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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

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

AZ CORP COMMISSION  
DOCKET CONTROL

2016 FEB 23 AM 11 07

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

DOCKET NO. E-04204A-15-0142

**NOTICE OF FILING SURREBUTTAL  
TESTIMONY OF DR. JAY  
ZARNIKAU ON RATE DESIGN ON  
BEHALF OF NUCOR STEEL**

Nucor Steel Corporation ("Nucor"), hereby provides notice of filing Surrebuttal  
Testimony of Dr. Jay Zarnikau on Rate Design, in the above-referenced matter.

DATED this 23 day of February, 2016.

MUNGER CHADWICK, P.L.C.

Arizona Corporation Commission

DOCKETED

FEB 23 2016

Robert J. Metli  
Attorneys for Nucor Steel Corporation

DOCKETED BY

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1 ORIGINAL and 13 copies filed  
this 23<sup>rd</sup> day of February, 2016, with:

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4 Phoenix, Arizona 85007

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1 **BEFORE THE ARIZONA CORPORATION COMMISSION**

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3 **COMMISSIONERS**

4 SUSAN BITTER SMITH – CHAIRMAN

5 BOB STUMP

6 BOB BURNS

7 DOUG LITTLE

8 TOM FORESE

9  
10 IN THE MATTER OF THE APPLICATION OF ) DOCKET NO. E-04204A-15-0142  
11 UNS ELECTRIC, INC. FOR THE )  
12 ESTABLISHMENT OF JUST AND )  
13 REASONABLE RATES AND CHARGES )  
14 DESIGNED TO REALIZE A REASONABLE )  
15 RATE OF RETURN ON THE FAIR VALUE OF )  
16 THE PROPERTIES OF UNS ELECTRIC, INC. )  
17 DEVOTED TO ITS OPERATIONS )  
18 THROUGHOUT THE STATE OF ARIZONA )  
19 AND FOR RELATED APPROVALS )  
20 )  
21

22 **SURREBUTTAL TESTIMONY OF**  
23 **DR. JAY ZARNIKAU ON RATE DESIGN**  
24 **ON BEHALF OF NUCOR STEEL**

25 **FEBRUARY 22, 2016**  
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**I. INTRODUCTION**

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

A. My name is Jay Zarnikau. My business address is 1515 Capital of Texas Hwy, South, Suite 110, Austin, Texas, 78746.

**Q. Are you the same witness who previously filed direct testimony in this proceeding on behalf of Nucor Steel-Kingman?**

A. Yes, I am.

**Q. Please state the purpose of your surrebuttal testimony.**

A. This testimony responds to the rebuttal testimony of Mr. Craig Jones, appearing on behalf of UNS Electric, and the direct testimony of Mr. Howard Solganick, appearing on behalf of the Staff of the Arizona Corporation Commission (“Staff”).

**II. RESPONSE TO THE REBUTTAL TESTIMONY OF MR. CRAIG JONES**

**Q. Please summarize your concerns regarding the rebuttal testimony provided by Mr. Craig Jones on behalf of UNS Electric.**

A. While it appears as though we are now in agreement that the “differential” in the time-of-use energy charges between on and off-peak periods should remain the same as agreed to in the previous rate case, I continue to have the following concerns:

- 1 • We continue to disagree over the design of the demand charge applicable to industrial
- 2 energy consumers.
- 3 • We continue to disagree over the value and benefits to UNS Electric of interrupting
- 4 large industrial energy consumers during off-peak periods.
- 5 • Mr. Jones has failed to clarify the proposed minimum load factor requirement in the
- 6 proposed Economic Development Rate (EDR).

7

8 **Q. On page 32 of his rebuttal testimony, Mr. Jones states:**

9 “Demand rates should be a combination of costs being recovered based on the

10 system’s non-coincident peak and its coincident peak depending on the cost.

11 Further review of how these costs should be recovered may justify more costs

12 being allocated to the off-peak period instead of less as NUCOR proposes,

13 especially for the largest TOU rate class. Since the current differential was agreed

14 to in the last rate case, the Company believes its current design is appropriate and

15 is willing to leave the differential as it is in current rates for purposes of this rate

16 case.”

17 **Do you agree with this statement?**

18 A. No. This statement appears to confuse two separate and unrelated issues raised in my

19 direct testimony. One issue is the design of the demand charge applicable to LPS (and

20 LPS-TOU) customers. The second issue is the difference between the energy charges

21 applicable to on and off-peak periods under the LPS-TOU tariff.

22 Indeed, the “differential” that was agreed to among the parties in the previous rate

23 case involved the time-of-use energy charge, and had nothing to do with the demand

1 charge. I am unaware of any “differential” in the demand charge applicable to LPS  
2 and/or LPS-TOU customers. Specifically, the issue in the previous rate case involving a  
3 “differential” pertained to how high the level of the on-peak energy charge should be set  
4 relative to the level of the off-peak energy charge.

5  
6 **Q. How do you interpret Mr. Jones’s statement that “Demand rates should be a  
7 combination of costs being recovered based on the system’s non-coincident peak and  
8 its coincident peak. . . .”**

9 A. Mr. Jones’s response seems to advocate two demand charges – one to recover costs  
10 which are incurred to meet the (coincident) system peak and another to meet the (non-  
11 coincident) peak associated with the customer’s demand. I am not necessarily opposed to  
12 this proposal. However, this is not consistent with the tariff proposed by UNS Electric.  
13 UNS Electric has proposed a single demand charge, based solely on the customer’s non-  
14 coincident peak. Nucor would be willing to consider the application of two demand  
15 charges – one based on the coincident peak and one based on the class non-coincident  
16 peak – as UNS has now suggested. However, UNS Electric has provided no calculations  
17 to support this new proposal.

18 To me, the question before the Commission is clear. Absent a more  
19 straightforward proposal to establish *both* coincident and non-coincident demand charges,  
20 the question is: Should the demand charge be based upon a customer’s contribution to  
21 system peak, or should it be based on the customer’s highest demand? I recommend that  
22 it be based on the customer’s demand at the time of the utility’s system peak, and have



1 advocated that a four coincident peak (4CP) or a Top 20 hours metric be used to  
2 approximate a customer's contribution to the UNS Electric system peak.  
3

4 **Q. How is this approach different from what UNS Electric has proposed?**

5 A. The tariff proposed by UNS Electric uses the customer's highest demand during the peak  
6 period or half of the customer's demand during an off-peak period (whichever is greater),  
7 along with some other complications (a ratchet and the possibility of using a "contract  
8 capacity" value or a simple 500 kW minimum value). If UNS Electric stands by its  
9 testimony that *system demand* largely drives the need for generating capacity, then the  
10 demand charge should be based upon the customer's contribution to the system peak.

11 As stated once again by Mr. Jones on p. 35 of his Rebuttal testimony:

12 "As NUCOR's witness states and as Company rebuttal witness Mr. Overcast  
13 states, the generation and transmission costs should be based on the capacity  
14 needs the customer contributes to the system peak."

15 I agree with this statement by Mr. Jones and this is precisely what I have proposed. In  
16 contrast, Mr. Jones has proposed that the demand charge be based upon the customer's  
17 highest demand during the on-peak period or one-half of the customer's highest demand  
18 during the off-peak period, or a "contract capacity" value, or a simple 500 kW minimum  
19 value. These values do not measure the customer's contribution to the system peak  
20 demand, as I have demonstrated in my direct testimony.

21  
22 **Q. How does the NARUC Electric Utility Cost Allocation Manual cited by Mr. Jones**  
23 **define coincident peak demand?**

1 A. P. 41 of the manual states: "The customer's demand at the time of the system peak is that  
2 customer's "coincident" peak."  
3

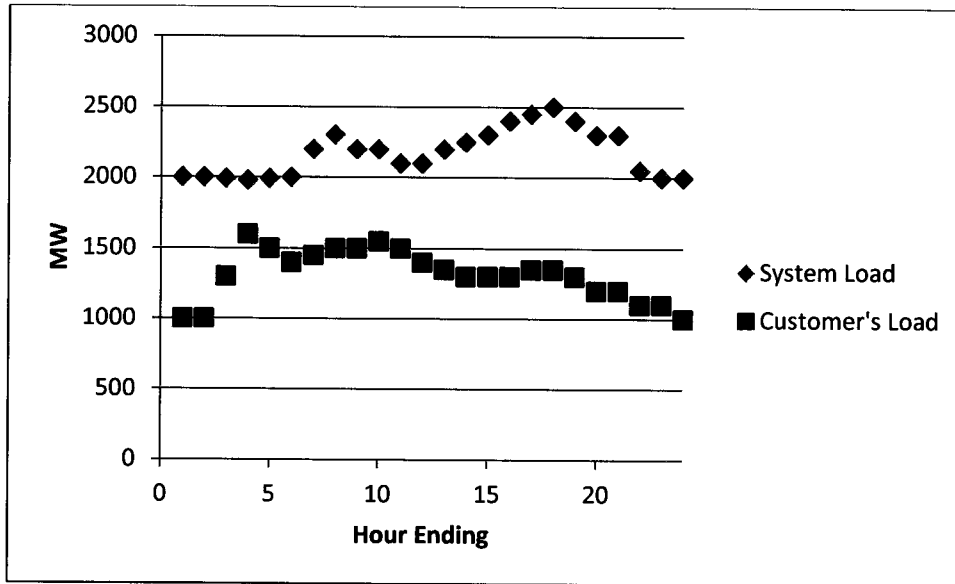
4 **Q. Please explain why the customer's highest demand during the on-peak period or**  
5 **one-half of the customer's highest demand during the off-peak period fails to**  
6 **measure coincident peak – the customer's contribution to the utility's system peak.**

7 A. Consider a very simple example. To keep this simple, let's pretend that a year had only  
8 one day (rather than 365 or 366). Alternatively, we could assume that a customer  
9 reached its noncoincident peak and the utility serving the customer reached its system  
10 peak on the same day, so that the other days of the year could be safely ignored.

11 I have plotted the demand for a hypothetical utility and the hypothetical (very large)  
12 customer over a 24 hour period on the graph below. In this example, the utility reaches  
13 its system peak of 2,500 MW at the hour ending 18:00 (6 p.m.). The customer's  
14 contribution to that peak – i.e., the customer's coincident peak – is 1,350 MW. The  
15 customer's noncoincident peak is 2,300 MW in this example. But, because the  
16 customer's noncoincident peak occurs during the hour ending 8 a.m., it is a very poor  
17 measure of how the customer affects the utility's need for generation and transmission  
18 capacity. The utility invests in generation and transmission capacity to meet the system's  
19 demand for the peak or hour with the maximum demand value, which ends at 6 p.m. –  
20 not a morning hour when the system load is relatively low.<sup>1</sup>

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<sup>1</sup> Distribution facilities may need to be designed and acquired to meet the customer's maximum (noncoincident) demand – but not generation and transmission capacity.



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Moreover, the customer's highest demand during the off-peak period (which is the hour ending 8 a.m.), clearly does not drive the utility's need to obtain capacity. To take this measurement, and divide it by half to assign a demand charge to the customer (as UNS Electric does currently and proposes to do going forward) is completely arbitrary. For this reason, I suggest that demand charges (at least for the LPS and LPS-TOU customers) be based upon the customer's coincident peak.

9

My recommended approach is consistent with the numerous statements pertaining to cost causation made by the utility in this, and previous, rate proceedings. I would further note that my concerns about the calculation of demand charges are similar to those raised in the direct testimony of Mr. Kent Simer on behalf of the Fresh Produce Association of the Americas.

14

15 **Q. Did the Company explain why it initially proposed to reduce the differential**  
16 **between on-peak and off-peak energy prices in the LPS-TOU tariff?**

17 A. No. On p. 32 of his rebuttal testimony, Mr. Jones states:

1 “The Company does not currently incur a substantial difference in the marginal  
2 cost of energy purchased on peak, versus off-peak. Therefore, the Company  
3 believes its proposed differential between on- and off-peak fuel prices is  
4 appropriate. In fact, the actual difference in marginal costs associated with the on-  
5 and off-peak period may justify a smaller differential. But for purposes of this  
6 case, the Company is willing to leave the differential as proposed in the  
7 Company’s direct rate case.”

8 My testimony in the last rate case demonstrated that the differential in marginal energy  
9 cost is “significant,” at least in my opinion. If, as Mr. Jones suggests, there is no  
10 significant differential in costs, then why is the Company proposing to increase the on-  
11 peak/off-peak differential for the LGS-TOU tariff? And why would they introduce a new  
12 TOU rate for schools in this proceeding? Further, even if there were no significant  
13 differences between marginal energy costs between on- and off-peak periods, TOU rates  
14 serve several other purposes as well. For example, the costs associated with transmission  
15 and generating capacity may be reduced if consumers are encouraged to shift  
16 consumption to off-peak periods.

17 Nonetheless, while I am concerned about some of Mr. Jones’s reasoning, it now  
18 appears we are in agreement that the differential between on-peak and off-peak energy  
19 charges in the LPS-TOU tariff should not be reduced, if I am correctly interpreting page  
20 32 of his Rebuttal testimony. Indeed, the differential between on- and off-peak energy  
21 charges should remain the same as it is in the current LPS-TOU tariff.

22  
23 **Q. Do you agree with Mr. Jones’ explanation of the new Interruptible Rider?**

1 A. No. While I understand the reasons why the Company feels compelled to create the new  
2 Interruptible Rider, the new rider is too narrowly designed.

3 I agree with the following statements on pages 32-33 of Mr. Jones's Rebuttal testimony:

4 "The interruptible rate has not provided benefit to the system or other rate payers  
5 in the last few years and the capacity needs of the Company do not justify  
6 offering any discount for the interruptible service currently being provided. The  
7 Company has proposed a new Interruptible Rider and proposed to freeze the  
8 current IPS rate. Staff has agreed to this proposal."

9 However, I disagree with the following statement on page 33:

10 "Without a need to interrupt during the peak load timeframe, the Company does  
11 not see any value in creating a special deal that allows for a discount if the  
12 customer can interrupt during the off-peak period."

13 To be clear, in my previous testimony, I was not proposing any "special deals." Rather,  
14 the Interruptible Rider does not appear to recognize that there is value in having loads  
15 that may be interrupted during off-peak periods, and therefore the Rider should be opened  
16 to off-peak loads.

17 Many of the most severe reliability problems that electricity grids have faced in  
18 recent years have started in, or extended into, off-peak periods. The Northeast blackout  
19 of 2003 started on a Thursday afternoon and lasted two days – thus encompassing periods  
20 which would be considered "off-peak" under the tariffs of UNS Electric. Many of the  
21 reliability problems faced by the Electric Reliability Council of Texas (ERCOT) have  
22 occurred during periods of relatively low demand, when generating units failed or  
23 generation from wind farms fell below projections.

1           Having a properly designed interruptible tariff can reduce costs for all ratepayers.  
2           My recommendation is simply to make the tariff useful during all periods, not just the on-  
3           peak period, in order to plan for a wider variety of contingencies. It is not reasonable for  
4           the utility to assume that it will never experience a need for a resource during off-peak  
5           periods in order to maintain system reliability.  
6

7   **Q.   Did the Company's Rebuttal clarify the applicability of the Economic Development**  
8   **Rate (EDR)?**

9   **A.   No.** On p. 33 of his rebuttal testimony, Mr. Jones states:

10           “NUCOR wants the load factor associated with the EDR to be calculated based on  
11           the customer's billing demand and monthly usage. The Company's proposal  
12           simply states the customer must have a load factor of greater than 75% to qualify.  
13           The Company proposed this provision to encourage only the customers with the  
14           highest load factor to participate. Changing the parameters in the tariff may result  
15           in less efficient use of the system and may result in capacity issues. Therefore the  
16           Company does not believe that any changes to the proposed tariff are necessary or  
17           appropriate.”

18           Contrary to Mr. Jones's assertion, I am not opposed to limiting the EDR to customers  
19           with high load factors. However, the calculation of “minimum load factor” in the EDR  
20           tariff is not clear. In order for an EDR tariff to be valuable, the terms must be absolutely  
21           clear to current and potential customers. I suggest that the requirements be clarified to  
22           reduce any future confusion.

1           The load factor of a customer over some period of time may be calculated in the  
2 following manner:

$$\text{Load Factor} = \frac{\text{Customer's Energy Consumption (kWh)} / \text{Hours in the Period}}{\text{Customer's Peak Demand (kW)}}$$

3  
4  
5           In the EDR tariff proposed by the utility, it is not clear which measure of the Customer's  
6 Peak Demand should be used in the formula. For an LPS or LPS-TOU customer, for  
7 example, the options for measuring demand might include the customer's highest demand  
8 during a peak period, the customer's highest demand during an off-peak period, the  
9 customer's contribution to the monthly or annual system peak, the contract capacity value  
10 mentioned in part 4 of the Billing Demand section of the tariff, or the 500 MW minimum  
11 demand also mentioned in part 4 of the Billing Demand section of the tariff.

12           It is also unclear how the requirement that load factors be calculated for "the  
13 highest 4 coincident-peak months in a rolling 12-month period" would be implemented.  
14 Does this suggest that the average of the load factors for four summer months would need  
15 to exceed 75%? Or would the customer's load factor in each of four months need to  
16 exceed 75%? Which months are "coincident-peak months"? How will this calculation  
17 "roll"? Would a calculation made in the middle of 2017 include values from the later  
18 summer months of 2016?

19           To determine whether expansion of an existing facility might qualify for the  
20 proposed EDR tariff, would both the existing load and the load of the proposed expansion  
21 be considered in the calculation of the load factor? Or would this calculation merely  
22 consider the proposed expansion?

1           It seems appropriate that the value for “Customer’s Peak Demand” used in the  
2 load factor calculation should be the same demand value which is used as the basis for  
3 the demand charge. I presume that this is the measurement that UNS Electric intends to  
4 use in this calculation. This is a value that appears on the customer’s bill, and thus is  
5 transparent and known to both the utility and the customer.

6           When an existing facility is expanded, I presume that this load factor calculation  
7 would need to include both existing load and the load associated with the proposed  
8 expansion. Unless the new operations associated with the expansion were separately  
9 metered, it would be difficult to calculate the load factor associated with the expansion  
10 alone.

11           I recommend that, at a minimum, the utility provide a further explanation or  
12 sample calculations for “the highest 4 coincident-peak months in a rolling 12-month  
13 period” feature of the formula within the tariff.

14           In summary, I am not challenging the utility’s proposal to limit Rider EDR to  
15 customer with high load factors. I am merely recommending that the load factor  
16 calculation be described better to reduce any later confusion. The present wording is  
17 extremely unclear.

18  
19 **Q. Do you agree with Mr. Jones’ characterization of Nucor and other Intervenors in**  
20 **the rate case as expressing “special interests?”**

21 **A.** No. On page 34 of his rebuttal testimony, Mr. Jones states:

22           “As that evidence is considered, some thought must be given to the specific  
23 parties who express a special interest. This includes the low income customers,



1 solar providers, specific customers such as NUCOR, WalMart, the Fresh Produce  
2 customers, and other groups like SWEEP and WRA. All of these groups want the  
3 general rate design and cost recovery allocation to benefit their individual  
4 interests.”

5 Nucor’s interest in this general rate case, as it was in the previous rate case, is in the  
6 establishment of just and reasonable rates for UNS Electric customers. The Company’s  
7 own Cost of Service Study indicates that Nucor and other large customers are currently  
8 subsidizing other rate classes. And I have demonstrated through testimony that the  
9 Company’s policies and pricing do not reflect the cost allocation principles outlined by  
10 Company witnesses.

11 As I explained in my previous testimony, electricity is one of the highest variable  
12 input costs in steel production. Nucor has operated a rolling mill in Kingman since 2008,  
13 and has sought to reduce costs wherever possible to maintain profitability. However,  
14 Nucor is not a monopoly, and the price of steel is not set by a Commission. Rather, steel  
15 prices are the product of a highly competitive global commodities market, where steel  
16 producers in Mexico, China, Turkey, and other countries put near-constant price pressure  
17 on American steel mills like Nucor.

18 Nucor’s rolling mill is an essential component in Kingman’s economy – an  
19 economy that was hit particularly hard by the bankruptcy of the Mineral Park Mine and  
20 the loss of hundreds of jobs a few years ago. As UNS Electric acknowledges on page 3  
21 of its Application, an 8% drop in retail sales is due, in large part, to the loss of Mineral  
22 Park, UNS Electric’s previously largest customer. The loss of large industrial loads  
23 affects not only the cities close to industrial customers, but ultimately all UNS Electric

1 customers. It is therefore critical that the rate design applied to large industrial customers  
2 – and all customers, for that matter – reflect sound ratemaking principles. Each of  
3 Nucor’s recommendations above would provide a more accurate and more consistent rate  
4 design for industrial customers.

5  
6 **Q. On page 35 of his rebuttal testimony, Mr. Jones states:**

7 “NUCOR is the only customer in the TOU class and is currently the Company’s  
8 largest consumer. Therefore the Company is of the opinion that its allocation of  
9 demand related costs is reasonable and any change to how it is recovered would  
10 not change the total cost allocated to that class, only how that TOU customer  
11 would pay the same total amount. Therefore no change in how demand charges  
12 are recovered is warranted.”

13 **Is Nucor indeed challenging the class cost allocation proposed by UNS Electric?**

14 **A.** No. Nucor has not taken issue with allocation of demand-related costs to various  
15 customer classes proposed by UNS.

16 It is my understanding that the LPS rate class includes LPS-TOU customers, and  
17 that there would be four LPS customers (including Nucor) if the utility’s proposal to  
18 move a number of customers presently within the LPS class to the LGS rate class is  
19 adopted. My recommendation does not impact the total costs to be collected from the  
20 LPS customer class. However, it may impact the revenues collected from each of the  
21 four customers within that class. That is, revenues would be collected from the LPS class  
22 (including LPS-TOU customers) in a more equitable manner, consistent with the cost  
23 causation theories endorsed by the utility.



1           “The individual rate classes should be gradually moved toward an UROR of  
2           1.000 over one or more rate cases depending on the frequency of rate cases and  
3           the distance of the class’ UROR from 1.000.”  
4

5 **Q.    What is the UROR?**

6 A.    Mr. Solganick defines the UROR or Unitized Rate of Return as the class return divided  
7       by the Company return. Thus, a value above 1 would suggest that the rate of return from  
8       a class is greater than the Company’s anticipated overall rate of return.  
9

10 **Q.    Why would Mr. Solganick’s recommendation to impose a rate increase on the LPS  
11       class violate his first principle?**

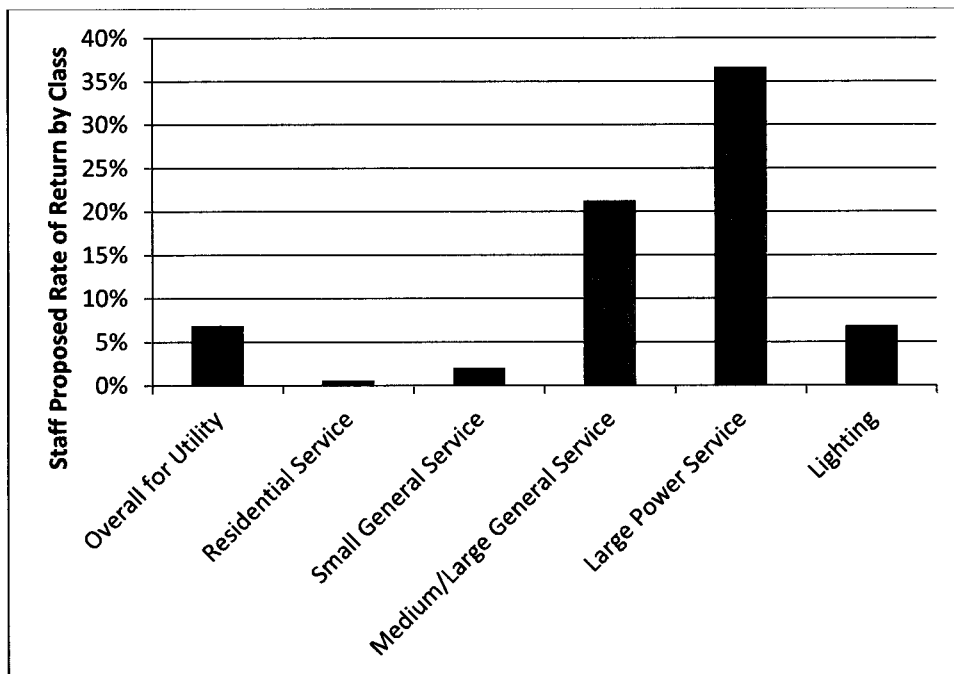
12 A.    Mr. Solganick’s recommendation would move LPS rates *in the wrong direction*. The  
13       utility’s analysis suggests that this class deserves a decrease in rates, not a rate increase.  
14       For example, Mr. Jones’ Direct testimony (p. 25, line 15) suggests that UNS Electric is  
15       presently earning a return of 27.95% from this class at present rates using an Average &  
16       Excess cost allocation. Thus, LPS rates should be reduced if the goal is to gradually  
17       move each class to a UROR of 1.000 as recommended by Mr. Solganick.

18           The calculations within the boxed area of Mr. Solganick’s Exhibit HS-4 suggest  
19       that his recommendation would raise the UROR for the LPS class to a whopping 5.29!  
20       That is, the utility would earn a 36.62% Rate of Return on Rate Base from LPS  
21       customers, which is 5.29 times the utility’s overall rate of return.<sup>2</sup> The figure below

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<sup>2</sup> Technically, the UROR for the LPS class would indeed decline under Mr. Solganick’s recommendation, from a UROR of 12 (=27.95/2.31) to 5.29 (=36.62/6.92). However, this is not a reasonable comparison because the utility’s present return at present rates is low because UNS Electric’s actual rate of return is low. The percentage

graphically compares Mr. Solganick's recommended class rates of returns, based on the boxed area within his Exhibit HS-4. The bars in this graph indicate the rate of return which would be received by the utility from each class, under Mr. Solganick's recommendations. The rate of return received by the utility from the LPS class would be over 64 times higher than the rate of return from serving the Residential Service class.<sup>3</sup> The rate of return for serving LPS customers would be nearly 18 times higher than the return earned from serving Small General Service customers.<sup>4</sup>



**Q. How do you recommend that this inequity be resolved?**

**A.** Although the original proposal by UNS Electric for a small decrease in LPS rates would result in a continuation of a situation whereby LPS customers were subsidizing customer

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rate of return earned by the utility from serving the LPS class would increase considerably under Mr. Solganick's recommendation.

<sup>3</sup> That is, the utility would receive a rate of return of 36.62% from LPS customers, as opposed to a 0.57% rate of return from Residential Service customers.

<sup>4</sup> That is, the utility would receive a rate of return of 36.62% from LPS customers, as opposed to a 2.07% rate of return from Small General Service customers.

1 in other classes, Nucor can agree to it, provided there is a commitment to reducing such  
2 subsidies in subsequent rate cases.

3

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

5 **A. Yes, it does.**