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BEFORE THE ARIZONA CORPORATION C



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**COMMISSIONERS**  
**Mike Gleason, Chairman**  
**William A. Mundell**  
**Jeff Hatch-Miller**  
**Kristin K. Mayes**  
**Gary Pierce**

Arizona Corporation Commission  
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AUG 28 2007

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ARIZONA CORP. COMM  
400 W CONGRESS STE 218 TUCSON AZ 85701

IN THE MATTER OF THE  
APPLICATION OF UNS ELECTRIC,  
INC. FOR APPROVAL OF 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.

Docket No. E-04204A-06-0783

Notice and Filing of the  
Surrebuttal Testimony

of

Marshall Magruder

24 August 2007

As provided by the Procedural Orders of 1 February 2007, 27 March 2007, and 25 June 2007, herein is the Surrebuttal Testimony of Marshall Magruder.

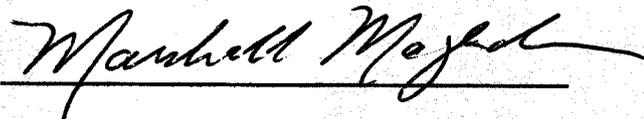
My Direct Testimonies concentrated on five issues: the Demand-Side Management (DSM), administrative issues, cost to improve reliability, CARES and CARES-M, and Environmental Portfolio Standard/Renewable Energy Standard and Tariff programs.

This Surrebuttal Testimony responds to the UNS Electric Rebuttal Testimonies.

I certify this filing has been mailed to all known and interested parties, as shown on the Service List, by email on 24 August 2007, and by US mail as soon as possible thereafter.

Respectfully submitted on this 24<sup>th</sup> day of August 2007

MARSHALL MAGRUDER

By 

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3 afterward with:

4 **Docket Control (13 copies)**  
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8 **Tenna Wolfe, Administrative Law Judge (1 copy)**  
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10 **Christopher Kempley, Chief Counsel (1 copy)**  
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12 Additional Distribution (1 copy each) are filed by e-mail this date (except for PWCC/APS) and by mail  
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**SURREBUTTAL TESTIMONY**

**OF**

**MARSHALL MAGRUDER**

**24 August 2007**

**In the matter of  
the**

**APPLICATION  
OF UNS ELECTRIC, INC.,  
FOR THE APPROVAL OF 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.**

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# SURREBUTTAL TESTIMONY OF MARSHALL MAGRUDER

## PART I – INTRODUCTION

### 1.1 Introduction.

#### Q. Why are you filing this surrebuttal testimony?

All intervening parties are required to file their Surrebuttal Testimony on or before 24 August 2007. This Surrebuttal Testimony responds to the UNS Electric (UNSE) Rebuttals of 14 August 2007 and others.

### 1.2 Summary of Issues and Recommendations.

#### Q. Can you summarize the issues from your Direct Testimonies?<sup>1</sup>

A. Several issues of concern are in my testimonies as follows:

**Issue 1** – Demand-Side Management (DSM) Program.

**Issue 2** – Administrative Issues

**Issue 3** – Costs to Improve Electric Reliability in the Santa Cruz service area.

**Issue 4** – CARES and CARES-M Tariffs

**Issue 5** – Environmental Portfolio Standard (EPS) Surcharge and Renewable Energy Standard and Tariff (REST)

Each issue received some comments in UNS Electricity's Rebuttal Testimonies; however, only a few of the recommendations in my Testimonies received any comments. A few were rejected by UNSE; however, the basis for most of those was weak and unsupported by evidence or by reference. In UNSE Rebuttal Testimonies, all 18 of the footnotes were in areas that my Testimonies did not discuss.

#### Q. Can you summarize your recommendations in responding to UNSE's Rebuttals?

A. Yes. My recommendations have not been changed in most cases and vary for each issue.

Issue 1 Recommendations – There are different recommendations for each DSM Program.

- Education and Outreach DSM Program. My detailed Recommendations are in my Direct Testimony in 3.2.f with the cost changes summarized in Table 1 that added \$273,205 to the 2008 Cost Budget. I recommend change the title to "DSM Education and Training Program" to integrate performance, information and knowledge.

---

<sup>1</sup> These two testimonies are The Direct Testimony of Marshall Magruder, of 26 June 2007, hereafter as "**Magruder Direct Testimony**" or "**my Direct Testimony**" and the The Supplemental Direct Testimony of Marshall Magruder, of 12 July 2007, hereafter as "**Magruder Supplemental Testimony**" or "**my Supplemental**" and for both, hereafter as "**Magruder Testimony**".

- 1 • Direct Load Control DSM Program. My detailed Recommendations are in 3.3.f of my  
2 Direct Testimony, in 3.3 in my Supplemental and herein. My serious concern and  
3 potentially life-threatening structural flaws were not accepted by UNSE. This must be  
4 resolved by UNSE before implementation and any determination of program cost.
- 5 • Low-Income Weatherization DSM Program. My detailed recommendations are 3.4.f of  
6 my Direct Testimony and 3.4 in Supplemental to delete \$5,104 from proposed budget.
- 7 • Residential New Construction DSM Program. My detailed recommendations are in 3.5  
8 my Direct Testimony and 2008 with proposed budget changes to delete \$21,924.
- 9 • Residential HVAC Retrofit DSM Program. My detailed recommendations are in 3.6.f of  
10 my Direct Testimony and 2008 with proposed budget changes to delete \$27,954.
- 11 • Shade Tree DSM Program. My detailed Recommendations are in 3.7.f of my Direct  
12 Testimony and herein to removal of this DSM program. This deletes all funds  
13 (\$65,000) in the budget because overhead cost greatly exceeded customer benefits. A  
14 \$30 tree rebate coupon should not have \$35 of overhead to administer. UNSE still  
15 supports.
- 16 • Commercial Facilities Efficiency DSM Program (EE). My detailed recommendations  
17 are in 3.8.f of my Direct Testimony and the 2008 budget to expand customer  
18 participation and add \$93,289 to the proposed budget.
- 19 • The proposed 2008 DSM Budget recommended totals \$3,428,000; however, by  
20 reducing all programs 25% but excluding LIW, the recommended 2008 DSM Program  
21 is now \$937,430 with an aggregated DSM Adjustor rate for all customer is 0.00057966  
22 per kWh in 3.9 my Supplemental and this Surrebuttal.

23 Issue 2 Recommendations. The detailed recommendations are in 4.1 of my Direct Testimony,  
24 Supplemental, and herein. Many Administrative recommendations are to modify billing  
25 schedule changes, eliminate using predatory loan and check cashing facilities as  
26 UNSE Billing Agents, revise the billing statement, and changes to the UNSE Rules and  
27 Regulations. Most were unanswered any UNSE's Rebuttals.

28 Issue 3 Recommendations. The detailed electricity reliability in Santa Cruz service area  
29 recommendations are in 5.4 of the Supplemental to delete of \$15,561,520 from the  
30 UNSE rate base for failure to comply with ACC Orders, to complete and continuous  
31 compliance with the City of Nogales and ACC Staff Agreements, to avoid expenses  
32 performed prior to acquisition credited to UNSE, to increase access on WAPA  
33 transmission lines with significant customer savings when compared to TEP  
34 transmission lines, to be consistent with operational objective measures, to comply  
35 with NERC-WECC reliability for substation data management, to commence actions

1 required for a second transmission line and to not just rebuild a single circuit line, and  
2 to cease "fear mongering" about how soon the "lights will go out" in Nogales.

3 Issue 4 Recommendations. The detailed CARES and CARES-M recommendations are in 6.4  
4 and 6.5 of my Supplemental Testimony, with new human safety concerns for life-  
5 support equipment for non-CARES-M ratepayers during an outage.

6 Issue 5 Recommendations. The detailed recommendations for transition from EPS to REST  
7 have been revised in this filing in 7.2 below.

8 **1.3 Recommendations for additional Issues.**

9 **Q. Are there additional issues that others have included or time does not permit**  
10 **testimony?**

11 **A.** Yes. Other areas of concern, including some from the Magruder Motion to Intervene, that may  
12 still be resolved before or during the forthcoming evidentiary hearings:

- 13 a. Mandatory Time of Use (TOU) tariffs for new residential and small commercial ratepayers,  
14 This should not be a mandatory program and the highest 15-minute period used for  
15 calculation of the "demand" is not reasonable, that is 1/16<sup>th</sup> of the peak period and 1/48<sup>th</sup> of  
16 the off-peak period in summer, I recommend that a one-hour period or more be used.
- 17 b. Proposed Purchase Power and Fuel Adjustment Clause (PPFAC) rate structure includes  
18 the Test Year energy losses. UNSE in its response to my Data Request refused to  
19 provide this data and stated energy loss costs were not appropriate for this case.  
20 Ratepayers in the PPFAC pay the energy losses based on last test year. Quantification of  
21 energy loss from 2005-2006 test year results must be clearly presented by UNSE.
- 22 c. New purchase power, generation and transmission agreements impacts on ratepayers  
23 were requested but not received, as they are "confidential", so they cannot be reviewed.
- 24 d. Prudence of its present DSM Program since the last rate case. There has been very little  
25 "bang" for the "bucks" invested in the present DSM Program.
- 26 e. Reliability concerns and planning cost for a second Nogales substation. The single  
27 Nogales substation is in the 100-year floodplain and is greatly overloaded and crowded,
- 28 f. Effectiveness of the ACC Environmental Portfolio Standard since the last rate case,
- 29 g. Potential for any Citizens-UniSource transition of ownership costs to be absorbed by the  
30 customers beyond those in the Settlement Agreement,
- 31 h. Potential for UNS Electricity, Inc. ratepayers to pay multiple or imprudent charges to  
32 UniSource Energy and its subsidiaries including increases in O&M and G&A, and,
- 33 i. Conflicts and higher expenses for customer meters are being replaced by two different  
34 programs that appear totally un-integrated, the TOU and DSM DLC programs, which  
35

1 appear redundant meter changes as one meter should be used for both programs to make  
2 this more efficient.

3 Some of these issues were not presented due to discovery issues and/or refusal to respond.  
4 UNSE unilateral deemed such information was not appropriate. I did not want to delay these  
5 proceedings and request assistance of the ALJ even though I could use this capability that  
6 was available for all parties.

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3 **PART II – ISSUES**

4 **2.1 Summary of Issues**

5 **Q. Can you summarize the issues from your Direct Testimonies?**

6 **A.** The issues of concern included in my testimonies and continue in this response to the  
7 applicant's rebuttal testimonies. I have numbered them for convenience.

8 **Issue 1 – Demand Side Management Programs**, see Part III

9 **Issue 2 - Administrative Issues** (Billing Schedules, Predatory Loan/Check Cashing Facilities  
10 as Billing Agents, Revised Billing Statement, and R&R Publication) in Part IV

11 **Issue 3 – Cost to Improve Electricity Reliability in Santa Cruz County** in Part V

12 **Issue 4 - CARES and CARES-M Tariffs** in Part VI

13 **Issue 5 – Environmental Portfolio Standard (EPS) Surcharge and Renewable Energy  
14 Standard and Tariff (REST)** in Part VII

15 **2.2 Impacts of these Issues on proposed UNS Electric rates or procedures.**

16 **Q. Do any of these issues impact overall proposed capital cost or changes?**

17 **A.** Yes. Each issue will have different changes and impacts, if the recommendations are  
18 approved. A brief summary of these changes include:

19 Issue 1 – DSM Programs. The recommended changes impact the scope and expenses  
20 proposed for each proposed DSM Program. Based on these changes, the aggregated  
21 summation of the DSM Surcharge Adjustor rates for each program directly impact the  
22 resultant rates for all UNS Electric ratepayers.

23 Issue 2 – Administrative Issues. The recommended changes impact areas that are not directly  
24 related to company's expenses but directly impact the customers.

25 Issue 3 – Cost to Improve Electricity Reliability in Santa Cruz County. The recommended  
26 changes will remove some capital expenses from the test year, which impact rate base  
27 due to failure to meet agreements in ACC Orders.

28 Issue 4 – CARES and CARES-M Tariffs. The recommended changes have minor impacts on  
29 expenses as additional safety/administrative procedures are recommended.

30 Issue 5 – EPS and REST Surcharge/Adjustor. The recommended changes include deletion of  
31 the EPS Surcharge; implement an interim Renewable Energy Standard and Tariff  
32 (REST) and REST Bank until USNE obtains approval of a new REST Surcharge/  
33 Adjustor in a separate case, and for failing to meet the existing EPS Goals.

PART III – ISSUE 1

DEMAND-SIDE MANAGEMENT PROGRAMS

1  
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4 Q. What is the status of testimonies concerning these DSM programs?

5 A. In a few words, continual confusion and lack of clarity, which I will discuss first in general and  
6 then specifically for each proposed DSM program.

7 3.1 UNS Electricity Demand-Side Management Programs.

8 On 13 June 2007, UniSource Energy Services (UES), for UNS Electricity, Inc., filed with ACC  
9 Docket Control, a letter<sup>2</sup> that was the basis for my Direct Testimony on 26 June (13 days  
10 later). Since that filing, additional information continues to come forth in various data request  
11 responses and the UNSE Rebuttals, which are now included here.<sup>3</sup> This Surrebuttal clarifies  
12 the concerns, primarily from Ms Smith's UNSE Rebuttal.<sup>4</sup>

13 Before going into those concerns, it was noted the UniSource Energy Services (UES),<sup>5</sup>  
14 UNSE holding company, a non-party to these proceedings, sent a letter dated 13 June 2007.  
15 This letter has not been filed until UNSE Rebuttal, which the D. Smith Rebuttal "incorporated  
16 herein by reference."<sup>6</sup> Further, the 13 June 2007 letter did not state, "UNS Electric filed its  
17 comprehensive DSM Program Portfolio *to replace* [emphasis in original] the original filing on  
18 December 15, 2006."<sup>7</sup> This letter stated "The Company is filing the enclosed Portfolio so that  
19 details regarding the DSM programs can be considered in a separate proceeding (the "DSM  
20 Docket")" with "general DSM testimony in its ongoing rate case in"<sup>8</sup> this docket. In my view,  
21 this lacks any real clarity as to, even now, any real legal status for this letter, and uncontested.

22 There have been no Commission comments on these series of confused, overlapping,  
23 and conflicted filings, known by this party (other than the Procedural Order in this docket,  
24 about considering DSM for the 12 July 2007 Direct Testimony filings). This confusion is in  
25 both UNSE and UNSG dockets concerning DSM Surcharge Adjustor determination, DSM  
26

27  
28 <sup>2</sup> UNSE letter "Re: UNS Electric, Inc.'s Demand Side Management Program Portfolio Filing, E-04204A-07-  
\_\_\_\_\_", of 13 June 2007, hereafter "UNSE DSM Programs", at 2.

29 <sup>3</sup> In particular additional program information in the "Rebuttal Testimony of Denise Smith on Behalf of UNS  
Electric, Inc." of 14 August 2007, hereafter "D. Smith Rebuttal".

30 <sup>4</sup> *Ibid.* page 2, lines 18 to 21. The draft DSM document "ACC Staff's First Draft of Proposed DSM Rule,  
31 Exhibit 1, Draft Demand-Side Management Rules," of 7 February 2005, hereafter "Staff DSM Report" was  
32 used extensively in my review of the UNSE DSM Programs; with only minor deviations due to the age of  
33 that first draft and major technological DSM changes and emphasis in the past two years. If given a chance,  
updated approaches, such as subsequently recommended by ESRI, will produce more effective results and  
benefits.

34 <sup>5</sup> The role of UES in this case and in UNSE DSM Programs is a mystery.

35 <sup>6</sup> UNSE DMS Programs, first paragraph of cover letter.

<sup>7</sup> D. Smith Rebuttal, page 3, lines 24 and 25.

<sup>8</sup> UNSE DMS Programs, first paragraph of cover letter.

1 Program approval, and which of these two precedes the other. This is not a Company  
2 decision but is an ACC procedural issue open for interpretation in the "separate" and  
3 uncoordinated TEP, UNSG, and UNSE ongoing rate cases. Each defines unique DSM  
4 Surcharge Adjustors to impact all ratepayers in three independent public service companies.

5 It is inconceivable rates could be increased with a DSM Surcharge Adjustor prior to (1)  
6 any decisions concerning acceptability, accountability, prudence, or accomplishments planned  
7 for these DSM programs; (2) the two UNSE and UNSG parties roles and (3) interactions with  
8 TEP (if any), the ACC Staff, and RUCO reviews and comments for each DSM program; and  
9 (4) computation and the apportionment of DSM Surcharge Adjustor "rates" to customer  
10 categories for each Company. All of these procedural actions must be resolved prior to first  
11 approval of the DSM Surcharge Adjustor rate.

12 Individual DSM Programs required review and approval before assessing customers.  
13 My testimony, considers many areas where significant adjustments are essential prior to  
14 charging ratepayers. The UNSE Testimony shows the DSM Surcharge Adjustor will be  
15 charged as a function of electricity consumed for all rate categories, with no emphasis equally  
16 on individual customer or rate category consumption reductions. These interactive DSM  
17 programs have assumed an equally function of consumption but not demand reduction  
18 function goal and objectives. Demand-Side Management requires "demand" goals, objectives,  
19 and plans on how and by what processes to achieve specified and Commission-approved  
20 "demand" goals in MW and MWh for power and energy for its customers and Company's  
21 benefit. An Example of what needs to be considered, assessed, and resolved.

22 Only Lake Havasu City residential and some small commercial customers will be  
23 involved with the Direct Load Control DSM program however all ratepayers will fund it without  
24 any possibility of participating, thus.

- 25 a. Is it reasonable and fair that all UNSE customers fund this limited (or any other specific)  
26 program) with no opportunity to participate?  
27 b. Should all rate categories, some of which may never have Direct Local Control (DLC),  
28 be charged the same DSM Surcharge Adjustor rate for this DLC DSM program?  
29 c. Do the specifics of this (or other) DSM program meet the Commission plans for DSM?

30 **Q. What is your attitude and expectations for the long-term DSM results for UNSE?**

31 **A.** I strongly support DSM and its three components, energy conservation, energy efficiency, and  
32 demand response.<sup>9</sup>

33  
34 <sup>9</sup> Magruder Direct Testimony, pages 16 line 28 to page 17 line 12, in 3.1.1. One reason for these definitions  
35 are to clarify the extreme confusion that now exists so that clear, objective, separations exist between these  
three terms and that subsequent regulatory proceedings, hearing, order and decisions are consistent when

1           There is also the fourth component, *dynamic response* that is considerably more  
2 advanced beyond the existent capabilities at TEP or UNSE.<sup>10</sup> Dynamic Response not  
3 recommended for consideration at this time.

4           ESRI estimates range from 10-25% of total U.S. electricity consumption” can be  
5 reduced by energy efficiency. This is significant. ESRI believes regulators [ACC] need to use  
6 this potential and “elevate its strategic priority’.”<sup>11</sup>

7           UNSE Rebuttal commented that the energy efficiency terms and definitions used in my  
8 Testimonies did not agree with a draft DSM document.<sup>12</sup> I agree and said so when presented.  
9 This “first draft” UNSE reference is over two years old and has not yet been approved by the  
10 Commission, I used a more common definitions of the first three components the Department  
11 of Energy (DOE) used in its DSM website, where

- 12 a. Energy Conservation (EC) is voluntary and has no customer cost (but has benefits) and is  
13 not readily measurable,  
14 b. Energy Efficiency (EE) involves using equipment or things (such as higher R-rated  
15 insulation for walls) that have a cost to reduce electricity consumption, and  
16 c. Demand Reduction (DR) uses “controls” to selectively reduce consumption.

17 This discussion shows the boundary definitions of the “draft” terms are not clear definitions.

18 **Q. Can you explain your DSM program changes recommended in your previous filings?**

19  
20  
21  
22 it comes to “money” differences that are clear between these terms as I have defined them. DOE used  
23 these definitions in its DSM discussions but I am unable to locate that reference at this time.

24 <sup>10</sup> There is an excellent background paper which came to light after my Supplemental Testimony, by the  
25 Energy Power Research Institute (ESRI) and is found on its website, “Advancing the Efficiency of Electricity  
26 Utilization: “Prices to Devices”, 2006 EPRI Summer Seminar,” which defines in its Executive Summary

- 27 • **Energy Efficiency** consists of ongoing technology development and programs in energy efficiency  
28 driven by economic and policy drivers. In this sense, these drivers result in a built-in improvement in  
29 energy efficiency that is occurring on an ongoing basis. This area has a large and direct bearing on CO<sub>2</sub>  
30 reduction as well as related electricity consumption.  
31 • **Demand Response** represents shifting the pattern of the load. This area has a small impact on energy  
32 reduction but is a large role in enhancing systems economics and reliability. It may or may not result in  
33 reduced CO<sub>2</sub>.  
34 • **Dynamic Systems** represents the future of networked, smart, end-use devices interacting with the  
35 marketplace for electricity and other consumer-based services. Market interaction includes sending  
36 direct “prices to devices”<sup>SM</sup>. This area may have substantial impacts on system reliability, customer  
37 value, modest energy savings, and CO<sub>2</sub> savings.”

38 **Energy Conservation** was not defined but usually includes voluntary measures only to reduce energy  
39 consumption. I intend to introduce this Executive Summary during the testimonial hearings.

40 <sup>11</sup> *Ibid.*

41 <sup>12</sup> D. Smith Rebuttal, page 2, lines 18 to 21. The Draft ACC DSM Report was used extensively in my review of  
42 the UNSE DSM Programs, with only minor deviations due to the age of that first draft and major  
43 technological DSM changes and emphasis in the past two years. If given a chance, updated approaches,  
44 such as subsequently recommended by ESRI, will produce more effective results and benefits.

1 A. Certainly. Seven DSM programs are now proposed by UNSE. Each is independent of the  
2 others but all have common goals and objectives. They are discussed, with responses to  
3 UNSE Rebuttal.

4 a. Education and Outreach (Training and Education) Program in 3.2 below

5 b. Direct Load Control Program in 3.3 below

6 c. Low-Income Weatherization Program in 3.4 below

7 d. Residential New Construction Program in 3.5 below

8 e. Residential HVAC Retrofit Program in 3.6 below

9 f. Shade Tree Program in 3.7 below

10 g. Commercial Facilities Efficiency Program in 3.8 below and

11 h. The resultant and aggregate DSM Surcharge Adjustor rate in 3.9 below

12 In 3.2 to 3.8 of my Testimony, each DSM program is discussed in terms of its proposed  
13 scope, references, requirements, verification, and recommended improvements with 3.9 used  
14 for aggregated data derivation of the SDM Surcharge Adjustor rate. My Testimonies use the  
15 paragraph numbers above to ease tracking.

16 Q. Are there general concerns raised by the UNSE you would like to respond?

17 A. Yes. In general, the UES DSM Programs letter has a cover letter and seven DSM Program  
18 Attachments. There is no DSM integration plan that ties all these programs into a unified plan  
19 with goals and defined objectives and thresholds. I added 3.9 to integrate aggregating costs  
20 necessary to determine the proposed DSM Adjustor Surcharge for all future customer billings.

21 I recommend a DSM integration plan include a summary of each DSM Program's  
22 goals and objectives, to include commonality throughout implementation and to centralize  
23 cost accounting information. An expansion of 3.1.1 and Table 1 from my Direct Testimony<sup>13</sup>  
24 show the relationships between these programs in one location and in my Supplemental,  
25 Table 2 how each program's costs lead into the total DSM Adjustor Surcharge rate.<sup>14</sup> Further,  
26 general DSM program guidance must be provided and assumptions in repetitive parts of the  
27 individual DSM Programs.

28 Q. What is your reaction to UNSE concerns about reporting more environmental impacts?

29 A. Not until the UNSE Rebuttal was information known about the method for calculating  
30 environmental impacts. It now appears that a simple, single cycle natural gas turbine is the  
31 reference. In reality, most electricity generated in Arizona and used by UNSE is from coal-

32  
33  
34 <sup>13</sup> Magruder Direct Testimony, 3.1.1 pages 16 and 17; Table 1, page 17, Types of Demand-Side Management  
for the Seven Proposed UNS Electric DSM Programs.

35 <sup>14</sup> Magruder Supplemental Testimony, Table 2, page 18, Summary of Proposed DSM Costs for UNSE DSM  
Programs and DSM Adjustor.

1 fired steam turbine generators, which have significantly more pollutants than natural gas.  
2 UNSE must use relevant data applicable to UNSE and not TEP (with 90% coal) or APS.

3 **Q. What should be used as the environmental impact reference model(s)?**

4 **A.** For simplicity, I recommend using a 50:50 split between natural gas and coal-powered  
5 generation, to reflect the fuel diversity in the UNSE service area. This basic information  
6 should be included in the UNSE DSM Programs documentation. A traceable, UNSE-relevant,  
7 and conservative approach for determination environmental impacts is desirable.

8 For natural gas, the nameplate or documented reference environmental data for the  
9 BMGS, being procured by UNSE, values could be used. These values are not known by this  
10 party but should be easily available to UNSE. If not feasible, using the environmental impacts  
11 from the new LM-2500 natural gas turbine fuel in Nogales would be appropriate. Realistic,  
12 UNSE-oriented environmental impact assessments are essential for truth in these values.

13 For coal-generated, there is no standard. Data for the new 1,500 MW Desert Rock  
14 power plant has been published. This is intended to be one of the "cleanest" coal generated  
15 plants in the United States. Using the environmental impacts for the plant should remain  
16 conservative as indicated in the UNSE Rebuttal.

17 Based on the "Department of Interior Preliminary Technical Comments on the Desert  
18 Rock Prevention of Significant Deterioration (PSD) Permit Application" (September 2006),<sup>15</sup>  
19 the following are the annual pollution emission limitations required for these two 750 MW  
20 boilers using supercritical pulverized clean-coal are:

21	Sulfur Dioxide (SO <sub>2</sub> )	3,315 tons per year <sub>2</sub>
22	Nitrogen Oxide (NO <sub>x</sub> )	3,315 tons per year
23	Total Particulate Matter (PM <sub>10</sub> )	1,105 tons per year
24	(PM <sub>2.5</sub> )	unknown
25	Sulfuric Acid Mist	221 tons per year
26	Hydrogen Fluoride (HF)	13.3 tons per year
27	Mercury emissions	114 lb per year
28	Ozone	unknown
29	Water consumed	unknown

30 The DSM Program impacts must use specific and objective environmental parameters,  
31 and I recommend, the ratio of the above emissions be a function of the annual MWh of UNSE  
32 r annual sales, as a minimum, in associated reporting. UNSE should obtain and publish the  
33 "unknowns" and ratios necessary for computation. Thus, I recommend the UNSE environment  
34

35 <sup>15</sup> I intend to bring copies this document to the evidentiary hearings for ACC Staff and UNSE.

1 impact statistics look more like the below Table A. This expands that originally recommended  
 2 and provides a much better and more honest, conservative, and comprehensive display for  
 3 each and all DSM programs:<sup>16</sup>

4  
 5 **Table A – Environmental Impact Factors for UNSE DSM Programs.**

6

GHG, Airborne Pollutants and Others	Saved [Pounds]	Other Environmental Impacts	Saved [various units]
Carbon Dioxide (SO <sub>2</sub> )		Water Saved	gallons
Sulfur Dioxide (SO <sub>2</sub> )		Mercury Emissions	ounces
Nitrogen Oxide (NO <sub>x</sub> )			
Total Particulate Matter (PM <sub>10</sub> )		Additional TBD Impacts	TBD
Total Particulate Matter (PM <sub>2.5</sub> )			
Sulfuric Acid Mist			
Hydrogen Fluoride (HF)			
Ozone (O <sub>3</sub> )			
Total			

7  
 8  
 9  
 10  
 11  
 12  
 13  
 14  
 15  
 16 With this more complete list of environmental benefits, UNSE and ACC should be able  
 17 to report more complete information to the public, Arizona Department of Environmental  
 18 Quality (ADEQ), US Environment Protection Agency (EPA) and others interested.

19  
 20 **Q. Can you respond to UNSE comments with respect to the Citizens Advisory Council?**

21 **A.** Yes. In the D. Smith Rebuttal paragraph B.1; the first topic is "Citizens Advisory Council". This  
 22 Rebuttal missed the point concerning the ACC-mandated in ACC Order No. 61793 of 29 June  
 23 1999, that the CAC, was in the City of Nogales-Citizens Settlement Agreement<sup>17</sup> The CAC  
 24 was formed to improve future electricity service and as consumer and business  
 25 communications mechanism to improve a very negative attitude prevailing, including the  
 26 abrupt termination of the City of Nogales franchise Agreement. The CAC was to open  
 27 communications and dialog between this utility and the local citizens on a continuous basis to  
 28 reduce the probability of the prior unpleasant experiences. The Company is required to have  
 29 a CAC so relevant issues, which specifically included DSM in the ACC Order, are openly  
 30 discussed. The CAC last met in September 2000. The second transmission line issue has not  
 31 been resolved as claimed. TEP missed its mandated operational date of 31 December 2003,

32  
 33 <sup>16</sup> For an example, see Magruder Direct Testimony, page 21, lines 14 to 18, but recommend that a standard  
 34 table be used in for each program in a report, but as additional environmental information becomes  
 35 available that this information be discussed in the Report Summary section and then used.

<sup>17</sup> Please see Magruder Supplemental page 22 line 10 through page 30 line 8 for additional discussions on  
 this and the subsequent ACC Staff-Citizens Settlement Agreement with page 24 line 19 to page 25 line 6  
 for details concerning CAC. Also, see Part V of this filing.

1 or earlier. The Company obtained a waiver of the \$30,000 month penalty for liquidation of  
2 damages for missing this "critical date or the lights will go out" deadline Mr. Glaser COO for  
3 TEP personally testified before the Commission that he would not miss this operational date  
4 for any reason. He is retired and we see another promise not kept.

5 **Q. Can you respond to UNSE comments with respect to multiple DSM programs?**

6 **A.** Yes. The D. Smith Rebuttal in B.2, the second topic was concerned about "lost revenue" or  
7 "lost net revenue," used at least four times in the UNSE DSM Programs This was  
8 misunderstood in the Rebuttal. My comments concerned UNSE and any recovery as "avoided  
9 costs"<sup>18</sup> or recovery of revenues that were "lost" revenue due to DSM consumption savings It  
10 is noted only the Commission could make that decision; not the ACC Staff. Commissioners,  
11 using ACC Staff through, comprehensive and validated recommendations can make the  
12 Commission decision. The public must be notified, informed, and have an opportunity to  
13 comment on changes to the DSM Adjustor Surcharge impacts on rates. My concern had  
14 nothing to do with cost-benefit tests but with ACC Staff versus Commission and the lost  
15 revenue issue.

16 The third topic in B. Smith Rebuttal in B.2 discusses changing the cost-effectiveness  
17 methodology established by the Commission in the Staff DSM Report. For each program in  
18 my testimonies, the "societal test benefit effectiveness" was provided directly from the UNSE  
19 DSM Programs document, if there were recommended changes that would invalidate the  
20 value from the UNSE DSM Programs description documentation. UNSE societal benefits test  
21 ratios were used and not "calculated" differently. In many cases, obvious statistical analysis  
22 was used. For example, in on program the UNSE cost to administer and provide rebates for  
23 the "shade tree" program, based on UNSE data, were \$35 per tree for a \$30 benefit per  
24 participant. This is not a "new" or non-conformant calculation, but an obvious fact. Common  
25 sense should always be a part of any "judgment" that uses all factors when making decisions.  
26 The Rebuttal missed these points.

27 The fourth topic in the D. Smith Rebuttal in B.2 discusses "line loss" used in DSM  
28 calculations. They did not match today's line lost values. This Rebuttal indicated that the  
29 Commission has not approved a new line loss in this case. In fact, I have been unable to  
30 obtain the 2005/2006 Test Year Line Loss data as Mr. Beck in data request responses has  
31 stated that line loss in not relevant to these hearings. Since the PPFAC presently equals  
32 wholesale price plus the cost of line loss, which uses the last Test Year line loss values that  
33 also impacts correct DSM calculations. The line loss values in my Testimony are the correct  
34

35 <sup>18</sup> Magruder Direct Testimony, on page 27 line 8 footnote 38; page 28 line 25 footnote 41; page 29 line 28  
footnote 50; and page 36 line 5 and footnote 71.

1 values from the last rate case. The line loss in the Residential HVAC DSM Program was  
2 10.69%. There is an additional 4.95% line loss for the WAPA transmission lines for a total of  
3 15.64%, the line loss used for the current PPFAC.

4 **Q. Does this complete your response to general DSM issues?**

5 **A.** Yes.

6  
7 **Q. Could you respond to UNSE concerns about the "Education and Outreach" Program?**

8 **A.** Yes. I will briefly describe this program, our differences, and recommendations in 3.2.

9 **3.2 Education and Outreach DSM Program or DSM Education and Training Program.**<sup>19</sup>

10 Each program should have independent goals and objectives of the others; however, the  
11 Education and Outreach Program should be expanded to provide all the external media  
12 exposures, training and marketing support for all UNSE DSM Programs. This integration of  
13 information sharing benefits from one DSM program impacts other DSM programs and  
14 facilitates centralized DSM training management, courseware development, media campaigns,  
15 and should lower costs with cross-functional activities by personnel working in this program.  
16 This combination of training and education efforts should produce synergy between UNSE  
17 employees, contractors, call center, and most importantly, provide a united "face" to the  
18 customers. As now constructed, with education and training fragmented, conflicts may arise  
19 and best customer-focused programs overlooked by contractors making money from UNSE.

20 Unfortunately, the D. Smith Rebuttal overlooked the recommended \$318,205<sup>20</sup> for the  
21 DSM Education and Training Program. This has no budget problems as integrated training and  
22 education element consolidated and retained all the proposed training and education costs.

23 Ms Smith discussed the current ACC "first draft" definitions for Demand Side  
24 Management elements, discussed above in detail. Her "belief" about "energy efficiency" would  
25 be solved with more definitive and the DSM element definitions I recommended with  
26 supporting references. Since the draft ACC DSM Policy is NOT approved, these definitions are  
27 the only variance from the ACC Staff's first draft, discussed openly in my Testimonies, so "The  
28 Commission will make the final recommendation". I agree and see no problem here.

29 **Q. Do you want to change any of your DSM Training and Education Recommendations?**

30 **A.** The D. Smith Rebuttal accepted recommended items 1.b, 3 and 4, which is appreciated. The  
31 additional recommended items 1.a, 1.c, 2, 5, 6.a, 6.b, 6.c, 6.d, 6.e, 6.f, 7, 8, 9, 10, 11, 12, 13,

32  
33 <sup>19</sup> UNSE DSM Plan, Attachment 1 – Education and Outreach Program. A new Title "DSM Education and  
34 Training Program" has been recommended as a better title for this program.

35 <sup>20</sup> Magruder Supplemental Testimony, pages 13 and 14, Table 1, "Recommended Program Cost Summary  
for DSM Training and Education Programs for Implementation in 2008," and page 18, Table 2, "Cost of  
Proposed and Recommended Cost of UNSE DSM Programs with DSM Adjustor"

1 14, 15, 16, 17, and 18, as expanded in my Supplemental Testimony with 2008 funding  
2 recommendations, were not in the UNSE Rebuttal.<sup>21</sup> They remain valid recommendations.

3 The UNSE final comment about "UNS Electric is unable to provide 15-minute interval  
4 data without the use of AMI/AMR" is true. I agree and fully support replacing all analog meters  
5 with two-way automated meters. I recommended, as DSM elements are developed, planned  
6 and implemented and mature, then inclusion in the DSM Training and Education Program is  
7 logical and should be incrementally incorporated during the DSM Program Annual updates. I  
8 fully support combined TOU/DLC automated, two-way meters for every UNSE customer with  
9 remote data displays and control features so that UNSE "smart" meters are fully interoperable  
10 with the Intelligent Grid (see the ESRI Intell-Grid) making both micro- and macro- real-time  
11 information and knowledge available at ALL levels from the customer to the UniSource CEO to  
12 the ACC Staff to the Secretary of Energy. This has to be done, one-step at a time with eyes  
13 open and the long-term vision clear of chaos, or failure and lost revenues follow.

14 Without any rebuttal comment for these and all other recommendations, other than a  
15 temporal delay for item 7, I can then assume all of these numbered recommendation items are  
16 acceptable for future UNSE implementation and for consideration and recommendations to the  
17 ALJ for consideration in the resultant ACC Order.

18 Further, UNSE is concerned about performance measures for DSM Training and  
19 Education Programs, which are "energy conservation" programs that are hard to measure in  
20 terms of kW and kWh from personal behaviors. I completely agree with her concern, which is  
21 why the definition for all these "energy conservation" items are subjective, with sparks of  
22 genius sometimes lighting objective measures. Energy Conservation is a DSM element with its  
23 own performance measures, such as indicated by Ms Smith, but is needed to be defined  
24 appropriately in the Second Draft ACC Staff DSM Report and the final version presented to the  
25 Commissioners.

26 **Q. Does this complete your response for the "DSM Training and Education Program"?**

27 **A. Yes.**

28  
29 **Q. Could you respond to the UNSE concerns about the "Direct Load Control (DLC) DSM  
30 Program"?**

31 **A. Yes. I will briefly describe this program, our differences, and recommendations in 3.3.**

32 **3.3 Direct Load Control (DLC) DSM Program.**<sup>22</sup>

33  
34 <sup>21</sup> Magruder Supplemental Testimony, page 12 line 5 to page 14 line 13, including Table 1, Recommended  
35 Program Cost Summary for DSM Training and Education Program for Implementation in 2008"

<sup>22</sup> UNSE DSM Programs, Attachment 2, "Direct Load Control (DLC) Programs"

1 I appreciate the work that Ms Smith has done in updating me on the status of the Florida  
2 Power and Light DSM program. My referenced FPL DSM program was its R&D effort for  
3 about 800,000 customers, of which over 700,000 voluntarily participated, received rate  
4 rebates and participation was free. I read the analysis of its 50% OFF cycle timing with horror  
5 for residents of Lake Havasu City, one of the hottest locations in the United States,<sup>23</sup> vastly  
6 exceeding anything in Florida, where 100F is rarely experienced. As my conclusion (2) stated  
7 this is "hazardous" and recommendation item 3 that a shorter OFF cycle time than 50% in the  
8 proposed location is a critical safety issue. Some customers have air conditioning systems  
9 that, at temperatures over 100F or so, are on 100% of the time and still not able to "cool"  
10 anymore. If shut off, temperatures will rise even more and we will see a small-scale French  
11 August disaster when 15,000 died due to heat. Manufactured homes are especially vulnerable  
12 due to lack of insulation and metal walls and roofs, especially older retirees, many times used  
13 as the "best affordable" retirement home for the thousands of elderly in Lake Havasu City.  
14 The Company cannot tell them to purchase more air conditioning equipment, which is not  
15 affordable for these customers. Without a careful audit of the "envelope" and air conditioner  
16 outputs, messing with this situation will expose UNSE to liabilities that are not reasonable just  
17 due to this high of OFF cycle percentage. If "dynamic systems" (as defined earlier) were  
18 available, then this kind of cycle time might be reasonable since some residences have  
19 adequate or even excess cooling capacity.

20 My comments about 15 minutes off per four hours was from the FPL R&D program  
21 results and going over 50% is, in my view, for Lake Havasu City still not safe and will be  
22 hazardous for some UNSE customers. As a minimum a human health hazard risk analysis  
23 should to be accomplished, not a "cost-effectiveness" analysis, before any recommendation  
24 greater than 12.5% OFF cycle should be considered for this area. UNSE Cost effectiveness,  
25 should intuitively have superb results for Lake Havasu City using a 50% demand reduction  
26 cycle in this ultra-hot city where air conditioning is probably more important than any other  
27 City in Arizona, Without air conditioning, Lake Havasu City would not exist.

28 **Cost is ALWAYS less important than human safety.**

29 **Q. Do you want to change any of your DSM DLC Recommendations?**

30 **A. Upon review of the Rebuttal shows acceptance of Recommended item 1 and is appreciated,  
31 Recommended item 2 is OBE.**

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32  
33  
34  
35 <sup>23</sup> While driving to Kingman, AZ on 19 August 2007, the radio reported the temperature at Lake Havasu City was 116F.

1 Recommended item 3 was rejected by UNSE's Rebuttal. Item 3 is now recommended  
2 more strongly than my prior understanding. The UNSE Rebuttal is for 50% cycle OFF. The 3  
3 or 4 hours per day or 100 hours per year are insignificant compared to consecutive or near  
4 consecutive OFF air conditioning cycles.

5 Recommended Items 4.a, 4.b, 4.c, 4.d, and 4.e and 5 should be considered only if  
6 proven to meet the cost-effectiveness test. When two or more electrical equipment are  
7 combined for one customer then cost-benefit tests should be at the customer level (more DR  
8 per meter), than for any one individual demand-reduce energy sources. This 'whole customer'  
9 approach should be considered for cost-effectiveness, or certain customer benefits if 2, 3, 4 or  
10 5 of a list of 5 items are placed under DLC DR schemes.

11 Recommended Items 4.f and 7 to revise the DLC "draft" Participation Agreement  
12 "after" DLC receives Commission approval for implementation" is a bad business practice that  
13 opens the Company for later liability issues. It is noted that draft "Participation Agreement"  
14 does not state 15-minutes so the participant unknowingly agrees when signing the agreement  
15 to jeopardize their life? Convert this agreement to English/Spanish-Friendly wording. Change  
16 to include real-time "telephonic" changes as stated in its description in UNSE DSM  
17 Programs.<sup>24</sup>

18 Recommend item 8 concerning "off-the-shelf, proven equipment and DLC hardware  
19 and software" was rejected with rationale that shows the immaturity of the UNSE team in this  
20 area. Systems engineering practices are essential for hardware and software requirements  
21 analysis, systems trades, system synthesis, system design, system and component tests,  
22 installation and operations and maintenance, and retirement phases, All require integration.  
23 For example, this approach does even not mention the associated TOU meter requirements  
24 that will be deployed to a far greater extent than these DSL meters. Does UNSE have a  
25 Strategic Automated Meter Plan, or equivalent? UNSE system-level smart metering  
26 implementation will determine the future of this distribution utility and its profit potential  
27 through smart and knowledgeable system design. The "Commission" should never restrict this  
28 Company's strategic planning or determine internal integration elements, unless the  
29 Commission has a "vision" to integrate all Arizona utilities with an Intelligent Grid, such as  
30 ESRI's IntelliGrid, which requires "smart" meters integrated throughout the state. This vision  
31 must be sound, forward looking and non-restrictive for the utilities. The MOST restrictive  
32

33 <sup>24</sup> UNSE DSM Programs, Attachment 2 at 5 states "Participant will have the right at any time to over-ride a  
34 specific control event by notifying UNSE in writing or by telephone. Participant will have the right at any  
35 time after the first year to terminate the service by notifying UNSE in writing or by telephone." [Note, "in  
writing" during a four-hour control event is not realistic.]. This statement is not in Appendix 1 (DLC  
Participant Agreement) and contradicts paragraphs 9 and 21.

1 decision would be the use of "proprietary" hard/software by any utility. Open Systems, open  
 2 architectures, industry standard all work, closed systems have no future.

3 Recommended item 9 follows the UNSE process used to determine the DSM Adjustor  
 4 however was ignored by UNSE's Rebuttal

5 **Q. Does this complete your response to "DSM DLC Programs"?**

6 **A.** Yes. The Supplemental Testimony discussion concerning Time of Use is valid, but may  
 7 change if the "super" TOU schedules in Alternative B are approved. However,<sup>25</sup> Supplemental  
 8 Testimony Figure 1 (rev) now shows when TOU and DLC control actions<sup>26</sup> can both occur  
 9 including proposed Peak (A) and Super-Peak (B) winter alternatives described in the caption.  
 10

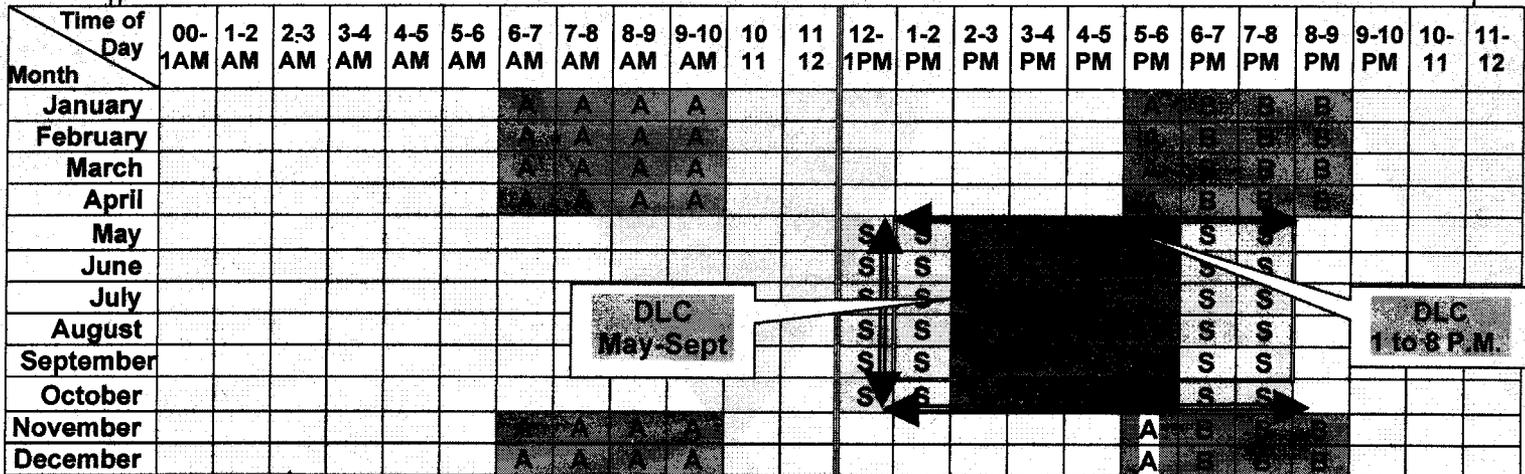


Figure 1 (Rev). DLC Action Events and Time of Use (TOU). This figure shows that DLC events will occur between May and September and from 1 PM to 8 PM in the Box with arrows. Peak Hours are shown with P (red), Shoulder with S (yellow), and Off-Peak (green) are blank. In the winter, there are two evening alternatives under consideration, Alternative A includes all the hours shown with as A and B (A+B), and the Super Peak Alternative B with the three hours indicated by B.

23  
 24 **Q. Could you respond to UNSE concerns about the "Low-Income Weatherization DSM Program"?**

25  
 26 **A.** Yes. I will briefly describe the differences and resultant recommendations in 3.4.

27 **3.4 Low-Income Weatherization (LIW) DSM Program.**<sup>27</sup>

28  
 29  
 30  
 31 <sup>25</sup> Rebuttal Testimony of D. Bentley Erdwrum on Behalf of UNS Electric, Inc., 14 August 2007, hereafter "Erdwrum Rebuttal", page 11, line 8 to page 12 line 1.

32 <sup>26</sup> The months and hours that DLC actions might occur are from UNSE response to Data Request STF 13.32 of 18 June 2007. The UNSE Rebuttal, by several witnesses, proposed reducing the winter Peak Hours from eight to three hours, now referred to as "super peak" with alternatives being recommended, therefore specific winter evening peak hours under Alternative A are as originally proposed and the super peak as Alternative B. [Erdwrum Rebuttal page 11 and Exhibit DBE-2]

33  
 34  
 35 <sup>27</sup> UNSE DSM Programs, Attachment 3, "Low-Income Weatherization (LIW) Program"

1 The UNSE Rebuttal agreed that the \$2,552 under CARES billing was in error and it should  
2 have been under the budget entry for "rebate processing." This is agreeable with this party so  
3 the resultant budget for this program remains as proposed.

4 **Q. Do you want to change any of your LIW DSM Program Recommendations?**

5 **A.** Yes. The UNSE Rebuttal only discussed Recommended item 2 about the Rebate Processing  
6 change from CARES Billing.

7 No changes to Recommended item 1 other than added additional environmental  
8 reporting elements. Recommended item 3 is now OBE due to no change from the proposed  
9 budget. Recommended item 4 remains which has been discussed previously.

10  
11 **Q. Could you respond to UNSE concerns about the "New Construction DSM Program"?**

12 **A.** Yes. I will briefly describe any differences and resultant recommendations in 3.5.

13 **3.5 Residential New Construction DSM Program a.k.a. Energy Smart Homes (ESH) (EE).<sup>28</sup>**

14 UNSE is concerned that the return to customers was stated in conclusion item 1 as 38.4%.  
15 This is not an error. This conclusion considered only the "DIRECT" rebates to customers, with  
16 no overhead. UNSE considered support plus customer rebate as benefit to agree with an  
17 overall return to customers at 58% for 2008. These no changes are necessary as this  
18 conclusion Item 1 emphasizes direct to [LIW, which should read ESH] participants. "Direct" is  
19 even underlined in this conclusion item statement for this purpose and emphasis.

20 In addition, UNSE is concerned that the goals recommended are too high.

21 **Q. Do you want to change any of your ESH DSM Program Recommendations?**

22 **A.** No changes are recommended; however, UNSE seemed concerned about reducing overhead  
23 recurrent costs. I remain very concerned. UNSE should and must continually be striving to  
24 reduce all costs at all levels of the Company. These DSM Programs are not a corporate-  
25 welfare program but defined customer-benefit program, similar to Company's benefits, where  
26 cost containment is always critical. Reducing all costs is always a valid recommendation.

27 The UNSE Rebuttal would like to take a more conservative approach than in  
28 Recommended Item 2 for increased participation. To resolve this, I have seen both "minimum"  
29 and "target" and "stretch" used for "minimum" and "highly desired" achievement requirements.  
30 This, would recommend for 2008, a "target" of 15% for 2008 and "stretch" goal of 45% for  
31 2008, with the likely result being halfway in between. Annual revisions of these two should be,  
32 as suggested by UNSE, in their DSM Reports and DSM Annual Reviews.

33  
34  
35 <sup>28</sup> UNSE DSM Programs, Attachment 4, "Residential New Construction Program"

1 Recommended item 3 use the UNSE process (nothing new in the process was used)  
2 to calculate DSM Surcharge Adjustor rate.

3 **Q. Does this complete your response to ESH DSM Program”?**

4 **A.** Yes.

5  
6 **Q. Could you respond to UNSE concerns about the “Residential HVAC Retrofit DSM  
7 Program”?**

8 **A.** Yes. I will briefly describe any differences and resultant recommendations in 3.6.

9 **3.6 Residential HVAC Retrofit DSM Program.<sup>29</sup>**

10 UNSE is concerned that subcontractor and internal marketing budget expenses have been  
11 deleted from this program budget. The \$12,000 internal marketing expenses were not  
12 deleted, but as discussed in the DSM Training and Education DSM Program, transferred to  
13 that program. Contractors, subcontractors, and company employees can and frequently work  
14 on integrated teams that will benefit information sharing, make the organization more  
15 productive/efficient and produce “team” results to benefit the customers. In other industries  
16 these are called Integrated Product Teams (IPTs) which are “product” or, in this case,  
17 program-oriented objective performance tasks, doing the same tasks with others doing similar  
18 tasks, using similar training facilities and equipment and common tools and processes.  
19 Unfortunately, UNSE is not ISO 9000 certified, thus is unaware of process management,  
20 improvement and self-correcting process performed by process mature companies.

21 Subcontractor Expenses of \$35,952 are not appropriate. UNSE is self-managing this  
22 program. No subcontractor expenses are necessary. UNSE expenses in all areas remain as  
23 proposed. See Table 4 in the Magruder Direct Testimony for these “subcontractor” expenses.

24 This program’s total budget an additional \$20,000 for 17 and 18 SEER air conditioner-  
25 heat pump rebates. UNSE DSM Programs does not provide any rebates to these most  
26 efficient air conditioners and heat pumps. The Rebuttal does not want any incentives. Further,  
27 UNSE Rebuttal would only escalate above \$100/ton for 17/18 SEER units “if the Commission  
28 wishes.” The Company should be active and propose not wait for such obvious direction over  
29 a logical decision. As a minimum, \$100/ton is more reasonable than \$0 for the most efficient  
30 air conditioners on the market, and the kinds of units The Solar Store in Tucson recommends  
31 be installed to reduce solar electricity capital costs.

32 UNSE is concern reporting savings in “therms” violates the “fuel neutrality” clause in  
33 the “first draft” ACC Staff DSM Report. Savings of any/all forms should be reported, including  
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<sup>29</sup> UNSE DSM Programs, Attachment 5, “Residential HVAC Retrofit Program”

1 "therms" which has been included by UNSE for the "Residential New Construction Program"  
2 in 3.8 below. The "therms" do not have to be used in the "cost benefits analysis" but should be  
3 recorded to benefit and/all accomplishments by UNSE in its DSM Program.

4 **Q. Do you want to change your Residential HVAC Retrofit Program Recommendations?**

5 **A.** No. UNSE was concerned about the \$12,000 internal marketing budget transfer and deletion  
6 of subcontractor expenses when a subcontractor does not exist remain.

7 Recommended items 2 and 3 add new 17 and 18 SEER incentives, as none exist now,  
8 and continue to report saved "therms," if and when applicable.

9 Recommended item 3 remains as is.

10 Thus, no recommended items were changed.

11 **Q. Does this complete your response to "Residential HVAC Retrofit DSM Program"?**

12 **A.** Yes.

13  
14 **Q. Could you respond to UNSE concerns about the "Shade Tree DSM Program"?**

15 **A.** Yes. I will briefly describe any differences and resultant recommendations in 3.7.

16 **3.7 Shade Tree Program.**<sup>30</sup>

17 **Q. Do you agree with the UNSE Rebuttal comments on the energy and demand savings**  
18 **value the proposed "Shade Tree Program?"**

19 **A.** No.

20 **Q.** Does the UNSE Rebuttal disagree with Mr. Magruder's Direct Testimony?

21 **A.** Yes. The UNSE Rebuttal indicated the Magruder Supplemental stated UNS Electric "does  
22 not have an assessment of the impact of reducing loads or energy savings through shading  
23 from trees."<sup>31</sup> UNSE Direct Testimony stated "UNSE does not currently have a baseline  
24 assessment of the applications of trees to reduce cooling loads, nor an estimate of the energy  
25 savings potential of reducing cooling loads through shading from trees."<sup>32</sup> The quote is from  
26 UNSE DSM Programs "Shade Tree Program" and confirms to my Supplemental Testimony.

27 The UNSE Rebuttal cites Appendix 3 of the Shade Tree Program which is for "Trees of  
28 high shade yield, medium to large sized."<sup>33</sup> This assumption is erroneous because the two  
29 trees selected, native, local Palo Verde and Mesquite, are NOT "trees of high shade yield".  
30 Non-native, non-local trees are prohibited by a Santa Cruz County Ordinance.

31 a. Palo Verde. From an Arizona poster there is an excellent description of Palo Verde,  
32

33  
34 <sup>30</sup> UNSE DSM Programs, Attachment 6, "Shade Tree Program"

35 <sup>31</sup> D. Smith Rebuttal, page 20, lines 8 to 10 and Magruder Supplemental, page 33.

<sup>32</sup> *Ibid.* page 1 under Current Baseline Conditions.

<sup>33</sup> *Ibid.* Appendix 3, "Measure Analysis Worksheet," page 12, lower left corner.

1 "The 'Palo Verde' (genus *Cercidium*) is Arizona's state tree. The name  
2 means 'Green Stick' in Spanish. During much of the year these trees are  
3 leafless, the green bark of the trunk and branches takes over the function of  
4 photosynthesis."<sup>34</sup>

5 b. Mesquite. See my Direct Testimony for non-qualifying factors for this tree.<sup>35</sup>

6 Further, the Shade Tree Program contains energy savings data with faulty  
7 assumptions, for non-qualifying "shade tress" have a benefit/cost ratio of 1.07 with a payback  
8 in 0.4 years. This fails any "common sense" test for reasonableness.

9 A 15-gallon tree is not medium to large sized as assumed in Appendix 3. A 15-gallon  
10 tree will cost at least \$100 per tree to have a backhoe dig the hole to plant (calicle clay below  
11 the soil prevents digging with a pick and shovel), \$15 or more for mulch per tree, and at least  
12 15 or more years of water to mature while increasing the fire hazard each year.

13 The \$35 overhead expenses for a \$30 coupon are ridiculous and a waste of  
14 ratepayers' funds. This fails all prudence test considerations.

15 A larger overhanging roof or porches on East, South, and West sides prevents sun  
16 from reaching walls and windows.<sup>36</sup>

17 As stated in both my Direct and Supplemental Testimonies, cost greatly exceeds  
18 benefits for this program and is the primary reason for rejection. If overhead costs were less  
19 than \$5 per coupon, which is still excessive, this program might have some merit as a  
20 corporate marketing effort and not chargeable to ratepayers but not as a ratepayer-funded  
21 DSM program.

22 The UNSE Rebuttal made my negative recommendation even stronger. This is an  
23 unworthy program without UNSE ratepayer benefits worth but a fraction of the high UNSE  
24 administration costs.

25 **Q. What is your response to the UNSE Rebuttal about "field verification" of shade trees?**<sup>37</sup>

26 **A.** Apparently UNSE misunderstood my testimony that stated this program "has a repeated and  
27 not relevant section on Monitoring and Evaluation. It is not expected that UNSE field  
28

29 <sup>34</sup> Waldmire, Robert, "A Poster of Arizona," Springfield IL: Frye-Williams Press, ca 1985.

30 <sup>35</sup> Magruder Direct Testimony, in paragraphs 3.7(1) on pages 34 and 35, also in 3.7e(2) on page 35, the fire  
31 danger is discussed. The mesquite is especially prone to "shedding" branches and limbs during periods of  
32 drought as a way to reduce its water needs. These dead branches are very dry and flammable, thus to be  
33 FIREWISE, they should not be planted within 30-feet of homes, especially in rural areas, where wild fires are  
34 a significant and real treat.

35 <sup>36</sup> My home was designed to have various energy efficiency measures that include a 10-foot porch around the  
36 south and west walls and over 50% of the east wall to keep sun off walls and windows during periods when  
37 solar radiation is highest. In the winter, when the sun's declination is below the Equator, sunrays reach the  
38 South wall and near winter solstice, rays reach the lower part of my southern windows, with minor warming  
39 benefits. Trees can be unnecessary for energy efficient designed homes.

40 <sup>37</sup> D. Smith Rebuttal, page 20, lines 18 to 27.

1 personnel will check customer's yards to verify UNSE 'shade trees'.<sup>38</sup> I NEVER expected  
2 any "field verification" would even be considered for such a program. The Rebuttal comment  
3 for repeated statement for "field verification" of shade trees is a waste of manpower and  
4 financial resources for a \$30 rebate coupon. The UNSE Rebuttal went to great length to justify  
5 because the "first draft" ACC Staff DSM Report required "field verification", thus "UNS Electric  
6 will conduct field verification of the installation of a sample of measures throughout the  
7 implementation of the program" is an example of blindly following a "first draft" rule instead of  
8 requesting another way or a waiver for this program. This fails the common sense test.

9 Field verification will be nearly impossible to verify if "that tree" is the tree that a rebate  
10 coupon was requested, approved and sent to a ratepayer so the tree can be purchased, hole  
11 dug, planted, watered and the tree lived. What about the 30% not expected to survive, do they  
12 have to be verified? Wow, all for a \$30 coupon! If this program is deleted, as recommended,  
13 this waste of MY DSM Adjustor payments will be eliminated. It should go for a "real" program.

14 **Q. Do you have any other responses to this "Shade Tree Program"?**

15 **A. Yes. The UNSE Testimonies and DSM Plan includes two statements:**

- 16 a. "If community projects wish to take advantage of incentives to plant trees, UNSE would  
17 not object."<sup>39</sup>  
18 b. "Desert-adapted trees will be provided to residential neighborhoods, public areas, and  
19 schools by UNS Electric base upon an application with interested community agencies or  
20 marketing by retailers."<sup>40</sup>

21 This says the UNSE Shade Tree Program will supply trees to

- 22 (1) Neighborhoods,  
23 (2) Public areas,  
24 (3) Schools,  
25 (4) Interested community agencies or  
26 (5) Marketing by retailers.

27 NONE meet the specified requirements in the Shade Tree Program "Delivery Strategy  
28 and Administration".<sup>41</sup>

29 How can UNSE justify using the ratepayers DSM Surcharge Adjustment fees for ANY  
30 of these 5 (or more) distributions. The "or more" is inserted because one implementation  
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32  
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34 <sup>38</sup> Magruder Direct Testimony, in paragraph 3.7d, on page 34, under Program Performance Measurement.

35 <sup>39</sup> UNSE DSM Programs, Attachment 7, Program Concept and Description", page 1.

<sup>40</sup> Ferry Direct Testimony, page 21, lines 6 to 11.

<sup>41</sup> UNSE DSM Programs, Attachment 7, pages 2 and 3, and Appendix I, page 6.

1 model steps states "UNSE modify the Shade Tree program as necessary"<sup>42</sup> This does not  
2 require Commission approval.

3 This program, used for years by TEP, is a corporate "marketing" program that is trying  
4 to obtain ratepayer funding. The TEP rules are unknown, but this one for UNSE fails.

5  
6 **Q. Do you want to change your "Shaded Tree Program" Recommendations?**

7 **A. No.** [The UNSE Rebuttal states "UNS Electric believes the Shade Tree program provides  
8 significant energy and environmental benefits to customers." This "belief" just is not true."<sup>43</sup>

9 The UNSE "Shade Tree Program" is not recommended for DSM Surcharge Adjustor  
10 ratepayer funding. IF the company wants to distribute "trees" or "coupons" to any of these five  
11 (or more), that is fine, but not at ratepayer expense as none qualify under this program.

12  
13 **Q. Could you respond to the "Commercial Facilities Efficiency DSM Program" concerns?**

14 **A. Yes.** I will briefly describe any differences and resultant recommendations in 3.8.

15 **3.8 Commercial Facilities Efficiency DSM Program.**<sup>44</sup>

16 UNSE is concerned that I assumed all participants receive the maximum rebate in Conclusion  
17 item 1. This was used for illustrative purposes and in no way was intended to limit this, the  
18 best DSM program proposed, as I recommended additional participation and funding. There  
19 was no discussion of an incentive "cap to prevent one or two customers from consuming the  
20 entire" program budget.

21 In response to providing copies of proposed proposals, agreements and report formats  
22 for this program, UNSE stated, "these have not been developed but will be in the coming  
23 months for the Commission approval." Does this imply the UNSE DSM program, which is on  
24 the "fast track" for Commission review and approval will be delayed until UNSE completes  
25 basic program information required for approval?

26 **Q. Do you want to change your "Commercial Facilities Efficiency DSM Program"**  
27 **Recommendations?**

28 **A. No.** My five recommendations are valid and remain as in my Testimonies. In my opinion, this is  
29 a best DSM program being presented in the UNSE DSM Plan.

30 **Q. Do you have any responses to UNSE's concern about the DSM Surcharge Adjustor?**

31 **A. Yes.** Each program's DSM Surcharge Adjustor factor equals the ratio of the Test Year total  
32 energy load in kWh<sup>45</sup> divided by the DSM Program Cost for the year. The sum of each DSM

33  
34 <sup>42</sup> *Ibid.* Appendix 1, page 6, Implementation Model.

35 <sup>43</sup> D. Smith Rebuttal, page 21, lines 1 to 6.

<sup>44</sup> UNSE DSM Programs, Attachment 7, "Commercial Facilities Efficiency Program"

1 Program's DSM Adjustor factor equals the annual DSM Surcharge Adjustor rate for  
2 ratepayers. All ratepayers will be assessed at the same DSM Adjustor rate for the year. Each  
3 year, this should be repeated, using the above process, and, after review and approval by the  
4 Commission, the next years DSM Surcharge Adjustor rate implemented for all ratepayers.  
5 This process must be clear, verifiable, and transparent.

6 During each year, USNE will report the details to monitor each DSM Program, the  
7 derivation of the program's semi-annual cost, and for the end of the year, the Total DSM  
8 Program financial and performance results. If excess DSM revenue is collected from the  
9 effective DSM Surcharge Adjustor, this excess is subtracted from the next year's cost for that  
10 DSM Program, before calculating the next year's DSM Surcharge Adjustor factor.

11 During the semi-annual DSM program ACC Staff reviews, USNE should be required to  
12 report at least the semi-annual cost-to-date for each DSM program and if the cost minus  
13 revenue will positive or negative for each program. All excess DSM funds should be  
14 expended in the next year's DSM Surcharge Adjustor process above. If USNE has overspent  
15 (negative excess), the ACC Staff should recommend how UNSE will compensate for  
16 overspending to the Commission during the Annual DSM Review for a decision.

17 Further, when any claims for lost revenue are made "the Commission shall determine  
18 whether a utility may be allowed to recover lost net revenue"<sup>46</sup> by the Commission during the  
19 Annual DSM Review. In addition, the utility will probably reduce its expenses based on the  
20 results of various DSM Programs. The reduction must be considered by the Commission  
21 during each Annual DSM Review. Any expense savings by the Company should be an  
22 important decision factor when the Commission determines the Annual DSM Surcharge  
23 Adjustor rate.

24 **Q. Do you have any changes to your Recommended DSM Adjustor Surcharge?**

25 **A.** Yes. The return of \$2550 in the LIW program was removed due to a reporting error by UNSE. Table 2  
26 (Rev) reflects the DSM Adjustor with this correction.

27 **3.9 DSM Summary of DSM Costs and Recommended DSM Adjustor Surcharge.**

28 The proposed and recommended 2008 cost for each DSM program with the calculated DSM  
29 Surcharge Adjustor factors for that DSM Program are in Table 2(rev). It also shows the total  
30 cost for the USNE DSM Programs and recommended DSM Surcharge Adjustor for each  
31 recommended DSM program.

32  
33 <sup>45</sup> The Test Year total energy was 1,606,376,387 kWh from UNSE Response to ACC Staff data request STF  
34 13.14.

35 <sup>46</sup> ACC Staff's First Draft of Proposed DSM Rule, Exhibit 1, Draft Demand-Side Management Rules, R14-2-  
1709.B which states "The Commission shall determine whether a utility may be allowed to recover lost net  
revenue."

**Table 2 (Rev). Cost of Proposed and Recommended Cost of UNSE DSM Programs with the DSM Surcharge Adjustor.**

DSM Programs for 2008	Proposed (3)		Recommended (3)	
	Program Cost (100%)	DSM Adjustor <sup>47</sup>	Program Cost (100%)	DSM Adjustor
DSM Education and Training (1)	\$170,000	0.00010517	\$318,205	0.00019809
Direct Load Control DSM Program	1,968,000	0.00122512	1,843,000	0.00114730
Low-Income Weatherization DSM Program (2)	105,000	0.00006536	99,896	0.00006225
Residential New Construction DSM Program	420,000	0.00026146	398,076	0.00024781
Residential HVAC Retrofit DSM Program	300,000	0.00018676	272,046	0.00016935
Shade Tree Program	65,000	0.00004046	0	0.0
Commercial Facilities Efficiency DSM Program	400,000	0.00024901	493,289	0.00030708
<b>Total</b>	<b>\$3,428,000</b>	<b>0.00213334</b>	<b>\$3,424,512</b>	<b>0.00213188</b>

Note 1. The title was changed, as recommended to ensure DSM funding for ALL Education & Training activities are in this program.

Note 2. Add \$2,550 to program to Recommended program cost.

Note 3. The Proposed and Recommended Program Costs are 100%. Company requested 25% of costs plus 100% of the LIW.

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If the Proposed 2008 Program was implemented, the 2008 DSM Adjustor rate would be 0.00213334 so UNSE could recapture the total cost of \$3,428,000 in the second column.

If the Recommended 2008 Program is implemented the 2008 DSM Adjustor rate would be 0.00213188 so to recapture the total cost of \$3,424,512 in the fourth column.

UNSE requested first year DSM Surcharge Adjustor to fund 25% of DSM Programs except LIW is funded at 100% for a study and DSM Program Surcharge Adjustor start later.

Using this formula, the Proposed cost for the 2008 DSM Program is **\$935,750** [(total/4 + 3xLIW/4)] (857,000+78,750). The Proposed DSM Surcharge Adjustor rate is **0.00058236** (0.00053333+0.00004902),

The Recommended 2008 Program Cost is \$934,878 (856,128 + 78,750) + \$2,550 for the LIW Program = **\$937,428**. The Proposed Cost of the 2008 DSM Program was \$950,000.

The Recommended 2008 DSM Surcharge Adjustor rate is **0.00057966** (0.00053297+0.00004669) per kWh. The proposed DSM Surcharge Adjustor rate was 0.00059 per kWh.<sup>48</sup>

**Q. Does the complete your DSM testimony.**

**A. Yes.**

<sup>47</sup> DSM Adjustor is calculated using same method in the UNSE Response to ACC Staff data request STF 13.14, by dividing cost by the test year adjusted kWh 1,606,376,397.

<sup>48</sup> Direct Testimony of James S. Pignatelli on behalf of UNS Electric, Inc., of 15 December 2006, hereafter "Pignatelli Direct Testimony" at 15.

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**Part IV – ISSUE 2**  
**ADMINISTRATIVE ISSUES**

Q. Are there any changes to this group of administrative Issues?

A. No. There are several sub-issues, and for clarity, identified as follows:

- a. Sub-Issue 2.1, Changes in "Connect" Fees (deleted earlier)
- b. Sub-Issue 2.2, Billing Schedules
- c. Sub-Issue 2.3, Predatory Loan/Check Cashing Facilities as Billing Agents
- d. Sub-Issue 2.4, Revised Billing Statement
- e. Sub-Issue 2.5, R&R Publication.

4.1 **Rebuttal Testimony Responses to these Administrative Issues.**

Sub-Issue 2.1 – Not at issue in this UNSE case (deleted)

Q. Do you have any responses related to Mr. Ferry's Rebuttal Testimony on Billing?

A. Yes, however he did not respond to my Testimonies. Let me discuss the issue then respond.

Sub-Issue 2.2 – Billing Schedule.

UNSE proposed to reduce the time between Bill Due and Termination to "avoid confusion for customers served by both UNS Electric and UNS Gas."<sup>49</sup>

- a. The Company's proposal is to change the interval from Bill Due to Delinquent from 15 days to 10 days.<sup>50</sup> A review of A.A.R., R14-2-210.C.1 states "All bills for utility services are due and payable no later than 15 days from the date of the bill. Any payment not received within this time-frame shall be considered delinquent and could incur a late payment charge." This is a unique interpretation of the A.A.R.
- b. The Company's proposal is to change the interval from when a Bill becomes Delinquent to the start of the Termination Process from 7 days to 5 days.
- c. The Company issues a "Suspension of Service Notice" 15 days after the bill is rendered. The A.A.R. does not discuss a "Suspension of Service Notice," only a "Termination Letter". If they are the same, the proposed Timeline below for Termination becomes 20 days instead of 25 days, a 12 day reduction from the 37 days after billing to termination.

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<sup>49</sup> Rebuttal Testimony of Thomas J. Ferry on Behalf of UNS Electric, 14 August 2007, hereafter "**Ferry Rebuttal**" page 2,

<sup>50</sup> Direct Testimony of Thomas J. Ferry on Behalf of UNS Electric, 15 December 2006, hereafter "**Ferry Direct Testimony**," Exhibit TJF-1, relined page 82, Section 11.C.1, which states. All bills for electric service are due and payable no later than ten (10) days from the date the bill is rendered. Any payment not received within this time frame will be considered past due." [underlined were the changes, "fifteen (15)" and "shall" in original]

d. It is possible for a customer to have their service terminated as early as 20 (or 25) days after the Bill is mailed and also due, which can vary between 25 and 35 days after prior bill. Within a ten day billing window, and a twenty day schedule, customer financial planning for monthly wage checks becomes very challenging for lower-income ratepayer.

**THE PRESENT TIMELINE OF BILLING EVENTS:**

Day -1 to 0 Meter is read, reported to the Company (between 25 and 35 days after prior reading)  
 Day 0 Billing Date, when the bill is rendered (considered when mailed), the Bill is Due  
 Day 15 (15 days after Due) Bill is Past Due  
 Day 25 (10 days after Past Due) Bill is Delinquent, Payment Penalty starts<sup>51</sup>  
 Day 30 Late Penalty (1.5%/month) starts for all account balances 30 days after postmark of account bills  
 Day 32 (7 days after Delinquent) Termination Process begins  
 Day 37 (5 days after Termination letter is mailed, Earliest Termination

**THE PROPOSED TIMELINE OF BILLING EVENTS:**

Day -1 to 0 Meter is read, reported to the Company (between 25 and 35 days after prior reading)  
 Day 0 Billing Date, when the bill is rendered (considered when mailed), the Bill is Due  
 Day 10 (10 days after Due) Bill is Past Due  
 Day 15 (15 days after Due) Bill is Delinquent, Payment Penalty starts and is payable on a monthly basis, Suspension of Notice letter is sent  
 Day 20 (5 days after Delinquent) Termination Process starts  
 Day 25 (5 days after Termination Letter mailed), Earliest Termination

The A.A.R. billing schedules are inconsistent as shown in Table 3(Rev). A typical credit card timeline is added for a comparison. Mr. Ferry's goal to "avoid confusion" is not possible if the A.A.R. billing schedule requirements are followed as the minimum times between events.

**Table 3 (Rev) – Comparison of Present and Proposed Billing A.A.C. Schedules for Various types of Utilities.**

Type of Utility	Billing Due (Mailing Date)*	Past Due or Delinquent (days after Billing Due)	Termination (days after Past Due)
Electricity	0	+15 days	+5 days after letter
Natural Gas	0	+10 days	+5 days after letter
Water	0	+15 days	+10 days after letter
Telephone	0	+15 days	+7 days after Past
Sewage	0	10 for Past Due	+15 to Start Term. + 5 days after letter
Credit Card	Purchased up to 31 days before	+20 days	Between 21 and 51 days after purchase

\* There is a technical definition of when "deemed" but when mailed is mostly accurate.

It is recommended that:

<sup>51</sup> This schedule concurs the Ms Diaz Cortez "Direct Testimony on Behalf of RUCO," of 28 June 2007, hereafter "Cortez Direct Testimony"

1 (1) That Past Due dates conform to the A.A.R., using 15 days after Billing date.

2 (2) That all proposed billing schedule changes be denied.

3 **Q. What is your response to Mr. Ferry's Rebuttal on billing rule?**

4 **A.** Mr. Ferry Rebuttal of Ms Diaz Cortez Direct Testimony stated "the bill date to reminder notice  
5 being mailed is unchanged at 25 days."

6 Mr. Ferry failed to respond to my Supplemental Testimony, mostly repeated above, so  
7 it is not lost as this case continues.

8 **Q. Do you have any changes to your recommendations concerning Billing?**

9 **A.** No. Each of my two recommendations remains as stated in my Supplemental Testimony

10 (1) Conform to the A.A.R. billing date of 15 days and thus will not be consistent with UNS  
11 Gas and

12 (2) Do not make any changes to the UNSE Rules and Regulations (R&R) on this issue.  
13

14 **Q. Do you have any comments about UNSE Rebuttal concerning Billing Agents?**

15 **A.** Yes. My Testimony has been ignored by all UNSE Testimonies to date. It is summarized as  
16 sub-issue 2.3.

17 **Sub-Issue 2.3 - Predatory<sup>52</sup> Loan/Check Cashing Facilities as Billing Agents.**

18 See Exhibit B of my Direct Testimony provides the basis, discussion and recommendations  
19 to the proposed changes in billing statements. UNSE refers ratepayers to these facilities  
20 hired as UNSE billing agents to pay in person by cash "at multiple 'ACE Cash Express  
21 Stores" or an "OK Quick Cash" facilities located throughout the UNS Electric service  
22 territory."<sup>53</sup> It is not appropriate to use possible predatory loan/check cashing facilities as  
23 UNSE billing agents for lower income ratepayers to pay their bills in "cash" since most do not  
24 have a bank account and also will have to pay a "check-cashing" commission to "cash" their  
25 paycheck in order to pay their bill in cash.

26 No changes in Testimony or recommendations are necessary. Enclosure B-3 in my  
27 Supplemental Testimony provides the present UNSE Payment Agents for making cash-only  
28 bill payments. The UES website lists 12 ACE Cash Express and one QA Quick Cash  
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30  
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32 <sup>52</sup> In this sub-issue, "predatory" is used for quick loan facilities that charge more than 30% per annum for  
33 loans. Most of these facilities have annual loan rates around 400% per annum. As provided in my Initial  
34 Testimony, the recommended Regulatory Agency rules permitted loan facilities to be billing agents when  
35 the annual loan interest rate is 30% or lower, recently enacted by Congress as the maximum for service  
personnel.

<sup>53</sup> Ferry Direct Testimony, page 8.

1 facilities.<sup>54</sup> Enclosure B-4 provides how one could pay their bill online with a bank withdrawal  
2 or with a credit or debit card with a third-party administration fee of \$3.95 per payment.

3 The Recommendations in Exhibit B remain unchanged:

4 (1) Do not allow payday loan organizations as payment agents. [I have read in the  
5 news articles that TEP, APS and SW Gas have stopped using payday loan  
6 companies as billing agents. UES (UNSE, UNSG) has not made a known public  
7 statement. I will keep pressing for this change until verified, when UES's  
8 WebPages and billing statements are changed and these "billing agents" have  
9 been removed.]

10 (2) Do not require any fees for online bill payments including credit card charges.<sup>55</sup>

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12 **Q. Did the UNSE Rebuttal respond to your Revised Billing Statement recommendations?**

13 **A.** No. My Testimony on this issue has been ignored by UNSE. It is summarized as sub-issue 2.4.

14 **Sub-Issue 2:4 – Revised Billing Statement.** See Exhibit B for detailed recommendations to  
15 changes proposed to the billing statement sent monthly to UNSE ratepayers. No changes in  
16 Testimony or recommendations from that in Exhibit B are necessary.

17 There were fourteen detailed recommendations to revise a new billing statement  
18 format presented in the UNS Gas Rate Case as found in Exhibit B. Since billing statements  
19 for UNSG and UNSE are similar, these same detailed recommendations apply.

20  
21 **Q. Did the UNSE Rebuttal respond to your Rules and Regulations document  
22 recommendations?**

23 **A.** NO. My Testimony has been ignored by UNSE Testimonies to date. My testimony is  
24 summarized as sub-issue 2.5.

25 **Sub-Issue 2.5 – R&R Publication.** See Exhibit B and specific recommendations to publish the  
26 ACC-approved UNSE Rules and Recommendations (R&R). No changes to the Magruder  
27 Direct Testimony or recommendations in Exhibit B are necessary.

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34 <sup>54</sup> See [www.uesaz.com/Customersvc/PaymentOptions/Agents.asp](http://www.uesaz.com/Customersvc/PaymentOptions/Agents.asp) (verified 9 July 2007)

35 <sup>55</sup> See [https://secure3.i-doxs.net/unisource/OneTime\\_Add\\_UniElec.asp?Ac](https://secure3.i-doxs.net/unisource/OneTime_Add_UniElec.asp?Ac) (assessed via UNSE website,  
verified 9 July 2007)

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Part V – ISSUE 3

Costs to Improve Electricity Reliability  
in the Santa Cruz Service Area<sup>56</sup>

5.1 Reliability Cost Issues in the Santa Cruz Service Area.

Q. Why are Reliability Issues in Santa Cruz Service Area important in this rate case?

A. As a long-term issue, expenses to rectify reliability issues impact the Company's costs and thus impact rates. As a customer, this directly impacts my bill. This cost issue is also long standing in the context of original reliability problems, ACC reviews, Settlement Agreements, ACC Orders, and compliance verification.

Q. Are you satisfied with UNSE Rebuttal and its response to this issue?

A. Absolutely Not. The two-page UNSE Rebuttal shows a lack of UNSE understanding of these issues<sup>57</sup> and the "cost" consequences for UNSE and/or its ratepayers. UNSE's inactions or incomplete actions are presented in some detail in my Surrebuttal Testimony.

Q. Why do you claim this UNSE response did not understand the importance of your Testimony?

A. My testimony present objective and referenced evidence that two settlement agreements and at least a half-dozen ACC Orders have not been completed or implemented, as required. All of these requirements are related to improving reliability or are the consequences of poor reliability in the Santa Cruz service area. Failing to comply/complete and not met agreements, is not acceptable corporate behavior. This must be considered in this rate case because the Company should not have a higher rate base for claiming such expenses.

Q. Are you implying that because of failure to complete agreements and Commission Orders some expenses or costs should be removed from the rate base?

A. Exactly. Some of these expenses are "soft" expenses, such as facilitating the Citizens Advisory Council and others are "hard" expenses with associated dollar objective measures.

Q. Can you expand this answer with some examples?

A. Yes. But first, let me be clear on one point.

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<sup>56</sup> Magruder Supplemental Testimony, Part V, Issue 3, Costs to Improve Electricity Reliability in the Santa Cruz Service Area, pages 22 to 49 inclusive.

<sup>57</sup> Rebuttal Testimony of Edmond A. Beck on Behalf of UNS Electric," of 14 August 2007, hereafter "**Beck Rebuttal**" His testimony indicates the issue in my testimony is reliability has already been "litigated." This is no true, as the Santa Cruz reliability hearings, the re-opened ACC Docket No, E-01032-99-0420 remains open and there has been no decisions made in this regard. Further, during those hearings and Case No. 111 Line Siting hearings, whenever "cost" was discussed, the Company objected and said cost was not relevant to the issue and to defer all cost issues to the next Rate Case which is now.

1 In my view, the electricity services provided in this service area are continuous. Some  
2 agreements and orders were made during the Citizens' era continues in full force today as  
3 UNSE obligations and are unchanged (except for the company's name and address) to UNS  
4 Electric. These reliability-related agreements and ACC Orders were not modified in any other  
5 way on 11 August 2003. Corporate "amnesia" is an unacceptable excuse for broken promises  
6 and agreements made earlier, in some cases, by the same Citizens' employees then; and are  
7 now, UNSE employees in the same positions.

8 **Q. What is your first example of an agreement that remains incomplete?**

9 **A.** As testified, the first was the City of Nogales-Citizens Settlement Agreement approved and  
10 implemented by an ACC Order as "liquidation of damages" because of poor service.<sup>58</sup> Parts of  
11 it have not been completed and remain open. My Supplemental Testimony provides these  
12 details and are summarized under the below headings:

- 13 a. Santa Cruz Economic Development.<sup>59</sup>
- 14 b. Funding Four-year Scholarships/Loans<sup>60</sup>
- 15 c. Create a Citizens Advisory Council<sup>61</sup>
- 16 d. Determine the order of circuits after Transmission Outages<sup>62</sup>
- 17 e. Develop a Mutually Acceptable Service Upgrade Plan<sup>63</sup>
- 18 f. Establish a Mutually Acceptable Franchise Agreement<sup>64</sup>

19 **Q. How important was this agreement to the ratepayers and local government?**

20 **A.** The City, which also was acting for customers in the County, was so displeased with  
21 electricity service it terminated its 25-year franchise agreement with Citizens and it filed a  
22 Formal Complaint to the Commission, both actions considered as evidence of their position.  
23 After a long series of negotiations including using the good offices of the ACC Staff, a  
24 settlement agreement was approved by the City Council and incorporated in an ACC Order.

25 **Q. Why is completion of these still important?**

26 **A.** First, they were mandated as compensation for poor service. Second, each was a mitigation  
27 element considered vital to permit this utility to continue operations. Third, each had defined  
28 and important benefits as compensation for poor service. Fourth, completion improved  
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32 <sup>58</sup> Magruder Supplemental Testimony, page 23 line 28 to page 26 line 3.

33 <sup>59</sup> *Ibid.* page 24, lines 1 to 11.

34 <sup>60</sup> *Ibid.* page 24, lines 12 to 18.

35 <sup>61</sup> *Ibid.* page 24, line 19 to page 25 line 6.

<sup>62</sup> *Ibid.* page 25, lines 7 to 17.

<sup>63</sup> *Ibid.* page 25 lines 18 to 24.

<sup>64</sup> *Ibid.* page 25 line 25 to page 3.

1 cooperation, public relations, service, and fulfilled needs. Data request to UNSE for details  
2 were denied.

3 **Q. Why is cost important for the Citizens-City of Nogales agreement?**

4 **A.** Most of these mandated actions were "soft" with respect to dollars except one. The annual  
5 four-year scholarship was for \$3,500.<sup>65</sup> This "Citizens" or now "UNSE" scholarship/loan would  
6 be one of the largest in the County. It was designed specifically to have recipients return to  
7 the county and work, thus improving the community educational level. Our County, with 19.4%  
8 of the adult population with less than a ninth grade education, needs local college graduates.  
9 In fact, I demand this scholarship be implemented.

10 **Q. What about the second agreement?**

11 **A.** This is the ACC Staff-Citizens Settlement Agreement<sup>66</sup> that implemented a series of specific  
12 and detailed reliability improvements. A summary of some details is in the Supplemental  
13 Testimony.<sup>67</sup> A few are easy for a local ratepayer to track and determine completion, which  
14 include replacement of past-lifespan utility poles and replacement of known defective and  
15 improperly installed underground cables. There were specific detailed projects for pole and  
16 cable replacement, with dollars and number of poles/feet of cable to be replaced. Some was  
17 accomplished; however, I know much was not. Some of these projects over-ran their budget  
18 or required more poles or cable. These provide quantifiable compliance measures.

19 **Q. With respect to the ACC-Staff Settlement Agreement, what was your recommendation?**

20 **A.** The known and approved total cost for both poles and cable replacements is removed from  
21 the rate base. Therefore, for pole replacements \$9,155,000 and for cable replacement  
22 \$6,406,520 should be removed from capital expenses attributable for work accomplished by  
23 this Company in this rate case.<sup>68</sup>

24 **Q. How should the removal of this \$15,565,520 be done in this Rate Case?**

25 **A.** I have not claimed to be an expert on how to accomplish this kind of reduction in allowed  
26 expenses; however both the ACC Staff and RUCO have the requisite skills in this area, I am  
27 sure there are procedures to remove these expenses from that claimed by the Company.

28 **Q. Are there other issues that involve the ACC Staff-Citizens Settlement Agreement?**

29 **A.** Yes. This involves the second transmission line mandated by ACC Order No. 62011, which  
30 was required to be operational on or before 31 December 2003, of a \$30,000 per month  
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34 <sup>65</sup> *Ibid.* page 24, lines 12 to 18.

35 <sup>66</sup> *Ibid.* page 26, line 4 to page 35, line 12.

<sup>67</sup> *Ibid.* page 23, line 14 to page 35, lines 12.

<sup>68</sup> *Ibid.* page 34, line 24 to page 35, line 13.

1 penalty would be assessed.<sup>69</sup> A TEP-Citizens Project Development Agreement (PDA) for this  
2 project was included within the Joint TEP-Citizens Application for a CEC by the Siting  
3 Committee in Case No. 111, transferred all responsibility for development, design and  
4 construction from Citizens to TEP and included other second line alternatives than that  
5 proposed to ensure a second line would be in place prior to the operational date in ACC Order  
6 No. 62011. The agreements in this PDA also have not been met. No development efforts  
7 presently exist.

8 These unanswered questions that impact rates are many but without a project that  
9 complies with this PDA they are not known. This PDA also specified the maximum cost for  
10 Citizens (now UNSE) with TEP absorbing the remainder. Again, another "promise",  
11 agreement, and ACC Order No. 62011 of 2 November 1999 compliance remains incomplete.

12 **Q. You testified about this second transmission line and made some recommendations?**

13 **A.** The existing proposal for a 345 kV transmission system will probably never be constructed to  
14 be the second transmission line required by ACC Order No. 62011. The existing CEC for a  
15 345 kV system will be mute.

16 UNSE should be ordered to cancel its participation in that project, substitute another  
17 for the second transmission line CEC Application, and get started on a fresh approach. These  
18 alternatives were presented in my Testimonies in the re-opened ACC Docket No. E-01032C-  
19 88-0420; which resulted in ACC Order No. 62011.

20 Further, all future expenses pursuing the TEP 345 kV project should not disallowed in  
21 any future rate cases. Note, the 345 kV project is a TEP project and not a UNSE project.

22 **Q. Are there any ACC Staff recommendations for expenses incurred under the ACC Staff-  
23 Citizens Agreement?**

24 **A.** Not yet. When these expenses eventually do come to light, the Commission is on record in  
25 the ACC Decision No, 62011, that some expenses prior to November 1999 may not be  
26 appropriate.

27 The ACC Staff has not presented these inappropriate expenses during this rate case.

28 **Q. Did the Beck Rebuttal questions your understanding of turbines and electricity  
29 operations?**

30 **A.** Yes. One of these two pages concerned his ignorance about my turbines, generators, and  
31 complex, dynamic electrical system experiences in the past 40 years. I will respond to each  
32 detail of the UNSE Rebuttal.

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<sup>69</sup> *Ibid.* page 28, line 11 to page 29 line 24, page 35 line 14 to page 45 line 22.

1 Q. Is Mr. Beck off base when it comes to understanding your background and experience  
2 with electricity systems?

3 A. Yes. I will discuss this in terms my undergraduate, mid-grade officer, graduate, post-  
4 graduate, industry, and post-industry relevant training and educational experiences he  
5 overlooked from my resume in Exhibit A of my Direct Testimony.

6 My undergraduate education at the United States Navel Academy was under the "old"  
7 system. This system was a comprehensively managed educational program to cover theory,  
8 knowledge, and practical applications of that knowledge with practical hands-on experiences  
9 during summer cruises. We had courses on the thermodynamic properties of steam,  
10 mechanical systems, electric and steam turbines, total ship system design with ship electrical  
11 systems integrated into equipment operation under normal, casualty, and emergency modes  
12 of operation found in combat. We designed "gas-turbine' powered ships (all cruisers,  
13 destroyers and frigates in the US Navy today use gas-turbines). all-electric drive ships, and  
14 each with performance cost-benefits determined during each design phase. Our two-years of  
15 electrical engineering were intensive with demanding "practical works' or laboratory analytical  
16 drills. Our summer cruises where challenging and planned knowledge-to-skill experiences.  
17 The first summer, was eight-weeks of hands-one engineering training in boiler to steam,  
18 steam to steam and electrical, and electrical distribution operations and maintenance  
19 experience filling the roles of enlisted boiler technician (BT), electrician mate (EM), and  
20 machinist mate (MM). One unique course was Operations Analysis, the basis for cost-benefit  
21 analysis process used today.

22 After graduation my first assignment was in missile and gunnery fire control where I  
23 managed control of ship turrets, gun mounts and fire control directors. These equipments had  
24 rapid electrical demand changes on the ship's transmission system, which greatly exceed the  
25 benign demand changes on the electrical grid. Each system had both primary and electrical  
26 distribution systems that were exercised to their limits frequently. My second assign was as an  
27 ASW officer with sonar and missile mounts. Sonar systems have complex electrical demands,  
28 such as the discharge of 1 MW of power within 0.03 seconds, as a series of pulses, or  
29 required a series of special distributed generations with both capacitance and fly-wheel  
30 energy storage equipment. My later sonar experiences used more complex electrical power  
31 systems,

32 My mid-level education and training experiences were at the Naval Destroyer School,  
33 a six months demanding course that qualified me to be an Engineering, Weapons and  
34 Operations office with additional cruise time. I traced and made a schematic of the entire  
35 electrical generation, transmission busses, distribution transformers, for three different kinds

1 of electrical circuits, including 60 Hertz AC, 400 Hz AC and 26 volt DC, all on the same ship.  
2 During at sea time, as a Navy Lieutenant, with my classmates, we performed EVERY function  
3 at EVERY station manned throughout the ship conducting training including extensive  
4 electrical drills.

5 The next tour at sea, I experienced 20 of 24 months in combat at sea 83% of the time.  
6 We only were in port to perform preventative and corrective maintenance that might have  
7 been unsafe at sea. When the enemy wants to destroy, damage or kill you and your ship, all  
8 hands were cross-trained in many additional functions. As the Officer of the Deck and Senior  
9 Watch Officer, I was the "manager" of this entire process that included the electrical system  
10 and routinely performance before the enemy or during drills, in all forms of operation. (We  
11 even were the primary recovery ship for two orbits during *Gemini XII* space mission.)  
12 Obviously, my prior hands-on-operational experiences gave me knowledge and skills  
13 necessary to control any form of excursion from the norm. This responsibility and delegated  
14 authority was similar to a utility's control room management experience.

15 Next, I attended the Naval Postgraduate School where I was a Physical  
16 Oceanography student for two years. 'Physics of the sea' would better explain the curriculum.  
17 Emphasis on underwater acoustics, included courses with the electrical engineering  
18 department that involved sound generation, transmission, and reception processing theory,  
19 knowledge, and hands-on-lab work, which is highly technical. The buildup for these courses  
20 included mathematical courses that exceeded the requirements for a MS in mathematics.  
21 Again, we went to sea on an oceanographic research ship making transmission loss  
22 measurements. My section of 13 officers included seven Rickover-trained submarine and  
23 surface ship nuclear-power qualified engineers. They taught me how to study and were stiff  
24 competition for "As" required to keep me on the Dean's List.

25 My later Navy experiences were applied planning oriented finding Soviet submarines  
26 which used all these prior skills, as understanding al the threat's and friendly submarine and  
27 surface electrical system is just one of the keys for success, as these systems provide critical  
28 signature clues. I also was on a Curriculum Review Board for the Naval Postgraduate School  
29 and my recommendation to add an additional "EMF Compatibility Course" was accepted in  
30 the ASW Technology degree program because EMF interfered with underwater signal  
31 detection. EMF compatibility is an important radiated and background noise issue. I also took  
32 several additional post-graduate level Electrical Engineering courses at the University of  
33 Rhode Island involving complex electrical beamforming and processing for advanced sonar  
34 systems, some now having up to 24 arrays, each up to five miles long being towed behind  
35

1 ships or other systems with high power pulses using tens of MW per pulse which extend to  
2 minutes of active sonar radiation, transmission measurements, and receiver sensitivity.

3 Using the GI Bill, I completed the two-year University of Southern California MS in  
4 Systems Management with an "A" in every course. This was a "systems" course that  
5 expanded my systems perspective with financial, individual and group psychology, human  
6 factors, R&D management, and other knowledge to skillfully handle any "system".

7 After Navy retirement, the next almost eighteen years involved many diverse systems,  
8 most included in Appendix A to my Direct Testimony. All involved electricity and electrical  
9 systems. The new generation aircraft carrier electric-drive ships will have eight or so 45,000  
10 SHP electric-motor propellers (not screws), large 20-foot diameter electro-magnetic "fly wheel"  
11 for electro-magnetic catapults and arresting gear, with multiple turbines, double-redundant  
12 electrical transmission and distribution systems for several forms of electricity, high-power  
13 kinetic-energy weapons, planar array radar, sonar and communication systems using complex  
14 wave forms. These new aircraft carriers will not become operational until after 2018 and the  
15 last will be retired in April 2111 (reactors goes to DOE for disposal), over a century from now.  
16 From a planning experience view, I was the author of the first Integrated Master Plan (IMP)  
17 and schedule for that program, obviously a major effort, to keep events, task, personnel,  
18 equipment, development, testing, and construction integrated through processes,  
19 management, and goal accomplishments, with planned feedback, updates, for top  
20 management decision making including Congress, DoD, DoN, shipbuilding and integration  
21 industries. Integrated into the IMP was the Total Ownership Cost (TOC) program analysis that  
22 is integrated into design and risk management processes. Every system (over 6,000 onboard)  
23 is included, from design, operation, maintenance, to decommissioning. In fact, TOC has  
24 driven this ship's design so much that 1,700 less personnel will be assigned, with billions of  
25 life-time savings, maintenance processes automated to the extent that even airborne aircraft  
26 engine's acoustic signatures and almost all other equipment are monitored (in the F-35) so  
27 when the aircraft lands, if there is any equipment failure the proper part is ready, in the  
28 technician's hands with tailored fault test, install, post-installation performance test procedures  
29 in his palm pilot. There is an automated NASCAR-fuel, and ammo "pit stop", and even some  
30 cruise liner meal preparation systems.<sup>70</sup>

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34 <sup>70</sup> The first major electric-drive motored ships, now at 45,000 SHP per motor were the new cruise liners. Their  
35 famous meals cost less than the present Navy meal preparation costs, so for the past ten years, technology  
transfer programs have existed between cruise ship companies and the US Navy because TOC drives  
almost all new systems decision process.

1 Q. What does this have to do with Mr. Beck's challenge to you're background experience  
2 with electric utility use of turbines, maintenance and service life considerations, and  
3 other issues?

4 A. First, the turbine on every cruiser, destroyer and frigate is the LM-2500, with first gas turbines  
5 being used in the 50s. Naval turbines led to the electricity utility industry to the LM-2500.

6 Second, the electricity generated from any generator (steam, diesel, natural gas,  
7 solar, geothermal, and any other useful process) is the same, be it AC or DC, the same  
8 theory, knowledge, and rules are followed through generation, transmission, and distribution.

9 Third, ships are much more complex, work in a salty-marine environment under all  
10 weather environmental conditions, that exceed any natural environmental condition  
11 experienced by electricity utility generation systems.

12 Fourth, the electrical demand environment is trivial compared to the routine  
13 operational environment on naval ships. Shifting loads, splitting plants, changing generators,  
14 synchronizing phases, meeting standards, reliability measures, and other daily tasks and  
15 drills that cannot be done are routine. Utilities cannot be "dead in the water" because they hit  
16 an underwater mine, they must continue to operate. The processes to continue operations  
17 are alike; however. Almost all of the extraordinary naval electrical demands exceed the ability  
18 of a utility to meet.

19 Fifth, when I was given a tour of the Valencia turbines, the lead turbine technician was  
20 navy training as a gas turbine technician (GS) second-class petty officer (E-5) before his  
21 employment in Nogales. We were on the same wavelength without any misunderstandings.  
22 During this discussion, he agreed that naval turbine operation and maintenance processes  
23 were more demanding and an excellent training ground for transition into the easier electricity  
24 turbine employment.

25 Sixth, Mr. Beck seems to believe that the electric utility industry has unique auxiliary  
26 equipment needs. They are the same auxiliary systems, except for auxiliary equipment used  
27 with coal, which the Navy stopped using after World War I. Auxiliary feed water, fuel heating,  
28 forced air, condensation, and others are found with all steam-systems,<sup>71</sup> as all generation  
29 equipment needs supporting auxiliaries. They are as important as the prime movers; if they  
30 fail, the system may also fail, all depending upon how the system is setup with automated  
31 monitoring, controls, and backup subsystems. The ship must carry everything.

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34 <sup>71</sup> Terminology differences must be understood by the parties involved, then the electric generation,  
35 transmission, and distribution principles and process are the same for ships, utilities, aircraft, spacecraft,  
off-grid homes, and any other electrical things. The frequency, line lengths, and scale are the differences,  
not electricity.

1 Seventh, he also is concerned about adjustment of "nameplate" specifications being  
2 changed by auxiliary needs, a non-concern. Each piece of equipment has its specifications,  
3 which are integrated into a system through its flow, work, task, or schematic where outputs  
4 reflect the transformation by that element from its input values. This is basic systems  
5 engineering. The equipments "transformation" or operational process operates in an  
6 environment, be it thermal, load, frequency, or transient-loaded changes. These elements  
7 always impact output, but usually are just a percentage of the input. For example, the  
8 nameplate temperature environment for Hitachi Valencia turbines, below 10C (40F) is 20.65  
9 MW and at it nominal 26.7C (~74F) is 18.00 MW, and at 40C (104F) is 15.40 MW,<sup>72</sup> or about  
10 a 25% reduction from cold to hottest environments, or +2.65 MW to -2.6 MW from nominal  
11 output as a function of temperature. My testimonies never stated that environmental impacts  
12 are not to considered but in many cases, such as the above example, these impacts are  
13 known and manageable.

14 Eighth, I have operated various turbines, from cold start, hot re-start, off-line,  
15 synchronized turbines to grids, split loads, and other modes of turbine operation at every  
16 position in the process. Most utility personnel have limited capabilities to do these actions.

17 Ninth, systems engineers are cross-trained in all fields. The national, regional, utility,  
18 subsystem, to user planning, operations, maintenance, and management are not especially  
19 challenging. I have eight years of experience in line siting, utility acquisition, electric and gas  
20 rate cases, purchase power and fuel adjustment clauses, reliability assessments, and other  
21 knowledge and experiences, focused on my county and its external interfaces. None of these  
22 cases required execution of "planning" but an understanding of the planning inputs, process,  
23 and outputs, as utility planning is just another system.

24 Tenth, systems engineers routinely work with many diverse disciplines and employ  
25 many varied and relevant processes, including reliability engineering and system risk  
26 management processes which appear weak at UNSE. Mr. Beck has stated reliability  
27 engineering in not applicable to UNSE. However, reliability-engineering analysis directly  
28 impacts systems that is very unfortunate for UNSE. Reliability engineers primary roles are to  
29 "design out failure" or reduce it to such a low probability, failures occur so rarely, then the  
30 system meets expectations. Reliability engineering develops designs and processes to  
31 reduce the time to repair. Reliability engineering and risk management should be significant  
32 drivers for any new system design.

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<sup>72</sup> From UNSE Response to Magruder Data Request MM DR 4.1a.

1 Eleventh, all naval ships interconnect with the "grid" routinely. This is not magic and is  
2 similar to any other electrical operational function. The steps are similar. During Hurricane  
3 Katrina, several naval ships were supplying electricity to cities where the utility systems  
4 failed. In San Diego, the nuclear submarines there routinely practice this function. The Navy  
5 (and other ships) is the primary backup power, if transmission is lost, to that community.

6 Finally, there is no requirement that my "experience involves ensuring that utility  
7 customers receive reliable energy and planning generation, transmission and distribution that  
8 affects an interstate and regional grid" as that is why I pay a utility to perform those functions.  
9 I also don't run sewage, gas distribution, filling stations, or the post office. But, understanding  
10 how these function, the systems approach, and environmental impacts<sup>73</sup> are experiences  
11 transferred from one discipline to another. In fact, this cross-industry experience transfer is  
12 probably one of the primary ways new technologies and innovations occur. Staying inside  
13 one's industry shell inhibits creativity and increases the probability of failure. The ESRI Intell-  
14 Grid has no new functions or features now performed by the information technology (IT)  
15 industry, as it is just another IT application; however, acceptance by the stodgy utility industry  
16 is its major environmental challenge, the IT is already there.

17 **Q. Do you agree with the Beck Rebuttal that you "forecast" electricity demand?**

18 **A.** No. The utility company that serviced the Santa Cruz service area produced all electricity  
19 demand forecasts. I did no electricity forecasting as I have always relied on the Company's  
20 data. Additional Santa Cruz load information for January through June 2007 has been  
21 received which has a new peak for this service area.

22 The following new Table 7 (Rev) shows the actual Peak Demand for each year since  
23 1993 and "forecasts" from organizations that have managed the Santa Cruz service area  
24 through 30 June 2007. Each band of ten MWs is the same color, so one can see how  
25 accurate the "forecasts" to actual peak for that year. Data 2005 and 2006, based the  
26 testimony in these proceedings have not been consistent. The "notes" record the data  
27 sources of all data, which indicated only utilities information is shown in Table 7 (Rev).

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31 <sup>73</sup> In the context of systems engineering, the "environment" is the total environment that includes natural,  
32 financial, management, market, risk, operational, security, and any other outside factors that impact a  
33 system. Also a "system" is anything between an atom and the universe, with each lower level being a  
34 subsystem of the higher level. All systems operate in an environment with inputs, transformation, and  
35 outputs. Interfaces exist between the environment and the system, between inputs and transformations,  
and between transformations and outputs. Transformations are the work, the processes, the action, and  
what is done to an input that results in an output. Systems Engineering primary challenges are at all  
system boundaries. These boundaries are where integration and interoperability processes have  
significant impacts and where most system failures occur.

1 Two UNSE forecasts are in these proceedings, one for a 3% annual growth rate and  
2 another for a 6% annual growth rate. These UNSE "growth rate" forecasts are shown.

3 During the 1990 to 2000 decade, census data have the annual growth was 1.7%.<sup>74</sup>  
4 The latest Arizona Department of Economic Security (ADES) official population predictions  
5 show a growth rate of 2.74% in 2007, 2.47% in 2010, 1.17% in 2015, and 1.06% in 2020 and  
6 continually decreasing through 2055 at 0.71%.<sup>75</sup> These are official population forecasts,  
7 which show a continual decline of the growth rate in the County.

8 Mr. Beck must consider this sentence to be offensive: "Since 90% of the county lives  
9 in this service area, it appears the 5% [UNSE growth] forecast maybe to high and the 3%  
10 [UNSE] growth forecast is still higher than expected,"<sup>76</sup> This does not state that electrical  
11 growth equals population growth but that population growth appears lower than Beck  
12 Testimony's 6% and maybe lower than 3% in the future. Mr. Beck indicated that this  
13 population forecasting is not related to electricity growth but I have not forecast either, just  
14 showing two relationships. If UNSE uses a 3% and 5% growth rates for electricity, while the  
15 population grows at less than 2.0%, Mr. Beck has not provided any references or supporting  
16 information for his statement.

17 In summary, I never forecast electricity demand. I have used population forecasts as  
18 future growth indicators that will limit demand growth when our County is built out. The  
19 population growth will stop when water runs out, estimated at about 71,000 for Santa Cruz  
20 AMA.<sup>77</sup> Using the maximum population and population growth, on can determine about when  
21 this will occur. Using that year, then the UNSE forecast demand would show the maximum  
22 electricity capacity for this population-constrained service area or between 115.8 MW and  
23 137.3 MW without considering distributed generation and renewable energy reductions. Thus  
24 my forecasts are conservative, factual-based with sources for all provided in my  
25 Supplemental Testimony.

26 Mr. Beck appears shooting from the hip without supporting data. One data request (sent 3 times) for  
27 his working papers finally was responded to with there were none. All other UNSE Direct  
28 Testimonies had extensive sets of working papers. He has none.

29 **Q. Why is the long-term peak demands for this area important?**  
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32 <sup>74</sup> Magruder Testimony in ACC Docket No. E-01032A-00-0401, pages 181 to 184 for additional Santa Cruz  
33 service area growth details.

34 <sup>75</sup> "Santa Cruz County Population Projections 2005-2055, ADES, Research Administration, Population  
35 Statistics Unit, approved by ADES Director on 31 March 2006, found on County and ADES websites.

<sup>76</sup> Magruder Supplemental Testimony, page 39, lines 1 to 4.

<sup>77</sup> 2004 Santa Cruz County Comprehensive Plan, revised 2005, page 65.

1 A. Table 8 in my Supplemental Testimony clearly shows that using one of the four available  
2 turbines for peaker power is much less expensive than installing another LM-2500 for  
3 approximately \$14 million in the near future. This Table, as discussed, is VERY conservative,  
4 and easily could be too high by a factor of three. Also, UNSE is now purchasing additional  
5 power on the WAPA lines to ameliorate that 65.8 MW restriction.

6 I have been recommending for years a new substation is required in Nogales The one  
7 in the City of Nogales is poorly located for many reasons. A location outside the 100-year  
8 floodplain is essential. Based on my many conversations with the County Flood Manager, he  
9 would demand 500-year floodplain since this one-substation is a critical facility. When this  
10 new substation issue is resolved, then additional generation there and upgrades help split the  
11 load, provide local backup, and increase local generation to reduce reactive power needs.

12 Q. What are the present reliability issues that are of concern?

13 A. All substations need upgrades recommended in the Powers Engineering Report, and  
14 distribution lines and poles replaced. Distribution reliability is the primary cause of lost power,  
15 and not the transmission line shown in Table 11. UNSE does not maintain substation  
16 reliability information as required NERC/WECC Reliability Criteria. Using IEEE Std 1366  
17 data, see Table 12 of my Supplemental Testimony<sup>78</sup> to standardize collection and analysis.

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35 <sup>78</sup> Magruder Supplemental Testimony, page 47, Table 12. Definitions of Key Distribution Reliability Indices" for ASAI, CAIFI, MAIFI, SAIDI, and SAIFI as a minimum.

**Table 7 (Rev). Actual and Forecast Annual Peak Demand for the Santa Cruz Area.** The actual observed values, in the second column, show the actual annual peak demand in MW, with forecasts that are "higher" than forecast in red and "lower" than forecast in blue. Each 10 MW/hr is shaded in a different background color. Newer forecasts are to the left and older to the right. Above the line between 2007 and 2008 indicates "history" which future demand predictions are below. All data shown are directly from many different Company references discussed below this table.

REAL WORLD Data		FORECAST PEAK DEMAND for the Santa Cruz Service Area												
Year	ACTUAL Peak Demand	UNSE	UNSE	UNS	Very Slow Scenario	TEP/UNS Electric	UNS Electric	TEP Hot Forecast	TEP High Forecast	TEP Normalized	RAC 2 Hot	RAC 2 Normal	Citizens C/B Analysis	Citizens Briefing
		Rate Case (3% gr)	Rate Case (5% gr)	and SEC	Scenario	UNSC Electric	UNSC Electric	Feb/Apr 2004	Feb/Apr 2004	Feb 2004	2000	2000	1999	1998?
1993	40.0													
1994	43.7													
1995	41.6													
1996	41.9													
1997	42.5													
1998	45.3													
1999	50.36												48.7	50.5
2000	52.60											50.2A	48.0	52.6
2001	50.54												49.0	55.7
2002	57.99												51.6	56.9
2003	57.64												52.4	58.2
2004	60.768												54.5	59.5
2005*	69.408 or 69.6												64.0	60.7
2006*	71.7 or 73.152												66.0	
2007	75.6			74.0	74.1	72.7	71.1	71.5	71.3	71.3	66.1	74.0	68.0	
2008		76.1	76.1	76.5	76.5	76.3	76.1	76.0	70.1	73.5	68.2	76.0	70.5	
2009		78.4	79.9	79.1	77.0	78.7	78.7	78.5	72.2	75.8	70.3	78.0	73.0	
2010		80.7	83.9	81.7	78.5	82.1	82.1	82.1	74.5	78.2	72.5	80.0	74.0	
2011		83.2	88.1	84.3	79.9	85.1	85.1	85.1	76.8	80.6	74.7			
2012		85.7	92.5	86.9	81.5	89.4	89.4	89.4	79.2	83.1	77.0			
2013		88.2	97.1	90		70.8	73.6	74.0	79.2	83.1	79.4			
2014		90.9	102.0	92		72.2	74.9	75.4	81.6	86.7	81.8			
2015		93.6	107.1	95		73.6	74.9	76.7	84.1	88.3	84.3			
2016		96.4	112.4	98		74.9	76.1	78.8	86.7	91.0				
2017		99.3	118.1	101		76.1	76.1	79.3						
2018		102.3	124.0	103		77.3	78.5	80.6						
2019				105		78.5	78.5	81.9						
2020				107		80.9	80.9	83.3						

Table 7 (Rev). Actual and Forecast Annual Peak Demand for the Santa Cruz Area. The actual observed values, in the second column, show the actual annual peak demand in MW, with forecasts that are "higher" than forecast in red and "lower" than forecast in blue. Each 10 MWhr is shaded in a different background color. Newer forecasts are to the left and older to the left. Above the line between 2007 and 2008 indicates "history" which future demand predictions are below. All data shown are directly from many different Company references discussed below this table.

**FORECAST PEAK DEMAND for the Santa Cruz Service Area**

REAL WORLD Data		FORECAST PEAK DEMAND for the Santa Cruz Service Area												
Year	ACTUAL Peak Demand	UNSE Rate Case (3% gr) Mar 2007	UNSE Rate Case (5% gr) Mar 2007	UNS Electric and SEC Dec 2006	Very Slow Scenario Oct 2005	TEP/UNS Electric July 2005	UNS Electric June 2004	TEP Hot Forecast Feb/Apr 2004	TEP High Forecast Feb/Apr 2004	TEP Normalized Feb 2004	RAC 2 Hot 2000	RAC 2 Normal 2000	Citizens C/B Analysis 1999	Citizens Briefing 1998?
2021				109		82.0		86.3						
2022						83.3		88.0						
2023								89.8						
2024								91.6						
2025								93.4						
2026								95.3						
2027								97.2						
2028								99.1						
2029								101.1						
2030								103.1						
2031								105.2						
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Historical Peak Demand Data

Forecast Peak Demand Data

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Forecast Data Sources and notes (reading from left to right columns)

**\*Actual Peak Demand (1993 to 2006)** – In the UNSE Rate Case, ACC Docket E-04204A-06-0783, the actual peak through 30 June 2007 was 75.6 MW (from UNSE Response to Magruder Data Request 4.1) measured at the Nogales Tap, which might be exceeded later in 2007. The actual peak loads for 2006 and 2005 were given as 71.7 MW and 69.6MW, in UNSE response to ACC Staff Data Request STF 1.1. In USNE response to MM DR 1.15 the peak load for 2006 was provided by UNSE to be 73.152 MW was provided as the 2006 peak load. In this UNSE response to MM DR 1.15, the peak load demands for 2003 through 2006 were provided which included a 2003 peak at 54.144 MW that occurred after 11 Aug 2003, under UNSE, while the actual 2003 peak occurred under Citizens at 57.64 MW earlier that summer. Additional peak data were in TEP's response to MM Data Request 221.c in ACC Docket E-01032A-99-0401.

**UNSE Rate Case (3% gr, 5% gr) (Mar 2007)** – In UNSE's response to MM Data Request 1.15 (Excel spread sheet) in ACC Docket E-04204A-06-0783 for years 2008 through 2018 using a 3% and 5% growth rates.

**UNSE Electric and SEC (Dec, 2006)** – For 2005 to 2012, from Testimony of Ed Beck in UNS Electric Rate case ACC Docket E-04204A-06-0783 and from 2013 to 2021 from the UniSource SEC Form 25 submitted in Dec 2006 and Exhibit MJD-1 to Michael DeConcini in the above UNS Electric Rate case. The SEC filing also included the earlier years, rounded off to an even MWhr as Weather Normalized Peak Demand Forecast.

**UNSE "Very Slow" Scenario (Oct 2005)** – From UNSE Annual Peak Load Forecast, emails in March 2006, from MM Data Request 1.9.g in ACC Docket E-04204A-06-0783.

**TEP/UNS (July 2005)** – From Beck Testimony of 8 July 2005, Exhibit 3 (Annual Peak Load Forecast for Santa Cruz County)  
**UNS Electric (June 2004)** – From UES "Long-term Transmission Plans for Santa Cruz County UNS Electric System," June 2004. For years 2021 and later, the forecast is extrapolated based on a 2% growth factor.

**TEP Hot, High, and Normalized Forecast (Feb/April 2004)** – From Exhibit 4 (February 2004) where TEP forecast is for the average year (also in the RMR report for 2005, 2008, 2012) and the "high" for years that are hotter than normal.<sup>79</sup> This also has been published as "Nogales Retail Peak Forecast – April 2004:" with the years 2004 to 2020 designated as the "UniSource Forecast (MW)" and the years 2021 to 2040 as "Extrapolated Forecast (2% growth factor (MW))"

**UniSource Energy Services** – Loads & Resources Peak (weather normalized) Demand Forecast (used by UniSource for the competition for a new Purchase Power Agreement for Santa Cruz County (February 2004))

**RAC2 Hot, Normal (2000)**, Testimony of Rasel Craven, Citizens Director of Engineer, May 1, 2001, Docket No. L-00000C/F-01-0111, Line Siting Case No. 111, as Exhibit RAC-2, which indicated on June 30, 2000, a record of 50.2 MW was reached (marked by A) above. Values for 2001 to 2003 are from testimony, from 2004 to 2010 from Exhibit 4 (February 2004) as footnoted above. The "normal" and "hot" were for years which were average or higher than average. The R.W. BECK & Co. determined the RAC-2 forecasts in early 2000.

**Citizens' Cost-Benefit Analyses (1999)** of Transmission-Line Alternatives, ACC Docket E-01032A-98-0611 in Exhibit F of July 13, 1999 at Nogales Tap for "normal weather."  
**Citizens Briefing (1988)** given to the Joint Santa Cruz County/City of Nogales Energy Commission in February 2001; however, content appeared to be dated about 1988.

<sup>79</sup> See Exhibit 4 from the TEP and UES "Response to Commission Questions and Updated Response Plan for Santa Cruz County" of 9 February 2004, in ACC Docket No. E-01032A-99-0401.

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3 **5.2 Recommendations.**

4 There are seven important recommendations to be considered that were without comment in  
5 the UNSE Rebuttal Testimony. They remain valid recommendations.

- 6 1. Decrease the rate base by \$15,561,520 for failure to comply with an ACC Order No. 62011  
7 (see above) and ensure compliance with all actions in the ACC Staff-Citizens Settlement  
8 Agreement and  
9 2. Complete and continue to take ALL actions required by the City of Nogales-Citizens  
10 Settlement Agreement.  
11 3. Ensure that the UNSE does not receive expenses for actions incurred prior to the  
12 acquisition, such as the \$122,842.89 for utility pole replacements and \$159,597.51 for  
13 underground cable replacements presented above because they were Citizens charges.  
14 4. Obtain more access on the WAPA lines, with its considerably lower wheeling costs, than  
15 using TEP facilities (rejected by Citizens in its trade-study for the ACC).  
16 5. Be consistent with objective data for load capacities when presenting operational data.  
17 6. Compute reliability indices at the substation level, as required by NERC/WECC reliability  
18 criteria.  
19 7. Delete considerations of a 345 kV line and get started with a second parallel transmission  
20 line for each substation, either 115/138 double-circuit or a backup 46/59 kW double-circuit.

21 AND to cease "fear mongering" by saying the "lights are going out" in Nogales in 2002,  
22 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, and later until firm clear  
23 alternatives have been objectively considered.  
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4 **Part VI – ISSUE 4**

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6 **CARES and CARES-M Tariffs**

7 **Q. Have your concerns about CARES and CARES-M in your Direct Testimonies been**  
8 **answered by the Company?**

9 **6.1 Response to UNSE Rebuttal Testimony.**

10 **A.** No. The Company has not responded to the CARES and CARES-M testimony in Part VI of my  
11 Supplemental Direct Testimony.<sup>80</sup> The specific CARES recommendations are in section 6.4  
12 and the CARES-M recommendations are in section 6.5 of my Supplemental Direct  
13 Testimony.<sup>81</sup> The four CARES recommendations aim was to improve participation<sup>82</sup> and the  
14 CARES program itself. The aim of the seven CARES-M recommendations was to support  
15 those on life support equipment during an electrical outage.

16 **Q. Why do you feel your recommendations are important?**

17 **A.** The CARES-M concern possible life-of-death for customers on life-support equipment.

18 The Company has a mission to ensure electricity reliability and safety, which applies to  
19 this concern. Taking action such safety concerns before the loss of life is responsible corporate  
20 behavior.

21 During earlier Commission UNS Electricity reliability hearings, then ACC Chairman  
22 Gleason questions clearly demonstrate his concerns about this kind of life-support  
23 recommendations, which pertain to both CARES-M participants and all other UNS Electricity  
24 customers on life-support equipment. My Issue Number 4 is intended to provide a  
25 comprehensive response to his penetrating questions.

26 Without the utility's support and an established working relationship with local officials  
27 for emergency support,<sup>83</sup> actual life-support-equipment operational checkups can not be  
28 planned in advance (such as each area having a list of such persons, their specific medical  
29 support equipment needs for electricity such as the duration of installed backup battery  
30 support, then these notifications can not take place.

31 The CARES recommendations support the ACC Staff's recommendations. I concur and  
32 support all eleven of the ACC Staff's recommendations as discussed below.

33 **Q. Can you respond to the Company's Rebuttals concerning these two programs?**

34 <sup>80</sup> Magruder Supplemental Testimony, 51 to 54.

35 <sup>81</sup> *Ibid.* see pages 53 and 54 for these seven recommendations.

<sup>82</sup> *Ibid.* see Table 13, page 52 which shows that the number of CARES potentially eligible participants that are  
not participating in CARES are approximately 9,876 in Mohave County and 3,349 in Santa Cruz County.

<sup>83</sup> *Ibid.* see page, over 13,000 families who are lower income are not in the CARES program.

1 A. Yes. I will respond to Mr. Ferry's Direct and Rebuttal Testimonies<sup>84</sup> first.

2 Mr. Ferry responded only to the excellent testimony of the ACC Staff witness Ms.  
3 McNeely-Kirwan<sup>85</sup>; however, Mr. Ferry did not respond to each of the Staff Recommendations  
4 on pages 14 and 15, other than recommendations 1 and, in general to her recommendation 4,  
5 without commenting on the \$400 per year per household for Warm Spirits emergency bill  
6 paying program. Her other recommendations (2, 3, 5 to 11) require answers by the Company in  
7 testimony so they can be considered for inclusion in the eventual ROO that will be issued by  
8 the Administrative Law Judge (ALJ). Without such comments, should acceptance be assumed  
9 for these other Staff Recommendation?

10 Q. **Where there other responses in the Company's Rebuttals concerning these programs?**

11 A. Yes. Mr. Erdwurm's Rebuttal<sup>86</sup> provided testimony that the CARES-M rate discount would be  
12 increased from \$8.00 per month to \$10.00 month and that these would remain as separate  
13 tariffs. The Company's recommended CARES rate discount remains at \$8.00.

14 Q. **Are you satisfied with the Company's responses concerning CARES and CARES-M?**

15 A. Mr. Erdwurm's response is positive; however the shallow, incomplete response by Mr. Ferry is  
16 non-responsive to Ms. McNeely-Kirwan and irresponsible with respect to my concerns and  
17 recommendations.

18 Q. **How do you recommend such non-responses to these CARES and CARES-M  
19 recommendations by the ACC Staff and yourself be handled?**

20 A. I feel any recommendation<sup>87</sup> in a witness's testimony needs a response by the applicant;  
21 unless, by default, such recommendations are acceptable by the Company without modification  
22 or additional discussion. No response to a proposed recommendation, in my opinion, means  
23 complete Company acceptance as recommended by a witness and thus automatically will be  
24 considered by the ALJ for inclusion in the ROO for this Rate Case, without further discussion.

25 Q. **Does the complete your Surrebuttal on this issue?**

26 A. Yes, but there remain unanswered questions:<sup>88</sup>

- 27 1. What are UNSE's concerns for those with electrical life-support equipment that are NOT
- 28 CARES-M customers?
- 29 2. Does UNSE have any moral, ethical, and safety responses for these people whose lives
- 30 are dependent on reliable electricity?

32 <sup>84</sup> "Direct Testimony of Thomas J. Ferry,

33 <sup>85</sup> "Direct Testimony of Julie McNeely-Kirwan Utilities Division" of 28 July 2007, hereafter "**McNeely-Kirwan  
34 Testimony**".

35 <sup>86</sup> Erdwurm Rebuttal, pages 16 and 16.

<sup>87</sup> In all of my testimonies in this case, for my recommendations, I underline recommendation for emphasis.

<sup>88</sup> Magruder Supplemental Testimony, page 51.

Part VII – ISSUE 5

**Environmental Portfolio Standard (EPS) and  
Renewable Energy Standard and Tariff (REST) Surcharges**

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5 **Q. Have your concerns about meeting the EPS goals and REST Surcharges in your Direct**  
6 **Testimonies been answered by the Company?**

7 **A.** No. Finally, the Company provided information about these two programs in these proceedings  
8 with the Rebuttal Testimony submitted by Mr. Hansen on this important topic.<sup>89</sup> The  
9 Commission is in transition from its Environmental Portfolio Standard (EPS) to the Renewable  
10 Energy Standard and Tariff (REST) programs with different rules for each.

11 **Q. Do you have any responses to Mr. Hansen's Rebuttal?**

12 **A.** Yes. Let me go through his rebuttal, which has four issues, before reviewing recommendations  
13 for these programs.

14  
15 **7.1 Response to UNSE Rebuttal Testimony.**

16 **Q. What is your response to his first issue<sup>90</sup> involving failing to meet EPS goals?**

17 **A.** His first issue discussed meeting the existing EPS annual renewable energy goals. He  
18 stated that UNS Electric met only 40.68% of its annual renewable energy requirement during  
19 the test year that was 1.025%<sup>91</sup> or stated another way, only 0.417% renewable energy  
20 (including "multipliers") was used by UNSE during the Test Year. He also testified that no other  
21 Arizona utility has met the renewable energy requirements since EPS implementation. He  
22 stated that no utilities have met the EPS annual solar energy requirements. He cites  
23 inadequate funding as the reason for this failure. This is most unfortunate as the Commission  
24 and public in Arizona expect goals set by the Commission to be achieved. It is most  
25 encouraging reading Mr. Pignatelli's Rebuttal where he states UNSE will "comply" with the  
26 REST rules,<sup>92</sup> which a reasonable person should assume means that UNSE will comply with all  
27 of the REST requirements summarized in Table 15 of my Supplemental Testimony.<sup>93</sup>

28 My Supplemental Testimony was also discussed EPS and solar energy goals in Table  
29 14. Unfortunately, the statements concerning 0.00646% of total sales in 2006 concerns actual  
30 solar electricity produced by UNS Electric ratepayers. This table was deliberately computed to  
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32 <sup>89</sup> "Rebuttal Testimony by Thomas N. Hansen on behalf of UNS Electric", 14 August 2007, hereafter "**Hansen**  
33 **Rebuttal**".

34 <sup>90</sup> *Ibid.* page 2 at 22 to page 3 at 2.

35 <sup>91</sup> The EPS requirement is for renewable energy 1.0% of retail sales for 2005 and 1.05% for 2006, thus using  
1.025% for the test year that spans these two is appropriate.

<sup>92</sup> Pignatelli Rebuttal, page 16, lines 3 to 5. [underlining added for emphasis]

<sup>93</sup> Magruder Supplemental Testimony, Table 15, "Some of the REST requirements for UNSE," page 58.

not take into account various "multiplier" credits, as its objective was to focus on the actual solar energy being or will be generated in the service area. Table 14 has been revised and is presented below with column titles and data corrected to reflect this intention. Considering this revision, Mr. Hansen objections for this issue are resolved.

**Table 14 (Rev). EPS and Solar Energy Goals and Solar Energy Generated to Date.** Since 1997, a total of 256 MWh of the total UNSE retail load was solar generated. In 2006, the best year to date, 0.00646% of the total UNSE load requirements was from solar generated electricity in the UNSE service area, well below the EPS requirement for 10,151.4 MWh, and was 10,040.8 MWh short.<sup>94</sup>

Year	UNSE/ Citizens Total Retail sales (MWh)	EPS Percent Renewable Electricity	Needed to meet EPS Standard (MWh)	Solar Generated (MWh)	Actual Percent Solar-only Generated	Annual Solar Goal (MWh)	Deficit to Meet Solar Goal
Column	(1)	(2)	(3)=(1)x(2)	(4)	(5) = (4)/(1)x100	(6) = 0.6x (4)	(7)=(6)-(4)
>2001	NA	NA	NA	57.0	unknown	NA	NA
2001	1,275,036	0.2 %	2,550	19.0	0.00149 %	1,530.0	-1,511.0
2002	1,136,581	0.4 %	4,546	19.4	0.00171%	2,727.6	-2,708.2
2003	1,392,466	0.6 %	8,355	13.3	0.00096%	5,013.0	-4,999.7
2004	1,462,633	0.8 %	11,701	10.0	0.00068%	7,020.6	-7,010.6
2005	1,631,947	1.0 %	15,210	26.7	0.00164%	9,126.0	-9,099.3
Test year <sup>95</sup> (2005-2006)	1,579,512	1.025%	16,168	54.6 <sup>96</sup>	0.00345%	9,700.8	-9,646.2
2006	1,711,420	1.05%	16,919	110.6	0.00646%	10,151.4	-10,040.8
Cumulative Total to 2007	8,610,083	NA	59,281	256.0	0.004318%	35,568.9	-35,369.6
2007e	1,659,763	1.10%	18,257	TBD	TBD	10,954	
2008e	1,709,555	1.10%	18,805	TBD	TBD	11,283	
2009e	1,760,842	1.10%	19,369	TBD	TBD	11,621	
2010e	1,813,667	1.10%	19,950	TBD	TBD	11,970	
2011e	1,868,077	1.10%	20,549	TBD	TBD	12,329	
2012e	1,924,120	1.10%	21,165	TBD	TBD	12,699	

**Q. What is your response to the second issue<sup>97</sup> involving UNS Electric EPS Management?**

**A.** Mr. Hansen stated that the Magruder Supplemental Testimony indicated that (1) UNS Electric did not have the attention of UNS Electric management; (2) the EPS program is not ISO 14400 certified, and (3) UNSE lacks commitment to development of renewable energy.

<sup>94</sup> Table 14 used the UNSE response to ACC Staff data request 13.40, which included UNSE "Test Year Annual Report on Environmental Portfolio Standard Programs," (hereafter "ESP Test Year Report") dated June 2007 and the UNSE response to ACC Staff data request 3.137, "Deferred Environmental Portfolio Surcharge Revenue Activity", Aug 2003 through Dec. 2006

<sup>95</sup> The Test Year values used the 2005 (second half) and 2006 (first half) from the EPS Test Year Report, page 2.

<sup>96</sup> EPS Test Year Report, page 5. Note, multiplier credits of 2.0 for 2005 and 2006 were not included in the analysis in original and revised Table 14.

<sup>97</sup> Hansen Rebuttal, page 3, lines 4 to 12.

1 First, as stated in the Magruder Supplemental Testimony, during the Test Year, UNSE  
2 had non-renewable energy expenses, including payroll, were as follows<sup>98</sup>:

3 Payroll	\$27,880
4 Marketing	\$902
5 Materials and Supplies	\$167
6 Training and Travel	\$1,458
7 Outside services & contracting	\$2,923
8 Subtotal Test Year Expenses	\$33,330

9 A review of these EPS program expenses, shows less than one manager-year was  
10 probably involved in this program of the \$33,000 for these expenses in the Test Year. Further,  
11 a payroll total of only \$40,499<sup>99</sup> for the life of the program since 2001 supports low personnel  
12 involvement including management.

13 Second, it appears Mr. Hansen does not understand ISO 14400. This is a corporate  
14 process standard used for Environmental Management. Companies, such as Public Service  
15 Company of New Mexico (PNM), have been ISO 14400-certified for years. PNM website shows  
16 how that company considers the environment at all management levels as its annual reports  
17 shows. Such environmental awareness creates a workplace process that continually works to  
18 sustain and improve the total environment. ISO 14400 is not a standard for any single program,  
19 such as EPS, but is an important environmental step to establish and maintain effective  
20 management processes.

21 No UniSource entities are ISO 9000-certified. This indicates the Company processes  
22 have not been third-party reviewed for quality, completeness, accountability, and compliance  
23 by its employees, a routine for the tens of thousands of worldwide ISO 9000-certified  
24 companies. During my tenure as a MBA instructor in "Operations Management" at the  
25 University of Phoenix, ISO 9000 and ISO 14400 were two basic building blocks used by  
26 successful companies. I have been through initial certification at Hughes where we "thought"  
27 we were doing quality work; however, to achieve ISO 9000 certification<sup>100</sup> allowed us to benefit  
28 from internal process reviews to improve and self-sustain even higher levels of performance. I  
29 also have been in one of the first SEI Level 5 certified organizations,<sup>101</sup> and at the time, the

30 <sup>98</sup> *Ibid.* Table 1, "Summary of EPS Programs Period from July 1, 2005 through June 30, 2006," page 3. The  
31 hardware buy down program, landfill gas credits are related to material or power purchase programs and  
32 can be found in the above.

33 <sup>99</sup> *Ibid.*

34 <sup>100</sup> For several years, "management" used the expense for our 2,000 organization of \$50,000 as "what is the  
35 payback". After we got there and hoisted a large "ISO 9000 Certified" banner, all managers agreed the  
benefits outweighed the expense (to pay and setup the third-party certification team).

36 <sup>101</sup> The Carnegie-Mellon Software Engineering Institute "maturity" level process is very demanding and  
specialized for organizations involved with software development, including systems engineering, testing,  
quality, and other parts of the company. Maturity Level 5 is the highest and when we were certified, there  
were less than five such organizations. It took us over 18-months of hard work to achieve this level upgrade

1 largest Level 5 certified entity in the United States. I realize Mr. Hansen has never experienced  
2 an ISO 9000 or 14400 certified organization.

3 Third, as shown in Table 14, the failure to reach a goal for six consecutive years has  
4 not excited this company. The EPS Test Year Report has no "fix it" approaches mentioned.  
5 Comparison with TEP, which has the same program management and performance level, adds  
6 nothing for failing to continually not meet objective goals. The original UNS Electricity "Green  
7 Watts™ SunShare Hardware Buydown Program"<sup>102</sup> was very weak. I made written and public  
8 comments before the Commission when it was initially approved trying to make the program  
9 stronger. It failed as I warned because it was so ineptly weak it could not generate the "critical  
10 mass" in either Mohave or Santa Cruz County to really get started. The annual decrease of  
11 renewable energy rebates, complex contractual requirements including recording the UNSE  
12 contract on one's property deed, unnecessary battery storage prohibitions, and other  
13 restrictive procedural steps that were designed to quickly discourage individuals who wanted  
14 solar-electric systems. For me personally, this was true, and why I lost interest.

15 The new program, approved by the ACC on 21 December 2006, is more customer-  
16 friendly, has steady rebates, permits batteries, with a less restrictive UNSE contract and other  
17 features to help encourage customers to participate. It is easy to see why UNSE has a higher  
18 rate of participation in Sun Share than TEP, UNSE started near zero.

19 **Q. What is your response to the third issue<sup>103</sup> involving calculations in Table 14?**

20 **A.** Mr. Hansen stated that the Magruder Supplemental Testimony contained errors in Table 14. As  
21 testified above for the first issue, this table was designed to show both EPS/REST and solar  
22 generated goals and accomplishments. This is now shown in the revised Table 14.

23 Mr. Hansen stated a capacity conversion was improperly made; however, no such  
24 conversions<sup>104</sup> were made as all the values in columns 1, 2, 3, and 4 were copied directly from  
25 the UNS Electric Test Year EPS Report. His comment might be that the original column 4 was  
26 erroneously labeled in units of MW (capacity) when MWh was the intended unit of  
27 measurement. This is also corrected in the revised Table 14. This issue was due to a confused  
28 and mixed presentation that I intended to be straightforward.

30  
31 from Level 3, it considered as highly professional. What this does is establish internal self-sustaining  
32 management that impacts every decision, risk, and builds initiatives where none thought were possible. This  
33 maturity level certification process has been expanded to Systems Engineering, Quality, Testing and other  
34 disciplines in technical engineering companies.

35 <sup>102</sup> See ACC Decision No. 67178, "In the Matter of UNS Electric, Inc., - Filing to Introduce GreenWatts Pricing  
Plan, GreenWatts SunShare Hardware Buydown Program, and Non-Firm Purchase from Renewable Energy  
Resources," of 10 August 2004, hereafter **ACC Decision No. 67178**.

<sup>103</sup> Hansen Rebuttal, page 3, line 14 to page 5 line 15.

<sup>104</sup> *Ibid.* page 3, lines 21 to 23 and page 4 line 10.5.

1 **Q. What is your response to the fourth issue<sup>105</sup> involving energy and capacity?**

2 **A.** Various points are mentioned. He stated "energy" and "capacity" were confused; however, only  
3 energy is discussed in section 7.1, after correcting the units in column 4 of Table 14. On page  
4 17, line 1, adding the word "system" after "solar electric energy" would have been clearer. The  
5 "52" panels was found on page 6 of the UNSE Test Year EPS Report, which combined the 24  
6 panels at Lake Havasu City and 27 panel at Kingman, which total 51 panels which is one panel  
7 more, much less of an error than "flat wrong."

8 There is no discussion in the USNE Test Year EPS Report about "320 solar modules  
9 installed:.. capable of generating over 8,000 watts of power"<sup>106</sup> which is why they were not  
10 discussed in this testimony. The test year comment in the Magruder Supplemental Testimony  
11 about "no solar electricity has been generated in Santa Cruz service area"<sup>107</sup> is based on Table  
12 3<sup>108</sup> of the UNSE Test Year EPS Report which shows no entries under "NO" which is assumed  
13 to be Nogales, as the other two abbreviations, KG for Kingman and LH for Lake Havasu City  
14 are supported by other discussions in this report.

15 **Q. Have you responded to all of Mr. Hansen's issues?**

16 **A.** Yes for the four issues, now for my response to his concerns about my three  
17 Recommendations.

18 First, the term "GreenWatts™ SunShare Hardware Buydown Program"<sup>109</sup> or "SunShare" should have  
19 been used in the first recommendation in my testimony revised below.

20 Second, the schedule for REST filing proposed differs from that required by the ACC. It  
21 wasn't until 9 August 2007 that an email from Mr. Ray Williamson, ACC Staff, outlined the  
22 REST submission process,<sup>110</sup> obviously received after submission of the Magruder  
23 Supplemental Testimony.

24 **Q. Do you have any changes in your recommendations found in section 7.4 of your filing?**

25 **A.** Yes. The Supplemental Direct Testimony recommendations in 7.4, should be replaced with the  
26 following four recommendations:

30  
31 <sup>105</sup> *Ibid.* page 4, line 17 to page 5 line 4.

32 <sup>106</sup> UNSE Test Year EPS Report, page 6.

33 <sup>107</sup> Magruder Supplemental Testimony, page 57, lines 13 and 14.

34 <sup>108</sup> UNSE Test Year EPS Report, Table 3, "EPS Solar Energy Production Period from July 1, 2005 through  
35 June 30, 2006, page 5.

36 <sup>109</sup> This program name is in the title of ACC Decision No. 67178. On page 3 in lines 2 and 3, the term  
37 "GreenWatts™ SunShare Hardware Buydown Program ('SunShare')" is used. Regret confusion.

38 <sup>110</sup> This email stated that all REST tariffs should be filed by 14 October 2007 with the Commission. The  
39 Commission expects that the UNSE and TEP REST Implementation Plans be filed in September.

- 1 (1) That UNSE continue to invigorate its "SunShare" program, as upgraded on 21 December  
2 2006 and as expanded in its REST Implementation Plan expected filing during September  
3 2007.
- 4 (2) That UNSE present in its REST Implementation Plan<sup>111</sup> details on how it will transition from  
5 EPS to REST, as required by the ACC Decision No. 69127 and rules in Appendix A of this  
6 Decision to comply with or exceed<sup>112</sup> all REST requirements, summarized in Table 15 or as  
7 presented by UNSE to the Commission in its REST Implementation Plan.
- 8 (3) That UNSE present its REST Tariff not later than 14 October 2007 and implemented as  
9 required by the resultant Commission Order or Decision.
- 10 (4) That all future ACC REST Reports be routed through and signed by Mr. Hansen, whose  
11 job title reflects this area, before submission to the ACC and Docket Control.

12 **Q. Have you answered all the UNS Electric Rebuttal comments?**

13 **A.** Yes. In am particularly pleased that the UniSource CEO and UNSE President Mr. Pignatelli  
14 has use the term "compliance" with respect to the new REST rules. Compliance does not  
15 mean only 46% as used by Mr. Hansen, but 100% compliance. The forthcoming UNSE Plan  
16 will have to show how UNSE will meet ALL REST goals and requirements.

17  
18 **Q. Have you finished your Surrebuttal Testimony on this issue?**

19 **A,** Yes.

20  
21 **Q. Have you finished your Surrebuttal Testimony?**

22 **A,** Yes,, this completes my Surrebuttal Testimony.

23  
24  
25  
26  
27  
28  
29  
30  
31 <sup>111</sup> Pignatelli Rebuttal, page 16, lines 3 to 5, used the term REST "Compliance" Plan, which is assumed to be  
32 the same as the term REST Implementation Plan used by Mr. Hansen.

33 <sup>112</sup> It is very interesting to note that EPRI, the electric utility research institute, which UniSource and UNSE have  
34 memberships, states in its Executive Summary, "Electricity Technology in a Carbon-Constrained Future" of  
35 15 February 2007, recommends "reasonable but aggressive deployment programs in seven specific  
areas...2. Increased deployment of cost-effective large-scale renewable energy resources, sufficient to  
exceed future State renewable portfolio requirements..." found at the ESRI website. At present I have no  
reproduction capabilities and may enter this ESRI document as an Exhibit during forthcoming hearings.