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7 *Attorneys for Southwest Energy*  
8 *Efficiency Project*

9 **BEFORE THE ARIZONA CORPORATION COMMISSION**

Arizona Corporation Commission

10 DOUG LITTLE, Chairman  
11 BOB STUMP  
12 BOB BURNS  
13 TOM FORESE  
14 ANDY TOBIN

DOCKETED

FEB 23 2016

DOCKETED BY

15 IN THE MATTER OF THE APPLICATION  
16 OF UNS ELECTRIC, INC. FOR THE  
17 ESTABLISHMENT OF JUST AND  
18 REASONABLE RATES AND CHARGES  
19 DESIGNED TO REALIZE A REASONABLE  
20 RATE OF RETURN ON THE FAIR VALUE  
21 OF THE PROPERTIES OF UNS ELECTRIC,  
22 INC. DEVOTED TO ITS OPERATIONS  
23 THROUGHOUT THE STATE OF  
24 ARIZONA, AND FOR RELATED  
25 APPROVALS.

Docket No. E-04204A-15-0142

**NOTICE OF FILING  
SURREBUTTAL TESTIMONY OF  
JEFF SCHLEGEL ON BEHALF  
OF SOUTHWEST ENERGY  
EFFICIENCY PROJECT**

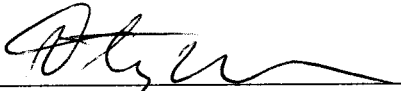
Southwest Energy Efficiency Project ("SWEEP"), through its undersigned counsel,  
hereby provides notice that it has this day filed the attached surrebuttal testimony of Jeff  
Schlegel.

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1 DATED this 23<sup>rd</sup> day of February, 2016.

2 ARIZONA CENTER FOR LAW IN  
3 THE PUBLIC INTEREST

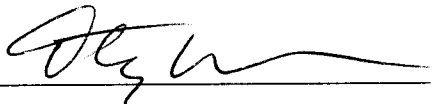
4 By   
5 Timothy M. Hogan  
6 202 E. McDowell Rd., Suite 153  
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8 *Attorneys for Southwest Energy Efficiency*  
9 *Project*

10 ORIGINAL and 13 COPIES of  
11 the foregoing filed this 23<sup>rd</sup> day  
12 of February, 2016, with:

13 Docketing Supervisor  
14 Docket Control  
15 Arizona Corporation Commission  
16 1200 W. Washington  
17 Phoenix, AZ 85007

18 COPIES of the foregoing  
19 electronically mailed this  
20 23<sup>rd</sup> day of February, 2016 to:

21 All Parties of Record

22   
23  
24  
25

**BEFORE THE ARIZONA CORPORATION COMMISSION**

COMMISSIONERS

DOUG LITTLE, CHAIRMAN  
BOB STUMP  
BOB BURNS  
TOM FORESE  
ANDY TOBIN

IN THE MATTER OF THE APPLICATION OF  
UNS ELECTRIC, INC. FOR THE  
ESTABLISHMENT OF JUST AND  
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THROUGHOUT THE STATE OF ARIZONA,  
AND FOR RELATED APPROVALS.

Docket No. E-04204A-15-0142

Surrebuttal Testimony of

**Jeff Schlegel**

**Southwest Energy Efficiency Project (SWEEP)**

February 23, 2016

**Surrebuttal Testimony of Jeff Schlegel, SWEEP  
Docket No. E-04204A-15-0142**

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**Introduction**

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Q. Please state your name and business address.

A. My name is Jeff Schlegel. My business address is 1167 W. Samalayuca Drive, Tucson, Arizona 85704-3224.

Q. For whom are you testifying?

A. I am testifying on behalf of the Southwest Energy Efficiency Project (SWEEP).

Q. Have you filed direct testimony in this docket previously?

A. Yes. I filed direct testimony on behalf of SWEEP on November 6, 2015; direct testimony errata on November 9, 2015; and rate design testimony on December 9, 2015.

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of my surrebuttal testimony is to respond to several recommendations and points made by other parties in this case, as well as changes to the UniSource Electric (“UNSE” or “Company”) proposal for residential rate design. Specifically, I will address the following:

- The general concept of mandatory residential demand charges, which UNSE proposed in its rebuttal testimony.
- The UNSE proposal to institute a mandatory three-part rate for all residential customers.
- Comments made by several parties, specifically UNSE witnesses Overcast and Jones, regarding the SWEEP recommendation not to increase the customer fixed charge.
- Comments made by UNSE witness Smith in regards to the SWEEP proposal to move collection of some energy efficiency related costs to base rates.
- The need for UNSE to expand demand side management offerings that will help customers manage their energy usage and demand before any changes to rate design, including demand charges, are implemented.
- The need for the Commission’s cost effectiveness test for energy efficiency to accurately account for the capacity and other benefits that energy efficiency delivers so that customers are not being denied opportunities to save on their utility bills.

1  
2 Q: Do you offer specific recommendations to the Commission in your surrebuttal  
3 testimony?  
4

5 A: Yes. I offer the following recommendations to the Commission in this case.  
6

- 7 1. The Commission should reject proposals to force all residential customers to  
8 mandatory demand charges.<sup>1</sup> Residential customers should have options and  
9 choice when it comes to their electric bills. Forcing all residential customers to  
10 mandatory demand charges limits customers' options regarding how to control  
11 their bills. Customers should have options and should be able to choose a rate  
12 design that best fits their needs. The effects and implications of moving full  
13 classes of residential customers to a mandatory demand charge rate structure are  
14 not known. There is also no evidence in the record to indicate the ability of  
15 limited income customers to respond to residential demand charges. Finally,  
16 residential mandatory demand charges will disproportionately shift costs to  
17 lower usage customers, who are likely also lower income customers.  
18
- 19 2. The Commission should deny the UNSE proposal specifically to force all  
20 residential customers to mandatory demand charges. The UNSE proposal is not  
21 fully developed in terms of which costs will be included in a residential demand  
22 charge. Currently significant differences exist between the Commission Staff  
23 and UNSE on which costs should be included. The Company does not have  
24 complete data available to fully understand and analyze this rate proposal,  
25 especially in terms of cost, revenue neutrality, and price responsiveness.  
26
- 27 3. If, despite SWEEP's opposition, the Commission chooses to approve a  
28 mandatory three-part rate for residential customers, the demand charge should  
29 be based on the coincident peak demand and only include incremental peak  
30 related costs. The Commission should also be very careful in considering what  
31 costs will be included in the demand charge due to the likely precedential nature  
32 of this case. What costs the Commission allows UNSE to include in demand  
33 charges will likely have implications for rate design moving forward in the State  
34 of Arizona.  
35
- 36 4. The Commission should deny the UNSE proposal to increase the customer fixed  
37 charge (the basic service charge) in this case. The Company's proposal is not  
38 cost justified by any standard. Arbitrarily increasing fixed customer charges for  
39 residential customers will reduce customer control over electricity bills and  
40 reduce the customer incentive to pursue energy efficiency to reduce their utility  
41 bills. This mandatory fixed charge is antithetical to the state policy goal of

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<sup>1</sup> While SWEEP focuses its concerns about mandatory demand charges on the appropriateness and effectiveness of such mandatory charges for residential customers, many of the same concerns apply for small business customers.

1 increasing cost-effective energy efficiency in order to reduce total customer  
2 costs.

3  
4 5. The Commission should order UNSE to provide customers with more tools to  
5 manage and alleviate increasing energy bills caused by the rate increase itself  
6 and by new pricing mechanisms. These tools give customers more choice. The  
7 tools should be offered and widely available to customers before any new rates  
8 and new pricing mechanisms are implemented.

9  
10 6. The Commission should order the Company to consider greater use of time  
11 varying rates for residential customers as an alternative to a mandatory demand  
12 change. This structure would allow UNSE to promote state policy goals of  
13 increasing energy efficiency, and send customers appropriate price signals  
14 related to cost of service and opportunities to reduce their utility bills.

15  
16 7. The Commission should direct UNSE to recover energy efficiency costs in base  
17 rates.

18 **Mandatory Residential Demand Charges**

19  
20 Q. Is SWEEP supportive of residential demand charges?

21  
22 A. No, not as proposed in this proceeding. SWEEP has several concerns related to the  
23 design and implementation of residential demand charges. A poorly designed  
24 residential demand charge may not be cost based and does not provide adequate price  
25 signals to customers.

26  
27 Q. Do you believe residential demand charges convey the proper price signals to  
28 customers?

29  
30 A. No. As noted in an article cited in Dr. Faruqui's testimony, demand charges do not  
31 convey the correct marginal price signals to customers.<sup>2</sup> This rate approach is also  
32 not cost based because the only distribution system component sized to individual  
33 customer demands is the final line transformer.<sup>3</sup> Distribution circuits are sized to the  
34 group demand, and generation and transmission are developed based on system peak  
35 demands and system load shapes. Including in demand charges significant costs that  
36 are not sized to individual customer demands will likely overcharge some customers  
37 while under charging others.

38  

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<sup>2</sup> Stokke, A. V., G. Doorman, and T. Ericson. 2009. *An Analysis of a Demand Charge Electricity Grid Tariff in the Residential Sector*. Discussion Papers No. 574 January 2009, Statistics Norway, Research Department.

<sup>3</sup> Lazar, J. and W. Gonzalez. 2015. *Smart Rate Design for a Smart Future*. Regulatory Assistance Project.

1 Q. What other concerns does SWEEP have regarding mandatory residential demand  
2 charges?  
3

4 A. SWEEP is concerned with the ability of customers to respond to residential demand  
5 charges, especially mandatory demand charges. It is more complex for a customer to  
6 understand how to reduce demand to control their bill. Most utilities have excluded  
7 small commercial customers (under 20 kW demand) from three-part rates for this  
8 reason.  
9

10 There are a number of factors customers will need to understand and consider while  
11 making changes to reduce demand. For example, customers will need to understand  
12 the demand draw of each appliance and device in their home; the actions of individual  
13 household members over the course of a day; how these events interrelate at any  
14 given time; and how demand could be reduced. It is also unclear which customers  
15 will have the ability to respond at all, especially if a demand charge is based on non-  
16 coincident peak. For most customers, it would be burdensome to respond to all hours  
17 in a month. One single short-duration event could cause a large spike in a customer's  
18 bill. For example, an apartment resident with an electric water heater, hair dryer,  
19 coffee maker, and range operating simultaneously might experience a 15-minute  
20 demand of 10 kW, even though their contribution to the system diversified peak  
21 demand is less than 1 kW.  
22

23 UNSE has no experience communicating this type of rate design to residential  
24 customers. The Company has no demonstrated record communicating this type of rate  
25 design to customers so they can fully understand how it works and how they may  
26 respond.  
27

28 Finally, there is no evidence in the record to indicate whether or not customers will be  
29 price responsive to the new rate structure. If in fact customers are not able to respond,  
30 the proposed mandatory demand charges will be nothing more than an unavoidable  
31 cost for customers. In this situation, the demand charge presents the same problems as  
32 a high fixed charge which I discuss further below and which Staff witness Broderick  
33 opposes.  
34

35 Q. Is SWEEP concerned about any specific customer class's ability to respond to  
36 demand charges?  
37

38 A. Yes. SWEEP is especially concerned with the ability of limited or low income  
39 customers to respond to this type of rate design. Residential demand charges are  
40 essentially a high fixed charge for those customers who are unable to respond. Given  
41 that high fixed charges disproportionately harm low income and low usage customers,  
42 these customers will be further harmed by a mandatory residential demand charge.  
43

44 Q. What percentage of UNSE's service territory is considered low or limited income?  
45



1 A. It is difficult to determine exactly how many residential customers could be described  
2 as limited or low income customers. According to discovery responses to Staff,  
3 UNSE has not conducted such a study to determine income distribution versus  
4 consumption levels. The Company did provide the following information, presented  
5 in Figure 1. As the figure shows, the majority of customers, 73.4%, fall below the  
6 category described as “midscale” in regards to income level. However, given that the  
7 table lacked detailed descriptions for income level labels, it is unclear what is meant  
8 by each level. The only take away one could make from this table is that the majority  
9 of UNSE’s customers fall below the average or “midscale” income level.  
10

**STF 2.085**

Rate Design: Please provide any studies, investigations, analyses or reviews performed by or for the Company that considered, evaluated or reviewed the income distribution versus consumption by rate schedule.

**RESPONSE:**

No specific study or evaluation was made that responds to this question. However, UNS Electric did create a table with historical data in it utilizing November 2013 through October 2014 to evaluate the percentage of customers falling within some very general income levels.

**UNSE**

Income Level (High to Low)	Percentage of Customers	Percentage of kWh (2013)	Cumulative Percentage of Customers	Cumulative Percentage of kWh (2013)
Wealthy	0.4%	0.7%	0.4%	0.7%
Upscale	3.5%	4.9%	3.9%	5.6%
Upper Mid	15.2%	19.2%	19.1%	24.8%
Midscale	1.4%	1.7%	20.5%	26.6%
Lower Mid	37.0%	38.7%	57.5%	65.3%
Downscale	41.9%	34.3%	99.5%	99.6%
Low Income	0.5%	0.4%	100.0%	100.0%
Grand Total	100.0%	100.0%		

11  
12 Figure 1. Source: STF 2.085.

13 Q. Please respond to statements presented by Company witness Overcast in rebuttal  
14 testimony related to the evidence of customer response to mandatory demand charges.  
15

16 A. In rebuttal, Mr. Overcast cites the implementation of mandatory demand charges for a  
17 small rural electric cooperative in Kansas, the Butler REC (total of 7,500 customers,  
18 6,500 residential) as evidence that residential customers can respond to mandatory  
19 demand charges.  
20

21 Q. Do you agree with Mr. Overcast’s assertion that the evidence presented in HEO-5 is  
22 conclusive evidence that residential customers can respond to mandatory demand  
23 charges?  
24

1 A. No, not at all. This study does not provide any conclusive evidence on the ability of  
2 customers to respond to mandatory demand charges. Although the Managers report in  
3 HEO-5 did indicate Butler REC members were receiving a refund for reduced  
4 operation costs, there is no conclusive information in this document to support Mr.  
5 Overcast's assertion about customers' ability to respond. There is also nothing in this  
6 exhibit that demonstrates savings have resulted from the mandatory demand charges,  
7 only speculation. It is also worth noting if the intent of demand charges is to reduce  
8 peak demand, the use of a time varying rates is an efficient and effective way to meet  
9 this goal.

10  
11 Q. Is the mandatory demand charge described by Mr. Overcast comparable to the rate  
12 structure proposed by UNSE in rebuttal testimony?  
13

14 A. No, it is not. While the final details of the proposed UNSE rate structure seem unclear  
15 at this point, the approach to billing demand in this example (billing actual demand in  
16 July and August and billing the highest of the actual monthly demand or minimum  
17 demand for September to June) is quite different than the UNSE proposal.  
18

19 Q. Arizona Public Service Company (APS) witness Dr. Faruqui also testified in support  
20 of a three-part rate structure and cited several studies to demonstrate the ability of  
21 customers to respond to this type of rate. Do you agree with Dr. Faruqui's testimony  
22 on this issue?  
23

24 A. No.  
25

26 Q. Can you please discuss the studies presented by Dr. Faruqui in his direct testimony?  
27

28 A. Dr. Faruqui presented four studies in his testimony that specifically address customer  
29 price responsiveness to demand charges. The first three studies did not include any  
30 information on the customer sample demographics and income levels. The fourth  
31 study presented a population profile for the customers in the study. The average home  
32 value for the group on demand charges was 51% higher than the total system  
33 customer average. The group on demand charges was also far more likely to own  
34 central air conditioning, a second freezer or refrigerator, and a dishwasher; in  
35 Arizona, this group would also be more likely to own a swimming pool. All of these  
36 items could be considered luxury items. While the population profile didn't include  
37 average household income for the total system, the increased presence of luxury items  
38 and a 51% higher value average home indicate the income level of these customers  
39 greatly surpasses that of the average customer.  
40

41 Q. Did Dr. Faruqui present evidence regarding how low or limited income customers  
42 respond to residential demand charges?  
43

44 A. As it relates to low or limited income customers, Dr. Faruqui did not present adequate  
45 evidence to demonstrate how low or limited income customers will respond to  
46 mandatory demand charges. It is unknown how low or limited income customers in

1 UNSE's service territory may respond to demand charges. The price responsiveness  
2 of limited income customers is especially critical in this case because the majority of  
3 UNSE's customers fall below the average or "midscale" income level.  
4

5 Q. Why does income level matter in a discussion of residential demand charges?  
6

7 A. There are several reasons why income level matters. The ability of customers to  
8 respond to changes in rates is dependent on a number of different factors, including  
9 socioeconomic factors such as income level. All of the evidence presented in this case  
10 regarding customers' ability to respond appears to be based on higher than average  
11 income customers. A swimming pool pump can be curtailed for a few hours without  
12 adversely affecting the customer's lifestyle; a refrigerator cannot – the frozen food  
13 melts. For a limited income customer who may not be able to respond, the demand  
14 charge simply becomes an unavoidable fixed charge. And the majority of the  
15 residential customers in the UNSE service territory have income levels below the  
16 average or midscale level.  
17

18 Q. Are there studies available that have attempted to provide insight into how low or  
19 limited income customers will respond to demand charges?  
20

21 A. No, not to my knowledge. Dr. Faruqui cites four studies (based on three different  
22 pricing experiments). None of these studies provide any insight into the low income  
23 customer response. The studies are also based on volunteers with higher than average  
24 usage. Two of these experiments are quite old and the third is from Norway (which  
25 has a climate that is not comparable to Arizona). The other 18 utilities that have  
26 instituted demand charges for residential customers are voluntary charges. As Mr.  
27 Ryan Hledik (a colleague of Dr. Faruqui's at the Brattle Group) noted in a recent  
28 presentation, new research is necessary to better understand how customers will  
29 respond.<sup>4</sup>  
30

31 His firm, Brattle Group, has estimated that TOU rates will produce about a 10%  
32 reduction in coincident peak demand, that Critical Peak Pricing rates will produce  
33 about a 30% reduction in coincident peak demand, and that demand charges will  
34 produce only a 1.7% reduction in coincident peak demand. This tells us that time-  
35 varying rates, not demand charges, are the right strategy.<sup>5</sup>  
36

37 Q. Dr. Faruqui cites 18 utilities in the United States that currently have residential  
38 demand charges. Do any of these cases offer evidence to support price responsiveness  
39 to demand charges for limited income customers?  
40

---

<sup>4</sup> Hledik, R. The Top Ten Questions about Residential Demand Charges. Presentation at the EUCI Residential Demand Charges Symposium, May 2015.  
[http://www.brattle.com/system/publications/pdfs/000/005/171/original/The\\_Top\\_10\\_Questions\\_about\\_Demand\\_Charges.pdf?1431628604](http://www.brattle.com/system/publications/pdfs/000/005/171/original/The_Top_10_Questions_about_Demand_Charges.pdf?1431628604)

<sup>5</sup> Ibid.

1 A. No, not that I'm aware of. According to the recent presentation by Ryan Hledick of  
2 the Brattle Group enrollment has been quite low and the typical enrollee uses at least  
3 two times more energy than an average customer.<sup>6</sup> The majority of customers  
4 enrolling in residential demand charges have been high users who likely have above  
5 average incomes and the ability to respond to the changes in rate structure. If the  
6 Commission approves mandatory residential demand charges, the UNSE residential  
7 customer class will become a testing ground for how different residential customers  
8 respond to mandatory demand charges as no evidence currently exists to understand  
9 how moderate and low income customers will respond.

10  
11 Q. Do any of the 18 utilities impose mandatory demand charges on all residential  
12 consumers?

13  
14 A. No. Each has the demand charge rate as an optional rate. In the case of APS, which  
15 has a relatively large number of residential customers with demand charges, APS has  
16 targeted this rate to high-use customers who are likely to have curtailable loads like  
17 central air conditioning and swimming pools. These customers also benefit from the  
18 fact that the inclining block rate, which would otherwise be adverse to large-use  
19 customers, does not apply to the demand charge tariff.

20 **The Company's Proposal for Mandatory Demand Charges Should be Rejected**

21  
22 Q. Please describe the Company's proposal for residential rate design, specifically  
23 three-part rates, in this case.

24  
25 A. Initially, the Company proposed mandatory three-part rates (including demand  
26 charges) for all residential and small commercial new distributed generation  
27 customers and optional three-part rates for all other residential and small commercial  
28 customers. In rebuttal, the Company changed its position, instead requesting  
29 mandatory three-part rates for all residential and small commercial customers. The  
30 Company's proposal is based on a recommendation made by Staff in direct  
31 testimony, but does include several changes from Staff's proposal. These changes  
32 include: using a minimum 15% load factor for calculating a demand charge, and to  
33 recover generation costs through the demand charge, instead of distribution costs.  
34 However, the Company has not filed a revised tariff for the proposed rates and it is  
35 unclear exactly how UNSE intends to bill customers.

36  
37 Q. Please discuss the differences between the UNSE rebuttal position and Staff's  
38 recommendations regarding the implementation of three-part rates.

39  
40 A. The UNSE and Staff proposals for three-part rates are significantly different. The  
41 most significant of these differences is which costs are to be included in the demand  
42 charge. The Company initially requested the demand charge to be billed on a non-

---

<sup>6</sup> Ibid.

1 coincident peak basis and only include the distribution related costs. However, in  
2 rebuttal the Company agreed to bill the demand charge based on a coincident peak  
3 basis (without defining the peak period), but stated the only costs recovered in this  
4 charge would be generation unit costs (and only 50% of these costs). The Company  
5 also clearly stated an intention to move all distribution, generation, and transmission  
6 unit costs into a demand charge.  
7

8 Q. Does the Company acknowledge the problem of insufficient data available in this rate  
9 case to properly design revenue neutral rates for residential customers?  
10

11 A. Yes. In rebuttal testimony, the Company outlined a general idea of what guidelines  
12 the Commission should consider in a transition period. Essentially, the Company  
13 proposed leaving the docket open to make corrections to specific rates (up or down)  
14 and billing determinants as the Company continues to collect actual data following  
15 the installation of the remaining demand meters.<sup>7</sup> UNSE also understands its rate  
16 design is not fully developed and intends to “collect and analyze billing data to  
17 determine if any rate design changes are necessary prior to billing customers under  
18 these three-part rates.”<sup>8</sup>  
19

20 Q. Is SWEEP supportive of this approach?  
21

22 A. Definitely not. The Commission should not approve a radically different rate design  
23 on partial information. There is no other investor owned utility of its size with a  
24 mandatory three-part rate design. This approach also provides uncertainty to  
25 customers as rates could likely change several times in a short time period, especially  
26 considering UNSE is approaching the three-part rate as a temporary step to moving  
27 the majority of costs into the customer charge and demand charges. Such large  
28 changes in rate design are unwise. Rate changes should be gradual. This is one of  
29 Bonbright’s fundamental principles of rate design. Moving from a two-part rate to a  
30 transition two-part rate with fewer tiers, to a three-part rate with a \$5 demand charge,  
31 to a three-part rate with what might be a significantly higher demand charge in the  
32 near future conflicts with this principle.  
33

34 Q. What is SWEEP’s recommendation for the Commission in this case?  
35

36 A. SWEEP recommends the Commission reject the UNSE rebuttal request to implement  
37 a mandatory three-part rate for the residential customer class. However, SWEEP does  
38 not oppose the Company offering a voluntary three-part rate. The voluntary three-part  
39 rate will allow the Company to become familiar with how to communicate with  
40 customers regarding this rate design. The Company will also be able to better  
41 understand the customer willingness or interest in this rate structure.

<sup>7</sup> See Jones rebuttal at 7, lines 20-24.

<sup>8</sup> See Dukes rebuttal at 13, lines 2-5.

1 **The Commission Should Reject the UNSE Proposal to Increase the Residential**  
2 **Customer Fixed Charge**  
3

4 Q. Please describe the Company's proposed shift for residential customer charges in this  
5 case.

6  
7 A. Initially, the Company proposed increasing the residential customer charge from \$10  
8 to \$20 per month. Then, in rebuttal the Company suggested it would reduce this  
9 proposal to \$15 per month if the Commission were to approve a mandatory three-part  
10 rate structure advocated by Staff and supported by APS with modifications from  
11 UNSE. These modifications were discussed in earlier sections of this testimony.  
12

13 Q. What method did the company rely on to determine the initially-proposed \$20 per  
14 month customer charge for residential customers?  
15

16 A. It appears the Company did not rely on any specific method, but instead argues it  
17 should be able to collect all "fixed" costs in the customer charge. In testimony, the  
18 Company presented a customer charge of \$14.73 based on the minimum system  
19 method for allocating distribution system costs.<sup>9</sup> The Company's proposal of \$20 is  
20 not based on any established method accepted by this Commission or any other.  
21 Instead of relying on decades of established ratemaking precedent, methods, and  
22 principles, the UNSE proposed customer charge in this case appears to be movement  
23 towards straight fixed variable rate design in which all "fixed" costs are collected in a  
24 fixed charge. The proposal is also a departure from the method used in the last rate  
25 case in which the Company relied on the basic customer method to determine the  
26 customer charge.  
27

28 Q. In your opinion, which costs should be included in a residential customer charge?  
29

30 A. As I noted in my direct testimony in this case, the costs collected in the customer  
31 charge should be based on the Bonbright definition of customer costs, which is the  
32 "operating and capital costs found to vary with the number of customers, regardless,  
33 or almost regardless, of power consumption."<sup>10</sup> This approach is more commonly  
34 known as the basic customer method and usually only includes only the costs  
35 associated with customer service, meters, and service line drops. This approach also  
36 appears to be the method the Company relied on in both the 2009 and 2012 rate cases  
37 to allocate costs between customer and demand for the distribution system.  
38

39 Q. Have other parties testified on the originally-proposed \$20 customer charge?  
40

41 A. Yes, several other parties have testified on this issue. Staff agrees the customer charge  
42 should be "narrowly focused on the cost of a meter, the costs of customer service, and

<sup>9</sup> See UNSE Response to STF 2.057, Schedule G-6-1, line 23.

<sup>10</sup> See Bonbright, James C. 1961. Principles of Public Utility Rates. p. 347.

1 billing, and the cost of a service line.”<sup>11</sup> Staff also states addressing the under  
2 recovery of utility fixed costs in a customer charge is not appropriate for several  
3 reasons, including such an approach would “eliminate nearly all customer ability to  
4 control or reduce electric bills... and would be a major step backwards.”<sup>12</sup> I agree  
5 with this logic; however, it is inconsistent with Staff accepting the UNSE proposal to  
6 include minimum system costs and supporting a \$15 a month customer charge.  
7

8 APS witness Faruqi also opined on the customer charge. As part of his proposal for  
9 three-part rates, Dr. Faruqi states the monthly service charge “should be designed to  
10 recover fixed costs such as metering, billing, and customer care.”<sup>13</sup> Dr. Faruqi goes  
11 on to say that sometimes this charge also covers the cost of the line drop and  
12 associated transformer.  
13

14 Q. Did APS witness Faruqi explicitly comment on the methodology used by UNSE to  
15 propose a \$20 customer charge?  
16

17 A. No. However, the costs described by Dr. Faruqi in his explanation clearly do not  
18 include costs associated with minimum system or other system fixed costs. Dr.  
19 Faruqi argues these costs should be collected in a demand or capacity charge.  
20

21 Q. Please respond to the rebuttal testimony of Company witness Jones regarding your  
22 direct testimony on the issue of customer charges.  
23

24 A. Company witness Jones responded to an exhibit in my direct testimony showing  
25 UNSE would have one of the highest customer charges in the region if the  
26 Commission were to approve a \$20 per month charge. He points to three cooperative  
27 utilities in Arizona with an equally high customer charge. I would note that all three  
28 of these companies are cooperatives and all three are significantly smaller service  
29 companies with much more rural service territories than UNSE. Furthermore, two of  
30 the three companies have fewer than 2,500 customers in total. A sparsely populated  
31 rural system should not be compared with a system centered on Kingman and Lake  
32 Havasu City.  
33

34 I don’t believe this to be a valid comparison. I would also further point out that in a  
35 survey of residential rates for 160 utilities in the United States, only 8 companies  
36 have a higher customer charge than the Company’s proposed \$20. This is 5% of the  
37 total number of companies. Of this 5%, five of the eight companies are cooperatives.  
38 Finally, the 160 companies surveyed represent nearly 80% of the residential  
39 customers in the United States. The median customer charge in this review is \$9.50,  
40 lower than the UNSE current \$10 customer charge and far below the revised  
41 proposed \$15 charge and UNSE’s originally-proposed \$20.  
42

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<sup>11</sup> See Broderick direct at 9, lines 8-9.

<sup>12</sup> See Broderick direct at

<sup>13</sup> See Faruqi direct at 11, lines 7-9.

1 Q. In your opinion, why are most customer charges nationally lower than the current  
2 UNSE \$10 charge and significantly lower than the revised (rebuttal or Staff) proposed  
3 \$15 or the originally proposed \$20?  
4

5 A. There are several explanations, most of which have been discussed in previous  
6 testimony in this case. High customer charges reduce customer control over utility  
7 bills, reduce customer incentive to conserve electricity and engage in UNSE's energy  
8 efficiency programs, and disproportionately impact low usage customers (many of  
9 which also happen to be low income customers). Finally, based on rate design  
10 principles, increased customer charges (especially those which attempt to include  
11 demand related system fixed costs) are simply not cost justified.  
12

13 Q. Please summarize Company witness Overcast's response to the SWEEP  
14 recommendation to use the basic customer method to determine the customer charge.  
15

16 A. Mr. Overcast claims "the basic customer method is not a method for calculating the  
17 customer component of costs because it fails to reflect any costs more than the meter,  
18 service, and direct customer accounting costs."<sup>14</sup> He further goes on to state that the  
19 method is a results driven methodology to lower costs for smaller customers. Mr.  
20 Overcast asserts several FERC accounts (364-368) should be allocated to both  
21 customer and demand. Finally, he states his opinion that the basic customer method  
22 should never be considered a viable alternative for calculating a customer charge  
23 because it does not include fixed costs of the distribution system.  
24

25 Q. Do you agree with Mr. Overcast's opinion?  
26

27 A. No, I do not. Mr. Overcast fails to recognize customer costs, by definition, do not  
28 include fixed costs of the distribution system. This principle is clearly articulated in  
29 Bonbright's *Principles of Public Utility Rates* and in Bonbright's own definition and  
30 explanation of customer costs (and his rejection of allocating minimum system costs  
31 to the customer). What Mr. Overcast is describing is similar to the minimum system  
32 method, which does not provide cost justification for the Company's \$20 proposal  
33 nor the \$15 revised proposal.  
34

35 Q. Mr. Overcast relies on the NARUC Cost Allocation Manual to justify the use of the  
36 minimum system method to determine the customer charge. Do the majority of states  
37 rely on this method?  
38

39 A. No, most states do not use the minimum system method. As a published report  
40 prepared for NARUC stated "the most common method used is the basic customer  
41 method which classifies all wires, transformers, and poles and demand related, and  
42 meters, meter reading and billing as customer related. This approach is used by more

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<sup>14</sup> See Overcast rebuttal at 37-38, lines 20-22, 1-4.



1 than 30 states.”<sup>15</sup> Therefore, the use of the basic customer method is supported by Dr.  
2 Bonbright, most state commissions, and is a generally accepted rate design principle.

3  
4 Q. Does Mr. Overcast provide any cost based evidence to justify the Company’s  
5 proposal for a \$20 basic customer charge?

6  
7 A. No, he does not. Mr. Overcast spends significant time arguing why the basic customer  
8 method should not be considered as a method for determining a customer charge. He  
9 relies on portions of the NARUC Cost Allocation Manual to assert the customer  
10 allocated costs of FERC accounts 364-368 should be included in a customer charge.  
11 What Mr. Overcast fails to address is the minimum system method does not justify  
12 the Company’s proposal of \$20 per month. By my estimation, the minimum system  
13 method doesn’t even justify Staff’s proposed \$15 per month.

14  
15 Q. Have you calculated a proposed residential customer charge for this case?

16  
17 A. Yes. Using the basic customer method, I have calculated a customer charge of \$4.32  
18 per month. This charge is far below the Company proposal of \$20 and is less than  
19 half of the current customer charge of \$10. For this analysis, I included the A&G and  
20 O&M accounts associated with customer costs specifically associated with meters,  
21 billings, and customer service. I also calculated a return on rate base for the  
22 depreciation plant accounts associated with meters and services. I used the Company’s  
23 proposed capital structure to determine the return on rate base. This calculation is  
24 attached as Exhibit SWEEP Surrebuttal-1.

25  
26 Q. Does Mr. Overcast’s recommended method for allocating distribution system costs  
27 comport with the Company’s allocation of these costs in prior rate cases?

28  
29 A. No, not at all. The Company’s allocation of costs in previous rate cases seems to  
30 indicate a reliance on the basic customer method. A review of the three last UNSE  
31 rate cases, 2006, 2009, and 2012, demonstrate a shift in how the Company is  
32 allocating distribution system costs, with each year indicating that the Company  
33 included greater levels of cost in the customer category. Table 1 shows the Company  
34 proposed allocations for each rate case. As the table shows, the Company is allocating  
35 a greater share of costs to the customer category in each case. For example, in 2012,  
36 the Company allocated 6% of total distribution plant to customer. In the current 2015  
37 case, this increased to 45%. The company did not begin to allocate costs associated  
38 with Accounts 364-368 until this current case.

39  
40  

---

<sup>15</sup> Weston, F. 2000. *Charging for Distribution Utility Services: Issues in Rate Design*. Regulatory Assistance Project.

1 **Table 1. Distribution system related cost allocations in various UNSE rate cases.**

	2006		2009	
	Demand	Customer	Demand	Customer
Distribution Plant	\$ 157,617,750	\$ 56,761,626	\$ 379,273,529	\$ 26,901,461
O&M Expense – Dist.	\$ 3,956,148	\$ 1,295,747	\$ 4,740,215	\$ 1,372,041
A&G Expense	\$ 5,452,921	\$ 2,268,948	\$ 5,441,846	\$ 1,786,950
	2012		2015	
	Demand	Customer	Demand	Customer
Distribution Plant	\$ 305,250,491	\$ 20,089,083	\$ 191,641,961	\$ 159,238,288
O&M Expense – Dist.	\$ 4,542,572	\$ 977,523	\$ 3,230,233	\$ 2,267,078
A&G Expense	\$ 4,683,375	\$ 3,795,376	\$ 5,133,344	\$ 2,816,002

- 2  
3 Q. Are there other reasons to reject the Company's proposed increase customer charge?  
4  
5 A. Yes, other than the fact the proposal is not cost justified, there are several policy  
6 reasons to reject the Company's proposal, which I described in my direct rate design  
7 testimony. An unjustified increase in this charge will harm low income and other low  
8 use customers, discourage conservation, and is antithetical to statewide policies  
9 directing utilities to implement energy efficiency programs. Increasing customer  
10 charges will also reduce the level of control a customer has over their bill. While  
11 SWEEP is fully supportive of utilities recovering the authorized costs of service,  
12 increasing the customer charge (especially when not based on any established or  
13 appropriate method) to recover fixed costs that are not customer related is an ill-  
14 suited approach to this issue.

15 **Time Varying Rates are a Better Solution than Mandatory Demand Charges for**  
16 **Residential Customers**  
17

- 18 Q. Do you have an alternate proposal for the Commission to consider addressing the  
19 Company's concerns?  
20  
21 A. Yes. I would recommend that the Commission direct UNSE to make greater use of  
22 time varying rate structures for residential customers. Time varying rate structures  
23 include both time of use pricing and critical peak pricing.  
24  
25 Q. Can you give an example of a rate design that you believe is cost-based?  
26  
27 A. I have not calculated such a rate to reflect the revenue requirement for UNSE.  
28 However, the illustrative rate design published in Smart Rates for a Smart Future

1 provides an illustrative example of this type of rate design, meaning a rate design that  
2 is cost based.<sup>16</sup>  
3

<b>Illustrative Residential Rate Design</b>		
<b>Rate Element</b>	<b>Based On the Cost Of</b>	<b>Illustrative Rate</b>
<b>Customer Charge</b>	Service Drop, Billing, and Collection Only	\$4.00/month
<b>Transformer Charge</b>	Final Line Transformer	\$1/kVA/month
<b>Off-Peak Energy</b>	Baseload Resources + Transmission and Distribution	\$0.07/kWh
<b>Mid-Peak Energy</b>	Baseload + Intermediate Resources + T&D	\$0.09/kWh
<b>On-Peak Energy</b>	Baseload, Intermediate, and Peaking Resources + T&D	\$1.14/kWh
<b>Critical Peak Energy (or PTR)</b>	Demand Response Resources	\$7.44/kWh

4  
5  
6 This rate design would recover customer-related costs in a customer charge (resulting  
7 in a lower customer fixed charge), customer-specific capacity costs (the transformer)  
8 in a customer-specific demand charge, and all other costs in a time-varying energy  
9 rate. This would provide a stronger incentive for peak load reduction, and would  
10 avoid punishing low-use and low-income consumers.

11  
12 SWEEP does not consider the illustrative example above to be a simple rate design or  
13 one that is appropriate for all residential customers. Again, customers should have  
14 options. Therefore, SWEEP suggests such a rate design could be explored as a  
15 voluntary or opt-in rate design.

16  
17 Q. Please discuss the alternate proposal of implementing time varying rates for  
18 residential customers instead of a three-part rate structure including a demand charge.

19  
20 A. Properly designed time varying rate structures offer many advantages to the three-part  
21 rate structure as proposed by UNSE in this proceeding. Instead of collecting costs  
22 only at the highest demand peak, time varying rates collect costs throughout the day.  
23 This better captures the fact that the costs of serving electricity to customers varies  
24 throughout the day. This approach not only collects costs from those imposing costs  
25 on the system, but it provides customers stronger price signals regarding the true  
26 system costs at any given time.

27  
28 Q. SWEEP recommended that the Commission consider full revenue decoupling in  
29 direct testimony. Could you please elaborate on this recommendation?

30  
31 A. In testimony and rebuttal, the Company expressed concerns regarding the ability to  
32 collect authorized revenues. SWEEP supports the ability of a utility to collect  
33 Commission-authorized revenues to provide service.  
34

<sup>16</sup> Lazar, J. and W. Gonzalez. 2015. *Smart Rate Design for a Smart Future*. Regulatory Assistance Project.

1 Implementation of time-varying rates (or, for that matter, demand charges of any  
2 magnitude) may result in over-collection or under-collection of allowed costs as  
3 customers respond to the new rate design. Revenue decoupling would help ensure  
4 that the company recovers the authorized amount of revenue, independent of usage  
5 levels or characteristics – not less and not more.

6  
7 In direct testimony, SWEEP recommended the Commission consider full revenue  
8 decoupling as a policy option to remove the Company disincentive to promote greater  
9 levels of energy efficiency. While SWEEP does not support the use of full revenue  
10 decoupling solely as a mechanism to ensure utility recovery of fixed costs, we believe  
11 full revenue decoupling can better align the interests of the utility and its customers.  
12

13  
14 **The Commission Should Require UNSE to Move Collection of**  
15 **Energy Efficiency Funding and Related Costs to Base Rates**  
16

17 Q. Why should energy efficiency funding be recovered in base rates?

18  
19 A. As I testified earlier, UNS Electric has positioned energy efficiency as an important,  
20 core resource to meet energy needs and load over the next decade. For example in  
21 2024, energy efficiency will comprise more than 14% of UNS Electric's energy  
22 resource portfolio, up from 5.4% in 2014.<sup>17</sup> As a result, energy efficiency is one of  
23 UNS Electric's fastest growing energy resources for meeting customers' energy needs  
24 and UNSE-projected load growth over the next few years. As a core resource meeting  
25 the real energy needs of customers at lowest cost, energy efficiency should be  
26 adequately funded through a stable, fully imbedded funding and cost recovery  
27 mechanism. As a core resource, it is appropriate for energy efficiency cost recovery  
28 to be in base rates rather than in a separate adjustor mechanism. Recovery of energy  
29 efficiency program costs in base rates will help ensure that the numerous public  
30 interest benefits of this core resource will be fully realized.  
31

32 Q. Do you agree with UNSE witness Smith that recovery of energy efficiency program  
33 costs in base rates will decrease customer transparency?  
34

35 A. Absolutely not. As I testified before all energy resources should be treated equally in  
36 terms of disclosure and transparency. Recovering energy efficiency program costs  
37 through base rates would be consistent with the treatment of other energy resources,  
38 whose costs are not expressly identified in the current bill format.  
39  
40

---

<sup>17</sup> UNS Electric, 2014 Integrated Resource Plan, April 1, 2014,  
<http://images.edocket.azcc.gov/docketpdf/0000152211.pdf>.

**The Company Needs to Offer New and Expanded Programs and Tools  
to Help Customers Alleviate Higher Utility Bills  
Before New Rates or Pricing Mechanisms are Implemented**

1  
2  
3  
4  
5 Q. Why should UNSE expand customer offerings and tools in this proceeding?

6  
7 A. As I described in my rate design testimony, as part of any rate case proceeding,  
8 SWEEP believes it is essential to provide customers with more tools to manage and  
9 alleviate increasing energy bills caused by the rate increase itself and by new pricing  
10 mechanisms. These tools give customers more choice; and need to be offered and  
11 widely available to customers before any new rates and new pricing mechanisms are  
12 implemented.

13  
14 Q. Are these tools available in the UNSE service territory now?

15  
16 A. While UNSE has some programs and tools; SWEEP believes that UNSE could and  
17 should be doing a lot more to help its customers manage their utility bills, energy use,  
18 and demand.

19  
20 Q. What are some new and expanded offerings that UNS Electric should offer?

21  
22 A. As I testified before, UNS Electric's existing energy efficiency programs offer a great  
23 platform that should be leveraged to integrate demand response and to help customers  
24 alleviate the impact of the rate increase and new pricing mechanisms. For example,  
25 UNS Electric's energy efficiency pool pump program should be leveraged to deliver a  
26 pool pump demand response program. UNS Electric should also look to programs  
27 implemented by other utilities in the southwest. For example, NV Energy's integrated  
28 energy efficiency and demand response smart thermostat program has delivered air  
29 conditioning savings of 11% while also delivering significant demand response  
30 capacity benefits.<sup>18</sup> UNSE does not have a comparable offering.

31  
32 Q. What does SWEEP recommend?

33  
34 A. Regardless of the outcome of this proceeding, SWEEP recommends that UNS  
35 Electric develop a DSM customer-peak-demand-reduction proposal as part of this rate  
36 case and be required to implement new DSM offerings prior to the implementation of  
37 the rate increase and any new pricing mechanisms so that customers have a suite of  
38 tools available to them to manage their bills.

---

<sup>18</sup> See presentations in Arizona Corporation Commission Docket No. E-00000J-13-0375, "In the matter of the Commission's Inquiry into Potential Impacts to the Current Utility Model Resulting from Innovation and Technological Developments in Generation and Delivery of Energy," <http://edocket.azcc.gov/Docket/DocketDetailSearch?docketId=18185>, <http://images.edocket.azcc.gov/docketpdf/0000153633.pdf>

1 **The Commission's Cost Effectiveness Test for Energy Efficiency Should Reflect the**  
2 **Capacity and Other Benefits that Energy Efficiency Delivers in Order to Ensure**  
3 **that Customers are Not Being Denied Cost-Effective Opportunities to Save Money,**  
4 **Energy, and Demand on their Utility Bills**  
5

6 Q. Does the Commission require energy efficiency investments to be "cost effective"?

7  
8 A. Yes. Only those energy efficiency opportunities found to be cost effective by  
9 Commission Staff are recommended for Commission approval.

10  
11 Q. How does the Commission evaluate energy efficiency cost effectiveness?

12  
13 A. The Arizona Commission uses an economic test called the "Societal Cost Test." The  
14 Commission has used this test since its 1991 Resource Planning decision. The  
15 Commission's Electric Energy Efficiency Rule also requires it. SWEEP strongly  
16 supports the use of the Societal Cost Test to evaluate energy efficiency opportunities;  
17 and the use of this economic test is standard practice nationally.<sup>19</sup>  
18

19 Q. What does it mean for an energy efficiency opportunity to be "cost effective"?

20  
21 A. When an energy efficiency program is "cost effective" its monetary benefits (such as  
22 the energy costs it avoids) exceed its costs (such as the costs to market and administer  
23 the program). By definition an energy efficiency program that is cost effective is a  
24 better economic investment for customers than the next best energy resource, which  
25 is typically a natural gas investment.  
26

27 Q. Does SWEEP have concerns about the way that the Societal Cost Test is implemented  
28 in Arizona?

29  
30 A. Yes. While SWEEP strongly supports the use of the Societal Cost Test to evaluate  
31 energy efficiency opportunities, we have concerns about the way the test is applied in  
32 Arizona. For many reasons, the application of the test in Arizona does not follow  
33 standard practice and does not meet the definition of the Societal Cost Test. For  
34 example, the application of the test in Arizona undervalues the role that energy  
35 efficiency plays in reducing capacity, among other issues.  
36

37 Q. How does it undervalue the capacity benefits of energy efficiency?

38  
39 A. There are many reasons why it does. First the carrying costs of capacity are excluded  
40 in the analysis. Excluding carrying costs artificially reduces the overall cost of  
41 capacity resources that energy efficiency avoids. By excluding carrying costs in the  
42 analysis, the analysis presumes that utilities purchase all of their supply side resources  
43 with cash. Needless to say, this is not common practice and does not reflect reality.  
44 Only by including the carrying costs in the analysis will the methodology accurately

---

<sup>19</sup> See March 18, 2014, Workshop on Energy Efficiency and Integrated Resource Planning

1 portray the full cost of generation capacity that energy efficiency avoids. In addition,  
2 the test does not employ a societal discount rate, which the Societal Cost Test  
3 requires by definition. Because a societal discount rate is not employed the capacity  
4 benefits of energy efficiency are more heavily are discounted than they should be.  
5

6 Q. What does this mean for Arizona ratepayers?  
7

8 A. It means that Arizona ratepayers are being denied cost effective energy efficiency  
9 opportunities that would reduce total energy costs for all customers and that would  
10 help them to manage their utility bills, energy use, and demand. As a result, Arizona  
11 ratepayers are paying higher utility bills than they should be paying. For example,  
12 SWEEP has observed that Arizonans are being denied certain air conditioning  
13 measures that are cost effective in other southwest states and even in the Northeast.  
14 This result is surprising because these other states have significantly less need to  
15 reduce cooling loads compared with Arizona.  
16

17 Q. Do other stakeholders in Arizona share SWEEP's concerns?  
18

19 A. Yes. In 2010 APS, UNSE, and various Demand Side Management (DSM)  
20 Collaborative Group stakeholders, including SWEEP and Western Resource  
21 Advocates (WRA) met and worked together to develop recommendations to  
22 standardize the implementation of the Societal Cost Test in Arizona based on  
23 standard national practice. These recommendations were filed with the Commission  
24 in a memorandum submitted by UNSE to the Commission in late 2010.  
25

26 Q. Why are these recommendations relevant to this proceeding?  
27

28 A. As I testified earlier, it is important and appropriate to ensure that customers have  
29 maximum access to energy efficiency opportunities so that they can manage higher  
30 utility bills caused by the rate increase itself and by new pricing mechanisms. It will  
31 also help to mitigate future rate increases.  
32

33 That Arizona ratepayers are being denied cost effective energy efficiency  
34 opportunities that would help them to manage demand is of particular concern and  
35 relevance to this proceeding. If the issue of demand management is of such high  
36 importance that mandatory residential demand charges are being contemplated then  
37 the Commission should ensure that it is doing all that it can to support the deployment  
38 of offerings that help customers to reduce demand. It should also ensure that it is not  
39 actually contributing to the problem itself by limiting cost effective opportunities that  
40 would help customers to manage demand.  
41

42 Q. What does SWEEP recommend?  
43

44 A. As part of this proceeding, SWEEP recommends that the Commission adopt the  
45 recommendations put forth by SWEEP, UNSE, APS, and other stakeholders in the  
46 2010 memorandum. Adoption of these recommendations will ensure that Arizonans

1 are not being denied opportunities to reduce utility bills and that Arizonans have  
2 greater access to cost-effective tools to manage energy use and demand.

3 **Conclusion**

4  
5 Q. Does this conclude your testimony?

6  
7 A. Yes.

8



1 Exhibit SWEEP Surrebuttal - 1  
2

<b>UNS Customer Charge Quantification</b>			
<b>Components of Customer Cost</b>			<b>\$/month</b>
Return		\$ 751,087	\$ 0.758
Depreciation		\$ 183,209	\$ 0.185
O&M		\$ 144,107	\$ 0.145
Meter Reading		\$ 601,239	\$ 0.607
Billing		\$ 2,599,100	\$ 2.622
		\$ 4,278,742	\$ 4.316
<b>Electric Customer-Related Costs for PPL</b>			
<b>Expenses</b>	<b>Account</b>	<b>Amount</b>	<b>Exhibit Part 2</b>
Meters	597	\$ 362	
	586	\$ 125,478	
	Depreciation	\$ 38,338	
Services	587	\$ 13,272	
	Depreciation	\$ 138,521	
Meter Reading	902	\$ 580,400	
Billing	903	\$ 2,509,015	
Subtotal Expenses		\$ 3,405,386	
Net to Gross on Expenses		96.5%	
Total Expenses		\$ 3,527,655	
<b>Rate Base</b>			
Meters			
Plant In Service		\$ 1,267,806	
Less Accumulated Depreciation		\$ (315,573)	
Net Plant		\$ 952,233	
Depreciation Expense		\$ 38,338	
Services			
Plant In Service		\$ 12,449,691	
Less Accumulated Depreciation		\$ (7,310,404)	
Net Plant		\$ 5,139,287	
Depreciation Expense		\$ 138,521	
Meters		\$ 952,233	
Services		\$ 5,139,287	
Total Rate Base		\$ 6,091,520	
Grossed Up Return	12.33%	\$ 751,087	
<b>Total Customer-Related Revenue Requirement</b>		<b>\$ 4,278,742</b>	
<b>Annual Residential Bills</b>		<b>991,284</b>	
<b>\$/Month</b>		<b>\$ 4.32</b>	

3