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IN THE MATTER OF THE APPLICATION OF
 UNS ELECTRIC, INC. FOR APPROVAL TO
 REVISE ITS DSM SURCHARGE BEGINNING
 JUNE 1, 2009

Docket No. E-04204A-06-0783

ACC Decision No. 70360

**RESPONSE AND EXCEPTIONS TO UNS ELECTRIC APPLICATION
 TO INCREASE ITS DSM SURCHARGE**

This filing is in response to the UNS Electric Application for Approval to Revise its DSM Surcharge beginning June 1, 2009, the Staff Report of 12 May 2009, and Demand Side Management Surcharge Rider R-2 of 1 May 2009, in ACC Docket E-04204A-06-0783 and ACC Decision No 70360. This filing contains an analysis of the total UNS Electric DSM Programs. A separate filing will be for the Compact Fluorescent Light (CFL) Program.

1. Summary of UNS Electric DSM Programs Analysis (See Attachment A)

In 2007, UNS Electric submitted a plan for seven Demand Side Management Programs:

- a. Education and Outreach Program (E&O) – Attachment B
- b. Direct Load Control Program (DLC) – not implemented - Attachment C
- c. Low Income Weatherization Program (LIW) – Attachment D
- d. Energy Smart Homes Program (ESH) – Attachment E
- e. Residential HVAC Retrofit Program (Res HVAC) – Attachment F
- f. Shade Tree Program (ST) – Attachment G
- g. Commercial Facilities Efficiency Program (CFE) – Attachment H

Arizona Corporation Commission
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1.1 Accomplishment of 2008 DSM Program Goals and Objectives.

The accomplishment of the performance goals set for 2008 in this company's plan were, at best dismal, and frankly terrible. In summary, UNSE in 2008 accomplished ONLY

- 4.5%, or 0.483 MW in the DSM plan to reduce 10.7 MW peak demand goal were met.
- 20.3%, or 795 MWh in the DSM plan to reduce 3,923 MWh energy savings was met.
- 2.7% or 1,157 Therms in the DSM plan to reduce 42,419 Therms were met.

Overall, less than 10% of the DSM plan electrical goals were met and is unsatisfactory.

The annual UNSE load is 1,850,954 MWh. Using the 2008 reduction of 795 MWh; the reduction is 0.043% of the total load. UNS Electric DSM 2008 results were pathetic, at best.

The 2008 environmental reductions were

- 29.9%, or 974 pounds of SOx in the DSM plan goal of 3,256 lbs was met.
- 29.5%, or 3,108 pounds of NOx in the DSM plan goal of 10,528 lbs was met.
- 34.1%, or 2,314,000 pounds of CO2 in the DSM plan goal of 6,787,000 lbs was met.

These appear erroneous as the LIW program data includes cumulated reductions since 1994 as discussed in Attachment A. Again, even with this error, goals were not met.

1.2 Cost of the Beneficial Accomplishments.

For these beneficial accomplishments costs were extraordinarily high. Overall it

- Cost \$667,429.00 to reduce peak demand capacity by 1 MW,
- Cost \$410.54 to reduce each MWh of electrical energy,
- Cost \$283.00 to reduce each Therm of natural gas energy,
- Cost \$336.00 for each pound of SOx not emitted to the atmosphere,
- Cost \$105.00 for each pound of NOx not emitted to the atmosphere,
- Cost \$0.14 for each pound or \$280.00/ton of CO2 not emitted to the atmosphere, and
- Cost \$1.14 for each gallon of water saved.

For the 2,319 program participants in 2008, it cost an average of \$141 per participant that included online views of Energy Advisor and school children participants.

1.3 Cost Contradictions and Inconsistencies.

The company's data is in the several different dockets that complicate its many contradictions and inconsistencies. For example, actual expenditures for January through December in 2008 vary between \$345,778 in the DSM Report¹ and \$343,926 in an amended DMS Surcharge Rider R-2 letter². What is most interesting is that the 2008 Program Budget

¹ UniSource Energy Services letter, no title, Docket No. E-04204A-06-0783, of 1 April 2009, filed the Semi-Annual DSM Program Progress Report for Jun-Dec 2008 with year-to-date data. There are different Total DSM Program expenditures using on page 1 at \$461,455 that include Program Costs of \$345,778 and \$115,667 for Measurement, Evaluation, and Research (MER) expenditures of \$115,667. "Evaluation, Measurement, and Verification (EM&V) was in the Program Costs and not separately funded when the initial DSM Adjustor was determined in the last UNS Electric rate case in 2008.

² UniSource Energy Services letter, "Demand Side Management Surcharge (DMSS) Rider R-2" of 1 May 2009, corrected a prior filing on 24 March 2009, ACC Docket E-04204A-06-0783, Decision No. 70360, on page titled "UNSE 2009 Budget for Adjustor". In addition to the "program total" above, \$115,667 is added as an additional 2008 expenditure for "Measurement, Evaluation & Research" and a footnote stated, "these costs include

included "Evaluation, Measurement & Verification (EM&V)/Research Activity" costs that are now being added as additional expenditure than program costs. I will return to this strange and new \$115,667 MET issue in Appendix A.

Looking at administrative costs for each DSM program, we see some anomalies such as dual funding education accounts that could lead to double charges. For example, In addition to the Education & Outreach (E&O) DSM Program expenses, other expenses for \$7,350 for training and technical assistance (of which \$1,334 was for E&O), \$2,823 for non-E&O consumer education, \$11,942 for non-E&O "program marketing", or a total \$14,781 within the purview of the E&O DSM program. By splintering these education and outreach to individual programs, UNSE DSM representatives become single-DSM program focused instead of having the total energy efficiency and DSM viewpoint.

Further, expending \$73,555 on the Energy Smart Home (ESH) DSM program for three participants in 2008 appears excessive. In Santa Cruz County, where these three ESH programs are located, our Planning & Zoning Commission routinely requires developers to have, as a minimum, 20% of their homes to be EnergyStar®-compliant. This local action exceeds the 8-11% goal for the ESH program at no cost. Two local developments are voluntarily planned as LEED GOLD-compliant that exceeds the UNSE plan.

1.4 Company's Request for Additional Funding in 2009.

Based on its corrected filing of 1 May 2009³, the company requested DSM Adjustor funds be expended as follows:

	2008 Expended	2009 Request	Budget Increase	Percent Increase
E&O DSM Program	\$119,277	\$300,000	\$180,723	151.5%
LIW DSM Program	\$ 96,171	\$117,805	\$ 26,634	27.7%
ESH DSM Program	\$ 89,813	\$305,444	\$215,631	240.0%
Res HVAC Program	\$ 15,772	\$223,438	\$207,666	1,719.3%
Shade Tree Program	\$ 2,790	\$ 68,285	\$ 65,495	2,347.5%
CLF DSM Program	\$ 16,730	\$340,676	\$323,946	1,936.3%
<u>Commercial Fac. Program</u>	<u>\$ 3,375</u>	<u>\$337,247</u>	<u>\$333,872</u>	<u>9,892.5%</u>
DSM Programs Total	\$459,593	\$1,522,894	\$1,063,307	231.4%
MET (EM&V)	\$115,667	\$ 0	\$ 0	0.0%
UNSE Baseline Study	\$ 0	\$ 13,633	\$ 13,633	new
DSM Adjustor Total	\$459,593	\$1,536,527	\$1,076,934	234.3%

Summit Blue assistance with program design, evaluation, and technical assistance; and costs to develop a database to track program participation and savings."

³ *Ibid.*

1.5 Public Participation in DSM Programs.

The E&O DSM program goals for reaching the public may conflict with individual DSM Program tasks. As recommended in the UNSE Rate case, consolidating ALL educational efforts into the E&O Program remains as a beneficial way to “get the word out.”

As an example, the annual 2008 UNSE Time of Use (TOU) Report shows there are only seven (7) TOU residential customers using TOU service for total savings of \$18.32 for 2008.⁴ This is also NOT satisfactory. I have yet to meet anyone in Santa Cruz County that knows TOU is available for residential customers. The company bill stuffer did not include adequate information to know the peak/non-peak hours, the differences in cost/kWh for each, or show examples where customers can save by using TOU. Cost is a significant motivator for customers to shift electrical demands from peak to non-peak hours.

Widespread implementation of TOU should lead to either measurable Peak Demand reductions or higher revenue for the company, thus it is the public's interest to promote TOU and the company's revenue interest to not promote TOU. Firm direction by the Commission to ensure the former is essential.

Obviously, the effectiveness of UNSE E&O program is suspect, no matter the number of newspaper, radio, or flyers are used. It is the human touch that sells and working closely with customers gives the greatest payoff. Satisfied customers who save will convince others, a marketing technique used in the automobile industry, while dissatisfied ones lose sales.

The public does NOT understand and, in general, is unaware these DSM Programs. Without local proponents for UNS Electric, who understand the benefits demand side management, such as TOU, then DSM will not make a dent in reducing peak demand. TOU is designed to reduce PEAK demand; none of the other present UNSE DSM Programs can guarantee lower peak demand and the resultant capital savings for the company.

A local, utility-sponsored active citizens advisory council or committee (CAC) appears to be the best way to keep the public informed about DSM and a host of other energy related information. A CAC is essential for every community, especially, where there is a local UNS Electric/Gas office that should be used to support CAC activities. Frequent meetings, with same and new faces, will improve knowledge sharing between the public and the company. This

⁴ UniSource Energy letter of 13 February 2009, Decision No. 70440, Docket No. E-04204A-06-0783, “Annual Report – UNS Electric, Inc.’s, Time-of-Use Tariffs”, at 2, hereafter “TOU Annual Report”.

benefits both groups, in particular, prior to submitting filings to the Commission, with their participating in putting program particulars to meet local needs will gain easier public acceptance. There is no such dialog now.

The Santa Cruz County/City of Nogales CAC, mandated in ACC Decision No. 61793 of 29 June 1999, last met in September 2001. One of its designated areas of interest is DSM.

How many commercial ratepayers use TOU tariffs? They can significantly reduce demand, and at a step higher, how many commercial-industrial users are on non-Firm delivery schedules? This kind of delivery schedule can reduce peak demand in emergency situations.

1.6 Zero-Net Energy Homes (ZEH) Efficiency Program.

As stated in ACC Order No. 70522,

“The Commission believes it is important for UNS Electric to develop a zero-net energy efficiency program in order to mitigate the impact of price increases on consumers and assist the Company in reliably meeting the needs of future growth.”⁵

The company provided a response on 30 March 2009, to this ordered requirement that UNS Electric establish a ZEH pilot program. This response stated, “None of the ZEH scenarios studied passed the Total Resource Cost (TRC) test.”⁶ The TRC and other “tests” exist only in a “draft” Staff Report and have not been adopted by the Commission. Further, some customers feel environmental benefits outweigh cost and they should be given an option to be able to select a 100% net-zero plan.

The company response included 50%, 75%, and a 100% ZEH program.

There were 10 homes in the evaluated scenarios did not include state of the art (SOA) energy efficient homes. My home has 5 sky-light with four that are 6-feet long and electric lights are not needed in most rooms during the day, a 10-foot porch on the E, S, and W sides of home so the Sun only reaches windows in winter, EnergyStar® painted roof with low solar absorbance, insulated roller shutters to seal the home at night, at least one ceiling fan in each room, higher grade than code for insulation, N/S orientation, up to 15-foot ceiling height in a major family room, solar water heater with tankless storage and natural gas backup, 100% CFL

⁵ ACC Decision and Order No. 70522, “In the matter of the Application of UNS Electric, Inc.’s for Approval of its Proposed Demand Side Management Portfolio for 20089-2012 – Energy Smart Homes”, of 30 September 2008, at 2 and 9.

⁶ UniSource Energy Services letter, “UNS Electric, Inc.’s Zero-Net Energy Homes Pilot Program” of 30 March 2009, at 1.

lights, double-pane sash windows bottom/top opened most mornings, and TOU metering. Since installation of my TOU-meter on 6 March 2009, my 2,700 square-foot has used a total of 735 kWh of electricity, with 95 kWh ON-Peak, 547 kWh OFF-Peak, and 92 kWh Shoulder.⁷ My average annual electricity usage for past 4 years has been 9,364 kWh per year.⁸ The “current practice” homes in the company’s scenarios consume 14,880 kWh per year. My peak month from 15 June-15 July averages 1,961 kWh per month and the minimum month April 15-May 15 averages 303 kWh per month. Further, the analysis assumed a line loss factor of 10.69%; however, under the new UNSE-WAPA network transmission tariff, line losses are now 3.3%. Maybe with correct inputs, this ZEH analysis could be useful, but the significant input errors make any output suspect. Further, the validation certification for the predication model used for calculations of a ZEH is unknown.

2. Conclusions.

Thus, without an outside, independent audit of these and other DSM expenditures, ratepayer’s funds can easily be used for imprudent and non-DSM beneficial purposes. The expenditure of over \$61,400 for such poor results is a real concern as discussed in Attachments. The lack of participation by RUCO is noted with displeasure. A poorly informed public is equally disturbing. A ZEH DSM program for 50%, 75%, and 100% zero-energy homes is not in the present UNSE DSM Program as correction of the ZEH study will be necessary prior to additional review. Additional programs are needed for the levels of LEED certifications.

3. Recommendations.

3.1. Consolidate DSM Program Information into ONE Binder.

Recommend that all the UNS Electric programs be consolidated into a three-ring binder, and issued so all DSM Programs are aware of other programs, with updates quarterly, a

⁷ *Ibid*, TOU conditions were not accurately considered (no 4-hr per summer day shoulder conditions) in the Measure Analysis Sheet, page 19. Further, the cost of electricity was significantly different from actual rates:
Present Summer TOU Peak Rate (2-6PM) is 10.2086 cents, not 12.777 cents/kWh
Present Summer TOU Off-Peak Rate (8PM-noon) is 7.2092 cents, not 0.466 cents/kWh in the analysis
Present Summer TOU Shoulder Rate (noon-2PM, 6-8 PM) is 7.7793 cents/kWh, not considered
Non-TOU rates, first 400 kWh are 9.02348 cents/kWh and additional kWh is 9.89262 cents/kWh, considerably less than that used in Appendix 5 of this analysis. Above TOU meter readings as of 15 June.

⁸ My home does not have a PV system but have a bid for 5.5kW system to meet over 50% of my annual demand, thus making my system nearly net-zero for an out-of-the pocket cost of about \$11,000. The PV systems used in this analysis are inadequate, from 0.70 kW DC to 4.74 kW DC.

table of contents and list of effective pages, containing flyers, brochures, and other "marketing material" and that these DSM binders be issued to all UNS Electric offices, Staff, RUCO, parties to these hearings, and to local citizens advisory council or committees (CAC) members, as they are being formed.

3.2 Increase Public Awareness Through Local CACs.

Recommend that each UNS Electric Office develop a local citizens advisory council or committee (CAC) of at least 10 or more interested local ratepayers, representing all rate categories, to meet at least bimonthly, to discuss DSM programs, any future filings including DSM, annual PPFAC adjustor rate impacts, electric and natural gas rate case issues, filing before Arizona Power Plant and Transmission Line Siting Committee, diverse energy efficiency issues, renewable energy standard and tariff (REST) issues, energy and grant programs sponsored by the Arizona Department of Energy Office, TOU programs, UNSE/UNSG renewable energy rebate/buy down programs, semi-annual REST, TOU, and DSM Reports, and other current energy related topics including use of Energy Advisor, E&O training "academic" materials, and other company DSM presentations. An agenda will be published in a local newspaper at least 14 days prior to meetings, all meeting open to the public, Commission staff invited to attend, minutes taken and published on company website (having one section for each local CAC) with copies of presentations made available.

The company should consider having an informed public, distributed throughout the service area, will provide company knowledgeable proponents to help promote future changes. The Company, being responsible for managing each CAC, will designate a local company person as the local coordinator. CAC oversight results and status shall be included in future DSM Status Reports to the Commission Utility Division and this docket to include number of local members and rate categories represented in each CAC, dates of meetings, and number of attendees, or other information requested by the Utility Director. In general, it would be considered appropriate for each CAC to sponsor a local Solar, Renewable or Sustainability EXPO at least annually so a wider public audience can participate and learn about applicable DSM and REST programs.⁹

⁹ In November 2007, I held the first Santa Cruz County Solar EXPO in Tubac, with 150 attendees, 10 vendors and displays, and presentations on solar systems, how to prepare for solar, DSM programs and Solar

3.3 Increase DSM Status Reports Frequency and Audits, until back on track.

Recommend, based on performance to date, that increased cost accounting and expenditure reviews are necessary, until this program is back on track, therefore, a quarterly report shall be necessary to include expenditure justifications and details, with both Staff and RUCO review and required to provide constructive "feedback" to the company on each Quarterly DSM Report, until at least 90% accomplishment of the DSM Program Goals are being met, as determined by the staff Utilities Director to resume the Semi-Annual DSM Report. Further, each DSM Status Report shall include a financial statement and annual audit showing that funds were prudently expended on these programs.

3.4 Require Annual Goals for every DSM Program.

Recommend that specific Annual performance and environmental GOALS be established for every DSM Program. Further, that all DSM Reports shall report performance status toward accomplishment each annual goal.

3.5 Add Creative, Innovation DSM and EE Programs.

Recommend that innovative programs, including LEED-certification, LED lights, solar water heaters to replace electric (UNSE DSM Programs) or natural gas (UNSG DSM Programs), including incentives for EnergyStar® cool roof paints, tankless water heaters, and adding additional incentives, be presented to CACs and other local groups for discussion, comment and review prior to submission to the Commission for approval. Further new ideas should be credited to various CACs, when being presented to other organizations. Add additional environmental factors, such as reduced water demands, reduced equivalent mercury emissions, as goals for future programs.

applications and Rebate programs. UNSE provided speakers for 3 of the 4 presentations and an ad in the *Nogales International*. The total cost, other than for UNSE, was \$37.40 to print a program for attendees. The Second Santa Cruz County Renewable Energy EXPO was held in March at the County Fair Grounds in Sonoita, with over 350 attendees, over 12 displays, and presentations. Cost was about \$300 defrayed by donations. The Third Santa Cruz County (Sustainability or Renewable Energy) EXPO is planned for the fall of 2009 in Rio Rico, probably at the high school, with over 600 expected attendees. A Fourth SCC EXPO is tentatively planned for either Nogales or Sonoita in the spring of 2010 and semi-annually thereafter. The public wants to know about these issues.

3.6 Establish a Zero-Net Energy Home (ZEH) Efficiency DMS Program.

Recommend that the present ZEH study be redone due to too many erroneous inputs and reviewed by a local CAC prior to submission of a more realistic ZEH DSM Program. UNS Electric should then apply for a ZEH DSM program at 50%, 75% and 100% while noting that the Total Resource Cost (TRC) test was not met. Further, the proposed incentives are not significant and should be doubled to \$1,200, to \$1,600 and to \$2,000 respectively.

3.7 Restore Direct Load Control DSM Programs.

- (1) Recommend that restoration of Direct Load Control (DLC) DSM Programs. Only such Demand Management (DM) programs ensure demand, especially peak demand, is reduced. Control of DM programs is by the company and is the way to ensure "peak" demand reductions are being met.¹⁰ Neither UNSE nor TEP have hand-on experience with a DLC Programs. Neither company has an R&D program where small pilot projects, using cooperative volunteering customers, can be conducted to evaluate technology options and gain corporate experience in "state-of-the-art" (SOA) technologies. Without such experiences, then less risk can be taken, programs overrun their budgets, performance does not meet expectations and failures are more common. The "smart" Grid will employ DSL technologies and corporate experiences are critical to understand how to best employ SOA technologies. Without a corporate R&D Program, innovation and progress with UNS Electric in future "smart" grid, DSM and Energy Efficiency

¹⁰ DM is one of the three DOE-defined DSM terms that become confused in DSM Programs. These three DOE DSM terms are

- a. Energy Conservation (EC). These are human actions to reduce or change demand. Achieving success is through education and knowledge by the customer to take the appropriate action. Conservation can never be assured. Conservation performance may not be directly measured. When a human "conserves" by purchasing an EnergyStar® refrigerator to reduce electricity cost, this is a conservation action but does not reduce demand unless properly used after installation. Conservation includes training, educational programs and materials but does not include energy efficiency equipment.
- b. Energy Efficiency (EE). EE is the result of using of various equipment or items to reduce demand, such as an automated thermostat, EnergyStar® refrigerator or EnergyStar® roof paint to reduce heat transfer through one's roof. EE program beneficial performance can be measured in terms of resultant reduction in capacity in kW and energy in KWh or Therms. Cost can be in terms of dollars, with results similar to Table 4 in Attachment A. Cost and Benefits are measureable for EE programs.
- c. Demand Management (DM). This is when the customer's demand can be interrupted by direct load control (DLC) by the system operator to individual appliances or equipment on customer premises such as pool pumps and sweeps, air conditioning units, or clothes dryers. DLC usually involves residential customers. An Interruptible Demand tariff is another form of DM. DM is the only process on short notice, other than load shedding, to rapidly reduce demand or to plan on demand reductions, when needed.

programs will be retarded due to a lack of knowledge, experience, and skills necessary to just stay current with the SOA.

- (2) Recommend that UNS Electric seriously consider to split fund R&D Programs, equivalent to 10-25% of the DSM Budget and to submit DSM R&D Projects in its DSM Plan. With an R&D DSM Program, then limited prototype R&D projects can be used to establish the basis for much wider-scale future DSM, EE and REST projects. The proposed DSM R&D Projects should be included in this docket, with a somewhat different funding profile.
- (3) Recommend that the company, in general, fund 50% and the DSM Adjustor fund the remaining 50% for DSM R&D Projects. The company's R&D expenditures would be considered in next follow-on rate case for prudence and used and useful considerations. Other share splits could be used for future REST R&D, stimulus partially funded, or other funding sources including grants for DSM projects.
- (4) Recommend UNS Electric submit a new, more realistic, DLC DSM or DLC R&D DSM Program not later six months after the effective date of this Order based on these recommendations.

4. EXCEPTIONS,

The following exceptions are recommended to the proposed Recommended Opinion and Order (ROO) in the Staff Report of 12 May 2009:

4.1 Exception No. 1 – Consolidate DSM Program Information into ONE Binder.

- a. Discussion. At present, there is no single source for DSM information.
- b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "There is no single source for DSM information."
- (2) Add new Order to read: "It is ORDERED that ...[see Recommendation 3.1 above]"

4.2 Exception No. 2 – Increase Public Awareness Through Local Citizens Advisory Committees or Councils.

- a. Discussion. At present, there are no working relationships between the utility and its customers on DSM or any other energy related issues.
- c. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "There are not ongoing utility relationships between the utility and its customers, including consumer previews of future programs, rates, and other energy issues."
- (2) Add new Order to read: It is ORDERED that...[see Recommendation 3.2 above]

4.3 Exception No. 3 – Increase DSM Status Reports Frequency and Audits.

a. Discussion. At present, due to lack of achieving DSM goals, DSM Status Reports are needed more frequently. Further, audits are needed to ensure ratepayer funds are prudently expended on these programs.

b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "The performance of UNSE DSM Programs needs to be monitored more closely as the Semi-Annual DSM Reports do not provide adequate assurance that DSM program performance programs are being met, thus Quarterly DSM Reports, submitted 30-days days after each quarter should provide the Commission with information to determine the performance of ongoing current DSM Programs.
- (2) Add new Finding of Fact to read: "There are no performance or financial audits used to monitor prudent spending of funds to achieve DSM performance goals."
- (3) Add new Order to read: It is ORDERED that...[see Recommendation 3.3 above]

4.4 Exception No. 4 – Require Annual Goals for every DSM Program.

a. Discussion. At present, the DSM Reports do not present annual goals and have "life-time" or "5-year" goals. Annual performance accomplishments should be measured against an annual goal.

b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "The present UNS Electric DSM Reports do not present annual performance and environmental goals."
- (2) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.4 above]

4.5 Exception No. 5 - Add Creative, Innovative DSM and EE Programs.

a. Discussion. At present, most DSM programs that UNS Electric have been routine, low technology, and not very creative."

b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "The present UNS Electric DSM Programs lack state of the art creativity and innovation which maybe due to there being no DSM or EE Research and Development (R&D) activities at the company."
- (2) Add new Finding of Fact to read: "Newer energy efficiency technologies have provided many opportunities for inclusion in DSM Programs that are not in today's programs that local discussion CACs could preview and help the company create to benefit all concerned."
- (3) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.5 above]

4.6 Exception No. 6 – Establish Zero-Net Energy Home (ZEH) Efficiency DMS Programs.

- a. Discussion. The ZEH is on the leading edge of EE for homeowners
- b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "The company's initial ZEH Study appears to have used erroneous inputs that make its results suspect. This study needs to be redone and reviewed prior to submission to the Commission."
- (2) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.6 above]

4.7 Exception No. 7 – Restore Direct Load Control DSM and Add New Pilot R&D Programs.

a. Discussion. At present, most programs that UNS Electric has applied for have been routine, low technology, and not very creative in nature. Without any Research and Development (R&D) to develop creative and innovative DSM and EE Programs, this trend may continue."

- b. Recommended changes to the ROO:

- (1) Add new Finding of Fact to read: "The company removed the only DLC DSM Program because it was concerned about the state of art (SOA) thermostats and meters. The present UNS Electric DSM Programs lack SOA features that maybe due to no DSM or EE Research and Development (R&D) activities at the company."
- (2) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.7(1) above]
- (3) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.7(2) above]
- (4) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.7(3) above]
- (5) Add new ORDER to read: It is ORDERED that...[see Recommendation 3.7(4) above]

4.8 Exception No. 8 – Synchronize the 2009 DSM Adjustor to Expire on 1 June 2010 with the same revenue for the company’s DSM program.

a. Discussion. Due to the one-month delay, adjusting by a factor of 12/11 or 1.090909 times the company proposed 2009 DSM Adjustor of \$0.000768 per kWh equals an eleven-month factor of \$0.0008378 per kWh at the rate for 2009, then subtracting 1/12 of the 2008 DSM Adjustor rate of \$0.000583 x (1/12) or \$0.0000485 for revenue collected at the 2008 DSM Adjustor rate in June 2009, for a revised 2009 DSM Adjustor of \$0.0007893 per kWh.

b. Recommended changes to the ROO:

- (1) In Findings of Fact #5, add at end: “Due to approval for the 1 July 2009 instead for the June 2009 billing cycle, the proposed adjustor rate is increased by 12/11 or 1.090909 and reduced by 1/12th of the 2008 rate for revenue collected in June 2009, thus effective 1 July 2009, the DSM adjustor rate will be \$0.0007893 per kWh.”
- (2) In Findings of Fact #9, change the Table to read as:

Average monthly usage by Season	kWh	Monthly increase from Company proposal (\$0.000185)	Monthly total based on revised Company proposal (\$0.0007893)
Summer	1083	\$0.20	\$0.85
Winter	665	\$0.12	\$0.52

- (3) Change the first ORDER to read: “IT IS THEREFORE ORDERED that the UNS Electric, Inc.. DSM adjustor rate be, and hereby is, set at \$0.000768 per kWh, beginning July 1, 2009.”

Respectfully submitted on this 16th day of June 2009 to all parties on the Service List.

MARSHALL MAGRUDER

By 

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Attachments:

- A Summary Analysis of the UNS Electric DSM Programs
- B Overview Analysis of the Education and Outreach DSM Program
- C Overview Analysis of the Direct Load Control (DLC) DSM Program
- D Overview Analysis of the Low Income Weatherization (LIW) Program
- E Overview Analysis of the Energy Smart Homes (ESH) DSM Program
- F Overview Analysis of the Residential HVAC Retrofit (Res HVAC) DSM Program
- G Overview Analysis of the Shade Tree (ST) DSM Program
- H Overview Analysis of the Commercial Facilities Efficiency (CFE) DSM Program

SUMMARY ANALYSIS OF THE UNS ELECTRIC 2008 DSM PROGRAMS

1. Summary.

In 2007, UNS Electric submitted a plan for seven Demand Side Management Programs:

- a. Education and Outreach Program (E&O)
- b. Direct Load Control Program (DLC)
- c. Low Income Weatherization Program (LIW)
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- e. Residential HVAC Retrofit Program (Res HVAC)
- f. Shade Tree Program (ST)
- g. Commercial Facilities Efficiency Program (CFE)

1.1 DSM Program Goals for 2008.

The 2008 goals for these programs are summarized in Table 1 below:

Table 1 – UNSE DSM PROGRAM GOALS FOR 2008¹¹

2008 DSM Goals	UNSE DSM Program for 2008 (excluding CFL Program)							Total for 2008
	E&O	DLC	LIW	ESH	Res HVAC	ST	CFE	
Non-Coincident Capacity Savings, MW	0.0	9.42	0.05	0.54	0.24	0.0	0.46	10.71 MW
Coincident Capacity Savings, MW	0.0	9.42	0.0	0.42	0.24	0.0	0.42	10.5 MW
Energy Savings, MWh	0	36	46.4	635.6	660.8	140.2	2,403.8	3,922.8 MWh
Energy Savings, Therm	0	0	3721.5	38,697.2	0	0	0	42,419 Therms
DSM Program Annual Budget	\$170,000	\$1,288,389	\$105,000	\$420,000	\$300,000	\$65,000	\$400,000	\$2,748,389
Lifetime SOx Reduction (lbs)	0	223.8	36.2	495.8	515.4	109.4	1,875	3,255.6 lbs
Lifetime NOx Reduction (lbs)	0	722.8	117.0	1602.0	1,665.0	363.5	6,057.6	10,527.9 lbs
Lifetime CO2 Reduction (lbs)	0	466,400	75,600	1,033,600	1,074,400	228,000	3,908,600	6,786,600 lbs

1.2 DM Program Results for 2008. The results for each 2008 DSM program are in Table 2 below:

Table 2 – UNSE DSM PROGRAM ACCOMPLISHMENTS FOR 2008

Actual 2008 DSM Results ¹²	UNSE DSM Program for 2008 (excluding CFL Program)							Total for 2008
	E&O	DLC	LIW	ESH ¹³	Res HVAC	ST	CFE	
Non-Coincident Capacity Savings (MW)	0	0	0	0.471	0.012	0	0	0.483 MW
Coincident Capacity Savings (MW)	0	0	0	0.471	0.012	0	0	0.483 MW
Energy Savings (MWh)	0	0	34	728	33	0	0	795 MWh
Energy Savings (Therm)	0	0	1,116	41	0	0	0	1,157 Therms
Program Expenses (DSM Report Table 2)	\$119,277	\$0	\$96,823	\$74,779	\$16,972	\$2,790	\$3,375	\$286,941
2008 Expenses (DSM Adjustor Request)	\$119,277	\$0	\$96,171	\$89,813	\$15,772	\$2,790	\$3,375	\$ 327,198
Lifetime SOx Reduction (lbs)	0	0	537	50	387	0	0	974 lbs
Lifetime NOx Reduction (lbs)	0	0	1,714	159	1,235	0	0	3,108 lbs
Lifetime CO2 Reduction (lbs)	0	0	1,369,000	148,000	797,000	0	0	2,314,000 lbs
Lifetime Water Reduction (gallons)	0	0	158,496	14,667	114,230	0	0	287,393 gallons
Number of actual participants	2,243*	0	44	3	29	0	0	2,319 people

* = Participants that used the UNS Website (1,564 residential and 309 commercial customers accessed Energy Advisor, 758 completed an online Energy Audit, 101 accessed TOU information, and 150 were 4th grade students as "academic" participants.

¹¹ DSM Program Plan, p. 11, "Electric Savings and Benefits, 2008-2012 Programs" annualized five-year goals by dividing by 5.

¹² UNSE Semi-Annual DSM Progress Report, for 1 July-31 December 2008, with year to date data, Docket No. E-04204A-06-0783, pp. 1-3, hereafter "DSM Progress Report" and includes the CFL Program.

¹³ Data for Capacity, Energy, Thermal Savings from DSM Report p. 7 with higher values than tables.

1.3 Accomplishment of DSM Goals in 2008.

To determine goal achievement we will take ratios by comparing actual results in Table 2 to the goals from Table 1, as shown in Table 3 below:

Table 3 – ACCOMPLISHMENT OF 2008 DSM PROGRAM GOALS

Goal Accomplishment (Table 2 / Table 1=)	UNSE DSM Program							Total
	E&O	DLC	LIW ¹⁴	ESH	Res HVAC	ST	CFE	
MW Capacity Savings	NA	0/9.42= 0%	0/0.05 = 0%	0.471/0.54 = 17.8%	0.012/0.24= 1.0%	0/0= 0.0%	0/0.46 = 0.0%	0.483/10.71 4.5%
MWh Energy Savings	NA	0/9.42 = 0.0%	34/46.4 = 73.2%	728/636 = 111.4%	33/660.8= 5.0%	0/140.2 = 0.0%	0/0.42= 0.0%	795/3923= 20.3%
Therm Energy Savings	NA	0/0= 0.0%	1116/3722= 30.0%	41/38697= 0.1%	0/0= 0.0%	0/0= 0.0%	0/0= 0.0%	1157/42419= 2.7%
SOx goal achievement	NA	0/223.8= 0.0%	537/36.2= 1,483%	50/495.8= 10.1%	387/515.4= 75.1%	0/109.4 = 0.0%	0/1875= 0.0%	974/3256= 29.9%
NOx goal achievement	NA	0/722.8= 0.0%	0/117 = 0.0%	159/1602= 9.9%	1235/1665= 74.1%	0/363.5 = 0.0%	0/6058= 0.0%	3108/10528= 29.5%
CO2 goal achievement	NA	0/466,400= 0.0%	1369446/75600= 1,811%	148/1033.6= 14.3%	797/1665= 47.8%	0/228000= 0.0%	0/3,908k= 0.0%	2,314/6,787= 34.1%

1.4 Additional Accomplishments.

Using data from Tables 1 and 2, additional “accomplishments” and results in Table 4:

Table 4 – OTHER COSTS AND BENEFITS OF THE 2008 UNSE DSM PROGRAMS

Ratio (A/B=)	UNSE DSM Program							Total
	E&O	DLC	LIW	ESH	Res HVAC	ST	CFE	
Program Expense per MW	No MW Saved	NA	No MW saved	\$89,813/ 0.471 = \$190,686 per MW	\$15,772/ 0.012 = \$1,314,333 per MW	No MW saved	No MW saved	\$327,198/ 0.483 = \$667,429 per MW
Program Expense per MWh	No MWh Saved	NA	\$96,171/ 36 = \$2,671 per MWh	\$89,813/ 728 = \$123.37 per MWh	\$15,772 / 33 = \$477.94 per MWh	No MWh Saved	No MWh Saved	\$327,198/ 797 = \$410.54 per MWh
Program Expense per Therm	No Therms saved	NA	\$96,171/ 1,116= \$86 per Therm	\$89,813/ 41 = \$2,190 per Therm	No Therms saved	No Therms saved	No Therms saved	\$327,198/ 1,157 = \$283 per Therm
Program Expense per lb SOx	No SOx saved	NA	\$96,171/ 537 = \$179 per lb SOx	\$89,813/ 50 = \$1796 per lb SOx	\$15,772/ 387 = \$41 per lb SOx	No SOx saved	No SOx saved	\$327,198/974= \$336 / lb SOx
Program Expense per lb NOx	No NOx saved	NA	\$96,171/1714 = \$56 per lb NOx	\$89,813/ 159 = \$56 per lb NOx	15,772/ 1,235 = \$13 per lb NOx	No NOx saved	No NOx saved	\$327,198/3,108 = \$105 /lb NOx
Program Expense per lb CO2	No CO2 saved	NA	\$96,171/1,369 = \$70 per 1,000 lb CO2	\$89,813/ 148 = \$606 per 1,000 lb CO2	\$15,772/ 797 = \$20 per 1000 lb CO2	No CO2 saved	No CO2 saved	\$327,198/2,314 = \$141 per 1000 lb CO2
Program Expense per Gallon of H2O	No HO2 saved	NA	\$96,171/158,496 = \$0.61 per gal H2O	\$89,813/14,667= \$6.12 per gal H2O	\$15,772/114,230= \$0.11 per gal H2O	No HO2 saved	No HO2 saved	\$327198/287393 = \$1.14 per gal H2O
Program Expense per Participant	\$119277/ 2243 = \$491 per participant	NA	\$96,171/44 = \$2,185 per participant	\$89,813/ 3 = \$29,938 per participant	\$15,772/ 29 = \$544 per participant	No participants	No participants	\$327,198/2,319 = \$141 per participant

During the UNS Electric Rate Case on 13 June 2007, the company submitted a package of DSM Programs.¹⁵ Attachments that follow discuss each of these programs.

¹⁴ DSM Report Table 4 SOx, NOx, and CO2 data for LIW appears not to be Jan-Dec 2008 data but cumulative reductions since 1994 that explain the high LIW accomplishments herein.

OVERVIEW ANALYSIS OF THE EDUCATION AND OUTREACH (E&O) DSM PROGRAM

1. PROGRAM SUMMARY.¹⁶

The 2008 E&O DSM Program included four educational strategies:

- a. Residential Education for homeowners and apartment dwellers.
- b. Academic Education for school children.
- c. Commercial Education for small commercial customers.
- d. Time-of-Use (TOU) Education for commercial and residential customers.

The budget and allocated expenses are as follows:

E&O Program Budget Components	Initial Program Proposal ¹⁷	2008 Budget Allocations ¹⁸	Planned for 2008 ¹⁹	2008 Actual Expenses ²⁰	Planned 2009 ²¹
Residential & Commercial Education (a, d)	\$54,000	\$27,000		\$53,036	Breakout not provided with DSM Application
Advertize on-line Energy Audit		\$27,000			
Software License		\$11,000	\$65,000		
Academic Education (b)	\$15,000	\$15,000	\$15,000	\$3,822	
Time-of-Use Education (c)	\$90,000	\$25,000	\$25,000	\$23,049	
Evaluation	\$15,000	\$15,000	\$15,000	\$0	
Program Implementation				\$17,539	
Program Marketing				\$0	
Planning and Administration				\$1,823	
TOTAL	\$185,000	\$185,000	\$120,000	\$99,269	\$130,000

ACC Order No. 70401 allows UNS Electric to "shift money between program components in order to address changes in participation."²²

UNS Electric employees administer this program.

2. COMMENTS.

2.1 Effectiveness of TOU Education. For \$23,049, only 7 residential customers signed up for TOU tariffs that were approved in July 2008. There are no known TOU commercial or

¹⁵ UniSource Energy Services letter of 13 June 2007, "Demand Side Management Program Portfolio Filing," in ACC Docket No. E-04204A-07-0365, hereafter initial program. An "errata" was later filed in same docket with the UNSE "DMS Program Portfolio Plan 2008-2012", hereafter DSM Plan.

¹⁶ ACC Staff Report of 17 June 2008, "UNS Electric, Inc.'s Application for Approval of its Proposed Demand Side Management Portfolio for 2008-2012 – Education and Outreach Program", Docket No. 04204A-07-0365 and resultant ACC Order No. 70401 of 3 July 2008.

¹⁷ DSM Plan, Attachment 1, revised page 6.

¹⁸ ACC Order No. 70401, at 7.

¹⁹ *Ibid.*

²⁰ DSM Report, p. 12

²¹ UNS Electric, Inc., Application for Approval to Revise its DSM Surcharge Beginning June 1, 2009, of 24 March 2009, ACC Docket No. E-04204A-06-0783, hereafter "DSM Application", p. 2.

²² ACC Order No. 70401, at 11.

industrial ratepayers. All rate categories have TOU tariffs, and if the larger demand customers used TOU as a way for their company to reduce electricity costs, then electrical demands should be impacted. A TOU-participating company may want to change its start work hours in summer to earlier hours to reduce "peak" demand hours. Someone needs to show the financial benefits for making this change, as it is not obvious to many customers. The Santa Cruz service area has many produce plants with 0.5 MW loads that could make significant savings by completing their daily work by 2 PM, and avoid peak load rates. Use of actual billing statements, showing how this might reduce one's electric bills is the most effective way to have customers make a change. A billing flyer or 30-second radio ad will not have the same success percentage.

- 2.2 The multiple media used to date does not "get the word" out does and appears to be ineffective.
- 2.3 There appears to be little emphasis on having larger commercial customers shift from "firm" to "non-firm" delivery schedules, with lower rates for non-firm delivery.
- 2.4 Bases on comments in the main body of this filing, coordination between all UNSE DSM programs is vital from a customer's viewpoint. When DSM personnel deal with UNSE customers, it is essential that referral to the correct UNSE point of contact be made. During a February 2009, brief to the Santa Cruz County P&Z Commission, responses concerning REST rebates were not known by the ESH DSM Program briefer. Referral is an appropriate response.
- 2.5 I learned in May 2009, that I was the fifth TOU customer in the Santa Cruz service area. This fact caused me to request to respond to the UNSE Education and Outreach Program on 16 May 2009, to delay approval until after I conducted the analyses herein.

3. CONCLUSIONS.

- TOU participation in all rate categories is significantly below expectations.
- Present media appear to be ineffective.
- Personal contact should rapidly improve TOU acceptance and expand implementation.
- As stated in the main body of this filing, other UNSE DSM Programs also provide education and outreach.
- A comprehensive DSM, REST, and other program summary sheet is needed.

4. RECOMMENDATIONS.

- 4.1 Recommend that personal interactions with all customer categories be used to increase TOU success.
- 4.2 Recommend frequent, such a monthly, collaborative and working group meetings with a customers from all rate categories to solve local energy issues. In Santa Cruz County two such groups have sustainability goals, one is "Sustainability East of the Santa Rita Mountains" and another "Sustainability Santa Cruz". These could be ideal groups for company E&O representative participation to recruit local CAC members.
- 4.3 Recommend the E&O Program collaborate and coordinate ALL DSM Educational actions in the service area to ensure an activity is not duplicated and employee and contractor personnel actions with customers have comprehensive knowledge of the DSM Programs, in order to ensure referral to the proper point of contact.
- 4.4 Recommend that one page comprehensive and current handout include points of contact for ALL UNSE programs be carried and made available whenever working with the public.

OVERVIEW ANALYSIS OF THE DIRECT LOAD CONTROL (DLC) DSM PROGRAM

1. PROGRAM SUMMARY.

The company withdrew the DLC from the Commission-Approved UNSE DSM Program. The rationale for this withdrawal was that “advances in thermostat technology and metering communications infrastructure are still required. UNS Electric anticipates that these technologies will be available in the near-term, and plans to re-file its DSL program, incorporating these new technologies, as soon as practical.”²³

2. COMMENTS.

- 2.1 During the last UNS Electric Rate Case, this party had many recommended changes and comments²⁴ about the proposed DLC Program compared to another successful, customer-voluntary program managed by Florida Power and Light, that had a 70% customer acceptance rate, with lower rates for allowing the company to control air conditioners, hot water heaters, pool pumps, and a fourth equipment I don't remember. This resulted in saving some 3,000 MW of new generation (six 500 MW plants) and \$3 billion in capital investments. A copy of this paper was provided to the company and filed as an exhibit.
- 2.2 Neither UNSE nor TEP have any hand-on experience with a DLC Program.
- 2.3 Neither company has an R&D program where small pilot projects, using cooperative volunteering customers, can be conducted to evaluate technology options and gain corporate experience in “state-of-the-art” (SOA) technologies. Without such experiences, then higher risk can be taken, programs overrun their budgets, performance does not meet expectations and failures are more common.
- 2.4 The “smart” Grid will employ DLC technologies and corporate experiences are critical to understand how to best employ SOA technologies.
- 2.5 DLC is the ONLY DSM program that can reduce “peak” loads. In Table 1 from Attachment A, the proposed DLC program provided 88% of the electrical capacity MW savings. This is closely related to reduction of future capital and infrastructure cost to meet capacity demands to benefit the company and customers with lower rates.

3. CONCLUSIONS.

- 3.1 Without a corporate R&D Program, innovation and progress with UNS Electric in future “smart” grid, DSM and Energy Efficiency programs will be retarded due to a lack of knowledge, experience, and skills necessary to just stay current with the SOA.
- 3.2 DLC program provide the most significant capacity and demand reductions with associated future capital cost reductions.

4. RECOMMENDATIONS.

- 4.1 Recommend that UNS Electric seriously consider to split fund R&D Programs, equivalent to 10-25% of the DSM Budget and to submit DSM R&D Projects in its DSM Plan. With an R&D

²³ UniSource Energy letter by Philip J. Dion, “UNS Electric, Inc.'s Direct Load Program”, Docket No. E-04204A-07-0365, of 1 July 2008.

²⁴ See numerous comments, conclusions and recommendations in Magruder Direct Testimony, Surrebuttal Testimony, Responses, and Briefs in ACC Docket E-04204A-06-0783, the last UNS Electric Rate case.

DSM Program, then limited prototype R&D projects can be used to establish the basis for much wider-scale future DSM, EE and REST projects. The proposed DSM R&D Projects should be included in this docket, with a somewhat different funding profile.

- 4.2 Recommend that the company, in general, fund 50% and the DSM Adjustor fund the remaining 50% for DSM R&D Projects. The company's R&D expenditures would be considered in next follow-on rate case for prudence and used and useful considerations. Other share splits could be used for future REST R&D, stimulus partially funded, or other funding sources including grants for DSM projects.
- 4.3 Recommend UNS Electric submit a new, more realistic, DLC DSM and/or DLC R&D DSM Program not later than six months after the effective date of the Order.

OVERVIEW ANALYSIS OF THE LOW INCOME WEATHERIZATION (LIW) DSM PROGRAM

1. PROGRAM SUMMARY.²⁵

The 2008 LIW DSM Program is designed to add energy efficiency capabilities to lower income ratepayers so they can conserve electricity during both winter and summer months, used to heat and cool, their homes.

The budget and allocated expenses are as follows:

Low Income Weatherization Program Budget Components	Initial Program Proposal ²⁶	Total Planned for 2008 ²⁷	2008 Actual Expenses ²⁸	Planned 2009 ²⁹
Managerial and Clerical	\$ 5,460	\$ 5,460		Breakout not provided with DSM Application
Overhead	\$ 546	\$ 546		
Support Activity Labor	\$ 3,000	\$ 3,000		
Financial Incentives	\$89,242	\$89,242	\$80,394	
Rebate Processing & Inspection	\$ 2,552	\$ 2,552		
EM&V Research Activity	\$ 3,780	\$ 3,780		
EM&V Overhead	\$ 420	\$ 420		
Planning & Administration			\$ 3,646	
Program Implementation			\$ 6,916	
TOTAL	\$105,000	\$105,000	\$90,955	

2. COMMENTS.

- 2.1 UNS Electric provides funds to be administered by the Arizona Department of Commerce Energy Office (AEO)'s Weatherization Assistance Program (WAP). The Western Arizona Council of Government (WACOG) for Mohave County and Southeastern Community Action Program (SEACAP) for Santa Cruz County administer the AEO WAP program.
- 2.2 UNS Electric administers the LIW DSM program by direct funding to WACOG and SEACAP for the AEO WAP.
- 2.3 The DSM Application for 2009 shows that the 2008 expenditures were \$96,171 in the proposed ROO compared to \$90,955 in the DSM Report and in the DSM Application where used to compute the DSM Adjustor.

3. CONCLUSION.

- 3.1 This DSM program has numerous benefits, but the primary task is for UNS Electric to submit a check to fund its participation in the AEO WAP.

4. RECOMMENDATIONS.

- 4.1 None.

²⁵ ACC Staff Report, "UNS Electric, Inc.'s – Application for Approval of its Proposed Low-Income Weatherization Program within its Demand Side Management Portfolio for 2008-2010", ACC Docket No. E-04203A-07-0365, of 22 April 2008, hereafter ACC LIW DSM Report.

²⁶ DSM Plan, Attachment 3, revised page 6.

²⁷ ACC Order No. 70347, at 5.

²⁸ DSM Report, p. 6.

²⁹ DSM Application, p. 2

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Attachment E

**OVERVIEW ANALYSIS OF THE
ENERGY SMART HOMES (ESH) DSM PROGRAM**

1. PROGRAM SUMMARY.³⁰

The 2008 ESH DSM Program provides builders \$400 for each home that is EnergyStar® certified.

The Budget and allocated expenses are as follows:

Energy Smart Home Program Budget Components	Initial Program Proposal ³¹	2008 Budget Allocations ³²	Total Planned for 2008 ³³	2008 Actual Expenses ³⁴	Planned 2009 ³⁵
Managerial and Clerical	\$ 62,748	\$ 75,600			Breakout not provided with DSM Application
Travel & Direct Expenses	\$ 3,780				
Overhead	\$ 9,072				
Internal Marketing Expense	\$ 42,000	\$ 84,000			
Subcontractor Marketing Expense	\$ 42,000				
Financial Incentives	\$161,312	\$243,600			
Support Activity Labor	\$ 36,540				
Hardware and Materials	\$ 33,568				
Rebate Processing & Inspection	\$ 12,180				
EM&V Research Activity	\$ 15,120	\$ 16,800	\$ 15,120		
EM&V Overhead	\$ 1,680		\$ 1,680		
CSG Planned Expenses			\$340,124		
UES Administrative Costs			\$ 45,097		
UES Marketing			\$ 15,000		
Training & Technical Assistance				\$ 1,320	
Customer Education				\$ 270	
Program Implementation				\$ 66,854	
Planning and Administration				\$ 1,582	
TOTAL	\$420,000	\$420,000	\$417,021	\$ 74,779	\$305,444

The ESH DSM Program is administered by Conservation Services Group (CSG), a non-profit contractor, that specializes in delivery of EnergyStar® new home programs. CSG provided its planned expenditures for different components than used previously, thus the sum of these are indicated in the fourth column. Summit Blue has been selected as the MER contractor for this program.

2. COMMENTS.

³⁰ ACC Staff Report, "UNS Electric, Inc.'s – Application for Approval of its Proposed Demand Side Management Portfolio for 2008-2012 – Energy Smart Homes", ACC Docket No. E-04203A-07-0365, of 10 September 2008.

³¹ DSM Plan, Attachment 4, page 6.

³² *Ibid.*

³³ ACC Order No. 70377, at 6.

³⁴ DSM Report, p. 8.

³⁵ DSM Application, p. 2.

- 2.1 The company, due to less demand in the housing market, has significantly reduced the 2009 program budget.
- 2.2 As shown in Table 1 in Attachment A, the ESH DSM Program is the MOST significant in energy savings in terms of Therms, over 83% of the combined such savings for all UNSE DSM Programs.
- 2.3 The ZEH pilot program was discussed in the main body of this filing. The analysis flaws are so significant that it needs to be redone using correct input values.
- 2.4 The goal for 8-11% of new homes constructed as being EnergyStar®-certified is way to low, as some 72% of new homes in Nevada have this certification. Further, based on approval of all new developments in past two years in Santa Cruz County, at least 20% of these homes will be EnergyStar®-certified without any "marketing" by the company.
- 2.5 There are no ESH programs for LEED-certifications.

3. CONCLUSIONS.

- 3.1 The reduction of the ESH DSM Program should be temporary as its results are significant, especially in energy savings when measured in Therms.
- 3.2 The proposed ZEH pilot study needs to be redone with corrected inputs and larger PV systems before additional conclusions can be reached.
- 3.3 Further, after review of a revised study, then three levels at 50%, 75%, and 100% ZEH should be developed into three different programs.
- 3.4 An additional ESH DSM program for the different LEED-certification levels needs to be developed.

4. RECOMMENDATIONS.

- 4.1 That the ZEH pilot study be redone, after verification of all input values.
- 4.2 That ZEH DSM Program be created, after the model has been corrected, and filed with the Commission at 50%, 75%, and 100% ZEH.
- 4.3 That the ESH DSM Program be created to include each LEED-certification level.

OVERVIEW ANALYSIS OF THE RESIDENTIAL HVAC RETROFIT (Res HVAC) DSM PROGRAM

1. PROGRAM SUMMARY.³⁶

The Residential HVAC Retrofit DSM Program promotes installation of high-efficiency air conditioning and heat pump systems in existing homes with rebates from \$50 (14 SEER) to \$100 (16 SEER or higher) per ton of air conditioning or a heat pump. An additional \$25 incentive will be provided to the contractor.

Residential HVAC Retrofit Program Budget Components	Initial Program Proposal ³⁷	2008 Budget Allocations ³⁸	Total Planned for 2008 ³⁹	2008 Actual Expenses ⁴⁰	Planned 2009 ⁴¹
Managerial and Clerical	\$ 22,140	\$ 27,000	\$ 22,140		Breakout not provided with DSM Application
Travel and Direct Expenses	\$ 3,240		\$ 3,240		
Overhead	\$ 1,620		\$ 1,620		
Internal Marketing Expense	\$ 12,000	\$ 24,000	\$ 12,000		
Subcontract Marketing Expense	\$ 12,000		\$ 12,000		
Financial Incentives	\$172,800	\$240,000	\$172,800		
Support Activity Labor	\$ 45,600		\$ 45,600		
Hardware and Materials	\$ 12,000		\$ 12,000		
Rebate Processing & Inspection	\$ 9,600		\$ 9,600		
EM&V Research Activity	\$ 8,100	\$ 9,000	\$ 8,100		
EM&V Overhead	\$ 900		\$ 900		
Rebates and Incentives				\$ 5,550	
Training and Technical Assistance				\$ 363	
Program Implementation				\$ 6,542	
Program Marketing				\$ 1,950	
Planning & Administration				\$ 1,367	
TOTAL	\$300,000	\$300,000	\$300,000	\$15,772	\$223,438

UNS Electric for rebate processing selected KAMA. Summit Blue has been selected as the MER contractor for this program.

2. COMMENTS.

2.1 This program, as originally proposed, had the second highest energy savings (MWh) and second highest savings in water usage.

³⁶ ACC Staff Report of 20 May 2008, "UNS Electric, Inc.'s Application for Approval of its Proposed Demand Side Management Portfolio for 2008-2012 – Residential HVAC Retrofit Program", Docket No. 04204A-07-0365 and resultant ACC Order No. 70377 of 13 June 2008.

³⁷ DSM Plan, Attachment 5, revised page 6.

³⁸ *Ibid.*

³⁹ ACC Order No. 70377, at 5.

⁴⁰ DSM Report, p. 15.

⁴¹ DSM Application, p. 2.

- 2.2 The company commented to the draft Recommended Opinion and Order, specifically requesting a delay in requiring “proper sizing calculations” for two years so it could train contractors in the process for making these calculations.⁴² In rural areas, such as in the UNSE service area, such calculations for “retrofits” are rarely performed because local HVAC contractors do not have any need for such calculations. The \$25 rebate for a contractor is not adequate to cover the expense to make these calculations. In my opinion, without time to train rural HVAC contractors, then many opportunities for ratepayers to benefit from this program will be lost. In fact, I have no idea if any HVAC contractors in my County can make these calculations at a cost of equal or less than the \$25 ESH rebate.
- 2.3 A second area in which the company commented was a “cap” on customer rebates at \$250.⁴³ As the expenses show, rebates are about 1/3rd of this programs cost. I have a 4-ton A/C unit, presently rated at 9.5 SEER. If replaced with a 14 SEER unit, the rebate would be \$200, a 15 SEER unit at \$300, and a 16 SEER unit at \$400. Obviously, when capped at \$250, making a decision to purchase a less efficient replacement air conditioner is contrary to the whole purpose of DSM and this program.

3. CONCLUSIONS.

- 3.1 Not including the 24-month delay for contractor training maybe reducing the benefits for this program, especially for those who do not understand how to make such calculations, does not make sense.
- 3.2 There is no rationale reason for imposing any cap on energy efficiency as it reduces customer’s incentive to purchase more efficient units, at about 10% of increased efficiency for each SEER change by 1 unit.

4. RECOMMENDATIONS.

- 4.1 That the computation for proper sizing be delayed until 1 July 2010 so that HVAC contractors can be properly trained.
- 4.2 That the cap on payments for higher efficiency units be removed as soon as possible.

⁴² UNSE filing “UNS Electric’s Comments on Staff’s Report and Proposed Order” of 19 May 2008, at 1-2.

⁴³ *Ibid*, at 2-3.

OVERVIEW ANALYSIS OF THE SHADE TREE (ST) DSM PROGRAM

1. PROGRAM SUMMARY.⁴⁴

This one-year pilot program, starting in January 2009, is targeted to residential and commercial customers, community organizations, public areas, and schools. Two 5-gallon trees per year can be selected (4 for homes built before 1980), which must be planted on the E, S or W side of the home. Upon receipt of a UNSE Shade Tree Application including a drawing of your home showing where the tree(s) will be planted within 15-feet of home and a copy of the paid invoice for the tree(s), then UNSE will credit your billing account \$15 per tree. Only mesquite and *palo verde* trees are allowed. Annually, 2,000 trees are to be planned. By 2 November 2009, UNSE must file an application regarding the status of this program and reasons for continuing or discontinuing it.

Shade Tree DSM Program Budget Components	Initial Program Proposal ⁴⁵	2008 Budget Allocations ⁴⁶	Total Planned for 2008 ⁴⁷	2008 Actual Expenses ⁴⁸	Planned 2009 ⁴⁹
Managerial and Clerical	\$ 10,400	\$ 13,000	\$ 10,400		Breakout not provided with DSM Application
Overhead	\$ 2,600		\$ 2,600		
Internal Marketing Expense	\$ 3,575	\$ 7,150	\$ 3,575		
Subcontract Marketing Expense	\$ 3,575		\$ 3,575		
Financial Incentives	\$ 29,998	\$ 42,340	\$ 29,998		
Rebate Processing & Inspection	\$ 12,253		\$ 12,253		
EM&V Research Activity	\$ 2,340	\$ 2,600	\$ 2,340		
EM&V Overhead	\$ 260		\$ 260		
Program Implementation				\$ 2,202	
Planning & Administration				\$ 588	
TOTAL	\$ 65,000	\$ 65,000	\$ 65,000	\$ 2,790	\$ 68,285

UNS Electric manages this program. Summit Blue was selected as the MER contractor for this program.⁵⁰ Periodically, the MER contractor will confirm by visual inspection the status of the trees in this program.

⁴⁴ ACC Staff Report of 10 September 2008, "UNS Electric, Inc.'s Application for Approval of its Proposed Shade Tree Program within its Demand Side Management Portfolio for 2008-2012", Docket No. 04204A-07-0365 and resultant ACC Order No. 70523 of 30 September 2008.

⁴⁵ DSM Plan, Attachment 6, revised page 4.

⁴⁶ *Ibid.*

⁴⁷ ACC Order No. 70523, at 5.

⁴⁸ DSM Report, p. 19.

⁴⁹ DSM Application, p. 2.

⁵⁰ ACC Order No. 70523, at 4, indicates that UNS Electric will inspect a random sample of plantings using its own employees or employees of Southwest Energy Solutions (SES), a UniSource Energy subsidiary; to verify that program-eligible trees were planted in the correct orientations and to determine attrition. Further, other "evaluation, monitoring, and verification (EM&V) services would be performed by an outside contractor" to include database management, tracking savings using deemed savings values, field verification including type

2. COMMENTS.

- 2.1 The resultant ACC Order stated that the "lifetime energy savings for trees planted during the five-year program at approximately \$44,280,000 MWh."⁵¹ Since 2,000 trees are anticipated per year, for 5 years, then 10,000 5-gallon trees should be planted. This implies that each tree will save 4,428 MWh per year. Using data from the original proposal for 1,000 of the larger 15-gallon trees, we see that each tree saved just over 7 kWh per tree per year⁵² equivalent to 70 cents per year at 10 cents a kWh. This staff calculation appears to be erroneous.
- 2.2 A review of this program's annual cost of \$65,000 for 2,000 trees equals \$35.50 expenditure per \$15 rebate per tree. This is NOT cost effective!
- 2.3 In rural areas, fire safety programs emphasize not having any trees within 30-feet of any structures due to the constant hazards of wildfires. I have had the house next door burn down with three lives lost, my elementary school burn down, and my son's school burn down in the Oakland wildfire that destroyed over 3000 homes. I have seen homes burn up in Bonita and La Canada, California from my front porch. I have installed water sprinklers on my roof so that hot embers will not cause my home to catch fire during a firestorm. I also have cleared all trees, including *palo verde* and mesquite, to beyond 30-feet from my home.

3. CONCLUSIONS.

- 3.1 The staff's expectations in terms of lifetime savings are in error by a factor of 632 times higher than the calculations performed by the company.
- 3.2 For a ratepayer to receive a rebate of \$15.00 it will cost him/her \$35.50 by the processes used in this program.
- 3.3 This program does not enforce rural fire safety rules that apply to most customers' homes that might raise homeowners or fire insurance rates.

4. RECOMMENDATION.

- 4.1 Either cancel this program in these proceedings or do not approve extending this program beyond the end of 2009.

of tree, size of original tree planted, height of tree, tree orientation, tree attrition, building occupant and structure characteristics and type of HVAC system" at 4.

⁵¹ ACC Order No. 70523, Finding of Fact No. 27 "KWh Savings", at 7.

⁵² DSM Plan, Attachment 6, page 5, Table 4, "Representative Annual Shade Tree Program Energy Savings". The table indicates that 1,000 15-gallon trees equates to 140,280 kWh in energy saved, or 140.28 kWh per tree per 20 years, or 7.014 kWh per tree per year accounting for 30% attrition.

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