BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

IN THE MATTER OF THE APPLICATION OF
NEVADA POWER COMPANY FOR THE
APPROVAL OF ITS 2007-2026 INTEGRATED
RESOURCE PLAN

Docket No. 06-06051

Direct Testimony of

Howard Geller

on behalf of

Nevadans for Clean Affordable Reliable Energy (NCARE)

September 13, 2006
Introduction

Q. Please state your name, occupation and business address.
A. My name is Howard Geller. I am the Executive Director of SWEEP, the Southwest Energy Efficiency Project. My business address is 2260 Baseline Rd. Suite 212, Boulder, Colorado 80302.

Q. For whom are you testifying?
A. I am testifying on behalf of Nevadans for Clean Affordable Reliable Energy (NCARE).

Q. Please describe NCARE.
A. NCARE is a non-profit cooperative association of public interest entities with members, donors and supporters who are Nevada residents and ratepayers of Nevada Power Company (NPC) and Sierra Pacific Power Company. All have common interests in promoting expanded use of renewable energy, energy efficiency, and other clean energy resources, and in preserving Nevada’s environmental quality. NCARE consists of Citizen Alert, the Nevada Conservation League, the Progressive Leadership Alliance of Nevada, Western Resource Advocates, the Sierra Club and the Southwest Energy Efficiency Project.

Q. What are your professional qualifications?
A. I have 25 years of experience working on energy efficiency policy and program design, analysis, evaluation and advocacy. Prior to founding SWEEP in 2001, I
served as Executive Director of the American Council for an Energy-Efficient
Economy (ACEEE) in Washington, DC. I have authored or co-authored four books
on energy efficiency and energy policy, and published dozens of reports and articles
on these topics. I have testified before the public utility commissions of Colorado,
Illinois, Maryland, Utah, and the District of Columbia. Exhibit HG-1 summarizes my
professional qualifications.

Q. What is the purpose of your testimony?

A. In my testimony I will comment on Nevada Power Company’s (NPC’s) proposed
demand-side management (DSM) programs, comment on the additional potential for
cost-effective energy efficiency improvements in the NPC service area, and make
recommendations on how I believe NPC’s DSM programs should be expanded and
improved.

Q. Please summarize your testimony.

A. I first point out that NPC is doing a relatively good job implementing DSM programs
for its customers. I then review the funding levels for DSM proposed by NPC during
2007-2009 and suggest that these funding levels be increased both to expand
proposed programs and implement additional cost-effective programs. My proposed
funding levels for the DSM programs are shown in Exhibit HG-2. I recommend that
NPC be directed to achieve the maximum amount of cost-effective energy savings
through its DSM programs, rather than limit savings to the amount allowed for energy
efficiency portfolio credits under the state’s revised clean energy standards. In light of
experience in Nevada and elsewhere, I suggest that the utility should be able to save
at least 1\% of its electricity sales through DSM programs each year. I recommend
that the company be directed to meet or exceed this savings target if it can do so cost
effectively, and that electricity savings targets be established for a ten-year rather than
three-year period. I also comment on key issues related to DSM program analysis and
implementation such as cost effectiveness metrics, avoided cost estimation, and
energy savings evaluation procedures.

General Comments on Ongoing and Proposed DSM programs

Q. Please provide your overall assessment of how NPC has been doing with respect
to implementing DSM programs for its customers.

A. I believe NPC has been doing a relatively good job among utilities nationally in
implementing cost-effective DSM programs that have been well-received by its
customers. Total funding for NPC’s DSM programs has grown from about $9 million
in 2002-03 to over $24 million in 2006. Program sophistication and resulting energy
savings and peak demand reduction also has grown steadily over the past four years,
as documented in Table 9 of NPC’s Demand Side Plan (Volume V of the IRP). The
programs have been very cost effective for the most part. As of 2006, major programs
such as the ENERGY STAR lighting and appliances program, the Sure Bet
commercial incentives program, and the refrigerator recycling program have benefit-
cost ratios in excess of two using the Total Resource Cost (TRC) test. For reasons I
describe below (most important: exclusion of avoided transmission and distribution
system investment costs in the avoided cost calculations), NPC’s estimates of benefit-
cost ratios are conservative; in reality there are additional benefits to the utility
system that are not captured in NPC’s benefit-cost analysis. Each year the DSM programs are providing tens of millions of dollars of net economic benefits for NPC’s customers, and DSM has become a significant energy resource for NPC. The growth in DSM funding and savings has rapidly accelerated in the past year in particular, following the passage of the AB 3 legislation. In my view, the Company deserves a pat on the back for the relatively good job it has been doing with respect to DSM program development and implementation.

Q. Do you have general comments about DSM programs proposed for implementation in 2007-2009 in the 2006 IRP?

A. Yes I do. I recommend that NPC further expand some of the programs it has experience with and thereby achieve additional cost-effective energy savings and peak demand reductions. In addition, there are other programs that NPC has studied that appear to be cost-effective and that should be implemented during 2007-2009. I elaborate on these suggestions below. The funding levels I am proposing are summarized in Exhibit HG-2.

Q. Is the Company limiting the amount of DSM it pursues to the level of energy savings allowed under clean energy portfolio standards?

A. Yes it is. Company has proposed a set of DSM programs during 2007-2009 that will just enable it to meet 25% of the portfolio standards in 2008-09 with energy savings, which is the ceiling on the amount that energy savings can count towards the portfolio standards requirement (see response to BCP data request 5-10). In addition, the Company has stated in response to BCP data request 5-14 that “the DSM portfolio
was designed to meet the 25 percent energy efficiency portfolio standard opportunity."

Q. Is it appropriate for the Company to limit the amount of DSM it pursues to the level of energy savings allowed under the clean energy portfolio standards?

A. No it is not. The Company should strive to achieve the maximum amount of cost-effective energy savings from DSM programs. Doing so will lower the net present value of revenue requirements paid by customers as a whole and potentially increase system reliability by reducing peak demand and providing greater load control capability. Maximizing the amount of cost-effective energy savings would also provide other non-energy benefits such as reducing water consumption and pollutant emissions from conventional fossil fuel-based power plants. In short, the potential for meeting a portion of the portfolio standards through energy savings should not be used as a program design objective or a ceiling on DSM efforts.

Q. What is time frame for DSM programs presented in the Company’s DSM Plan?

A. The DSM Plan provided in Volume V of the IRP (with Appendices) presents DSM program budgets, savings estimates, and benefit-cost ratios for the three-year period 2007-2009 only. Other parts of the IRP such as Volume I include some estimates of the impacts of DSM programs beyond 2009, but these programs and impacts are not discussed in the DSM Plan itself.
Q. Is it appropriate to limit DSM program budget estimates and savings targets to the first three years of the 20-year planning period?

A. No it is not. The Company is proposing to make major supply side resource investments during the next ten years at a cost exceeding $3 billion. In order to ensure that these are the most cost-effective resource choices for NPC and its customers, it is essential that the Company fully analyze and consider the role that cost-effective demand-side resources can play in meeting the projected demand for electricity and energy services in its service territory over the same ten-year period.

Q. Do you have a recommendation for how to establish DSM budget estimates and savings targets over the longer term?

A. Yes I do. I do not think it is reasonable to ask the Company to develop detailed DSM program proposals for more than three years in the future because there is too much uncertainty about energy efficiency opportunities and market conditions beyond a three-year time frame. However, it is reasonable to establish energy savings and peak demand reduction targets and estimate DSM budget levels consistent with these targets for at least ten years into the future. The targets should assume the utility will continue to vigorously pursue cost-effective DSM opportunities without defining specific programs or estimating their characteristics in the out years (i.e., more than three years in the future) at this time. Establishing energy savings and peak demand reduction targets from DSM programs for at least ten years into the future is critical for informing the overall IRP and for not ignoring longer term DSM potential and thereby overestimating future electricity demand and over-investing in supply-side
resources. The savings targets should be updated in future IRPs and specific programs developed and presented for the subsequent three years.

Q. What parameters should be used to establish the energy savings targets and DSM budget estimates for the medium and longer term?

A. The estimates can be based on the level of energy savings the Company is projecting it will achieve in the short term as a fraction of total electricity sales, the level of peak demand reduction the Company is projecting it will achieve in the short term as a fraction of total peak demand, consideration of whether or not DSM programs are still ramping up or are in (or are close to) a steady-state mode, and the experience of other states and utilities in establishing energy savings targets and DSM budget estimates over the longer term.

Q. Are there other states and utilities that have established longer term energy savings targets either as part of an Integrated Resource Plan or some other planning process?

A. Yes there are. A recent report by researchers from Lawrence Berkeley National Laboratory on utility energy efficiency resource planning in western states shows that utilities in California and Washington as well as the multi-state utility PacifiCorp have established longer term energy savings targets.¹ The California PUC, for example, has established energy savings goals for the investor-owned utilities in the state over a ten-year period (2004-2013), in conjunction with specific DSM plans and budgets over a three-year period. The energy savings goals represent over 50% of
incremental electricity needs during 2004-2013. In Colorado, the PUC has approved eight-year energy savings and peak demand reduction targets for Xcel Energy, the main investor-owned utility in the state.

Q. Do you have longer term energy savings goals that you suggest be adopted for Nevada Power Company?

A. Yes I do. NPC is proposing to achieve total savings of approximately 200 GWh per year from DSM programs implemented each year during 2007-09 (see response to data request BCP 5-10). This represents approximately 0.8-0.9% of projected retail electric sales each year according to the load forecast the Company has prepared for this IRP. I suggest establishing energy savings goals of saving 1% of electricity sales from DSM programs each year considering the following factors: 1) the savings achieved in 2007-2009 would increase if the DSM programs proposed by the Company are expanded and additional programs are added, consistent with other recommendations in my testimony, 2) some of the programs and measures implemented during 2007-09 may diminish in importance over time, but other new efficiency measures will become commercially available and cost-effective in the future thereby presenting new energy savings opportunities, 3) southern Nevada is a very high growth region which provides large potential for electricity savings in new construction, and 4) other leading states and utilities have achieved 1% energy savings from DSM programs implemented annually.

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Q. Please clarify what energy savings targets you are proposing and how you envision such targets working.

A. I am suggesting that the Commission: a) establish 1% annual energy savings targets (i.e., 1% of retail sales each year) over a ten-year period in this docket, and b) direct the Company to strive to meet or exceed the targets through DSM programs if sufficient cost-effective programs can be designed and implemented. For example, if the Company sells 24,500 GWh of electricity to its retail electricity customers in a particular year, the 1% savings target would be 245 GWh/yr of electricity savings from DSM programs implemented that year. Individual programs and budgets would still be subject to approval by the Commission. But the targets would be used in the IRP as a proxy for expected energy savings from DSM programs over a ten-year period. In all likelihood DSM programs would continue to be implemented after a ten-year period, but making plausible assumptions about DSM programs for ten years is all that is needed to help establish the appropriate total demand used to determine the need for new supply resources.

Q. Can you cite examples of utilities or states that have achieved at least 1% electricity savings from DSM programs implemented annually?

A. Yes. Electric utilities in Massachusetts saved about 1.2% of sales from DSM programs implemented in 2004 while the statewide energy efficiency program in Vermont saved about 1.1% of sales. In California, the three major IOUs were saving

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close to 1% of their retail sales through DSM programs implemented in 2004-05 and
are expected to save 1% or more of sales each year during 2006-08 according to
recently adopted DSM savings goals and budgets in the state.

Q. How does a 1% annual electricity savings target compare to energy efficiency
goals recommended by the Western Governors’ Association?

A. The Western Governors’ Association (WGA) has adopted a goal of increasing the
efficiency of electricity use in Western states 20% by 2020. An Energy Efficiency
Task Force established by the WGA concluded that reducing otherwise forecast
electricity use 20% by 2020 through energy efficiency policies and programs is cost-
effective and achievable. Among the recommendations for achieving this goal, the
Task Force recommended setting a goal of saving 10-15% of projected electricity
sales from DSM programs by 2020. Adopting a 1% annual savings goal for NPC
starting in 2007 would put the Company on target for meeting this goal recommended
by the WGA Energy Efficiency Task Force.

Q. Is the Company modeling different levels of potential DSM programs and
savings in order to determine the optimal balance of between supply-side and
demand-side investments?

A. No it is not. The Company acknowledged this in response to Data Request BCP 5-15.
In addition the Company acknowledged in response to Data Request BCP 5-13 that it
did not model different levels of potential DSM programs and savings in order to
minimize the cumulative present worth of revenue requirements.
Q. **Should the Company modify its consideration of DSM resources in comparison to supply-side resources?**

A. Yes it should. I urge the PUCN to direct the Company to consider and model different levels of potential DSM programs and savings in order to minimize the cumulative present worth of revenue requirements. The Company should strive to identify and achieve as much cost-effective energy savings as possible, consistent with meeting or exceeding a savings target of at least 1% of sales from DSM programs each year (should such a target be set).

Comments on Individual DSM Programs in the IRP

Q. **Do you have comments on the residential ENERGY STAR lighting and appliances program?**

A. Yes. Regarding CFLs, stimulating the sales of over 1 million CFLs per year is an ambitious but plausible goal in my view. If achieved the energy savings and economic benefits will be very large. Furthermore, this program has the potential to reach the majority of households in the NPC service area, and I applaud the Company for thinking boldly about stimulating large-scale CFL adoption. I urge the Commission to approve this component of the program.

In addition to actively promoting CFLs, I urge the Company to add promotion and incentives for ENERGY STAR light fixtures and ceiling fans to the lighting and appliances program. The availability and performance of these products has improved

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in recent years, and many other utilities are promoting these products through their
DSM programs. Effective promotion of ENERGY STAR light fixtures and ceiling
fans should include working with lighting distributors, showrooms, builders, and
contractors, not just consumers and major retailers. Also, torchiere turn-in events
whereby consumers get a discount if they swap a halogen-based torchiere fixture for
an energy-efficient CFL-based torchiere fixture have proven to be effective in other
jurisdictions.\(^5\)

Regarding clothes washers and refrigerators, the national efficiency standards for
clothes washers will increase as of January 1, 2007. Specifically, the new clothes
washer standard will be a minimum modified energy factor (MEF) of 1.26. At the
same time the ENERGY STAR clothes washer requirements will increase to a
minimum MEF of 1.72 along with a maximum water factor of 8.0. I recommend that
the Company adopt these minimum requirements (both the minimum energy factor
and the water factor) in its incentive program. In addition, I recommend that the
company adopt higher incentives for clothes washers with superior energy
performance (i.e., tiered rebates), namely using the tier 2 and tier 3 thresholds
adopted by the Consortium for Energy Efficiency (CEE). These thresholds are MEF’s
of 2.0 and 2.2 and maximum water factors of 6.0 and 4.5. Other utilities will be
adopting these tiers for their DSM programs, and doing so in Nevada will maximize
the energy and water savings and help to transform the market to highly resource-
efficient clothes washers.

More generally, I urge the Company to offer year-round incentives for ENERGY STAR refrigerators and clothes washers, increasing the program budget in order to do so. This will avoid the confusion and potential vendor and customer dissatisfaction of “start and stop” incentives. In addition, the electricity savings determination for ENERGY STAR clothes washers should be based on surveys of program participants regarding their type of water heating and clothes drying fuel (gas or electricity). Likewise surveys should be used to estimate the fraction of qualifying CFLs that get installed and used, and this factor should be included in the energy savings and cost effectiveness analyses. It is not clear from the program data sheets if these procedures are being implemented as part of the M&V effort.

Concerning program budgets, my recommendations would have a limited impact on the total program budget since most of the program costs are for CFL incentives. I believe my recommendations for expanding promotion and incentives for ENERGY STAR light fixtures, offering multiple tiers of incentives for clothes washers, and for offering ENERGY STAR appliance incentives year-round would increase the total program budget by approximately $400,000 in 2007, $500,000 in 2008, and $600,000 in 2009. The growth in the increment during 2007-09 is based on the assumption that there would be growing market acceptance of ENERGY STAR fixtures over time. In summary, I am recommending total budgets of $3.5 million in 2007, $3.6 million in 2008, and $3.7 million in 2009.
Q. Do you have comments on the high efficiency air conditioner rebate program?

A. Yes. The program appears to be very cost-effective with an estimated TRC value of 2.16. But most of the impacts are expected in the new construction market; relatively low participation rates (2,250 units per year) are assumed in the replacement market. This is a small fraction of the total number of central AC units replaced each year. Furthermore, the quality installation part of the program is only offered in the new construction market according to the project data sheet. I recommend expanding the program to capture a greater portion of the replacement market which should be feasible given that Company is building up its relationship with HVAC contractors and given that the availability of high efficiency products is expected to grow over time. Extending the quality installation component to the replacement market is another way to expand the program and increase energy savings. This is desirable given that the energy savings per rebate dollar is greater for the quality installation portion of the program relative to the high efficiency equipment portion. In particular, I recommend that the total budget for the program be increased to $6.5 million in 2007, $7.5 million in 2008, and $8.5 million in 2009.

Q. Do you have comments on the Second Refrigerator Recycling program?

A. Yes. This type of program is very cost-effective according to the Company’s analysis, showing a benefit-cost ratio of nearly 2.4 under the TRC test and an average cost of conserved energy of $0.027/kWh. This means that if the energy savings were only half as great as the Company estimates, the program would still be cost-effective from a TRC perspective. Refrigerator recycling programs are cost effectively implemented
by at least 15 utilities in other states as part of their DSM programs. The NPC and its contractors appear to be doing a good job implementing and evaluating the second refrigerator recycling program. The program is both removing older unneeded refrigerators from the housing stock and accelerating the replacement of older refrigerators. Based on participation rates and experience in other states, the substantial program expansion proposed by the Company is reasonable in my view. I recommend the Commission approve the 2007-09 budget proposed by the Company for this program.

I do have one concern about how the utility is estimating electricity savings from this program. As I noted above, some of the refrigerators removed from operation are replaced with new more efficient refrigerators, while others are not replaced. In response to BCP data request 10-43, the Company acknowledged that it is not factoring replacements into its energy savings analysis. This is a flaw that leads to overstating energy savings. I recommend that it be corrected by estimating the fraction of recycled refrigerators that are replaced and not replaced based on participant surveys, and then reducing the assumed savings for models replaced by the average electricity use of new models. Even with this correction, I believe the refrigerator recycling program will be very cost effective and should be approved for implementation in 2007-09 as proposed.

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Q. Do you have comments on the Zero Energy Homes pilot program?

A. I support the concept of developing a program to stimulate construction of zero
energy or near zero energy tract homes in the southern Nevada market, homes that
combine high levels of energy efficiency with solar photovoltaic electricity
generation. Such homes are being built in California in increasing numbers after
having been proven to be viable in Sacramento. However, I have some concerns
about the specific program proposed by the utility. I think it is more reasonable to
spend six to nine months developing and analyzing a specific program for the
southern Nevada market. The program could then be piloted in a housing
development (50-100 homes) in the latter part of year one and year two. And if this
pilot is successful, I suggest launching a larger scale program to builders in general in
year three. This would move the program from design stage to full scale
implementation on a faster trajectory than proposed by the Company in the IRP. At
this point I recommend approving funding for a two-year design, analysis, and pilot
program only. This accelerated two-year program would require $700,000 as the
Company has proposed spending over three years. If the pilot program is successful,
the Company should propose a much larger program starting in year three through the
IRP amendment process.

Q. Do you have comments on the Sure Bet commercial incentives program?

A. This program appears to be very cost-effective and is working well. The increase in
funding and addition of the direct installation component is warranted in my view.
However, I do not believe that the budget should be reduced in 2009. Experience
shows that awareness of and demand for energy efficiency measures is only
increasing over time. The potential for cost-effective energy efficiency improvements in the commercial sector will not be close to being saturated by 2009. If anything, the budget should be growing over time especially as the direct installation component gets established and ramps up. I recommend total budgets of $6 million in 2007, $7 million in 2008, and $8 million in 2009. If necessary, project and customer caps should be raised again in order to ensure adequate participation and maximum energy savings and economic benefits.

Q. Do you have comments on the Sure Bet schools program?

A. This program is relatively limited in budget and is targeting efficiency upgrades in only 10 schools per year. The estimated benefit-cost ratio during 2007-09 under the TRC test is only 1.06. But the program provides significant non-energy benefits by improving the learning environment and saving school districts money. Also, the avoided costs used by NPC are underestimated by not including avoided T&D costs in the economic evaluation (see comments below). If more complete avoided costs were being used, the benefit-cost ratio for this program (and other DSM programs) would be higher. I suggest expanding this program to include more schools in part by offering it to other school districts besides the Clark County district. This should help to improve program cost effectiveness by providing an economy of scale effect (e.g., marketing and admin costs would get spread over more projects), as well as increasing the energy savings and non-energy benefits. In particular I recommend budgets of $600,000 in 2007, $800,000 in 2008, and $1 million in 2009. If necessary, the incentive payment should be increased to stimulate greater interest and investment in cost-effective energy efficiency projects by the school districts.
Q. Do you have comments on the Sure Bet new construction program?

A. The Company is proposing to significantly expand this program relative to funding and activity levels in 2005-06. It is desirable to help make new construction as energy-efficient as possible since new buildings will operate for many decades and it is generally more cost effective to “build them right” than to go back and install energy efficiency measures via retrofit. But the estimated benefit-cost ratio under the TRC test for the proposed program is only 1.05. This appears to be due in part to relatively high marketing and administrative costs as a fraction of the overall budget. Actual incentive payments represent only 45% of the proposed total budget for the program. I suggest modifying the project in order to increase the “bang per buck” by reducing marketing and advertising costs and/or by increasing the number of participants in the program and the level of incentive payment. This would provide more impact for the marketing and administration dollars. It should be possible to grow the program over time especially in light of the property tax incentive for LEED silver buildings now in place in Nevada and the experience in other states shows that it can take a number of years to design, construct, and commission new commercial buildings, especially larger buildings or multi-building projects. I recommend a budget of $1.6 million in 2007 but increasing it to $2.0 million in 2008 and $2.4 million in 2009, with incentive representing at least 50% of the total three-year budget.
Q. Do you have comments on the Cool Controls project for small and medium size hotels?

A. This new project appears to be well-conceived and cost-effective. If successful, I recommend that it be continued for a third year (2009) rather than just run for two years as proposed. This will enable the Company to achieve additional cost-effective energy savings and reach more than the projected two-year target of 51 hotels and motels. I recommend extending the proposed budget for 2008, $1.34 million, for 2009 as well.

Comments on DSM Programs Studied but Not Included in the IRP

Q. Do you have comments on the residential products program studied by the utility but not included in the proposed set of DSM programs for 2007-09?

A. Yes. As noted in Table 8 of the Demand Side Plan and explained further in response to data request BCP 5-6, a residential products incentive program was developed and considered by the Company. The potential program includes rebates on high efficiency windows, insulation, duct sealing, solar screens, and other measures that would reduce residential electricity use in existing single family and multi-family dwellings. The budgets considered for the program were approximately $2.5 million in 2007 and $3.2 million in 2008 and 2009. The projected electricity savings are 28.2 GWh per year and nearly 6 MW of peak demand after three years of implementation, and the estimated benefit-cost ratios are 1.24 under the TRC test and 1.92 under the utility test. Considering that these estimates ignore avoided T&D costs (see comments below), the calculated benefit-cost ratios are conservative and indeed would be
greater if a more complete analysis were performed. This type of program would
increase the participation in and benefits of the Company’s DSM programs. I
recommend that it be approved by the Commission and implemented at the budget
levels considered by the Company.

Q. Do you have comments on the residential AC maintenance program studied by
the utility but not included in the proposed set of DSM programs for 2007-09?
A. Yes. As noted in Table 8 of the Demand Side Plan and explained further in response
to data request BCP 5-6, a residential AC maintenance program was developed and
considered by the Company. The potential program includes incentives to tune-up
existing AC units and also supports maintenance agreements to maintain high
performance, with an estimate of about 35,000 units getting a one-time tune-up and
nearly 13,000 getting covered under a five-year maintenance agreement. The budgets
considered for the program are $3.75 million per year in 2007-09. The projected
electricity savings are about 47 GWh per year and nearly 28 MW of peak demand
after three years of implementation, with saving assumed to degrade over time. With
these assumptions, the estimated benefit-cost ratio is 0.96 under the TRC test and
3.33 under the utility test. Considering that these estimates ignore avoided T&D costs
(see comments below), the calculated benefit-cost ratios are conservative and indeed
would be greater if a more complete analysis were performed. Furthermore, the
program could be focused on homes with older AC systems, above-average electricity
use, and/or in areas with T&D constraints, thereby further increasing the energy and
peak demand savings and/or the value of the savings. With guidance directing the
Company to modify the program in order increase the savings and to include avoided
T&D costs in the cost effectiveness analysis, I recommend the program be approved
and implemented at the budget levels considered by the Company. If real world
experience and further analysis shows that it is not cost effective using the TRC test
(with valuation of avoided T&D costs included), then the program could be
discontinued.

Q. Do you have comments on a potential residential new homes program?

A. The Company has not sponsored an ENERGY STAR new homes incentive program
in the past since the market share for ENERGY STAR new homes has been very high
in the southern Nevada. However, more stringent ENERGY STAR homes criteria
took effect in July, 2006. It is unclear if southern Nevada builders will continue to
build ENERGY STAR homes in large numbers under the new criteria. In addition,
there is a need for builder training and compliance activities to ensure that homes
claimed to be ENERGY STAR really meet the new, more complicated criteria.
Utilities in numerous other states including Arizona, Utah, and Texas are providing
builder training along with financial incentives for ENERGY STAR new homes. The
Company has developed a positive relationship with many builders as a result of the
air conditioner program implemented in 2005-06. In addition, builder training and
incentives can be provided to go beyond ENERGY STAR performance, for example
to reach the performance level that qualifies for the Federal tax incentive (i.e., 50%
energy savings in heating and cooling relative to the model building code).

Based on these factors, I believe that a DSM program promoting ENERGY STAR
and “ENERGY STAR Plus” homes in southern Nevada is feasible and would be cost
effective. I recommend that the Commission direct the Company to analyze the new homes market in light of the changes to the ENERGY STAR criteria and if possible develop a new homes program that will be cost-effective including consideration of freeridership. An RFP may be helpful for soliciting program ideas and proposals from contractors with experience in implementing successful ENERGY STAR new homes programs in other jurisdictions. If such a program is feasible, the Company should come forward with an amendment proposing to implement the program.

Q. Do you have comments on a potential DSM programs to reduce electricity use by office equipment and other electronic devices?

A. Office equipment and other electronic devices (so-called plug loads) represent a large growing fraction of electricity use in both residential and commercial buildings. The Company considered a potential DSM program known as the “80 Plus” program which involves paying computer manufacturers incentives in order to stimulate incorporation of high efficiency power supplies into PCs, but chose not to pursue this program. However, there are a variety of strategies the Company could undertake to stimulate energy savings in office equipment and other electronic devices ranging from promotion of ENERGY STAR products, paying incentives to stimulate greater adoption of ENERGY STAR products, to training and technical assistance to stimulate greater enabling of the power management features in computer monitors and PCs. Some specifications for ENERGY STAR electronic products are now available; others such as specifications for TVs and new more stringent specifications for PCs are under development. I recommend that the Company further study the
potential for cost effectively stimulating energy savings in office equipment and other
electronic devices in both the residential and commercial sectors including issuing an
RFP for program ideas. If it is possible to develop and implement such a program, the
Company should come forward with an amendment to the IRP proposing to do so.

Key Issues Related to DSM Program Planning, Implementation and Evaluation

Q. What is your view regarding the appropriate cost effectiveness test or tests to use
in evaluating whether or not DSM programs are cost effective?

A. I support the position of the PUCN, as indicated in the Order in Docket NO. 06-
03038, that the TRC test be used as the primary measure of DSM program cost
effectiveness. Under the TRC test, the total cost of efficiency measures and programs
is compared to the full energy benefits from the utility perspective including avoided
investment, fuel and operating costs. This is the primary or sole test used for
evaluating DSM program cost effectiveness in many other states including California,
Connecticut, Massachusetts, New Mexico, New Jersey, New York, Utah and
Vermont. A few states such as Arizona, Maine, and Oregon use the Societal test
which is the same as the TRC test except for the inclusion of a valuation of
environmental costs, along with the factors that are included in the TRC test.

Footnote:
7 Installing software that automatically enables the power management features of computer monitors and
PCs in networked offices is a very cost-effective energy efficiency strategy, for example. See
http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_management
Q. What is your view regarding appropriate avoided costs, in particular with respect to the comparison of DSM and renewable energy resources?

A. The utility raises the issue of comparing DSM and renewable resources on page 18 of its Demand Side Plan. On the one hand DSM measures are competing with renewable resource options for meeting a portion of the portfolio standard, i.e., up to 25% of the total portfolio requirement in any one year. On the other hand, as I argue separately, the portfolio standard should not be viewed as a ceiling on implementation of cost-effective energy efficiency resources. So in this sense DSM is not competing with renewable resources but instead with whatever marginal resource that further DSM implementation is avoiding. Given this set of circumstances, I recommend that the Company evaluate the cost effectiveness of potential DSM programs using two different sets of avoided costs—one set being the costs associated with marginal renewable energy resources that the Company is contemplating acquiring to meet the clean energy portfolio standards, and the other being the avoided costs associated with the other resources in its development plan. Individual DSM measures or programs may be cost effective within the framework of meeting the clean energy portfolio standards, but not be cost-effective compared to unconstrained resource selections.

Q. Do you have concerns regarding how the Company is measuring avoided costs for the purpose of analyzing DSM program cost effectiveness, in particular how the Company treats avoided T&D costs?

A. Yes I do. The Company states on page 36 of the Demand Side Plan that “DSM projects provide clear benefits to the distribution system.” But the Company is not
assuming any avoided transmission and distribution (T&D) system costs it is DSM program cost effectiveness evaluation as noted in Volume V, page 36. This undervalues the benefits of DSM measures and programs. Other utilities routinely include avoided T&D costs in the analysis of the cost effectiveness of DSM programs. Even if there is uncertainty in the appropriate value to use, zero is certainly the wrong value. Methods for estimating avoided T&D values include looking at ratios of T&D investments per unit of load growth on average in recent years and looking at the ratio of T&D to generation investment historically. Accounting for avoided T&D costs is appropriate especially considering that the energy savings and peak demand reductions from DSM programs are rapidly growing and are no longer “lost in the noise.” I recommend that the Commission direct the Company to include avoided T&D costs in the economic analysis of DSM programs in all future reports and filings.

In addition, some utilities such as the Bonneville Power Administration are targeting DSM programs in areas with T&D constraints, thereby deferring costly upgrades to the T&D grid. I recommend that NPC consider this strategy, namely targeting some of its DSM programs to areas with T&D constraints, as it proceeds with DSM program implementation over the next three years and beyond.

Q. Do you have comments on energy savings measurement and evaluation issues?
A. Yes. The Company appears to be using reasonable procedures for monitoring and verifying energy savings from individual DSM programs using a third party
evaluation process, as summarized in Volume V, pages 41-46. However, the
company has not been including adjustments for freeridership or spillover effect in
its ex-ante or ex-post evaluations of energy savings and program cost effectiveness.
But in its recent order in Docket No. 06-03038, the PUCN directed the company to
begin to include estimates of freeridership into energy savings and DSM program cost
effectiveness analysis. Such estimation is routinely performed by utilities
implementing substantial DSM programs in other states. I support the directive issued
by the PUCN in this regard.

Q. What about accounting for spillover effect if freeridership is going to be included
in energy savings and benefit-cost analysis?

A. Spillover effect in a sense is the opposite of freeridership. It is the implementation of
efficiency measures and energy savings stimulated by a DSM program, but by
customers’ actions outside of the program. It can occur, for example, by the increased
adoption of efficiency measures after a program ends or by those not eligible to
participate in the program due to increased availability and marketing of efficiency
measures and services. I believe that if NPC is required to account for freeridership in
its energy savings and benefit-cost analyses, it should also be entitled to include
estimates of the spillover effect as well where it is possible to estimate this effect with
reasonable accuracy. There are established procedures and guidelines for estimating

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both freeridership and spillover effect in DSM programs such as those presented in
the California Evaluation Framework report.⁹

Q. What about the issuing of including the effects of freeridership and spillover
effect in determining energy savings credits for purposes of compliance with the
clean energy portfolio standards?

A. It is my view that these effects should be accounted for in determining energy savings
credits for purposes of portfolios standards compliance, just as it is appropriate to
account for these effects in DSM program cost effectiveness evaluation. The AB3 law
itself and the PUCN’s rules regarding implementation of the law do not directly
address this issue. But it is logical to have consistency between net energy savings
estimates for the purpose of program impact and cost effectiveness evaluation, and
determination of energy savings credits for the purpose of complying with the clean
energy standards. If there is high likelihood that an energy efficiency project is going
to be implemented with or without a utility incentive, e.g., if the incentive payment is
very small relative to the full cost of the energy efficiency project, then this project is
most likely a free rider and the savings from the project should not be included in
either DSM program benefit-cost analysis nor in determining energy savings credits
the Company is entitled to take credit for when it is attempting to meet the portfolio
standards.

www.calmac.org/calmac-filings.asp
Q. What is your view regarding the collaborative process that NPC organizes to assist with DSM program planning and oversight?

A. I believe the DSM collaborative has played a valuable role in keeping stakeholders informed regarding NPC's DSM program plans and results. The Collaborative also enables stakeholders to comment on and make recommendations concerning DSM program design and evaluation. During 2002-04, the DSM collaborative was used by the Company to seek substantial input and advice regarding DSM program design including developing and evaluating potential new DSM programs in a cooperative manner. But this type and level of collaboration has not occurred more recently. I encourage the Company to make better use of the Collaborative by seeking advice from its members as issues and problems arise, not just at periodic Collaborative meetings; forming subgroups to work on specific topics such as the development and analysis of potential new DSM programs or addressing evaluation issues such as techniques for estimating free ridership and spillover effects; and by communicating to the Collaborative more frequently including providing periodic reports and follow-up on action items agreed to at Collaborative meetings in a timely manner.

Q. What is your view regarding allowing flexibility in the overall DSM budget as well as the budget for particular programs?

A. This issue was addressed recently by the PUCN in Docket No. 06-03038. The Commission approved up to a 20% deviation in the budget for three programs—ACLM, Sure Bet commercial incentives, and the Low Income Air Conditioner Program. This will enable the utility to respond to increased demand for program incentives or increased need for marketing expenditures in order to meet energy requirements.
savings targets, without requesting a budget amendment in all likelihood. I
recommend that the Commission allow the same flexibility be provided for other
incentive programs such as the ENERGY STAR appliances program and the normal
high efficiency AC program. Furthermore, I recommend providing flexibility in the
total budget amount so that the utility does not need to cut back on one cost-effective
program in order to meet unexpected demand for services or incentives in another
program. In particular I recommend that the Commission allow the Company to
exceed the approved overall DSM budget level by up to 10% without requesting a
resource plan amendment. This should reduce the frequency of plan amendments,
thereby cutting down on administrative burdens on the utility and other stakeholders.
However, in all cases the Company should still be responsible for operating cost-
effective programs and for spending DSM dollars prudently.

Q. Please summarize your main recommendations concerning the Company’s DSM
programs.

A. As shown in Exhibit HG-2, I recommend that the funding for the Company’s DSM
programs during 2007-09 be increased to $140.5 million at this time. Additional
funding should be considered if the Company is able to develop a cost-effective new
homes program or a cost-effective program for office equipment and other electronic
devices. I recommend that the Commission clarify that the limit on how much energy
savings can contribute to the Company’s clean energy portfolio standards not be used
as a ceiling on DSM programs, and that the Company be directed to implement
additional cost effective demand-side resources if feasible. I recommend establishing
electricity savings targets over a ten-year period with the targets set at 1% of
electricity sales for DSM programs each year. The Company should be directed to
meet or exceed the targets if sufficient cost-effective programs can be developed and
implemented. I recommend that avoided T&D costs be included in the analysis of
DSM program cost effectiveness, and that both freeridership and spillover effect be
incorporated into energy savings and cost effectiveness analysis as well. Finally, I
recommend the Company be given some flexibility for exceeding approved funding
levels for all its DSM programs.

Q. Does that conclude your direct testimony?

A. Yes.
Exhibit HG-1

Statement of Qualifications

Howard Geller

Dr. Howard S. Geller is the Executive Director of the Southwest Energy Efficiency Project (SWEEP), a public interest venture he founded in 2001. Based in Boulder, Colorado, SWEEP promotes policies and programs to advance energy efficiency in Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming.

Dr. Geller is the former Executive Director of the American Council for an Energy-Efficient Economy (ACEEE). He established ACEEE's Washington, D.C. office in 1981, stepping down as Executive Director in February 2001. He built ACEEE's reputation and influence through technical and policy assessments, advice to policy makers, development of energy efficiency programs, consumer guides, and conferences.

Dr. Geller has advised and conducted energy efficiency studies for utilities, governmental organizations, and international agencies. He has testified before the U.S. Congress on energy issues many times and has influenced energy legislation including the National Appliance Energy Conservation Act of 1987 and the Energy Policy Act of 1992. He has served as an expert witness on energy efficiency and resource planning issues before the utility commissions of Colorado, Illinois, Maryland, and the District of Columbia.

Dr. Geller is author or co-author of four books. His most recent book, *Energy Revolution: Policies for a Sustainable Future*, was published in 2003 by Island Press. In addition to his work in the United States, Dr. Geller has spent over three years working on energy efficiency issues in Brazil. He helped to start and frequently advises Brazil's National Electricity Conservation Program (PROCEL).

Dr. Geller was awarded the 1998 Leo Szilard Award for Physics in the Public Interest by the American Physical Society in recognition of his contributions to national appliance efficiency standards and more efficient energy use in general. Dr. Geller is a member of the editorial advisory board for the journal *Energy Policy*.

Dr. Geller received his PhD in Energy Policy from the University of Sao Paulo in Brazil in 2002. He holds a Masters degree in Mechanical and Aerospace Engineering from Princeton University (1979) and he received a Bachelors degree from Clark University (1977) where he majored in Physics and Science, Technology, and Society.
## Exhibit HG-2

### DSM Program Funding Recommendations:
**NCARE Compared to NPC**

<table>
<thead>
<tr>
<th>Program</th>
<th>NPC Budget 2007-09 (million $)</th>
<th>NCARE Budget 2007-09 (million $)</th>
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<tbody>
<tr>
<td>Energy education and non-profit agency grants</td>
<td>1.50</td>
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<td>Low-income projects</td>
<td>8.96</td>
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<td>Market and technology trials</td>
<td>1.02</td>
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<td>ACLM</td>
<td>32.85</td>
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<td>Cool controls</td>
<td>2.52</td>
<td>3.86</td>
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<tr>
<td>Zero energy homes</td>
<td>0.70</td>
<td>0.70 (1)</td>
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<tr>
<td>Refrigerator recycling</td>
<td>4.95</td>
<td>4.95</td>
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<tr>
<td>Energy Star manufactured homes</td>
<td>1.12</td>
<td>1.12</td>
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<td>Energy Star lighting and appliances</td>
<td>9.30</td>
<td>10.80</td>
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<td>Sure Bet commercial incentives</td>
<td>17.00</td>
<td>21.00</td>
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<td>Sure Bet schools</td>
<td>1.20</td>
<td>2.40</td>
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<td>Sure Bet new construction</td>
<td>4.80</td>
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<td>High efficiency residential AC</td>
<td>16.46</td>
<td>22.50</td>
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<td>Pool pumps</td>
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<td><strong>SUBTOTAL</strong></td>
<td>(105.12)</td>
<td>(120.40)</td>
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<td>Residential products</td>
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<td>8.88</td>
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<td>Residential AC maintenance</td>
<td>--</td>
<td>11.25</td>
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<td>Energy Star homes</td>
<td>--</td>
<td>TBD (2)</td>
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<td>Office equipment efficiency</td>
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<tr>
<td><strong>OVERALL TOTAL</strong></td>
<td><strong>105.12</strong></td>
<td><strong>140.53</strong></td>
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</table>

(1) Additional funding should be added in year three if the pilot program is successful.

(2) Funding for these programs should be requested if cost-effective programs can be developed.
AFFIRMATION

I, HOWARD GELLER, do hereby swear under penalty of perjury the following:

That I am the person identified in the attached testimony and that such testimony was prepared by me or under my direct supervision; that the answers and information set forth therein are true to the best of my knowledge and belief; and that if asked the questions set forth therein, my answers thereto would, under oath, be the same.

[Signature]
HOWARD GELLER

STATE OF COLORADO  )
COUNTY OF BOULDER  ) ss.

SUBSCRIBED AND SWORN to before me this 11th day of September 2006.

[Signature]
Notary Public
CERTIFICATE OF SERVICE

I hereby certify that I have this 13th day of September 2006, served the foregoing Direct Testimony of Howard Gellar upon the persons listed below either by messenger, electronic mail, U.S. Mail, first class postage prepaid or by overnight delivery service.

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Penny A. Ragan