

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

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

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

3

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

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

8

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

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

19

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

22 **A.** Yes. That statement is included as CCAЕ Exhibit __ (GR-1).

23

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

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

7
8 **Q. DOES CCAE SUPPORT THE STIPULATED AGREEMENT?**

9 **A.** Yes, CCAE is a party to the stipulation agreement and supports it.
10

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

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

20
21 **Q. WHAT HAS BEEN PNM'S EXPERIENCE WITH ENERGY EFFICIENCY**
22 **PROGRAMS?**

23

1 A. As described by PNM witness Ortiz, PNM has implemented energy efficiency programs
2 that primarily provide information and training to consumers. Given the nature and
3 limited funding for these programs, PNM has not attempted to quantify their impacts.
4

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

7 A. The commitments made in this Stipulation, and related efforts in Case No. 05-00189-UT
8 and Case No. 05-00261-UT, will accelerate PNM's efforts to incorporate energy
9 efficiency programs as part of the company's resource portfolio.
10

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

13 A. Energy efficiency and load management programs, if well-designed and well-funded,
14 could provide significant reductions in projected load growth during the 10-year planning
15 horizon considered in PNM's original filing, including some significant reductions by
16 2010. As a consequence, it is valuable for PNM to accelerate the originally proposed
17 timetable for implementation of energy efficiency programs. I elaborate on methods to
18 achieve significant reductions in my testimony below to illustrate the potential for DSM
19 to achieve energy and peak demand savings.
20

21 **Q. HAVE YOU PREPARED AN ESTIMATE OF THE IMPACTS THAT DSM**
22 **PROGRAMS COULD HAVE IN THE 2006-2014 TIME FRAME?**

1 A. Yes I have. These estimates are shown in CCAE Exhibit __ (GR-2). In this Exhibit, I
2 estimate the potential electricity savings and peak demand reductions from a robust set of
3 DSM programs that I assume begin in mid-2007 at the level of 0.35% of retail sales
4 revenues that year, ramp up during 2007-2009, and continue at the funding level of
5 1.45% of estimated retail sales revenues during 2009-2014. Such a projection is
6 reasonable if PNM aggressively follows through on its commitments to ramp up energy
7 efficiency as proposed in this Stipulation.

8

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

11 A. The DSM funding level assumptions are based in part on the terms of the stipulation,
12 namely that PNM proposes programs no later than January 31, 2007. I assume that these
13 DSM programs are approved and then implemented starting in the summer of 2007. The
14 assumptions are also based on key provisions in Efficient Use of Energy Act, namely the
15 1.5% cap on DSM funding as a percentage of utility retail sales revenue. I assume DSM
16 programs start in a limited manner with \$2.1 million in funding in 2007, \$5.0 million in
17 funding in 2008, and \$9.2 million in 2009. Starting in 2009, I assume PNM spends 1.45%
18 of projected revenues on DSM programs (\$9-10 million per year), taking into account the
19 spending cap in the Efficient Use of Energy Act and the fact that some large industrial
20 customers will contribute less than 1.5% of their revenues towards such programs given
21 that Act limits DSM cost recovery for very large customers.

22

1 **Q. WHAT ELECTRICITY PRICE ASSUMPTION DID YOU USE IN MAKING**
2 **THESE PROJECTIONS?**

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

8

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

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

17

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

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

¹ See M. Kushler, D. York, and P. Witte. 2004. *Five Years In: An Examination of the First Half-Decade of Public Benefits Energy Efficiency Policies*. Washington, DC: American Council for an Energy-Efficient Economy. April. <http://www.aceee.org/pubs/u041.pdf>. Also, see *The Potential for More Efficient Electricity Use in the Western*

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

11
12 **Q. WHAT TYPES OF DSM PROGRAMS COULD PNM IMPLEMENT AT THIS**
13 **DSM FUNDING LEVEL?**

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

- 19
20 • Grants or contracts to expand adoption of efficiency measures in low-income households,
21 • rebates for households that purchase energy-efficient appliances and lighting devices,
22 • rebates for households that purchase energy-efficient air conditioners, evaporative
23 coolers, or make other efficiency improvements in their cooling system,
24 • cycling controls for residential and commercial air conditioning systems,

- 1 • audits for and rebates to businesses that upgrade the efficiency of their cooling,
- 2 refrigeration, lighting, or other electrical equipment,
- 3 • technical and financial assistance to industries that are interested in improving the energy
- 4 efficiency of their processes,
- 5 • design assistance and incentives to increase the energy efficiency of newly constructed
- 6 homes and commercial buildings,
- 7 • grants to pay a portion of the cost for energy savings projects in local government
- 8 buildings and schools, and
- 9 • training and certification to increase the skills of builders, contractors, and energy
- 10 efficiency service providers in the PNM service area.
- 11

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

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

22

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

26 **A.** Based on the assumptions explained above and presented in the CCAE Exhibit _ (GR-2),
27 I estimate that the DSM effort would provide about 140 GWh/yr of electricity savings by
28 the end of 2010 and 370 GWh/yr of electricity savings by the end of 2014. Likewise, I

1 estimate that the DSM effort would reduce summer peak demand by nearly 44 MW in
2 2010 and 120 MW by 2014.

3
4 **Q. HOW SIGNIFICANT ARE THESE LEVELS OF ENERGY SAVINGS AND PEAK**
5 **DEMAND REDUCTION?**

6 **A.** These savings levels represent a significant fraction of the baseline load growth projected
7 by PNM during 2005-2014. The 370 GWh/yr of electricity savings by 2014 represents
8 20% of the projected growth in retail energy sales during 2005-2014 in PNM's 2005
9 Electric Supply Plan. The 120 MW of peak demand reduction by 2014 represents 42% of
10 the projected growth in summer peak demand by retail customers. Realizing these levels
11 of energy savings and peak demand reduction would mean that PNM would need fewer
12 and/or smaller new power generation resources and other supply-side infrastructure
13 additions during the ten-year planning horizon.

14
15 **Q. CAN YOU MAKE A PRELIMINARY ESTIMATE OF THE COST**
16 **EFFECTIVENESS OF A DSM EFFORT OF THIS MAGNITUDE AND SCOPE?**

17 **A.** Yes, I can do so by making assumptions about the level of investment in efficiency
18 measures per DSM program dollar and the overall benefit-cost ratio. First, based on
19 experience elsewhere, I assume that the DSM programs stimulate \$2 of investment in
20 efficiency and load management measures for each program dollar. Second, I assume that
21 efficiency measures have a 15 year lifetime on average and that electricity remain
22 constant at \$0.0732/kWh on average. Third, I discount future savings using a 5% real
23 discount rate. As shown in CCAE Exhibit __ (GR-2), these assumptions lead to total

1 investment of \$130.1 million in efficiency measures during 2005-2014 and electricity bill
2 savings worth \$281.4 million over the lifetime of the efficiency measures. This means net
3 economic benefits of \$151.3 million, and an average benefit-cost ratio of 2.16.

4
5 **Q. HOW DOES THIS ESTIMATED BENEFIT-COST RATIO FOR DSM**
6 **PROGRAMS COMPARE WITH THE EXPERIENCE OF OTHER UTILITIES?**

7 **A.** A benefit-cost ratio of 2.16 is within the range of what other utilities routinely achieve.
8 For example, the American Council for an Energy-Efficient Economy reports that
9 utilities with substantial DSM efforts in four states have achieved overall benefit-cost
10 ratios of 2.1 to 2.5 for their programs.² Some utilities such as Xcel Energy have
11 achieved even higher benefit-cost ratios.

12
13 **Q. COULD THE ECONOMIC BENEFITS BE GREATER THAN WHAT YOU**
14 **HAVE ESTIMATED?**

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

1 funding is possible if certain approvals are obtained, as specified in the Efficient Use of
2 Energy Act.

3
4 **Q. WHAT OTHER BENEFITS COULD A DSM EFFORT OF THIS MAGNITUDE**
5 **HAVE RELATIVE TO PNM'S CLAIMED RESOURCE NEEDS?**

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

16
17 **Q. ARE ANY OTHER UTILITIES IN THE SOUTHWEST REGION**
18 **IMPLEMENTING ROBUST DSM PROGRAMS?**

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

² See Kushler, York, and Witte.

1 summer peak demand by about 30 MW.³ In addition, PacifiCorp is continuing to develop
2 new DSM programs, and is striving to implement all cost-effective DSM programs using
3 the Total Resource Cost test to evaluate cost effectiveness. For comparison, PNM is
4 about 38% as large as Utah Power in terms of retail electricity sales.

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

11 In Nevada, Nevada Power Company and Sierra Pacific Power Company
12 implement various DSM programs for their residential and business customers. The
13 utilities are planning to spend about \$16 million on DSM programs in 2005 and ramp up
14 to a \$30 million DSM budget in 2006. The utilities spent about \$10.6 million on 2004
15 programs, reducing peak demand by nearly 21 MW and saving 78 GWh/yr as a result.⁴
16 For comparison, PNM is about 27% as large as the Nevada utilities in terms of retail
17 electricity sales.

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

³ Presentation made by Utah Power to the DSM Advisory Group, Oct. 28, 2005.

⁴ Annual Demand-Side Management Report. Nevada Power Company and Sierra Pacific Power Company. Las Vegas and Reno, NV. Sept. 1, 2005.

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

4
5 **Q. IS IT IMPORTANT THAT PNM GET STARTED AS SOON AS POSSIBLE**
6 **WITH THE DESIGN AND IMPLEMENTATION OF ADDITIONAL**
7 **ELECTRICITY DSM PROGRAMS?**

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

15
16 **Q. DO YOU HAVE SPECIFIC DSM FUNDING LEVELS AND SAVINGS TARGET**
17 **TO RECOMMEND?**

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

⁵ APS Demand Side Management Program Portfolio Plan 2005-2007. Arizona Public Service Company, Phoenix, AZ, July 1, 2005.

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

7
8 **Q. DO YOU HAVE COMMENTS ON THE SPECIFIC SUPPLY-SIDE ELEMENTS**
9 **OF THE STIPULATION AGREEMENT OR PNM'S FILING FOR**
10 **CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY IN THIS**
11 **DOCKET?**

12 **A.** No I do not.

13
14 **Q. PLEASE REITERATE YOUR PRINCIPAL CONCLUSIONS ABOUT THE**
15 **STIPULATED AGREEMENT AND PNM'S APPLICATION FOR A**
16 **CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE**
17 **AFTON FACILITY.**

18 **A.** CCAE supports the stipulation agreement in general and is especially supportive of
19 sections 12 and 13 concerning resource planning and energy efficiency programs. CCAE
20 believes that if PNM proceeds aggressively with this schedule and ramps up DSM
21 programs to the maximum funding level established in 2005 Efficient Use of Energy Act
22 as rapidly as possible, as long as such programs are cost-effective for PNM and its
23 customers, it can achieve energy efficiency savings as we predict. CCAE also believes

1 that that interested stakeholders should establish energy savings and peak load reduction
2 targets for PNM's DSM programs. In addition, PNM should review its load forecast and
3 its supply-side resource plans to take into account the impact that such DSM programs
4 could have on future electricity consumption and peak electric power demand.

5

6 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

7 **A. Yes.**