROVALS)
_____)

SURREBUTTAL
TESTIMONY
OF
THOMAS M. BRODERICK
DIRECTOR
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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1 **INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Thomas M. Broderick. My business address is 1200 West Washington Street,
4 Phoenix, Arizona 85007.

5
6 **Q. By whom are you employed and in what capacity?**

7 A. I am employed by the Arizona Corporation Commission (“Commission”) as Director of the
8 Utilities Division (“Staff”).

9
10 **PURPOSE OF SURREBUTTAL TESTIMONY**

11 **Q. What is the purpose of your Surrebuttal testimony?**

12 A. The purpose of my Surrebuttal testimony is to place further into current context Staff’s
13 interrelated testimonies for Net Metering (“NEM”) and residential rate design¹ as presented
14 by Staff witnesses Ranelle Paladino, Eric Van Epps and Yue Liu. A secondary purpose is to
15 continue to encourage the parties to this case to settle all issues.

16
17 All of the investor owned utilities and many of the cooperatives the Commission regulates
18 have either completed, pending or soon to be filed rate cases addressing, among other issues,
19 NEM and residential rate design particularly as it relates to alleged under recovery of each
20 utility’s fixed costs and the subsequent shifting of recovery of those fixed costs to other
21 customers. Additionally, the Commission has on-going generic Docket E-00000J-14-0023,
22 concerning the Value and Cost of Distributed Generation for which rooftop solar distributed
23 generation is a focus area and thus for which proposed changes to NEM are a possibility or
24 likelihood.

25

¹ And small general service customers in some cases.

1 **Q. What is the core NEM and residential rate design issue as Staff sees it presently?**

2 A. Virtually every utility proposed change to NEM and residential rate design which is intended
3 to improve utility fixed cost recovery is alleged unfavorably impact the economics of rooftop
4 solar. As described in Staff witness Mr. Yue Liu's testimony, Staff has selected for evaluation
5 two measurements, simple payback and internal rate of return, to express the impacts on
6 rooftop solar of various proposed NEM and rate design changes. In this case, SSVEC has
7 proposed to place residential DG rooftop solar customers on a separate tariff with a \$50 per
8 month basic service charge and a payment for solar generated electricity exported to the grid
9 based on the short-term avoided wholesale cost of power. However, at the present time, the
10 Commission has not approved or selected any set of NEM and residential rate design changes
11 in any recent or on-going rate case that improve utility fixed cost recovery.

12
13 **Q. What changes to NEM and residential rate design has Staff proposed to-date?**

14 A. In UNSE's rate case, Docket E-04204A-15-0142, Staff proposed mandatory demand charges
15 for residential and small general service customers² and no changes to NEM. Recently, in
16 Docket E-04204A-15-0142, two Commissioners filed letters in that Docket seeking analysis
17 of rate design and NEM alternatives to mandatory demand charges.

18
19 In this case, SSVEC neither proposed nor supported mandatory demand charges, and Staff
20 did not propose demand charges, Instead, Staff evaluated and discussed in its direct testimony
21 changes to residential rate design and NEM. While Staff is unable to support the formation
22 of a separate class or separate tariff for rooftop solar customers at this time, Staff did discuss
23 alternatives to NEM's banking and NEM's compensation for solar generated electricity
24 exported to the grid. In his surrebuttal testimony, Staff witness Mr. Yue Liu places into context
25 the SSVEC proposal for a separate tariff for residential DG and indicates the adverse possible

² When the applicant was also supportive.

1 impacts of that proposal on payback and internal rate of return. And, while Staff witness Van
2 Epps continues to discuss changes to NEM, Staff is unable at this time – without further
3 policy direction from the Commission – to support changes to NEM in this case.

4
5 Staff witness Paladino is supportive of SSVEC's request to increase the monthly basic service
6 charge for residential to \$25 per month in four annual steps. That increase will provide SSVEC
7 a very significant improvement in fixed cost recovery and revenue stability.

8
9 **Q. Why is Staff opposed to the formation of a separate class or tariff for solar rooftop**
10 **customers?**

11 A. Since the Commission's NEM rules allow for a separate charge for specific metering cost
12 increases imposed by rooftop solar customers, Staff concludes that the creation of such a class
13 or tariff at this time is unnecessary and duplicative and would impose additional fixed costs
14 on some residential customers (i.e., rooftop solar) that are not imposed on all other residential
15 customers.

16
17 In this case, SSVEC has not performed a cost of service analyses for such a separate class or
18 tariff in support of its request to increase the monthly basic service charge to \$50. SSVEC has
19 an existing charge of approximately \$3 per month applicable to rooftop solar customers as per
20 the existing NEM rules. SSVEC has not proposed to change that rate in this case.

21
22 **Q. What positions has Staff taken in the on-going generic Docket E-00000J-14-0023?**

23 A. In short, Staff has proposed a conceptual model of avoided cost. Staff is also examining
24 geographic feeder based evaluation of DG. Staff is also responding to utilities' proposal of a
25 single recent PPA as the proxy for the value of DG. Staff's response is considering a weighted

1 average of both owned and PPA photovoltaic utility scale sources actually in-service for each
2 utility. That proposal is still under development.

3

4 **Q. Does that conclude your surrebuttal testimony?**

5 A. Yes.

6

QUALIFICATIONS

THOMAS M. BRODERICK

Employment History

Director, Utilities Division, Arizona Corporation Commission, Phoenix, AZ (July 2015 - present)

Field Team Lead, Power Africa Project, Deloitte Consulting, Nairobi, Kenya (September 2013 - August 2014)

Director, Rates & Regulation, EPCOR and American Water, Phoenix, AZ (2004 - August 2013)

Director, External Affairs, PG&E National Energy Group, Phoenix, AZ (2001 - 2003)

Senior Energy Advisor, USAID, US Embassy, Kiev, Ukraine (1999 – 2000)

Consultant, PG&E Energy Services Corporation, Phoenix, AZ, (1997 – 1998)

Manager / Supervisor, Planning, Forecasts and Regulatory Affairs, APS, Phoenix, AZ (1984 – 1996)

Marketing Research Analyst, Miller Brewing Company, Milwaukee, WI (1982-1984)

Economist, Illinois Health Finance Authority, Chicago, IL (1981-1982)

Education

M.S., Economics, University of Wisconsin, Madison (1981)

B.S., Economics, Arizona State University, (1979)

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
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ANDY TOBIN
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IN THE MATTER OF THE APPLICATION OF)
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. FOR ESTABLISHMENT)
OF JUST AND REASONABLE RATES AND)
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SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. DEVOTED TO ITS)
OPERATIONS IN THE STATE OF ARIZONA)
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_____)

DOCKET NO. E-01575A-15-0312

SURREBUTTAL
TESTIMONY
OF
ERIC VAN EPPS
PUBLIC UTILITIES ANALYST
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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EXECUTIVE SUMMARY
SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC.
DOCKET NO. E-01575A-15-0312

The Surrebuttal testimony of Eric Van Epps responds to Company Witness Hedrick and presents an update to Utility Division Staff's ("Staff") recommendations in the rate case application ("Application") of Sulphur Springs Valley Electric Cooperative, Inc. ("SSVEC" or "Company") filed with the Arizona Corporation Commission ("Commission") on August 31, 2015.

Staff's Surrebuttal recommendations are as follows:

- a) Staff recommends that SSVEC's proposed partial requirement tariffs proposed, R-PR and R-PR-E, be denied.
- b) Staff is withdrawing its original Net Metering recommendation proposed in its direct testimony.
- c) Staff recommends that the status quo for Net Metering be maintained in SSVEC's service territory until such time as a decision has been made in the Value and Cost of Distributed Generation ("DG") Docket (Docket No. E-00000J-14-0023). Further, Staff recommends that SSVEC's rate case be held open for 12 months to address any future changes to the net metering tariff. Staff recommends that such changes to net metering be made by the Company by filing the appropriate request, and performing the appropriate analysis within 3 months of the conclusion of the value of DG docket.
- d) Staff recommends that the inter-relationship between proposed export rates and changes to the net metering billing methodology be evaluated together. The evaluation should include an analysis providing metrics on a utility's ability to recover its fixed costs as well as financial impacts to prospective solar customers. The evaluation should conclude with an analysis of how the proposed changes will affect non-solar customers moving forward.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Eric Van Epps. I am a Public Utilities Analyst employed by the Arizona
4 Corporation Commission (“Commission”) in the Utilities Division (“Staff”). My business
5 address is 1200 West Washington Street, Phoenix, Arizona 85007.

6
7 **Q. Briefly describe your responsibilities as a Public Utilities Analyst.**

8 A. In my capacity as a Public Utilities Analyst, I provide recommendations to the Commission
9 on matters involving electric and gas utilities. I also perform studies on ancillary issues
10 pertaining to matters concerning the electric industry.

11
12 **Q. Have you previously filed testimony in this docket?**

13 A. Yes, I previously provided direct testimony addressing Net Metering (“NEM”), for Sulphur
14 Springs Valley Electric Cooperative, Inc. (“SSVEC” or “Company”).

15
16 **Q. What is the purpose of your surrebuttal testimony?**

17 A. My testimony provides Staff’s response to rebuttal testimony filed by the Company along with
18 a change of position by Staff regarding the treatment of Net Metering customers.

19
20 **DIRECT TESTIMONY**

21 **Q. Please summarize your recommendations?**

22 A. In Direct Testimony, Staff recommended the following:

- 23 a) That SSVEC’s Schedule NM-1 be changed so that it is only available to customers
24 who installed a Distributed Generation (“DG”) system on or before April 14, 2015.
25 After this change to the Availability section is made, Staff recommended that NM-1
26 be frozen.

- 1 b) That SSVEC's Schedule DG be adapted to eliminate the banking of excess kWh,
2 require that all energy procured from the grid be compensated at SSVEC's retail rate,
3 and provide a methodology for the treatment of any energy provided or exported by
4 a DG system to the grid. Schedule DG should act as an export rate rider. This rider
5 should provide logistical language previously outlined in schedule NM-1. Schedule
6 DG should be updated to include an export rate methodology that includes a year one
7 and year two phase-in. Schedule DG should be made available to all eligible DG
8 customers who install a system on April 15, 2015.
- 9
- 10 c) That SSVEC proposed Schedules R-DG E and R-DG be denied, and that new and
11 existing DG customers remain on Schedule R.
- 12
- 13 d) That the export rate be updated every three years.
- 14
- 15 e) That, to the extent necessary, and in the event one of the parties to this case believes
16 the NEM rules should be waived for SSVEC, there be a partial waiver of the NEM
17 rules for SSVEC to enact the rate design recommendations discussed herein.
- 18

19 **PARTIAL REQUIREMENT TARIFF**

20 **Q. Has the Company provided Staff with partial requirement tariffs for review?**

21 A. Yes, In Mr. Hedrick's Rebuttal Testimony, the Company provided revised tariffs R-DG and
22 R-DG-E. The Company revised these tariffs to create partial requirement tariffs R-PR and R-
23 PR-E. Staff believes this was an attempt by the Company to address an issue mentioned in
24 Staff's direct testimony regarding fairness and other customer segments that operate similarly
25 to DG customers.

26

1 **Q. Does Staff believe that proposed partial requirement tariffs adequately address the**
2 **issues outlined in Staff's direct testimony?**

3 A. No. Rate Schedules R-PR and R-PR-E, SSVEC's partial requirement tariffs, are essentially the
4 same tariffs that Staff has already recommended be denied. Staff's intent in its direct testimony
5 was to point out that there are more than just DG customers contributing to the Company's
6 under-recovery of fixed costs.

7
8 **Q. Did the Company adequately present a case that it has experienced an under-recovery**
9 **of fixed costs due to the proliferation of DG?**

10 A. Yes. The Company supported its contention that it has experienced an under-recovery
11 associated with the proliferation of DG systems that equated to \$1,139,013.

12
13 **Q. Could the Company experience under-recovery of its fixed costs attributable to other**
14 **factors and customer segments?**

15 A. Yes. The Company could potentially experience under-recovery attributable to a number of
16 different factors and customer segments. Examples include weather, energy efficiency, home
17 vacancy, the loss of a large commercial or industrial customer, seasonal customers, etc.

18
19 **Q. Given the aforementioned under-recovery, why is Staff unwilling to support R-PR and**
20 **R-PR-E as separate rate schedules for DG customers?**

21 A. Staff previously addressed this issue in its Direct Testimony, but will state it differently here.
22 Under-recovery does not arise from any characteristic specific to DG customers, but instead
23 from a rate design issue impacting all Residential customers—the embedding of fixed costs in
24 volumetric rates. Because this rate design issue is both caused by and affects all customers,
25 solutions must be addressed holistically. Staff cannot support a rate design that singles out one
26 customer segment in SSVEC's territory.

1 Another reason Staff does not support recommending these separate rate schedules for DG
2 customers is the concept of gradualism. SSVEC customers have historically enjoyed a
3 relatively nominal customer charge of \$10.25 a month; both R-PR and R-PR-E would increase
4 that customer charge by 500 percent. Staff understands why the Company has proposed such
5 a drastic increase; however, Staff cannot support rates based solely on under-recovery,
6 especially when under-recovery could be easily addressed with a nominal increase in the
7 volumetric energy rate. Staff believes a \$50 customer charge would be a significant policy
8 change. At this time, Staff can support gradually increasing the customer charge over time
9 and supports the Company's proposed four-year transition proposal.

10
11 **Q. What does Staff recommend for the proposed partial requirement tariffs, R-PR and R-
12 PR-E?**

13 A. Staff continues to recommend that all general service residential customers remain on the same
14 tariff. Staff cannot support SSVEC's proposed partial requirement tariffs and recommends
15 that they be denied.

16
17 **NET METERING**

18 **Q. Did Staff make recommendations for Net Metering in its direct testimony?**

19 A. Yes.

20
21 **Q. Is Staff changing its recommendation for Net Metering?**

22 A. Yes.

23
24 **Q. Please explain.**

25 A. In its direct testimony, Staff's recommendations for Net Metering were based on the
26 assumption that there would be a decision in the Value and Cost of DG Docket prior to the

1 conclusion of this case. When direct testimony was filed in this case, the Value and Cost of
2 DG hearing had not yet begun. Staff has now reviewed information and testimony from the
3 Value and Cost of DG case regarding subject areas that directly impact Staff's initial
4 recommendation for Net Metering in this case. Based on this information, Staff does not
5 want to formulate a policy direction in the SSVEC case before a conclusion has been reached
6 in the Value and Cost of DG case. Mr. Broderick will provide further explanation in his
7 surrebuttal testimony.

8
9 **Q. What is Staff's recommendation for Net Metering in the immediate future?**

10 A. Staff recommends that the status quo for Net Metering be maintained in SSVEC's service
11 territory until such time as a decision has been made in the Value and Cost of DG Docket.
12 Further, Staff recommends that SSVEC's rate case be held open for 12-months to address any
13 future changes to the net metering tariff. Staff recommends that such changes to net metering
14 be made by the Company by filing the appropriate request, and performing the appropriate
15 analysis within 3 months of the conclusion of the value of DG docket.

16
17 **Q. Does Staff have anything further to add to the Net Metering discussion?**

18 A. Yes. Staff would like to note that there are many options when it comes to making adjustments
19 to the way Net Metering currently functions. Further, Staff would like to emphasize the
20 importance of fully understanding the impact of apparently minute differences associated with
21 the diverse proposals currently before the Commission. When considering Net Metering
22 proposals it is important to understand how the mechanism and the export rate interact with
23 one another. Variations in the billing methodologies and the export rate can have drastic
24 effects on the value to prospective solar customers and adversely a utility's ability to recover
25 fixed costs. If the mechanism is only slightly changed and the export rate is increased above
26 avoided cost, a utility may see little to no improvement in its ability to recover fixed costs.

1 Similarly if the mechanism is significantly changed and the export rate is pegged at a rate equal
2 to or less than avoided cost, there may no longer be any value to a potential solar customer.

3
4 Given the close inter-relationship between the net metering methodology and the export rate,
5 Staff recommends that each proposal to alter either one be evaluated together, with an analysis
6 providing metrics on a utility's ability to recover its fixed costs, and the financial impacts on
7 prospective solar customers. The evaluation should conclude with an analysis of how any
8 changes will affect non-solar customers moving forward.

9
10 **Q. Has the Company or any of the interveners provided Staff with any such evaluation?**

11 A. No. Staff witness Yue Liu has done some modeling with regard to the internal rate of return
12 and payoff periods for current and future solar customers under different rate designs and net
13 metering proposals. However, Staff has not seen a holistic analysis on how individual
14 proposals affect a company's ability to recover its fixed costs as well as the resulting effect on
15 other rate payers.

16
17 **Q. Has the lack of a holistic study, analyzing the inter-relationships between the net**
18 **metering mechanism, export rates, rate design and its effect on solar sales, recovery of**
19 **SSVEC's fixed costs and the impact to non-solar customers altered Staff's position in**
20 **this case?**

21 A. Yes. There are many moving parts with regard to a net metering policy direction, an agreed
22 upon export rate or "Value of DG" is one piece of that puzzle. Unfortunately, without the
23 rest of the pieces and an understanding of how each one affects the other; Staff cannot provide
24 an informed recommendation. It is for this reason that Staff has tabled the net metering
25 discussion and recommended the status quo.

26

1 **SUMMARY OF STAFF RECOMMENDATIONS**

2 **Q. Based upon your testimony, what are Staff's recommendations?**

3 A. Staff's recommendations are as follows:

4
5 a) Staff recommends that SSVEC's proposed partial requirement tariffs proposed, R-PR
6 and R-PR-E, be denied.

7
8 b) Staff is withdrawing its original NEM recommendation proposed in its direct
9 testimony.

10
11 c) Staff recommends that the status quo for Net Metering be maintained in SSVEC's
12 service territory until such time that a decision has been made in the Value and Cost
13 of DG Docket. Further, Staff recommends that the rate case be held open for 12
14 months to address any future changes to the net metering tariff. Staff recommends
15 that such changes to net metering be made by the Company by filing the appropriate
16 request, and performing the appropriate analysis within 3 months of the conclusion of
17 the value of DG docket.

18
19 d) Staff recommends that the inter-relationship between proposed export rates and
20 changes to the net metering billing methodology be evaluated together. The evaluation
21 should include an analysis providing metrics on a utility's ability to recover its fixed
22 costs and the financial impacts for prospective solar customers. The evaluation should
23 also include an analysis of how the proposed changes will affect non-solar customers
24 moving forward.

25
26 **Q. Does this conclude your surrebuttal testimony?**

1 A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
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ANDY TOBIN
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IN THE MATTER OF THE APPLICATION OF) DOCKET NO. E-01575A-15-0312
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. FOR A HEARING TO)
DETERMINE THE FAIR VALUE OF ITS)
PROPERTY FOR RATEMAKING PURPOSES,)
TO FIX A JUST AND REASONABLE RETURN)
THEREON, TO APPROVE RATES DESIGNED)
TO DEVELOP SUCH RETURN AND FOR)
RELATED APPROVALS.)
_____)

SURREBUTTAL
TESTIMONY
OF
RANELLE PALADINO
PUBLIC UTILITIES ANALYST IV
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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EXECUTIVE SUMMARY
SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC.
DOCKET NO. E-01575A-15-0312

Staff's surrebuttal testimony addresses issues raised in the rebuttal testimony of Sulphur Springs Valley Electric Cooperative, Inc.'s ("SSVEC") witness Mr. David Hedrick.

Staff's recommendations are as follows:

1. As a point of clarification, Staff recommends that in future rate cases the Residential Auxiliary Rate be included in the Residential class for the cost of service study rather than the General Service class and that the General Service RV Park Rate be included in the Large Power class for the cost of service study rather than the General Service class.
2. Staff does not support the creation of new residential rate schedules for existing customers who have installed distributed generation ("DG") and new customers who may install DG.
3. The Service Availability Charge should be increased to \$25.00 per month for all customers on the Residential ("Schedule R") rate schedule. This increase in Service Availability Charge should be phased in over a four-year period as proposed by SSVEC in its application.
4. The Service Availability Charge should be increased to \$26.50 per month for all customers on the Residential Time of Use ("TOU") rate schedule. This increase in Service Availability Charge should be phased in over a four-year period as proposed by SSVEC in its application.
5. All existing and new DG residential customers should remain on the rate schedule they are currently on, and be subject to the rate increases noted above, rather than being moved to the proposed new residential DG rate schedules.
6. The Energy Charge for the Residential and Residential TOU rate schedules should be adjusted in each phase to ensure the level of revenue approved by the Commission for the residential class is met.
7. All non-residential rate schedule increases proposed in four phases by SSVEC in its rate application should be approved.
8. SSVEC should continue to offer TOU rates for its residential, commercial, and large power customers.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Ranelle Paladino. I am a Public Utilities Analyst employed by the Arizona
4 Corporation Commission (“Commission”) in the Utilities Division (“Staff”). My business
5 address is 1200 West Washington Street, Phoenix, Arizona 85007.

6

7 **Q. Have you previously filed testimony in this docket?**

8 A. Yes. I filed direct testimony concerning the cost of service study, revenue allocation, rate
9 design, elimination of rate schedules, and the addition of new rate schedules.

10

11 **PURPOSE OF SURREBUTTAL TESTIMONY**

12 **Q. What is the purpose of your surrebuttal testimony in this proceeding?**

13 A. The purpose of my surrebuttal testimony in this proceeding is to respond, on behalf of Staff,
14 to the rebuttal testimony of Mr. David Hedrick, witness for Sulphur Springs Valley Electric
15 Cooperative, Inc. (“SSVEC” or “Cooperative”).

16

17 **Q. What issues will you address?**

18 A. I will address a clarification of a statement in David Hedrick’s rebuttal testimony, SSVEC’s
19 proposed rate design, and the request to freeze the Time of Use (“TOU”) rate schedules.

20

21 **COST OF SERVICE STUDY**

22 **Q. Did Staff review the Cooperative’s rebuttal testimony explaining SSVEC’s position**
23 **regarding areas of agreement with Staff’s recommendations?**

24 A. Yes. On pages 3-6 of Mr. Hedrick’s rebuttal testimony, SSVEC indicates those items that
25 SSVEC believes are areas of agreement between Staff and SSVEC.

26

1 **Q. Does Staff agree with the items outlined as points of agreement?**

2 A. Yes, with one exception. Staff would like to clarify lines 1-5 on page 6 of Mr. Hedrick's
3 testimony. SSVEC's rebuttal testimony indicates that it accepts Staff's recommendation to
4 include the Residential Auxiliary Rate in the General Service class and the General Service RV
5 Park Rate in the Large Power Class. Staff's recommendation on page 41 lines 10-11 of my
6 direct testimony indicates that the Residential Auxiliary Rate should be included in the
7 Residential class for future cost of service studies rather than part of the General Service class.

8
9 **Q. Has Staff changed its recommendation with respect to the Residential Auxiliary Rate
10 and the General Service RV Park Rate in future SSVEC rate case cost of service studies?**

11 A. No. Staff still recommends that, in future SSVEC rate cases, the Residential Auxiliary Rate be
12 included in the Residential class for the cost of service study, rather than the General Service
13 class and that the General Service RV Park Rate be included in the Large Power class for the
14 cost of service study, rather than the General Service class.

15
16 **RATE DESIGN**

17 **Q. Did Staff review the Cooperative's rebuttal testimony explaining SSVEC's position
18 regarding areas of disagreement with respect to Staff's recommendations on rate
19 design?**

20 A. Yes. On page 6 of Mr. Hedrick's rebuttal testimony, SSVEC indicates areas of disagreement
21 between Staff and SSVEC. Specifically, SSVEC does not agree with: (1) Staff's
22 recommendation not to implement separate rate schedules for new and existing residential
23 customers who have installed distributed generation ("DG"), (2) Staff's recommended rate
24 design for the Residential rate schedule and the Residential TOU rate schedule, (3) Staff's
25 recommendation to implement all rate changes over a two-year period rather than a four-year

1 phase in timeframe, and (4) Staff's recommendation to set an export rate valued between
2 avoided cost and the retail rate.

3
4 **Q. Will you address each of these items that are disagreements between SSVEC and Staff?**

5 A. In my surrebuttal testimony, I will address items 1-3 above as they relate to rate design. Staff's
6 recommendation regarding net metering and the export rate will be discussed in the surrebuttal
7 testimony of Eric Van Epps.

8
9 **Q. What is Staff's recommendation with regard to SSVEC's request to implement separate
10 Residential rate schedules for new and existing DG customers?**

11 A. Staff's recommendation has not changed. Staff does not support the creation of new rate
12 schedules.

13
14 SSVEC explained in Mr. Hedrick's direct testimony on pages 15-16 that SSVEC is proposing
15 several changes to address the issue of lost fixed cost. One of the methods SSVEC proposes
16 to address this issue is the creation of the separate Residential rate schedules for DG customers.

17
18 As detailed in my direct testimony on pages 6-7, Staff does not attribute SSVEC's inability to
19 recover the established revenue requirement to the existence of DG customers on its system.
20 DG customers are not the only customers who have reduced kWh usage since the last rate case.
21 In addition to the installation of DG, some customers have implemented energy efficiency
22 measures, some customers have intentionally implemented other energy conservation
23 measures, and some customers have moved out of their home and left the home vacant. These
24 customers do not warrant a new rate schedule, despite the fact that they are contributing to a
25 loss of revenue for SSVEC.

26

1 **Q. What does Staff consider the reason for SSVEC's inability to recover its established**
2 **revenue requirement?**

3 A. Staff attributes SSVEC's inability to recover the established revenue requirement to the
4 structure of SSVEC's existing rate design. Fixed charges are being recovered not just through
5 the monthly Service Availability Charge, but also through volumetric rates. Staff believes that
6 rate design should be more closely based on the actual costs to serve each customer class.
7 Although a rate design which embeds a portion of the fixed rates in the volumetric charge has
8 recovered the necessary revenue requirement in the past, DG, increased energy efficiency, and
9 conservation, for example, have reduced SSVEC's ability to recover fixed costs using this rate
10 design.

11
12 Staff believes that the fixed cost recovery issue is a function of rate design and has indicated
13 that a three-part rate (service availability charge, demand charge, and energy charge) would
14 allow each customer to pay for the type and level of service they require. Staff believes that a
15 change in rate design, not separate rate schedules, are needed to address the recovery of fixed
16 costs.

17
18 **Q. What is Staff's recommendation with regard to SSVEC's request to change Residential**
19 **and Residential TOU rates?**

20 A. Staff will address both areas of disagreement (the residential rates themselves and the
21 implementation timeframe) in this discussion. Staff's original recommendation with regard to
22 rate design for the Residential rate schedule and the Residential TOU rate schedule, was to
23 leave the DG customers as part of the Residential rate schedule and implement a \$27.00 per
24 month Service Availability Charge for the Residential rate schedule, and a \$28.50 per month
25 Service Availability Charge for the Residential TOU rate schedule. Staff recommended Energy
26 Charges that maintained the level of revenue recovery recommended by Staff from the

1 Residential class. Staff did not recommend any changes to the rates proposed by SSVEC for
2 the rest of the customer classes.

3
4 In addition to changes to the rates for the Residential and Residential TOU rate schedules, Staff
5 also recommended implementation of the new rates over a shortened timeframe of two years
6 rather than SSVEC's proposal of a four-year phase in. Staff felt the shortened timeframe would
7 be less confusing and result in lower marketing costs for SSVEC.

8
9 After further consideration, Staff understands that SSVEC has already spent a considerable
10 amount of time and money educating its customers regarding a four-year phase in of the new
11 rates. Staff also recognizes that a longer implementation timeframe supports Staff's desire to
12 gradually address issues with rate design, such as increasing the recovery of fixed costs through
13 the fixed charge. A four-year phase in of rates moves away from recovering so much of the
14 fixed costs through a variable charge, but does so in a gradual manner.

15
16 Staff also notes that the numerous customer meetings held by SSVEC addressed the need for
17 a higher customer charge. SSVEC communicated to its residential customers that the System
18 Availability Charge will increase to \$25.00 per month over a four-year phase in. (SSVEC also
19 proposed the System Availability Charge increase to \$50.00 per month for DG customers.)
20 Staff's proposal was to increase the System Availability Charge to \$27.00 over a two-year
21 timeframe.

22
23 Staff believes that a \$25.00 System Availability Charge implemented over a four-year phase in
24 is an acceptable method of moving the rates toward recovering fixed costs through a fixed
25 charge. Staff recommends the implementation of the \$25.00 System Availability Charge for all
26 Residential customers and a \$26.50 System Availability Charge for all Residential TOU

1 customers over a four-year phase in, as originally proposed by SSVEC. Staff does not
2 recommend separate rates for current Residential customers with DG or those that may install
3 DG in the future. The implementation of a \$25.00 System Availability Charge for all customers,
4 rather than a higher System Availability Charge for customers with DG, will result in a revenue
5 shortfall of close to \$315,000 in the Residential class. Staff recommends that the Energy Charge
6 be adjusted over the four phases to fully recover the revenue shortfall (approximately \$315,000)
7 so the revenue requirement for the Residential class is met.

8
9 **Q. What is Staff's recommendation with regard to non-residential rate schedule increases**
10 **proposed by SSVEC in its rate application?**

11 A. As indicated previously, in its direct testimony, Staff proposed to implement the proposed non-
12 residential rates as filed by SSVEC, but to implement those rates in a two-year timeframe rather
13 than the four phases proposed by SSVEC. Given the discussion herein, Staff believes a four-
14 year phase in is acceptable for the non-residential rates proposed by SSVEC in its rate
15 application.

16
17 **Q. Did SSVEC request any other changes to its rates or rate schedules in its rebuttal**
18 **testimony?**

19 A. Yes. On pages 24-25 of Mr. Hedrick's rebuttal testimony, SSVEC explains the challenges with
20 implementing TOU rates on SSVEC's system and details SSVEC's request to freeze the TOU
21 rate schedules. Mr. Hedrick explains that there are only 17 customers on the Residential TOU
22 rate, 39 customers on the commercial TOU rate, and 1 customer on the Large Power TOU
23 rate. SSVEC attributes the lack of interest in TOU rates to the fact that SSVEC's power supply
24 from Arizona Electric Power Cooperative ("AEPSCO") is not time differentiated.
25

1 **Q. Does Staff agree with SSVEC's request to freeze its currently in effect TOU rates?**

2 A. No. Decision No. 69736, dated July 30, 2007, details that the Commission was required by the
3 Energy Policy Act of 2005 to consider implementing certain Public Utility Regulatory Policies
4 Act of 1978 ("PURPA") provisions, including time-based metering and communications. As
5 a result of that directive, the Commission approved a modified version of the PURPA standard
6 on time-based metering and communications. The modified version requires all electric utilities
7 in the state to offer time-based rate schedules to appropriate customer classes.

8
9 Although SSVEC's TOU rates were in place long before the Energy Policy Act of 2005, in light
10 of Decision No. 69736, Staff believes it is inappropriate to freeze the existing TOU rate
11 schedules. Staff understands the challenges in implementing meaningful TOU rates given the
12 lack of price signals in its supply from AEPCO; Staff also recognizes the reason for the lack of
13 participation in the TOU rates as explained by Mr. Hedrick in his rebuttal testimony. Staff also
14 understands that if AEPCO's rates are structured differently in the future, the desire to be on
15 a TOU rate may increase within SSVEC's territory. Staff believes that the existing TOU rates
16 and those proposed by SSVEC in this rate case are not harmful to SSVEC's operations or
17 financial integrity. Staff recommends that SSVEC continue to offer TOU rates for its
18 residential, commercial, and large power customers.

19
20 **SUMMARY OF STAFF RECOMMENDATIONS**

21 **Q. Please summarize Staff's recommendations.**

22 A. Staff's recommendations are as follows:

- 23 1. As a point of clarification, Staff recommends that in future rate cases the Residential
24 Auxiliary Rate be included in the Residential class for the cost of service study rather
25 than the General Service class and that the General Service RV Park Rate be included

- 1 in the Large Power class for the cost of service study rather than the General Service
2 class.
- 3 2. Staff does not support the creation of new residential rate schedules for existing
4 customers who have installed DG and new customers who may install DG.
- 5 3. The Service Availability Charge should be increased to \$25.00 per month for all
6 customers on the Residential (“Schedule R”) rate schedule. This increase in Service
7 Availability Charge should be phased in over a four-year period as proposed by SSVEC
8 in its application.
- 9 4. The Service Availability Charge should be increased to \$26.50 per month for all
10 customers on the Residential TOU rate schedule. This increase in the Service
11 Availability Charge should be phased in over a four-year period as proposed by SSVEC
12 in its application.
- 13 5. All existing and new DG residential customers should remain on the rate schedule they
14 are currently on, and be subject to the rate increases noted above, rather than being
15 moved to the proposed new residential DG rate schedules.
- 16 6. The Energy Charge for the Residential and Residential TOU rate schedules should be
17 adjusted in each phase to ensure the level of revenue approved by the Commission for
18 the residential class is met.
- 19 7. All non-residential rate schedule increases proposed in four phases by SSVEC in its rate
20 application should be approved.
- 21 8. SSVEC should continue to offer TOU rates for its residential, commercial, and large
22 power customers.

23

24 **Q. Does this conclude your surrebuttal testimony?**

25 **A. Yes, it does.**

26

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
Chairman
BOB STUMP
Commissioner
BOB BURNS
Commissioner
TOM FORESE
Commissioner
ANDY TOBIN
Commissioner

IN THE MATTER OF THE APPLICATION OF) DOCKET NO. E-01575A-15-0312
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. FOR A HEARING TO)
DETERMINE THE FAIR VALUE OF ITS)
PROPERTY FOR RATEMAKING PURPOSES,)
TO FIX A JUST AND REASONABLE RETURN)
THEREON, TO APPROVE RATES DESIGNED)
TO DEVELOP SUCH RETURN AND FOR)
RELATED APPROVALS.)
_____)

SURREBUTTAL
TESTIMONY
OF
CRYSTAL S. BROWN
EXECUTIVE CONSULTANT III
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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EXECUTIVE SUMMARY
SULPHUR SPRINGS VALLEY ELECTRIC, INC.
DOCKET NO. E-01575A-15-0312

Staff recommends the same revenue as Sulphur Springs Valley Electric Cooperative, Inc. ("Sulphur Springs" or "Cooperative"). Staff's surrebuttal testimony responds to the Cooperative's rebuttal testimony regarding an updated rate case expense of \$409,770. Staff recommends continued recognition of the Cooperative's original \$200,000 for rate case expense but does intend to update its recommendation at the hearing.

Staff would note that while the Cooperative recently increased the level of rate case expense it was seeking to recover, it did not actually revise its requested level of rate increase, or otherwise revise any of its previously docketed schedules.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Crystal S. Brown. I am an Executive Consultant III employed by the Arizona
4 Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My
5 business address is 1200 West Washington Street, Phoenix, Arizona 85007.

6
7 **Q. Are you the same Crystal S. Brown who filed direct testimony in this case?**

8 A. Yes.

9
10 **PURPOSE OF SURREBUTTAL TESTIMONY**

11 **Q. What is the purpose of your surrebuttal testimony in this proceeding?**

12 A. The purpose of my surrebuttal testimony in this proceeding is to respond, on behalf of Staff,
13 to the rebuttal testimony of Mr. David Hedrick, witness for Sulphur Springs Valley Electric
14 Cooperative, Inc. ("Sulphur Springs" or "Cooperative").

15
16 **Q. What issue will you address?**

17 A. I will address the Cooperative's request for updated rate case expense of \$409,770.

18
19 **RATE CASE EXPENSE**

20 **Q. Did Staff review the Cooperative's rebuttal testimony concerning updated rate case
21 expense?**

22 A. Yes. On page 25, beginning at line 19 of Mr. Hedrick's rebuttal testimony, the Cooperative
23 proposes to increase rate case expense by \$209,770, from \$200,000 to \$409,770. The
24 \$409,770 is composed of \$309,770 in actual rate case expense incurred to date and \$100,000
25 in estimated rate case expense "to complete the process."

26

1 **Q. Does Staff agree with the Cooperative's proposed \$409,770 in rate case expense?**

2 A. No, as Staff has not reviewed the invoices supporting the amount, so its revenue requirement
3 Schedules continue to reflect the original rate case expense estimate. However, Staff reserves
4 the right to update, at the hearing, its recommendation regarding the level of rate case
5 expense to be recovered, after Staff has had a chance to review the supporting documents for
6 the Cooperatives' rate case expense increase.

7

8 **Q. Does this conclude Staff's surrebuttal testimony?**

9 A. Yes, it does.

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	(A) COOPERATIVE FAIR <u>VALUE</u>	(B) STAFF FAIR <u>VALUE</u>
1	Adjusted Rate Base	\$ 208,373,755	\$ 208,373,755
2	Margin (Loss) After Interest on L.T. Debt	\$ 4,133,279	\$ 4,133,279
3	Current Rate of Return (L2 / L1)	1.98%	1.98%
4	Required Rate of Return	6.41%	6.41%
5a	Required Margin (Loss) Before Interest on L.T. Debt (L4 * L1)	\$ 13,359,254	\$ 13,356,758
5b	Required Margin (Loss) After Interest on L.T. Debt	\$ 7,234,777	\$ 7,234,777
6	Operating Margin Deficiency (L5b - L2)	\$ 3,101,498	\$ 3,101,498
7	Gross Revenue Conversion Factor	1.0000	1.0000
8	Required Revenue Increase/(Decrease) (L7 * L6)	\$ 3,101,498	\$ 3,101,498
9	Adjusted Test Year Revenue	\$ 97,703,142	\$ 97,703,142
10	Proposed Annual Revenue (L8 + L9)	\$ 100,804,640	\$ 100,804,640
11	Required Increase in Revenue (%)	3.17%	3.17%
12	Depreciation and Amortization Expense	\$ 10,857,765	\$ 10,857,765
13	Interest Expense on Long-term Debt	\$ 6,028,981	\$ 6,028,981
14	Interest Income	\$ 171,224	\$ 171,224
15	Principal Payments	\$ 6,987,062	\$ 6,987,062
16	Cash Capital Credits	\$ 955,159	\$ 955,159
17	TIER ((L 5 + L 13) / L 13)	2.20	2.20
18	DSC ((L 5 + L 12 + L 13 + L 14 + L 16) / (L 13 + L 15) - Per Cooperative	1.94	N/A
19	DSC ((L 5 + L 12 + L 13) / (L 13 + L 15) - Per Staff	N/A	1.85

¹ The Cooperative's Required Margin After Interest on L.T. Debt does not equal L 1 x L 4.

References:

Column (A): Company Schedules A-1, A-2, & B-1
Column (B): Staff Schedule CSB-3

RATE BASE - ORIGINAL COST

LINE NO.	[A] COOPERATIVE AS FILED	[B] STAFF ADJUSTMENTS	[C] STAFF AS ADJUSTED
1	\$ 328,798,905	\$ -	\$ 328,798,905
2	(121,553,067)	-	(121,553,067)
3	<u>\$ 207,245,838</u>	<u>\$ -</u>	<u>\$ 207,245,838</u>
 <i>LESS:</i>			
4	\$ (2,732,323)	\$ -	\$ (2,732,323)
5	\$ (96,781)	\$ -	\$ (96,781)
6	\$ -	\$ -	\$ -
7	<u>(2,829,104)</u>	<u>-</u>	<u>(2,829,104)</u>
 <i>ADD:</i>			
8	\$ -	\$ -	\$ -
9	\$ 2,650,491	\$ -	\$ 2,650,491
10	\$ 1,306,530	\$ -	\$ 1,306,530
11	<u>\$ 3,957,021</u>	<u>\$ -</u>	<u>\$ 3,957,021</u>
12	<u>\$ 208,373,755</u>	<u>\$ -</u>	<u>\$ 208,373,755</u>

References:

Column [A], Cooperative Schedule B-1

Column [B]: Schedules CSB-2 through CSB-7

Column [C]: Column [A] + Column [B]

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	[A] COOPERATIVE AS FILED	[B] ADJUSTMENTS	[C] STAFF ADJUSTED
	Acct. No. <u>PLANT IN SERVICE:</u>			
1	346 Solar Production Panels and Equipment	\$ 5,418,964	\$ -	\$ 5,418,964
2	350 Transmission Plant - Land and Land Rights	\$ 1,051,896	\$ -	\$ 1,051,896
3	353 Transmission Plant - Station Equipment	\$ 1,538,886	\$ -	\$ 1,538,886
4	355 Transmission Plant - Poles and Fixtures	\$ 14,095,714	\$ -	\$ 14,095,714
5	356 Transmission Plant - OH Conductors	\$ 17,438,117	\$ -	\$ 17,438,117
6	360 Distribution Plant - Land and Land Rights	\$ 438,067	\$ -	\$ 438,067
7	361 Distribution Plant - Structures and Improvements	\$ 660,197	\$ -	\$ 660,197
8	362 Distribution Plant - Substation Equipment	\$ 28,609,446	\$ -	\$ 28,609,446
9	364 Distribution Plant - Poles, Towers, and Fixtures	\$ 56,052,611	\$ -	\$ 56,052,611
10	365 Distribution Plant - Conductors and Devices	\$ 37,882,046	\$ -	\$ 37,882,046
11	366 Distribution Plant - Underground Conduit	\$ 24,349,294	\$ -	\$ 24,349,294
12	367 Distribution Plant - Underground Conductors	\$ 40,366,827	\$ -	\$ 40,366,827
13	368 Distribution Plant - Transformers	\$ 55,440,604	\$ -	\$ 55,440,604
14	369 Distribution Plant - Services	\$ 9,931,495	\$ -	\$ 9,931,495
15	370 Distribution Plant - Meters	\$ 20,077,102	\$ -	\$ 20,077,102
16	371 Distribution Plant - Install. On Customers Premises	\$ 2,174,149	\$ -	\$ 2,174,149
17	373 Distribution Plant - Street Lighting and Signal Syst	\$ 3,969,068	\$ -	\$ 3,969,068
18	389 General Plant - Land and Land Rights	\$ 806,591	\$ -	\$ 806,591
19	390 General Plant - Structures and Improvements	\$ 11,434,576	\$ -	\$ 11,434,576
20	391 General Plant - Office Furniture and Equipment	\$ 4,865,525	\$ -	\$ 4,865,525
21	392 General Plant - Transportation Equipment	\$ 5,933,298	\$ -	\$ 5,933,298
22	393 General Plant - Stores Equipment	\$ 211,969	\$ -	\$ 211,969
23	394 General Plant - Tools, Shop, & Garage Equipment	\$ 2,455,903	\$ -	\$ 2,455,903
24	395 General Plant - Laboratory Equipment	\$ 878,967	\$ -	\$ 878,967
25	396 General Plant - Power Operated Equipment	\$ 12,635,559	\$ -	\$ 12,635,559
26	397 General Plant - Communications Equipment	\$ 1,238,456	\$ -	\$ 1,238,456
27	398 General Plant - Miscellaneous	\$ (31,228,238)	\$ -	\$ (31,228,238)
28	399 General Plant - Contributed dollars	\$ 71,817	\$ -	\$ 71,817
29	Total Plant in Service	\$ 328,798,905	\$ -	\$ 328,798,905
30	Less: Accumulated Depreciation	\$ (121,553,067)	\$ -	\$ (121,553,067)
31	Less: Accumulated Amortization	-	-	-
32	Total Accumulated Depreciation & Amortization	\$ (121,553,067)	\$ -	\$ (121,553,067)
33	Net Plant in Service	\$ 207,245,838	\$ -	\$ 207,245,838
	<u>LESS:</u>			
34	Consumer Deposits	\$ (2,732,323)	\$ -	\$ (2,732,323)
35	Consumer Advances	\$ (96,781)	\$ -	\$ (96,781)
36	Deferred Credits	\$ -	\$ -	\$ -
37	Total	\$ (2,829,104)	\$ -	\$ (2,829,104)
	<u>ADD:</u>			
38	Cash Working Capital	\$ -	\$ -	\$ -
39	Materials and Supplies	\$ 2,650,491	\$ -	\$ 2,650,491
40	Prepayments	\$ 1,306,530	\$ -	\$ 1,306,530
41	Total	\$ 3,957,021	\$ -	\$ 3,957,021
42	Total Rate Base	\$ 208,373,755	\$ -	\$ 208,373,755

OPERATING MARGIN - TEST YEAR AND STAFF PROPOSED

Line No.	DESCRIPTION	[A] COOPERATIVE TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF RECOMMENDED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Margin Revenue (Non-Base Cost of Power)	\$ 42,173,757	\$ -	\$ 42,173,757	\$ 3,101,498	\$ 45,275,255
4						
5	Base Cost of Power Revenue ("BCOP")	\$ 57,198,264	\$ (4,724,035)	\$ 52,474,229	\$ -	\$ 52,474,229
6	Power Cost Adjustor ("PCA")	\$ (4,724,035)	\$ 4,724,035	\$ -	\$ -	\$ -
7	To Reconcile to New BCOP	\$ (248,210)	\$ -	\$ (248,210)	\$ -	\$ (248,210)
8	Subtotal	\$ 52,226,019	\$ -	\$ 52,226,019	\$ -	\$ 52,226,019
	Rounding	\$ -	\$ (356)	\$ (356)	\$ -	\$ (356)
9	Base Cost of Power and Adjustor Revenue	\$ 52,226,019	\$ (356)	\$ 52,225,663	\$ -	\$ 52,225,663
10	Total Revenue from Sales of Electricity	\$ 94,399,776	\$ (356)	\$ 94,399,420	\$ 3,101,498	\$ 97,500,918
11	Other Revenues	\$ 3,303,366	\$ -	\$ 3,303,366	\$ -	\$ 3,303,366
12	Rounding	\$ -	\$ 356	\$ 356	\$ -	\$ 356
13	Total Revenues	\$ 97,703,142	\$ -	\$ 97,703,142	\$ 3,101,498	\$ 100,804,640
14						
EXPENSES:						
16	Purchased Power	\$ 52,225,663	\$ -	\$ 52,225,663	\$ -	\$ 52,225,663
17	Transmission Operation and Maintenance	\$ 183,288	\$ -	\$ 183,288	\$ -	\$ 183,288
18	Distribution - Operations	\$ 6,816,903	\$ -	\$ 6,816,903	\$ -	\$ 6,816,903
19	Distribution - Maintenance	\$ 3,738,590	\$ -	\$ 3,738,590	\$ -	\$ 3,738,590
20	Consumer Accounting	\$ 3,188,444	\$ -	\$ 3,188,444	\$ -	\$ 3,188,444
21	Customer Service	\$ 772,052	\$ -	\$ 772,052	\$ -	\$ 772,052
22	Sales	\$ 387,186	\$ -	\$ 387,186	\$ -	\$ 387,186
23	Administrative and General	\$ 5,675,495	\$ -	\$ 5,675,495	\$ -	\$ 5,675,495
24	Depreciation and Amortization	\$ 10,857,765	\$ -	\$ 10,857,765	\$ -	\$ 10,857,765
25	Taxes	\$ 3,600,000	\$ -	\$ 3,600,000	\$ -	\$ 3,600,000
26	Total Operating Expenses	\$ 87,445,386	\$ -	\$ 87,445,386	\$ -	\$ 87,445,386
27						
28	Operating Margin Before Interest on L.T.- Debt	\$ 10,257,756	\$ -	\$ 10,257,756	\$ -	\$ 13,359,254
29						
INTEREST ON LONG-TERM DEBT & OTHER DEDUCTIONS						
31	Interest on Long-term Debt	\$ 6,028,981	\$ -	\$ 6,028,981	\$ -	\$ 6,028,981
32	Interest - Other	\$ 8,823	\$ -	\$ 8,823	\$ -	\$ 8,823
33	Other Deductions	\$ 86,673	\$ -	\$ 86,673	\$ -	\$ 86,673
34	Total Interest & Other Deductions	\$ 6,124,477	\$ -	\$ 6,124,477	\$ -	\$ 6,124,477
35						
36	MARGINS (LOSS) AFTER INTEREST EXPENSE	\$ 4,133,279	\$ -	\$ 4,133,279	\$ -	\$ 7,234,777
37						
NON-OPERATING MARGINS						
39	Interest Income	\$ 171,224	\$ -	\$ 171,224	\$ -	\$ 171,224
40	Other Margins	\$ (192,011)	\$ -	\$ (192,011)	\$ -	\$ (192,011)
41	G&T Capital Credits	\$ 4,026,166	\$ -	\$ 4,026,166	\$ -	\$ 4,026,166
42	Other Capital Credits	\$ 294,675	\$ -	\$ 294,675	\$ -	\$ 294,675
43	Total Non-Operating Margins	\$ 4,300,054	\$ -	\$ 4,300,054	\$ -	\$ 4,300,054
44						
45	EXTRAORDINARY ITEMS	\$ -	\$ -	\$ -	\$ -	\$ -
46						
47	NET MARGINS (LOSS)	\$ 8,433,333	\$ -	\$ 8,433,333	\$ -	\$ 11,534,831
48						
49						
50	References:					
51	Column (A): Cooperative Schedule A					
52	Column (B): Schedule CSB-9					
53	Column (C): Column (A) + Column (B)					
54	Column (D): Schedule CSB-1					
55	Column (E): Column (C) + Column (D)					

SUMMARY OF OPERATING MARGIN ADJUSTMENTS - TEST YEAR

	[A]	[B]	[C]
LINE NO.	COOPERATIVE AS FILED	STAFF ADJUSTMENTS	STAFF ADJUSTED
REVENUES:			
1	Margin Revenue (Non-Base Cost of Power)	\$ 42,173,757	\$ 42,173,757
2			
3	Base Cost of Power Revenue ("BCOP")	\$ 57,198,264	\$ 52,474,229
4	Power Cost Adjustor ("PCA")	(4,724,035)	4,724,035
5	To Reconcile to New BCOP	(248,210)	(248,210)
6	Subtotal	<u>52,226,019</u>	<u>52,226,019</u>
7	Rounding	-	(356)
8	Base Cost of Power and Adjustor Revenue	<u>\$ 52,226,019</u>	<u>\$ 52,225,663</u>
9			
10	Total Revenue from Sales of Electricity	\$ 94,399,776	\$ 94,399,420
11			
12	Other Revenues	\$ 3,303,366	\$ 3,303,366
13	Rounding	-	356
14		<u>356</u>	<u>356</u>
15	Total Revenues	\$ 97,703,142	\$ 97,703,142
16			
OPERATING EXPENSES:			
17			
18	Purchased Power	\$ 52,225,663	\$ 52,225,663
19	Transmission Operation and Maintenance	183,288	\$ 183,288
20	Distribution - Operations	6,816,903	\$ 6,816,903
21	Distribution - Maintenance	3,738,590	\$ 3,738,590
22	Consumer Accounting	3,188,444	\$ 3,188,444
23	Customer Service	772,052	\$ 772,052
24	Sales	387,186	\$ 387,186
25	Administrative and General	5,675,495	\$ 5,675,495
26	Depreciation and Amortization	10,857,765	\$ 10,857,765
27	Taxes	3,600,000	\$ 3,600,000
28	Total Operating Expenses	<u>\$ 87,445,386</u>	<u>\$ 87,445,386</u>
29			
30	Operating Margin Before Interest on L.T.- Debt	\$ 10,257,756	\$ 10,257,756
31			
INTEREST ON LONG-TERM DEBT & OTHER DEDUCTIONS			
32			
33	Interest on Long-term Debt	\$ 6,028,981	\$ 6,028,981
34	Interest - Other	\$ 8,823	8,823
35	Other Deductions	86,673	86,673
36	Total Interest & Other Deductions	<u>\$ 6,124,477</u>	<u>\$ 6,124,477</u>
37			
38	MARGINS (LOSS) AFTER INTEREST EXPENSE	\$ 4,133,279	\$ 4,133,279
39			
NON-OPERATING MARGINS			
40			
41	Interest Income	\$ 171,224	\$ 171,224
42	Other Margins	\$ (192,011)	(192,011)
43	G&T Capital Credits	\$ 4,026,166	4,026,166
44	Other Capital Credits	294,675	294,675
45	Total Non-Operating Margins	<u>\$ 4,300,054</u>	<u>\$ 4,300,054</u>
46			
47	EXTRAORDINARY ITEMS	\$ -	\$ -
48			
49	NET MARGINS (LOSS)	\$ 8,433,333	\$ 8,433,333

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
Chairman
BOB STUMP
Commissioner
BOB BURNS
Commissioner
TOM FORESE
Commissioner
ANDY TOBIN
Commissioner

IN THE MATTER OF THE APPLICATION OF)
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. FOR ESTABLISHMENT)
OF JUST AND REASONABLE RATES AND)
CHARGES DESIGNED TO REALIZE A)
REASONABLE RATE OF RETURN ON THE)
FAIR VALUE OF THE PROPERTIES OF)
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC. DEVOTED TO ITS)
OPERATIONS IN THE STATE OF ARIZONA)
AND RELATED APPROVALS)
_____)

DOCKET NO. E-01575A-15-0312

SURREBUTTAL

TESTIMONY

OF

JULIE MCNEELY-KIRWAN

PUBLIC UTILITIES ANALYST

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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EXECUTIVE SUMMARY
SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC.
DOCKET NO. E-01575A-15-0312

Staff's surrebuttal testimony addresses a time-of-use ("TOU") compliance issue and Sulphur Springs Valley Electric Cooperative's ("SSVEC's") proposed changes to its Service Conditions. Staff's recommendations are as follows:

- Staff supports the elimination of the requirement to file an analysis of TOU rates that would include a proposal for TOU rates designed to maximize customer participation.
- Staff recommends approval of SSVEC's proposed new language in its Service Conditions relating to Line Extension design estimates, but also recommends that Section 4.4 be amended to include a table breaking out costs.
- Staff recommends against approving changes relating to responsibility for Meter Socket Enclosures, Meter Test Switches, and Meter Sockets proposed in SSVEC's Service Conditions.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Julie McNeely-Kirwan. I am a Utilities Analyst V employed by the Arizona
4 Corporation Commission (“Commission”) in the Utilities Division (“Staff”). My business
5 address is 1200 West Washington Street, Phoenix, Arizona 85007.

6
7 **Q. Have you previously filed testimony in this docket?**

8 A. Yes. I filed direct testimony in this docket concerning the base cost of power, the adjustors,
9 proposed changes to several service charges, the Service Conditions, and a time-of-use
10 (“TOU”) study.

11
12 **Q. What is the scope of your Surrebuttal testimony?**

13 A. I will address the TOU compliance item and proposed changes to the Service Conditions of
14 Sulphur Springs Valley Electric Company (“SSVEC” or “the Cooperative”).

15
16 **Q. Have you reviewed testimony submitted by the Cooperative in this case?**

17 A. Yes. I reviewed the Rebuttal testimony of David W. Hedrick.

18
19 **Q. What is the purpose of your Surebuttal testimony?**

20 A. To address a compliance issue related to SSVEC’s TOU rates and to address SSVEC’s
21 proposed changes to its Service Conditions.

1 **CHANGES TO SERVICE CONDITIONS**

2 **Q. Have the proposed changes to the Service Conditions now been filed in the Docket?**

3 A. Yes. SSVEC filed a redline version of its Service Conditions in the docket on February 26,
4 2016. In communication with Staff, SSVEC has confirmed that the redline version reflects all
5 of SSVEC's proposed changes to its Service Conditions.

6
7 **Q. Has SSVEC made public its proposed revisions to the Service Conditions?**

8 A. Yes. In addition to filing the proposed revisions in the current docket, as noted herein,
9 SSVEC published notice of the proposed revisions in the *Sierra Vista Herald* and the *Bisbee*
10 *Daily Review* on March 4, 2016.

11
12 **Q. What type of changes is SSVEC proposing for its Service Conditions?**

13 A. Many of the changes proposed by SSVEC involve renumbering the sections, correcting
14 typographical or other minor errors, and clarifying or updating existing language. There are
15 some more substantive changes, however. Proposed revisions to the section on *Distribution*
16 *Line Extension Estimates and Fees* would result in increased costs to customers, as would
17 proposed revisions to the Exhibits regarding responsibility for meter enclosures, switches,
18 and sockets.

19
20 **Q. Please describe the change to Section 4.4, *Distribution Line Extension Estimates and***
21 ***Fees*.**

22 A. The proposed change to Section 4.4, *Distribution Line Extension Estimates and Fees* would
23 increase costs for customers by approximately \$40, affecting approximately 50 customers per
24 year. The purpose of the change is to ensure that the entire cost of any design estimate
25 prepared by SSVEC is covered by the customer, even if the customer opts not to go forward
26 with a project once it has been designed.

1 **Q. What does Staff recommend?**

2 A. Staff is concerned about the proposed deletion of the existing fee table in Section 4.4, which
3 lists the *Type of Service, No. Lots/Service(s), and Fee*. Without this table, Section 4.4 is
4 significantly less clear concerning the costs related to design estimates. Staff recommends
5 approval of the proposed new language relating to Line Extension design estimates, but also
6 recommends that Section 4.4 be amended to include a table breaking out costs. The
7 amended Section 4.4 should include a table listing the costs relating to design estimates,
8 including the approximate cost of extra site visits that may be required for some design
9 estimates.

10
11 **Q. Please describe the proposed revisions to the Exhibits relative to responsibility for
12 Meter Socket Enclosures, Meter Test Switches, and Meter Sockets.**

13 A. SSVEC has proposed changes to Exhibits relative to Meter Socket Enclosures, Meter Test
14 Switches, and Meter Sockets. These changes would result in increased costs of approximately
15 \$279 for single-phase service customers and \$464 for three-phase service customers. The
16 \$279 increase would impact approximately 76 customers per year, while the \$464 increase
17 would impact approximately four customers per year.

18
19 **Q. Does Staff have concerns relating to SSVEC's proposed cost transfers relating to
20 Meter Sockets, Meter Switches and Meter Enclosures?**

21 A. Yes. There is insufficient explanation and documentation to justify the proposed changes,
22 which would transfer costs for Meter Socket Enclosures, Meter Test Switches, and Meter
23 Sockets from SSVEC to customers. For example, SSVEC states that these changes would
24 remedy an existing subsidy, but does not provide any supporting detail regarding the subsidy.
25 SSVEC also states that another reason for the proposed change is that there can be
26 coordination issues with the members' electricians or contractors when SSVEC provides the

1 equipment, resulting in problems with completing the work. Staff views this as an
2 insufficient rationale for transferring costs in cases where coordination issues do not exist.

3
4 Staff recommends against approving changes relating to responsibility for Meter Socket
5 Enclosures, Meter Test Switches, and Meter Sockets proposed in SSVEC's Service
6 Conditions.

7
8 **TIME OF USE STUDY**

9 **Q. In its direct testimony, what did Staff request with respect to the TOU analysis and**
10 **rate proposal ordered in Decision No. 73349 (August 21, 2012)?**

11 A. Staff recommended that SSVEC either file an analysis in the current rate case docket or file a
12 letter in the Docket explaining why TOU rates are not appropriate for its service territory.
13 Staff stated that it would consider little or no TOU variation in SSVEC's costs as a basis for
14 Staff's support for eliminating the requirement to file a TOU proposal.

15
16 **Q. What did SSVEC file in response to Staff's request?**

17 A. SSVEC filed responsive information in its Rebuttal testimony in this Docket.

18
19 **Q. Did this testimony indicate that there was little or no TOU variation in SSVEC's**
20 **costs?**

21 A. Yes. SSVEC Witness David W. Hedrick testified that the Arizona Electric Power
22 Cooperative ("AEPSCO") was SSVEC's primary source of power and that AEPSCO bills
23 SSVEC based on a fixed charge, rather than varying energy charges based on time. Mr.
24 Hedrick explained that, as a result, there is no meaningful difference between the on-peak and
25 off-peak prices, and therefore no effective price signal to make TOU rates attractive to
26 SSVEC customers. In light of this testimony, Staff supports the elimination of the

1 requirement that SSVEC file an analysis of TOU rates that would include a proposal for
2 TOU rates designed to maximize customer participation.

3

4 **Q. Did SSVEC make any other requests relating to its TOU rates?**

5 A. Yes. SSVEC requested that the existing TOU rates be frozen.

6

7 **Q. Do you have a recommendation regarding SSVEC's request to freeze its existing**
8 **TOU rates?**

9 A. No. My TOU testimony relates to a compliance issue. Staff Witness Ranelle Paladino
10 addresses rates in her testimony, including SSVEC's request to freeze its TOU rates.

11

12 **Q. Does this conclude your surrebuttal testimony?**

13 A. Yes, it does.

BEFORE THE ARIZONA CORPORATION COMMISSION

DOUG LITTLE
Chairman
BOB STUMP
Commissioner
BOB BURNS
Commissioner
TOM FORESE
Commissioner
ANDY TOBIN
Commissioner

IN THE MATTER OF THE APPLICATION OF)
SULPHUR SPRINGS VALLEY ELECTRIC)
COOPERATIVE, INC., FOR A HEARING TO)
DETERMINE THE FAIR VALUE OF ITS)
PROPERTY FOR RATEMAKING PURPOSES,)
TO FIX A JUST AND REASONABLE RETURN)
THEREON, TO APPROVE RATES DESIGNED)
TO DEVELOP SUCH RETURN AND FOR)
RELATED APPROVALS.)
_____)

DOCKET NO. E-01575A-15-0312

SURREBUTTAL

TESTIMONY

OF

YUE LIU

PUBLIC UTILITIES ANALYST III

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

MAY 6, 2016

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EXECUTIVE SUMMARY
SULPHUR SPRINGS VALLEY ELECTRIC COOPERATIVE, INC.
DOCKET NO. E-01575A-15-0312

My Surrebuttal Testimony addresses the estimated financial net savings or net costs of purchasing or leasing a rooftop solar system from a typical Sulphur Springs Valley Electric Cooperative, Inc. ("SSVEC" or the "Co-op") residential customer's perspective. I provide a comparison of the net savings and net costs for a customer considering the purchase or lease of a rooftop solar system based on four different rate designs, namely, SSVEC's current effective Residential Service rate schedule ("Existing Schedule R"), SSVEC's proposed Residential Service with Distributed Generation on or before April 14, 2015 rate schedule in Phase 4 in its Application ("Schedule R-DG E"), SSVEC's proposed Residential Service with Distributed Generation after April 14, 2015 rate schedule in Phase 4 in its Application ("Schedule R-DG"), and SSVEC's proposed Residential Service rate schedule in Phase 4 in its application ("Proposed Schedule R").

By modeling the bill savings under four different rate designs, and considering information provided by the DG solar industry representatives and associations which intervened in this case, Staff demonstrates that under the Existing Schedule R, the solar market might be considered to be overheated; under the Schedule R-DG E and Schedule R-DG, the solar market would be quite averse; and under the Proposed Schedule R, the solar market would be sustainable. Moreover, the Internal Rate of Return ("IRR") under the Schedule R-DG for new DG customers would be much lower compared to the other three rate designs. The 1.9 percent IRR for an average customer under the Schedule R-DG is lower than all the prevailing rate of return for a long-term investment, which makes solar DG not an economically viable investment option for customers. Therefore, the pace of rooftop solar installations would be expected to be slow, at least temporarily, if Schedule R-DG is adopted, all else being constant.

1 **INTRODUCTION**

2
3 **Q. Please state your name, occupation, and business address.**

4 A. My name is Yue Liu. I am a Public Utilities Analyst III employed by the Arizona Corporation
5 Commission (“Commission”) in the Utilities Division (“Staff”). My business address is 1200
6 West Washington Street, Phoenix, Arizona 85007.

7
8 **Q. Please describe your educational background and professional experience.**

9 A. In 2013, I graduated with high distinction from the University of Minnesota, receiving a
10 Bachelor of Arts degree in economics, mathematics and statistics. In 2014, after working as an
11 investment-banking analyst for one year, I enrolled in the graduate program in statistics at the
12 University of California Berkeley and received a Master of Arts degree in 2015. Before joining
13 the Commission in December 2015, I worked on several research projects of various disciplines
14 as a statistical consultant, offering clients advisory services on experimental designs, sampling
15 methodologies, data analytics and statistical inferences.

16
17 **Q. Briefly describe your responsibilities as a Public Utilities Analyst III.**

18 A. In my capacity as a Public Utilities Analyst III, I have been tasked to analyze and provide
19 recommendations to the Commission on assigned cases.

20
21 **Q. Did you file Direct Testimony in this proceeding?**

22 A. No.

23
24 **Q. What is the scope of your testimony in this case?**

25 A. I provide estimates of financial net savings and net costs in purchasing or leasing a rooftop
26 solar system from the perspective of a typical Sulphur Springs Valley Electric Cooperative, Inc.
27 (“SSVEC” or the “Coop”) residential customer using a bill and solar cost estimation model I

1 sponsor herein. Among other things, I provide a comparison of the net savings and net costs
2 for a customer considering solar based on four different rate designs, namely, SSVEC's current
3 effective Residential Service Schedule R ("Existing Schedule R"), SSVEC's proposed
4 Residential Service with Distributed Generation on or before April 14, 2015 rate schedule in
5 Phase 4 in its Application ("Schedule R-DG E"), SSVEC's proposed Residential Service with
6 Distributed Generation after April 14, 2015 rate schedule in Phase 4 in its Application
7 ("Schedule R-DG"), and SSVEC's proposed Residential Service rate schedule in Phase 4 in its
8 application ("Proposed Schedule R").

9
10 **Q. Please provide a summary of the four rate designs you have applied in the bill and solar**
11 **cost model.**

12 **A.** The rates of the four rate designed mentioned above are summarized in Table 1:
13

	Monthly Service Availability Charges (\$)	Energy Charges (\$/kWh)
Existing Schedule R	10.25	0.126038
Schedule R-DG E	50.00	0.119768
Schedule R-DG	50.00	0.071165
Proposed Schedule R	25.00	0.102038

14 Table 1: Summary of the four rate designs
15

16 **Q. Have you reviewed direct and rebuttal testimony submitted by the various parties in**
17 **this case as it relates to the subject matter of your Surrebuttal Testimony?**

18 **A.** Yes. My reviews included testimony from DG solar industry representatives and associations
19 which intervened in this case.
20

1 **BILL ESTIMATION AND SOLAR COST MODEL AND ASSUMPTIONS**

2 **Q. How was the bill estimation and solar cost model established?**

3 A. The bill estimation and solar cost model was first established in the UNS Electric, Inc.
4 (“UNSE”) rate case (Docket No. E-04204A-15-0142). For this surrebuttal testimony, Staff
5 issued data requests to SSVEC, The Energy Freedom Coalition of America (“EFCA”) and
6 Arizona Solar Deployment Association (“ASDA”) requesting their thoughts and suggestions
7 for improving the model.

8
9 The final model used in Staff’s surrebuttal testimony was based on the initial model and
10 augmented by relevant revisions and improvements from incorporation of SSVEC, EFCA and
11 ASDA input and Staff’s internal review and best judgement.

12
13 The model used here should be viewed as Staff’s model for which Staff is responsible. Staff is
14 confident in the relative DG solar cost effectiveness demonstrated under the various rate
15 options presented herein. Staff acknowledges there is uncertainty concerning the input
16 assumptions and, therefore, in the absolute values of the resulting estimations.

17
18 **Q. What are the key assumptions used in modeling the net savings or net costs in**
19 **purchasing or leasing a rooftop solar system?**

20 A. The initial assumptions include the 1) solar system size (kW-DC); 2) solar system conversion
21 factor (kWh-AC/kW-DC); 3) seasonal shaping of solar generation; 4) solar off-setting load at
22 time of generation; 5) a typical residential customer kWh before solar by season; 6) related taxes
23 and fees; 7) solar purchase cost (\$/kW-DC); 8) fixed system operating and maintenance (O&M)
24 cost (\$/kW-year); 9) SSVEC residential PV incentive (\$/W) and 10) applicable federal and state
25 investment credits. The numerical values of those assumptions are listed in Schedule YL-1.

1 **Q. Please discuss each key necessary assumption starting with the customer's solar system**
2 **size (kW-DC).**

3 A. For this assumption, Staff utilized SSVEC's response to Staff data requests¹ for the average
4 residential customer and the large residential customer assuming a 90 percent offset of a
5 customer's energy. This means the customer's DG solar system generates 90 percent of its
6 energy requirement. Staff arrived on 4.36 kW and 6.80 kW system sizes, respectively, for
7 average and large customers.

8
9 **Q. What is the solar system conversion factor (kWh-AC/kW-DC)?**

10 A. That assumption represents the energy kWh generation estimate per kW. Staff used 1,678 kWh
11 annually per one kW based on the National Renewable Energy Laboratory's ("NREL")
12 PVWatts residential solar generation profile for Douglas Bisbee International Airport (TMY3).
13 This assumption is also used in the formula for the customer's solar system size as described
14 above.

15
16 **Q. What did you assume for seasonal shaping of solar generation?**

17 A. Seasonal shaping is each season's average monthly DG solar generation as a percentage of the
18 monthly average DG solar generation. Staff used a 105 percent summer to annual solar
19 generation percentage and a 95 percent winter to annual solar generation percentage.

20
21 **Q. What is solar off-setting load at time of generation?**

22 A. Solar off-setting load at time of generation represents the percentage of a customer's solar
23 production which is self-consumed at the time of generation. The balance, then, is exported.
24 Staff used EFCA's provided summer percentage of 43 percent and winter percentage of 34

¹ Staff to SSVEC 12.2

1 percent for average customer, and summer percentage of 44 percent and winter percentage of
2 36 percent for large customer.

3
4 **Q. What is customer load before solar by season?**

5 A. This is the SSVEC-provided customer load profile data for the average customer. Staff pro
6 rata scaled this data for the large customer. The detailed customer usage profiles are provided
7 in Schedule YL-2.

8
9 **Q. What is the solar purchase cost assumption (\$/kW-DC)?**

10 A. This assumption is the installed purchase price to the customer. Staff used a cost of \$2,750
11 per kW as cited in the surrebuttal testimony in the UNSE rate case.

12
13 **Q. What are the taxes, fees and investment tax credit assumptions?**

14 A. These assumptions relate to applicable avoidable taxes on electric bills and applicable
15 investment tax credits. Staff used 10 percent as the percentage of taxes and government fees,
16 30 percent as the percentage of federal investment tax credit under the Existing Schedule R
17 and Schedule R-DG E and 26 percent for the other two rate designs, and \$1,000 per rooftop
18 solar system as the Arizona residential solar tax credit.

19
20 **Q. What is the fixed system O&M cost (\$/kW-year)?**

21 A. This is the fixed annual cost per kW for the operation and maintenance of purchased systems.
22 Staff used \$21/kW-year as the cost, assuming a system life of 33 years, based on NREL's
23 Distributed Generation Renewable Energy Estimate of Costs (updated February 2016).

24

1 **Q. What is the SSVEC residential PV incentive (\$/W)?**

2 A. This is the-per Watt up-front incentive for residential PV approved in Commission Decision
3 No. 74870. The incentive is \$0.25/W, up to \$2,500.
4

5 **Q. Lastly, what assumptions are made on Net Energy Metering (NEM)?**

6 A. Under the Existing Schedule R, Schedule R-DG E and Proposed Schedule R, the current
7 effective NEM is assumed, with banking and rollover for excess generation. For modeling
8 purposes, the accumulated excess generation is represented as an average credit spread over all
9 months, and the excess generation banked during the winter months is assumed to evenly offset
10 summer months' energy usage. The year-end balance of excess generation is paid out to
11 customers at SSVEC's avoided cost of \$0.025800 per kWh.
12

13 Under Schedule R-DG, the proposed NEM alternative in SSVEC's Application is assumed.
14 With the proposed NEM alternative, all exported electricity from a customer to SSVEC is paid
15 out each month to the customer at the avoided cost of \$0.025800 per kWh.
16

17 **RESULTS AND COMPARISON**

18 **Q. What evaluation measures did you select for purchasing a rooftop solar system?**

19 A. In order to evaluate the purchasing option, the simple payback and the Internal Rate of Return
20 ("IRR") measures were selected. The purpose of using those two measures is to capture the
21 total financial impact of purchasing a rooftop solar system, by evaluating bill savings together
22 with system capital cost recovery.
23

1 **Q. What are the resulting simple paybacks?**

2 A. Simple payback is a straightforward measure of how many years a customer needs to recover
3 the initial cost of purchasing a rooftop solar system through bill savings. Table 2 below
4 summarizes the resulting simple paybacks for an Average Customer and a Large Customer.
5

	Simple Payback (Years)	
	Average Customer	Large Customer
Existing Schedule R	6.5	6.8
Schedule R-DG E	14.7	11.9
Schedule R-DG	34.1	21.1
Proposed Schedule R	8.8	9.1

6 Table 2: Resulting Simple Paybacks

7
8 The results suggest that, under the Existing Schedule R, both the Average Customer and Large
9 Customer can achieve a better simple payback. However, with the Proposed Schedule R, both
10 customers have significant improvement in terms of simple payback, as compared to Schedule
11 R-DG E and Schedule R-DG.

12
13 **Q. Please summarize your findings on the simple paybacks.**

14 A. In ASDA's response to Staff data requests², ASDA provided an insightful comment on the
15 relationship between the simple payback and the solar market:

16
17 "ASDA believes that a superheated solar market exists when
18 the simple payback is 7 years or less, a sustainable solar market
19 exists when the simple payback is 8 to 11 years, and an adverse
20 market exists when the simple payback is over 12 years."
21

² Staff to ASDA 1.3

1 Applying this comment to the resulting simple paybacks shown in Table 2, it could be suggested
2 that under the Existing Schedule R, the solar market might be considered to be superheated;
3 under the Schedule R-DG E and Schedule R-DG, the solar market is quite averse; and under
4 the Proposed Schedule R, the solar market would be sustainable.

5
6 **Q. What is the formula of the IRR?**

7 A. The IRR is a financial metric used to evaluate the profitability of any potential investments.
8 The IRR is a discount rate that makes the net present value (“NPV”) of all cash flows from a
9 particular investment equal to zero. In the bill saving model, the IRR is calculated based on
10 the formula below:

$$NPV = 0 = -C_0 + \frac{S_1}{1+IRR} + \frac{S_2}{(1+IRR)^2} + \dots + \frac{S_{33}}{(1+IRR)^{33}},$$

11
12 where C_0 is the total initial cost of purchasing the rooftop solar system, and S_1, S_2, \dots, S_{33} are
13 the annual bill savings during the period of year 1, 2, ..., 33 after the rooftop solar system is
14 installed.

15
16 **Q. Why is the IRR used to evaluate a customer’s investment decision in purchasing the
17 rooftop solar system?**

18 A. Staff is using the IRR because, unlike the NPV, it does not make a numerical assumption
19 regarding discount rate. Given different perspectives on discount rates for various customers,
20 using the IRR simplifies the evaluation. Generally speaking, the higher an investment’s IRR,
21 the more desirable it is to undertake the investment from the customer’s perspective. Thus,
22 the IRR can be used to rank multiple potential investments. In the bill saving model, the IRR
23 provides an effective comparison for the financial feasibility of investing in a rooftop solar
24 system under the four rate designs. Moreover, the IRR can also be compared against the
25 prevailing rate of return in the securities market or accepted discount rate which are reference
26 points for customers. For a customer considering an investment in a rooftop solar system, if

1 the IRR for the investment is higher than his/her (publicly unknown) but accepted discount
2 rate, the investment is economically viable.

3
4 **Q. Are there additional assumptions in calculating the IRR?**

5 A. Yes. An annual DG solar degradation rate of 0.25 percent and a lifespan of 33 years are
6 assumed for the solar system. Moreover, an annual future utility rate escalation of 2.5 percent
7 is assumed.

8
9 **Q. How does the change of those assumptions affect the resulting IRRs?**

10 A. The change of assumptions on annual degradation rate and annual future utility rate escalation
11 will affect the numeric values of the resulting IRRs. However, the relative ranking among the
12 four rate designs should be unchanged and accurate, which is the reason why the IRR is used
13 here as an evaluation measure.

14
15 **Q. What are the resulting IRRs for Average Customer and Large Customer?**

16 A. The resulting IRRs for Average Customer and Large Customer under the four rate designs are
17 summarized in Table 3 below:

18

	IRR (%)	
	Average Customer	Large Customer
Existing Schedule R	17.4%	16.8%
Schedule R-DG E	7.9%	9.9%
Schedule R-DG	1.9%	5.0%
Proposed Schedule R	13.3%	12.8%

19 Table 3: Resulting IRRs

20
21 From the table above, it can be observed that both customers are much better off under
22 Proposed Schedule R compared to Schedule R-DG E and Schedule R-DG. Even though the

1 IRR is lower compared to the IRR under the Existing Schedule R, with Proposed Schedule R
2 purchasing a rooftop solar system is still an economically viable investment, especially when a
3 high utility rate escalation is expected.

4
5 **Q. Can you provide a prevailing rate of return in the securities market or a generally**
6 **accepted discount rate for comparison purposes?**

7 A. Yes. The Standard & Poor's 500 ("S&P 500") is an American stock market index based on the
8 market capitalizations of 500 large companies with common stock listed on the NYSE or
9 NASDAQ. The S&P 500 has a diverse constituency and is widely considered as one of the
10 best representations of the U.S. stock market and the U.S. economy. Therefore, the return on
11 the S&P 500 can be used as a prevailing rate of return in the securities market. In addition, the
12 returns on a 3-month Treasury Bill ("3-month T-Bill") and a 10-year Treasury Bond ("10-year
13 T-Bond") are generally accepted discount rates for long term and short term investments,
14 respectively. Table 4 below summarizes the geometric averages of the annual returns on the
15 S&P 500, the 3-month T-Bill and the 10-year T-Bond for three different time periods. The
16 raw data of annual returns during 1928 - 2015 was retrieved from Dr. Aswath Damodaran's
17 online database (<http://pages.stern.nyu.edu/~adamodar/>). Dr. Damodaran is a Professor of
18 Finance at the Stern School of Business at New York University.

19

	S&P 500	3-month T-Bill	10-year T-Bond
1928-2015	9.50%	3.45%	4.96%
1966-2015	9.61%	4.92%	6.71%
2006-2015	7.25%	1.14%	4.71%

20 Table 4: Geometric Averages of the Annual Returns
21

1 **Q. Are there any other prevailing discount rates that can be used for comparison purposes?**

2 A. Mortgage rate is another widely used prevailing discount rate. The Primary Mortgage Market
3 Survey (“PMMS”) results provided by Freddie Mac are presented in this surrebuttal testimony.
4 Through the PMMS, Freddie Mac surveys lenders each week on the rates, fees and points for
5 the most popular mortgage products. Three types of mortgage products will be shown, namely
6 30-Year Fixed-Rate Mortgages (“30-Yr FRM”), 15-Year Fixed-Rate Mortgages (“15-Yr FRM”)
7 and 5-Year Adjustable-Rate Mortgages (“5/1-Yr ARM”). Table 5 below lists the average rates
8 of these three mortgage products for 2005-2015.

9

	Mortgage Products		
	30-Yr FRM	15-Yr FRM	5/1-Yr ARM
Average Rate (2005-2015)	4.95%	4.35%	4.25%

10 Table 5: Average Rates of Three Mortgage Products

11
12 **Q. Please summarize your findings from your analysis.**

13 A. Under the Proposed Schedule R, the IRRs can reach 13.3 percent and 12.8 percent, respectively,
14 for an Average Customer and a Large Customer. This level of IRR is significantly higher than the
15 annual return on a 10-year T-Bond, which is generally accepted as the discount rate for long-term
16 investment. The IRRs are even substantially higher than the recent 10-year (2006-2015) average annual
17 return on the S&P 500. In addition, the IRRs are more than double of the mortgage rates. Therefore,
18 purchasing a rooftop solar system would still be an economically viable choice with the adoption of
19 Proposed Schedule R. On the other hand, the IRRs under the Schedule R-DG for new DG customers
20 would be much lower compared to the other three rate designs. The 1.9 percent IRR for an average
21 customer under the Schedule R-DG is lower than all the prevailing rate of return for a long-term
22 investment, which makes solar DG not a financially feasible investment option for customers.
23 Moreover, the pace of rooftop solar installations would be expected to be reduced, at least temporarily,
24 if Schedule R-DG is adopted, all else being constant.

1 **Q. What are the net payoffs under the four rate designs if a customer chooses to lease a**
2 **rooftop solar system?**

3 A. \$0.09/kWh is assumed as the rooftop solar system lease rate. The monthly average net payoffs
4 under the four rate designs for both an Average Customer and a Large Customer are
5 summarized in Table 6 below. The parentheses in the table indicate a net loss.
6

	Monthly Average Net Payoff	
	Average Customer	Large Customer
Existing Schedule R	\$ 33.39	\$ 53.75
Schedule R-DG E	\$ (11.51)	\$ (0.92)
Schedule R-DG	\$ (30.66)	\$ (29.86)
Proposed Schedule R	\$ 17.29	\$ 28.64

7 Table 6: Monthly Average Net Payoffs for Leasing

8
9 Based on the results shown above in Table 6, both customers would expect significant savings
10 if they choose to lease rooftop solar systems under the Proposed Schedule R. However,
11 customers would experience substantial losses under the two DG specific rate designs
12 especially for new DG customers under the Schedule R-DG.
13

14 **Q. Does this conclude your Surrebuttal Testimony?**

15 A. Yes, it does.

Key Assumptions

Solar system Size (kW-DC)	
Average Customer	4.36
Large Customer	6.80
Solar system conversion factor (kWh-AC/kW-DC)	
	1,678
Seasonal shaping of solar generation	
Summer	105% of monthly average
Winter	95% of monthly average
Solar off-setting load at time of generation (Average Customer)	
Summer	43% of total solar kWh
Winter	34% of total solar kWh
Solar off-setting load at time of generation (Large Customer)	
Summer	44% of total solar kWh
Winter	36% of total solar kWh
Customer load before solar by season	
	See Schedule YL-2
Taxes and government fees	
	10%
Solar purchase cost (\$/kW-DC)	
	2,750
Fixed system O&M cost (\$/kW-year)	
	21
SSVEC Residential PV Incentive	
	\$0.25/W, up to \$2,500
Federal investment tax credit	
	30% (by 12/31/2019) or 26% (after 12/31/2019 and before 01/01/2021)
Arizona residential solar tax credit	
	\$1,000

Customer Profiles

	Average Customer	Large Customer
Monthly kWh	677	1,057
Solar system size kW-DC	4.36	6.80
Monthly kWh - Summer	741	1,157
Monthly kWh - Winter	612	956