BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF THE APPLICATION OF
PUBLIC SERVICE COMPANY OF NEW MEXICO
FOR APPROVAL OF A CERTIFICATE OF PUBLIC
CONVENIENCE AND NECESSITY FOR A 141 MW
COMBUSTION TURBINE UNIT AND THE
CONVERSION OF THAT UNIT TO A 272 MW
COMBINED CYCLE GENERATOR.       Case No. 05-00275-UT

PUBLIC SERVICE COMPANY OF NEW MEXICO,

Applicant.

________________________________________________)

TESTIMONY OF

GAIL N. RYBA

On Behalf of the

Coalition for Clean Affordable Energy

December 21, 2005
Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Gail N. Ryba. My business address is 145 W. Zia Rd. Santa Fe, NM 87505.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am a contractor to the Southwest Energy Efficiency Project ("SWEEP"), which is a private, non-profit organization based in Colorado. I am SWEEP’s New Mexico representative.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS DOCKET?

A. I am testifying on behalf of the Coalition for Clean Affordable Energy ("CCAE"), a coalition of environmental and consumer groups focused on the development of renewable energy and energy efficiency resources in New Mexico. The members of CCAE include: Community Action New Mexico, Natural Resources Defense Council, New Mexico Citizens for Clean Air & Water, New Mexico Public Interest Research Group, New Mexico Solar Energy Association, Physicians for Social Responsibility, Rio Grande Chapter of the Sierra Club, Southwest Energy Efficiency Project, Southwest Research and Information Center, and Western Resource Advocates. Community Action New Mexico has intervened independently in this case.

Q. HAVE YOU PREPARED A STATEMENT OF YOUR EXPERIENCE AND QUALIFICATIONS?

A. Yes. That statement is included as CCAE Exhibit __ (GR-1).
Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to express CCAE’s support for the stipulated agreement in this case. CCAE believes energy efficiency and demand-side management (“DSM”) programs included in the stipulated agreement are an important step towards meeting PNM’s resource needs. My testimony provides information on how these resources can meet PNM’s resource needs during the 10-year load forecast period.

Q. DOES CCAE SUPPORT THE STIPULATED AGREEMENT?

A. Yes, CCAE is a party to the stipulation agreement and supports it.

Q. WHAT DOES THE STIPULATION PROPOSE WITH RESPECT TO ENERGY EFFICIENCY AND DSM PROGRAMS?

A. Section 13 of the stipulation commits PNM to file an application to initiate comprehensive electric energy efficiency programs by January 31, 2007. Section 12 commits PNM to use Integrated Resource Planning principles and include DSM options in its next Electric Supply Plan to be filed by February 1, 2007, as well as in transmission and distribution planning processes. CCAE is hopeful that PNM will accelerate the development and implementation of wide-ranging, cost-effective DSM programs as a result of these provisions.

Q. WHAT HAS BEEN PNM’S EXPERIENCE WITH ENERGY EFFICIENCY PROGRAMS?
A. As described by PNM witness Ortiz, PNM has implemented energy efficiency programs that primarily provide information and training to consumers. Given the nature and limited funding for these programs, PNM has not attempted to quantify their impacts.

Q. HOW DOES THE STIPULATION PROMOTE PNM'S ENERGY EFFICIENCY PROGRAMS?

A. The commitments made in this Stipulation, and related efforts in Case No. 05-00189-UT and Case No. 05-00261-UT, will accelerate PNM's efforts to incorporate energy efficiency programs as part of the company’s resource portfolio.

Q. WHAT ROLE DO YOU THINK ENERGY EFFICIENCY CAN PLAY IN MEETING PNM'S NEED FOR ADDITIONAL RESOURCES?

A. Energy efficiency and load management programs, if well-designed and well-funded, could provide significant reductions in projected load growth during the 10-year planning horizon considered in PNM’s original filing, including some significant reductions by 2010. As a consequence, it is valuable for PNM to accelerate the originally proposed timetable for implementation of energy efficiency programs. I elaborate on methods to achieve significant reductions in my testimony below to illustrate the potential for DSM to achieve energy and peak demand savings.

Q. HAVE YOU PREPARED AN ESTIMATE OF THE IMPACTS THAT DSM PROGRAMS COULD HAVE IN THE 2006-2014 TIME FRAME?
A. Yes I have. These estimates are shown in CCAE Exhibit __ (GR-2). In this Exhibit, I estimate the potential electricity savings and peak demand reductions from a robust set of DSM programs that I assume begin in mid-2007 at the level of 0.35% of retail sales revenues that year, ramp up during 2007-2009, and continue at the funding level of 1.45% of estimated retail sales revenues during 2009-2014. Such a projection is reasonable if PNM aggressively follows through on its commitments to ramp up energy efficiency as proposed in this Stipulation.

Q. HOW DID YOU SELECT THE ASSUMPTIONS REGARDING DSM FUNDING LEVELS?

A. The DSM funding level assumptions are based in part on the terms of the stipulation, namely that PNM proposes programs no later than January 31, 2007. I assume that these DSM programs are approved and then implemented starting in the summer of 2007. The assumptions are also based on key provisions in Efficient Use of Energy Act, namely the 1.5% cap on DSM funding as a percentage of utility retail sales revenue. I assume DSM programs start in a limited manner with $2.1 million in funding in 2007, $5.0 million in funding in 2008, and $9.2 million in 2009. Starting in 2009, I assume PNM spends 1.45% of projected revenues on DSM programs ($9-10 million per year), taking into account the spending cap in the Efficient Use of Energy Act and the fact that some large industrial customers will contribute less than 1.5% of their revenues towards such programs given that Act limits DSM cost recovery for very large customers.
Q. WHAT ELECTRICITY PRICE ASSUMPTION DID YOU USE IN MAKING THESE PROJECTIONS?

A. I assumed that the average retail electricity price that PNM charged in 2003, 7.32 cents per kWh, remains constant during 2005-2014. In reality this is a conservative assumption as there will most likely be tariff increases during this period due to rising fuel prices, capital investments, etc. If there are electricity price increases, then sales revenues will be greater as will be the potential budget for and energy savings from DSM programs.

Q. HOW DOES THE ASSUMED LEVEL OF DSM PROGRAM FUNDING COMPARE TO THAT BEING SPENT BY LEADING UTILITIES IN THE COUNTRY?

A. The amount I assume PNM spends on DSM programs is not as great as the amount being spent by leading utilities. Some electric utilities including those in California, the Pacific Northwest, Utah, and northeast states are spending 2-3% of their retail sales revenues on DSM programs.¹ These utilities are able to find and implement cost-effective programs at this level of funding.

Q. HOW DID YOU ESTIMATE THE ENERGY SAVINGS AND PEAK DEMAND REDUCTIONS THAT SUCH DSM FUNDING LEVELS COULD HAVE?

A. I did not have the time nor the capability to design and analyze specific DSM programs for PNM. Instead I used assumptions about energy savings coefficients, namely the

energy savings per DSM program dollar and peak demand reduction per program dollar. I based these assumptions on the experience of other electric utilities that have implemented a broad set of DSM programs. Numerous utilities such as the Nevada utilities, PacifiCorp (Utah Power), Xcel Energy in Minnesota, and utilities in California are saving between 4 and 7 kWh/yr per DSM program dollar. I assume that PNM is able to save 5 kWh/yr per DSM program dollar at the outset, with this value increasing to 6 kWh/yr per program dollar by 2014 as experience is gained. Likewise, numerous utilities have realized savings of between 1 and 3 Watts of peak demand per program dollar. I assume that PNM is able to save 1.5 Watts per DSM program dollar at the outset, with this value increasing to 2 Watts per program dollar by 2014 as experience is gained.

Q. WHAT TYPES OF DSM PROGRAMS COULD PNM IMPLEMENT AT THIS DSM FUNDING LEVEL?

A. The Company could implement a diverse set of energy efficiency programs that will both reduce summer peak demand and lower total electricity use. Below is a list of some programs that could be included in a robust DSM effort with a total budget of $9-10 million per year. These programs are general in nature, and do not provide specific details of energy efficiency measures that might be implemented under such programs:

- Grants or contracts to expand adoption of efficiency measures in low-income households,
- rebates for households that purchase energy-efficient appliances and lighting devices,
- rebates for households that purchase energy-efficient air conditioners, evaporative coolers, or make other efficiency improvements in their cooling system,
- cycling controls for residential and commercial air conditioning systems,

• audits for and rebates to businesses that upgrade the efficiency of their cooling, refrigeration, lighting, or other electrical equipment,
• technical and financial assistance to industries that are interested in improving the energy efficiency of their processes,
• design assistance and incentives to increase the energy efficiency of newly constructed homes and commercial buildings,
• grants to pay a portion of the cost for energy savings projects in local government buildings and schools, and
• training and certification to increase the skills of builders, contractors, and energy efficiency service providers in the PNM service area.

Q. IS THERE SIGNIFICANT SAVINGS POTENTIAL IN PNM’S SERVICE TERRITORY EVEN THOUGH ELECTRICITY USE PER HOUSEHOLD IN NEW MEXICO IS LESS THAN THE NATIONAL AVERAGE?

A. Much of the difference in average electricity use per household can be explained by the fact that the penetration and use of compressor-based air conditioning is much lower in New Mexico than in most other states. But the savings potential with efficient lighting, refrigerators, clothes washers, and other appliances in New Mexico is expected to be similar to that in other states. And there is significant savings potential in air conditioning in the limited number of homes in the state that do use compressor-based, central air conditioning.

Q. HOW MUCH OVERALL ENERGY SAVINGS AND PEAK DEMAND REDUCTION DO YOU ESTIMATE WOULD RESULT FROM A DSM EFFORT OF THIS MAGNITUDE AND SCOPE?

A. Based on the assumptions explained above and presented in the CCAE Exhibit _ (GR-2), I estimate that the DSM effort would provide about 140 GWh/yr of electricity savings by the end of 2010 and 370 GWh/yr of electricity savings by the end of 2014. Likewise, I
estimate that the DSM effort would reduce summer peak demand by nearly 44 MW in
2010 and 120 MW by 2014.

Q. **HOW SIGNIFICANT ARE THESE LEVELS OF ENERGY SAVINGS AND PEAK DEMAND REDUCTION?**

A. These savings levels represent a significant fraction of the baseline load growth projected by PNM during 2005-2014. The 370 GWh/yr of electricity savings by 2014 represents 20% of the projected growth in retail energy sales during 2005-2014 in PNM’s 2005 Electric Supply Plan. The 120 MW of peak demand reduction by 2014 represents 42% of the projected growth in summer peak demand by retail customers. Realizing these levels of energy savings and peak demand reduction would mean that PNM would need fewer and/or smaller new power generation resources and other supply-side infrastructure additions during the ten-year planning horizon.

Q. **CAN YOU MAKE A PRELIMINARY ESTIMATE OF THE COST EFFECTIVENESS OF A DSM EFFORT OF THIS MAGNITUDE AND SCOPE?**

A. Yes, I can do so by making assumptions about the level of investment in efficiency measures per DSM program dollar and the overall benefit-cost ratio. First, based on experience elsewhere, I assume that the DSM programs stimulate $2 of investment in efficiency and load management measures for each program dollar. Second, I assume that efficiency measures have a 15 year lifetime on average and that electricity remain constant at $0.0732/kWh on average. Third, I discount future savings using a 5% real discount rate. As shown in CCAE Exhibit __ (GR-2), these assumptions lead to total
investment of $130.1 million in efficiency measures during 2005-2014 and electricity bill savings worth $281.4 million over the lifetime of the efficiency measures. This means net economic benefits of $151.3 million, and an average benefit-cost ratio of 2.16.

Q. **HOW DOES THIS ESTIMATED BENEFIT-COST RATIO FOR DSM PROGRAMS COMPARE WITH THE EXPERIENCE OF OTHER UTILITIES?**

A. A benefit-cost ratio of 2.16 is within the range of what other utilities routinely achieve. For example, the American Council for an Energy-Efficient Economy reports that utilities with substantial DSM efforts in four states have achieved overall benefit-cost ratios of 2.1 to 2.5 for their programs. Some utilities such as Xcel Energy have achieved even higher benefit-cost ratios.

Q. **COULD THE ECONOMIC BENEFITS BE GREATER THAN WHAT YOU HAVE ESTIMATED?**

A. Yes they could. First, as I noted previously, this estimate assumes no increase in future electricity prices. If electricity prices increase, as they most likely will, then the value of energy savings would be even greater than I estimate. Second, this estimate does not account for any non-electricity savings. Some energy efficiency measures such as home retrofits in air conditioned homes reduce the use of gas for heating as well as electricity consumption. Some measures provide water and energy savings. The net economic benefits would be greater than I have assumed if the full savings are accounted for. Also, it is possible that more could be spent on DSM programs than what I have assumed, in which case the energy savings and economic benefits would be greater. Additional DSM
funding is possible if certain approvals are obtained, as specified in the Efficient Use of
Energy Act.

Q. WHAT OTHER BENEFITS COULD A DSM EFFORT OF THIS MAGNITUDE
HAVE RELATIVE TO PNM’S CLAIMED RESOURCE NEEDS?

A. In its Conservation Plan included in the CPCN for the Afton facility, PNM mentions that
growth in residential air conditioning is one of the causes of summer peak demand
growth (p. 9). Implementing a robust set of DSM programs could help the Company
reduce peak demand growth and thereby improve average system load factor, especially
if these programs emphasize improvements in air conditioning system efficiency,
building efficiency, and air conditioning load control. Comprehensive DSM programs
can improve system load factor by reducing peak demand more than total electricity use
in percentage terms, as illustrated in CCAE Exhibit __ (GR-2). Relative to the load
forecast presented in PNM’s CPCN, I estimate that the overall DSM effort would reduce
total peak demand in 2014 by 7.7% while reducing electricity sales by 3.9%.

Q. ARE ANY OTHER UTILITIES IN THE SOUTHWEST REGION
IMPLEMENTING ROBUST DSM PROGRAMS?

A. Yes, most are doing so or are in the process of doing so. In Utah, PacifiCorp (which
operates as Utah Power) is implementing a robust set of company-sponsored DSM
programs. The total budget for the utility’s DSM programs in Utah will reach about $22
million in 2005. This is equal to approximately 2.0% of its retail electricity sales
revenues. 2005 programs are expected to reduce electricity use by about 97 GWh/yr and

2 See Kushler, York, and Witte.
summer peak demand by about 30 MW. In addition, PacifiCorp is continuing to develop new DSM programs, and is striving to implement all cost-effective DSM programs using the Total Resource Cost test to evaluate cost effectiveness. For comparison, PNM is about 38% as large as Utah Power in terms of retail electricity sales.

In Colorado, Xcel Energy implements a diverse set of electricity DSM programs for its customers. The utility recently committed to spend up to $196 million (2005 dollars) on DSM programs during 2006-2013 and in doing so reduce peak demand by at least 320 MW and electricity use by at least 800 GWh/yr at the end of this eight-year effort. For comparison, PNM is about 28% as large as Xcel Energy (in Colorado) in terms of retail electricity sales.

In Nevada, Nevada Power Company and Sierra Pacific Power Company implement various DSM programs for their residential and business customers. The utilities are planning to spend about $16 million on DSM programs in 2005 and ramp up to a $30 million DSM budget in 2006. The utilities spent about $10.6 million on 2004 programs, reducing peak demand by nearly 21 MW and saving 78 GWh/yr as a result. For comparison, PNM is about 27% as large as the Nevada utilities in terms of retail electricity sales.

In Arizona, Arizona Public Service Company has agreed to spend $48 million on a three-year DSM effort during 2005-2008. APS has proposed implementing ten DSM programs which would achieve a peak demand reduction of nearly 52 MW at the end of

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this three-year effort along with 3,435 GWh of lifetime energy savings.\(^5\) APS was waiting for utility commission review and approval of most of the proposed DSM programs as of November, 2005 (two have already been approved).

Q. IS IT IMPORTANT THAT PNM GET STARTED AS SOON AS POSSIBLE WITH THE DESIGN AND IMPLEMENTATION OF ADDITIONAL ELECTRICITY DSM PROGRAMS?

A. Yes it is. The sooner PNM gets started on cost-effective electricity DSM programs, the sooner consumers and businesses will be able to participate and benefit. Furthermore, PNM can acquire more of this cost-effective resource in the near term (i.e., by 2010) the sooner it gets started. And the sooner PNM gets started, the sooner it will gain the capability and experience necessary to ramp up its DSM programs. For these reasons, CCAE strongly recommends that electricity DSM programs begin in 2007, as proposed in the stipulated agreement.

Q. DO YOU HAVE SPECIFIC DSM FUNDING LEVELS AND SAVINGS TARGET TO RECOMMEND?

A. Yes I do. Given the potential economic and other benefits of electricity DSM programs, I recommend that PNM start electricity DSM program implementation in 2007 and ramp up funding to close to the level of 1.5% of revenues by 2009, assuming that cost-effective programs can be designed and implemented in accordance with the Efficient Use of Energy Act. CCAE recommends energy savings targets along the lines presented in

CCAExhibit __ (GR-2), namely saving about 140 GWh/yr of electricity by 2010 and
370 GWh/yr by 2014, from DSM programs implemented starting in 2007, assuming that
the cost effectiveness requirements are met. Furthermore, I recommend summer peak
demand reduction targets of 43.7 MW by 2010 and 119.5 MW by 2014, once again from
DSM programs implemented starting in 2007, assuming that the cost effectiveness
requirements are met.

Q. DO YOU HAVE COMMENTS ON THE SPECIFIC SUPPLY-SIDE ELEMENTS
OF THE STIPULATION AGREEMENT OR PNM’s FILING FOR
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IN THIS
DOCKET?
A. No I do not.

Q. PLEASE REITERATE YOUR PRINCIPAL CONCLUSIONS ABOUT THE
STIPULATED AGREEMENT AND PNM’S APPLICATION FOR A
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE
AFTON FACILITY.
A. CCAE supports the stipulation agreement in general and is especially supportive of
sections 12 and 13 concerning resource planning and energy efficiency programs. CCAE
believes that if PNM proceeds aggressively with this schedule and ramps up DSM
programs to the maximum funding level established in 2005 Efficient Use of Energy Act
as rapidly as possible, as long as such programs are cost-effective for PNM and its
customers, it can achieve energy efficiency savings as we predict. CCAE also believes
that interested stakeholders should establish energy savings and peak load reduction targets for PNM’s DSM programs. In addition, PNM should review its load forecast and its supply-side resource plans to take into account the impact that such DSM programs could have on future electricity consumption and peak electric power demand.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.