BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPNAY OF NEW MEXICO FOR APPROVAL OF ELECTRIC ENERGY EFFICIENCY PROGRAMS AND PROGRAM COST TARIFF RIDER PURSUANT TO THE NEW MEXICO PUBLIC UTILITY AND EFFICIENT USE OF ENERGY ACTS,	)	**CASE NO. 12-00317-UT**
PUBLIC SERVICE COMPANY OF NEW MEXICO	)	
Applicant	)	

DIRECT TESTIMONY

OF

BRUNO E. CARRARA, P. E.

ON BEHALF OF

NEW MEXICO PUBLIC REGULATION COMMISSION
UTILITY DIVISION

23 January 2013

NMPRC CASE NO. 12-00317-UT
DIRECT TESTIMONY OF
BRUNO E. CARRARA, P.E.

Q. Please state your name, position and business address.

A. My name is Bruno E. Carrara. I am the Bureau Chief for the Electrical Engineering Bureau of the Utility Division of the New Mexico Public Regulation Commission ("NMPRC", "PRC", or "Commission"). My business address is New Mexico Public Regulation Commission, P.E.R.A. Building, 1120 Paseo de Peralta, Santa Fe, New Mexico 87504. My e-mail address is bruno.carrara@state.nm.us.

Q: Please describe your educational background and experience.

A. I received Bachelor's and Master's degrees in Mechanical Engineering from the University of New Mexico, in 1972 and 1975, respectively. I have performed extensive post-graduate course study work, both in work-related and personal capacities, including training on project management, cost engineering, cost accounting, and utility operation, governance and regulation. I have been a registered Professional Engineer in New Mexico since 1976. My License number is 6162. In 1985, I successfully completed the Program for Management Development ("PMD"). The PMD is an intensive three month business program offered at the Harvard Business School in Cambridge, Massachusetts, in business administration for technical, non-business executives.

My professional experience consists of over 40 years in the domestic and foreign electric and natural gas utility industry. I worked for 25 years for a combined electric and natural gas utility. I held technical, managerial and executive positions on both sides of the company, as well as in its non-regulated subsidiaries. After retirement in 1995, I performed consulting work for both domestic and foreign companies in the energy and utility industry, primarily as a project developer, for nearly 8 years. In early 2003, I was hired by the NMPRC to be the Statutory Pipeline Safety Engineer for New Mexico, and, as such, was Bureau Chief of the Pipeline Safety Bureau of the Transportation Division. I subsequently worked for the US Department of Transportation's Pipeline and Hazardous Material Safety Administration as a pipeline safety inspector and accident investigator. I left that position and accepted my current position here at the PRC in August 2010.

Q: Have you presented testimony before this Commission in other cases?

A: Yes, I presented testimony many years ago prior to my employment at the Commission when I was in private industry. I also presented testimony in several enforcement cases and in rulemaking proceedings in my previous capacity as Pipeline Safety Engineer. Staff Exhibit BEC-1 shows the utility cases in which I have presented testimony or have submitted an affidavit in my current capacity.

Q: What is the purpose of your testimony?

A: I am presenting testimony in this case in support of the policy recommendations made by Staff Witnesses Lamberson and Brack, and in support of the Energy Efficiency and Load Management program recommendations made by Staff Witness Reynolds. Specifically, I was given the assignment of reviewing Public Service Company of New Mexico's (PNM's or Company's) avoided cost calculations, and I present Staff's analysis, conclusions and recommendations regarding PNM's deferred cost calculations; Staff's analysis, conclusions and recommendations regarding PNM's application of deferred cost benefits in the TRC test; Staff's overall cost benefit analysis of PNM's proposed 2012 Plan; and the calculations supporting Staff's incentive proposal.

I my testimony, I refer to the PNM Power Saver and Peak Saver load management programs as the "LM" programs and the Commercial, Residential and Low Income energy efficiency programs as the "EE" programs.

Q. Summarize Staff's primary recommendations made in your testimony.

A. First, PNM's deferred capacity value of $122.40 per kW-year for energy efficiency programs should be reduced to $78.42 per kW-year;

Second, a corrected deferred capacity value of $123.24per kW-year should be used for LM;

Third, Staff's proposed $78.42 per kW-year deferred capacity value should be used for TRC test calculations to evaluate the cost effectiveness of PNM's proposed plan EE programs for this Application as presented by Staff witness John Reynolds;

Fourth, PNM's TRC calculations should be corrected for mathematical errors as presented in my testimony. Staff Witness Reynolds corrects for these errors in his testimony;

Fifth, PNM's avoided cost methodology should be rejected as the basis for determining an EUEA incentive; and

Lastly, the Commission should consider an alterative Staff incentive proposal in the amount of $1.7M for Program Year 2013.

Q. How is your testimony organized?

A. My testimony is divided into five major sections. First, I will broadly discuss the method used by PNM in the application to perform the total resource cost (TRC)

test. Second, I will discuss PNM's derivation of the energy (kWh) saving costs that are used in the TRC benefit calculation. Third, I discuss the capacity (kW) deferrals and resulting savings and costs that are used in the TRC benefit calculation. In doing so, I also discuss some matters regarding mathematical computations made by PNM in the capacity benefit calculations that Staff believes need to be corrected. I also discuss what Staff believes to be strengths and shortcomings of the approach PNM took in the application. In the fourth section, I discuss the overall cost and savings of PNM's EE and LM programs as proposed. Finally, I discuss an alternative approach and amount for the incentive payment that PNM is requesting.

Q: What information did you review to prepare your testimony?

A: I examined PNM's application and the included testimonies and exhibits. I also examined the interrogatories submitted by Staff and interveners and PNM's responses thereto and engaged in some informal discovery with PNM. I also briefly reviewed the transcripts of the depositions taken by the New Mexico Industrial Energy Consumers (NMIEC).

SECTION I: PNM'S TRC METHODOLOGY

Q: Before beginning, please describe your understanding of the statutory TRC requirements.

A: I am not an attorney, but I will provide my understanding of the TRC test contained in the Efficient Use of Energy Act (EUEA). The EUEA has two definitions that pertain to the TRC. The first is a definition of "cost effective", which says that an energy efficiency or load management program is deemed cost effective if it meets the TRC test. Section 62.17-4.C NMSA 1978. The second definition of "total resource cost test" states that the TRC is "...a standard that is met if the monetary ***costs that are borne by the utility and the participants*** and that are incurred to develop, acquire and operate energy efficiency or load management resources on a ***life-cycle*** basis are ***less*** than the ***avoided*** monetary ***costs*** associated with developing, acquiring and operating the associated ***supply-side resources*** ..." (emphasis added). Section 62.17-4.J NMSA 1978.

Q: How is the TRC generally calculated?

A: It is my understanding the TRC is generally stated as a ratio, where the numerator is the present value of avoided monetary costs associated with the avoided energy and deferred capacity and the denominator is the present value of costs "borne by the utility and the program participants". If the ratio is less than 1.0, or if the ratio is negative (that is, the numerator is negative because the programs result in net costs rather than net benefits), the TRC is not met and a program is not cost effective.

Section 62.17-4.J states the costs in the denominator should be the costs borne by the utility and the program participants, and the statute later goes on to authorize the utility to recover such costs from general customers, both participants and non-participants. The statute at this section also specifically limits benefits and/or costs in the numerator to benefits and/or costs associated with developing, acquiring, and operating supply side resources. Because these benefits and/or costs are associated with supply-side resource development, it is assumed that these benefits or costs will be borne by the utility and passed completely on to all customers, participating and non-participating, in future rates. Experience has shown that utilities, at least for rate base, make decisions about when to file rate cases based on its overall rate considerations, not the singular decision to install generating units. It is doubtful that customers will see in the future rate changes solely arising from singular generation unit installations. Rate case timing notwithstanding, the statute language contemplates that cost effective programs, in the aggregate, must be of net benefit to all and each customer, whether or not they are participants.

Q: Please describe your understanding of how PNM calculated the EE programs' TRCs.

A: PNM used the ratio technique described above on a program-by-program basis, by taking: 1) the sum of a) present value of the kWh savings and b) the present

value of the deferred kW savings and costs; and 2) dividing the sum by the present value of the program costs. The present value of costs and benefits was calculated by PNM using their weighted cost of capital, currently 8.20%, as the discount rate. Staff Witness Brack discusses this further.

Q: How did PNM calculate the present value of the kWh savings and the present value of deferred kW savings and costs used in the TRC calculations?

A: PNM did not use a single modeling tool to estimate the kWh savings and the deferred kW savings and costs. Rather, PNM calculated separate kWh unit energy cost values (depending on whether the program was a commercial or residential program) and applied them to the program's avoided kWh estimates. PNM Exhibits PJO-2 and PJO-3 show the kWh energy cost values that were applied in the TRC calculations in PNM Witness Bean's testimony. Staff Witness Reynolds discusses Staff's review of PNM Witness Bean's testimony.

To estimate the deferred kW savings or costs, PNM used a resource portfolio approach, as modeled using the Strategist modeling tool, to determine the timing of when generating units would need to be added to PNM's system. The Strategist tool is also used by PNM to perform its Integrated Resource Pan (IRP). Strategist is very powerful at "optimizing" the generation mix portfolio, but it cannot do hour by hour calculations for 20 years of load forecast due to the

number of permutations involved in the optimization process. PNM therefore developed simplified load profiles to account for EE and LM programs. The kW savings or costs were determined by estimating annual capital return, depreciation and other fixed operating costs (Capital and FOM) for the new generating units as selected by Strategist over a 2012-2031 timeframe (20 years). This was accomplished by comparing the results from two scenarios: the "baseline scenario", which included the effects of previously-approved EE programs (which have effective lives beyond 2012) and LM programs through 2017, and the comparison scenario which added the proposed 2013 and 2014 EE programs to the baseline scenario. In other words, PNM included future LM program impacts (in 2013, 2014, 2015, 2016, and 2017) in both scenarios. The last step performed by PNM was to calculate an average present value of the difference in the annual Capital and VOM between the two scenarios, expressed as $ per kW-year, and applied that value to the EE programs' estimated kW capacity savings in the TRC calculation. I will discuss this in more detail later in my testimony.

Q: You have used the phrase "kW savings or costs", rather than the more common "avoided capacity". Why?

A: It is clear from PNM Exhibit PJO-1 that future capacity additions are not avoided. Timing and size of planned capacity additions may change, depending on what one expects the future load to be. The term "kW savings and costs" better reflects

what happens when the future mix of planned additions change; in some years the Capital and FOM may be higher (a cost) and in some years it may be lower (a saving).

SECTION II: PNM'S AVOIDED KWH ENERGY CALCULATIONS IN THE TRC

Q: Does Staff agree with PNM's avoided kWh energy calculations used in the TRC test calculations?

A: As stated earlier, statute is clear that the TRC must be a life-cycle analysis, but it is unclear and indeed is confusing about which perspective the TRC should represent. Staff believes that the TRC should be performed from the perspective of the impact on the general customer; not from the perspective of participating customers solely or the company. It is also Staff's position, as addressed by Staff Witness Lamberson, that CO2 credits should not be included and that natural gas usage credits are questionable. Despite the inclusion of CO2 costs and avoided natural gas costs, it is Staff's position that PNM generally calculated avoided energy savings appropriately, but Staff recommends that guidance to the utilities should be provided in a Commission rule. As addressed by Staff Witness Reynolds, the status of Rule 17.7.2 NMAC is unclear, and both the 2007 and 2010 versions of Rule 17.7.2 NMAC are practically silent on this subject.

SECTION III: PNM'S DEFERRED KW CAPACITY SAVNGS AND COSTS CALCULATIONS IN THE TRC

Q: Does Staff agree with PNM's deferred kW capacity savings and costs calculations used in the TRC?

A: No. Staff generally agrees with the resource portfolio approach used by PNM but has identified a number of errors which call into question the reliability of the deferred kW capacity savings and cost calculations performed by PNM and used in the TRC.

Q: Why does Staff base it general agreement with the portfolio approach?

A. Because the statute requires a life-cycle approach, Staff agrees with PNM that a portfolio approach is the most appropriate approach for TRC purposes, and that any life-cycle analysis requires assumptions to be made. The TRC is similar to the IRP in many ways, but dissimilar in some very important ways. The IRP process recognizes that forecasting is imprecise at best, and the IRP process incorporates measures to account for the imprecision, and incorporates a large range of possible outcomes. For example, the many IRP scenarios model varying load growth assumptions, varying technology assumptions, varying escalation rates, etc. The 20-year IRP outcome is itself a four-year "road-map" plan, rather

than a specific conclusion, and is revisited every three years. Staff Exhibit BEC-2 is one example of just how complicated forecasting is. Staff Exhibit BEC-2 clearly demonstrates the inherent inaccuracy in PNM's load forecasts. Forecasting is a very fluid process; over the course of five years, the 2012 predicted load forecast ranged from 1903 to 2080 MW (weather normalized). That is a variance of 177 MW or 9.3%. The actual peak demand for 2012 was 1924 MW weather normalized or an actual of 1948 MW (un-normalized). The lack of certainty increases as the look into the future increases. The TRC, for practical reasons, is much less rigorous than the IRP and it follows that it should be used only for TRC program justification purposes primarily because statute requires it. However, as discussed by Staff Witness Lamberson, it would also be wise to use multiple tests as a "check" for the reasonableness of EE and LM program costs. I also discuss this more later. Again, there is no significant or specific additional guidance on the TRC method prescribed by statute or Commission rule, and Staff Witnesses Lamberson and Brack make recommendations on this topic as well as discuss the history of past utility calculations.

NOTE: On December 21, 2012 and on January 15, 2013, PNM updated PNM Exhibit PJO-1 in response to Staff's Interrogatory 1-18. I shall refer to the revised exhibit as PNM Exhibit PJO-1R (attached as Staff Exhibit BEC-3), and

will use that information in the rest of my discussion. PNM Exhibit PJO-1R resulted in a slightly lower deferred capacity credit (of $123.24 per kW-year in the revision vs. $124.04 per kW-yr in the original), but because the difference is slight, PNM did not recalculate the TRCs in PNM Exhibit SMB-1.

Also, as stated earlier and as discussed by Staff Witness Brack, Staff has a concern with using 8.20% as the discount rate, but because we do not have another number to recommend at this time, I and Staff Witness Reynolds continued to use 8.20%.

Q: What main concerns has Staff identified with PNM's avoided cost methodology and calculations as presented in the Application at this time?

A: Specifically, Staff has identified the following three main concerns with PNM's application:

- PNM has derived the $/kW-year number in PNM Exhibit PJO-1R inappropriately.
- PNM has included 20 years' worth of portfolio benefits during the first four program years (2013 through 2016) in program TRC calculations, when no difference in installed capacity is expected under any scenario, as shown in PNM Exhibit PJO-1R, thus overstating individual programs' TRC.

- PNM has made three inappropriate adjustments to the calculated $/kW-yr value in the individual program TRC calculations. Two of the inappropriate adjustments overstate the benefit and one inappropriate adjustment understates the benefit.

Q: Please explain Staff's first concern.

A: PNM's baseline scenario includes the effects of previously approved energy efficiency programs whose lives extend beyond 2012, and also includes the impacts of load management programs through 2017. The comparison scenario adds the proposed 2013 and 2014 (two years) of energy efficiency programs. Since the baseline scenario already includes the 2013 through 2017 load management programs, the difference between the two scenarios should represent the incremental effects of the 2013 and 2014 EE programs only. The difference in Capital and FOM between the two scenarios is a net present value of approximately $60.7 million, as shown at the bottom of the first table in PNM Exhibit PJO-1R. The bottom table shows that the **EFFECTIVE** capacity deferral impact is 186 MW-year due to EE programs and the LM capacity deferral is 307 MW-year, for a total of 493 MW-year. The sum of the program-by-program "deferred" kW-yr savings for EE programs from PNM Exhibit SMB-1 add up to approximately 292 MW-yr, much more than PNM Exhibit PJO-1R. When asked about this discrepancy, PNM responded that there is an apparent

"shrinkage" between the 493 MW-yr derived by PNM Witness O'Connell and the 599 MW-yr derived by PNM Witness Bean (292 MW-yr for the EM programs and 307 MW-yr for five years' of LM programs), and that the 2013 and 2014 programs are not additive when considering previously approved programs (see Staff Exhibit BEC-3, attached). This discrepancy, however, has not been adequately explained or accounted for by PNM. PNM then divides $60.7 million by 493 MW-yr to arrive at an average present value of the deferred kW savings and costs of $123.24 per kW-yr (was $124.04 in the original exhibit). The $124.04 value is passed on to the program TRC calculations in Exhibit SMB-1 (as stated earlier, PNM did not update the programs TRCs because the credit value is only slightly changed).

The $123.24 per kW-year is an average 2012 present value, not a "levelized" cost. Also, the baseline scenario already includes the LM program through 2017, and that the deferred capacity of 493 MW-yr also includes the LM impacts. Yet the $60.7 million Capital and FOM present value is the difference between the two scenarios. It therefore is more appropriate for the $60.7 million to be divided by only 186 MW-yr (the deferred capacity attributable to the EE programs only); however, that division yields $455.40 per kW-yr, which is unreasonably high and therefore suspect and unusable. It is also important to note that the 2031

cumulative capacity numbers are 991 MW for the baseline case and 1043 MW for the EE case (a difference of 52 MW in the EE case), and I discuss this more later.

Q: Please discuss Staff's second concern.

A: PNM Exhibit PJO-1R shows no capacity deferral occurs until 2017, so that there is no capacity kW savings or costs difference until then. PNM Exhibit PJO-1R also shows that most of the kW deferral savings occur after 2021, although their present value impact is diminished because of the discount rate. By 2021, most the 2013 and 2014 programs have either expired or are in the last few years of their lives. So using a 2012 net present value applied to all programs' deemed kW savings for their entire lives also is inappropriate when there is no deferred capacity savings until 2017 or after the program lives have exhausted.

Q: Please describe Staff's third concern.

A: PNM has made three mathematical errors in the TRC calculations. My supporting calculations described below are shown in Staff Exhibit BEC-4. The first mathematical error deals with applying the $123.24 per kW-yr to deemed program kW annual savings. As stated earlier, the $123.24 figure was derived by dividing the $60.7 million by 493,000 kW-yr. But in the TRC calculations, the $123.24 (ignoring the recalculation would have resulted from the corrected PJO-

1R) is applied to a total of approximately 292,000 kW-yr of deemed savings, or a total of approximately $36.0 million for the EE programs. Carrying this logic further, the LM capacity deemed savings is approximately $37.8 million (307,000 kW-yr times $123.24 per kW-yr). The sum of $36.0 million and $37.8 million is $73.8 million, which is $13.1 million more than the $60.7 million PNM started with, an overstatement of savings. PNM should have attributed to the EE programs only the amount contributed by the EE's programs to the total ($60.7 million times 186 kW-yr divided by 493 kW-yr or $22.90 million). On a program-by-program basis, this amounts to $78.42 per kW-yr of deemed savings ($22,900,000 divided by 292,000 kW-yr of total program deemed savings) for the EE programs. PNM has overstated the deemed capacity savings in the TRC in PNM Exhibit SMB-1. The $78.42 per kW-yr figure is used by Staff Witness Reynolds in his EE program-by-program TRC review.

The second mathematical error that occurred in the TRC calculations is that PNM grosses up the $123.24 figure for systems losses at 7% and for reserve margin of 13%. The TRC calculations should not have done so, since the $123.04 figure is already at the generation level, and thus systems losses and reserve margin consideration are already included in the figure. For example, $123.24 per kW-yr times 1.07 (system loss factor) times 1.13 (reserve margin) equals $149.01 per

kW-yr. $149.01- per kW-yr times 493,000 - kW-yr is $73.5 million, or about $12.8.2 million more than PNM started with, a second overstatement of savings.

These two errors have overstated the overall TRC by about $13.1 million plus $12.8 million, or about $25.9 million.

The third mathematical error identified by Staff is that PNM erroneously present valued the annual kW-yr deemed program savings again in the TRC calculations. However, present valuing again is unnecessary, since the capacity value is already a present value expressed in 2012 dollars. This error requires a TRC spreadsheet programming change, and Staff was not able to calculate the impact of this understatement.

SECTION IV: OVERALL COST AND SAVINGS OF PNM'S EE AND LM PROGRAMS

Q: What is Staff's general reaction to PNM's proposal given the numerous errors and concerns Staff has identified in PNM' deferred capacity costs methodology, calculations and application to the TRC?

A: To get a general sense and to confirm or dispel observations made during Staff's examination of PNM's application, Staff decided to perform a general cost/benefit

analysis of PNM's proposed EE and LM programs in the aggregate, as shown in Staff Exhibit BEC-5.

Staff Exhibit BEC-5 shows much of the same information as PNM Exhibit PJO-1R. No incentive payments in 2013 and 2014 were included in these calculations, and the fuel and variable O&M savings did not include CO2 or natural gas credits.. Staff Exhibit BEC-5 is cast in the same general form as PNM Exhibit PJO-1R, but the starting point is the fundamental decision before this Commission: whether the EE **AND** LM programs as proposed should be approved. Therefore, the base case in this exhibit is no more EE or LM programs past 2012 (previously approved programs that have lives that extend beyond 2012 continue, however), as opposed to PNM's baseline case which included LM past 2012 through 2017. Column A, labeled "No EE/No LM" displays the incremental capacity that Strategist identified as being necessary, given the same load growth and capacity options as in the baseline case of PNM Exhibit PJO-1R. Column B shows the incremental installed capacity determined by Strategist with EE and LM (2013 and 2014 of EE and 2013-2017 of LM). This column is the same as the comparison column (Column B) in PNM Exhibit PJO-1R. After 2020, unlike PNM Exhibit PJO-1R, the incremental capacity is the same in both cases. This confirms that, other than what gets institutionalized, load "rebounds" to previous

profiles after program lives are exhausted. (See Exhibit BEC-6, PNM response to AG Interrogatory 1-01). Columns C and D show PNM's estimate of the Capital and FOM on a year by year basis for each of the two scenarios, and Column E is the difference between the two. A positive value in Column E means a benefit, and a negative value means a cost. Columns F and G show 2013 and 2014 EE and LM programs costs, as proposed by PNM, and assumes that annual costs for LM for 2015, 2016, and 2017 are the same as PNM proposes in 2014. Column H is the sum of Columns F and G. Columns I and J show the energy savings, exclusive of CO2 and natural gas credits, for the EE and LM programs. Column K is the sum of Columns I and J. Below Columns E (the deferred resource benefit values), H (the program cost amounts) and K (the program energy savings), are the net present values of the numbers in each column, at several different discount rates. PNM used 8.20% as the discount rate in its TRC analyses, and I show 4% and 12%, just to see how changing the discount rate affects the result. The amounts in the right hand boxes below the table is the total NPV (that is, the sum of the deferred resource benefit NPV, and the total program cost NPV, and the total energy savings NPV).

Q: What does Staff's overall cost/benefit analysis demonstrate?

A: No matter what discount rate is used, the present value of the proposed programs costs is greater than the present value of the benefits received from the proposed EE and LM programs, costing customers some $16 million to $20 million more if the programs are implemented.

Q: What does Staff conclude from this analysis?

A: This analysis reinforces Staff's apprehensions that the justification method proposed by PNM as applied to the TRC calculations is inherently flawed and may not represent an accurate or complete picture. Staff has recommended some mathematical corrections which can account for some of the apparent discrepancies, but Staff at this time has not been able to fully resolve the differences. For this reason, Staff Witness Lamberson is recommending that the Commission needs to undertake an initiative with the goal of identifying and describing a well-founded, uniform method to be used by all utilities for quantifying avoided costs and for properly calculating the TRC.

Q: Is there any other observation that Staff can make?

A: It is clear, given all the above and as further described by Staff Witness Lamberson, that relying on the deferred capacity method as proposed by PNM in this case is not a valid foundation for establishing an incentive.

SECTION V: STAFF'S PROPOSED INCENTIVE CALCULATIONS

Q: Please explain Staff's incentive calculations.

A: Staff has decided to calculate the incentive using two components. One component would provide an incentive based on the cost-sharing of a proxy regulatory asset approach. The second component provides an incentive based on cost-sharing of energy saved. Staff Exhibit BEC-7 shows the incentive calculations.

Q: Please describe the first component.

A: This component addresses what the equity return would be if PNM funded the program costs and was able to recover the program costs through a regulatory asset.

Q: Please explain the regulatory asset proxy calculation in Staff Exhibit BEC-7.

A: Staff Exhibit BEC-7 uses the 2012 Plan program costs for the 2013 and 2014 programs contained PNM Exhibit SMB-1. PNM's weighted cost of equity was used to calculate the return that would be available if such costs were allowed to be booked as regulatory assets. Staff used an 8 year amortization period, which coincides with the average lives of the proposed programs of 7.8 years (see PNM

Witness Graves testimony, page 31, Figure 8). A discount rate of 8.2% was used, and, as stated by Staff Witness Brack a 90/10 cost sharing split was deemed appropriate. This first component of Staff's proposed incentive calculates out to $780,839 for the 2013 and 2014 programs, or $390,419 per year.

Q: Please describe the second component.

A: The second component shares the avoided energy deemed savings to be received between customers and the company, also on a 90/10 basis. This calculation is shown on page 2 of Staff Exhibit BEC-7. The calculation is fairly straightforward. Deemed annual kWh energy savings derived from PNM Exhibit SMB-01, are multiplied by the arithmetic average energy and variable O&M savings as projected in PNM Exhibit PJO-2. The resulting annual amounts are discounted by the same 8.2% discount rate. The saved energy and variable O&M costs are then shared between customers and PNM on a 90/10 basis. This component amounts to $2,620,527 for the 2013 and 2014 programs, or $1,310,263 per year, for shared energy saving.

Q: What is the total incentive Staff recommends?

A: Staff recommends an incentive be given to PNM of $1,700,703 for the 2013 plan year and of $1,700,703 for the 2014 plan year. These amounts should not be continued beyond Plan Year 1 and Plan Year 2, as future programs may not

necessarily afford customers the same level of benefit, even if their budgets are the same.

Q: Does this conclude your testimony?

A: Yes.

STAFF Exhibit BEC-1

Case No	Case Description	Company/Subject	Document
10-00073-UT	Utility/Other	PNM/Underground Rider	Investigation Report
10-00086-UT	Rate Case	PNM/General Rate Case	Testimony
10-00301-UT	CCN	EPEC/ Rio Grande #9	Testimony
10-00395-UT	Rate case	SPS/General rate case	Testimony
11-00123-UT	Utility/Other	PNM/Energy Efficiency Programs	Testimony
11-00218-UT	Utility/Other	Reasonable Cost Threshold Rulemaking	Testimony
11-00317-UT	Utility/Other	CCAE/Protest PNM IRP	Affidavit
12-00029-UT	Utility/Other	Future Test Year Rulemaking	Affidavit
12-00052-UT	CCN	SPS/Quay County GS	Witness/ Testimony
12-00131-UT	Utility/Other	PNM/RPS Renewable Energy Procurement	Testimony
12-00217- UT	Utility/Other	EPE/RPS Renewable Energy Procurement	Testimony
12-00235-UT	Utility/Other	SPS/PPA Approval	Testimony

As of 12/31/2012

PNM SYTEM PEAK DEMAND AND ENERGY FORECAST COMPARISON

Peak Demand (MW)	Year of the Forecast						
Year	2006	2007	2008	2009	2010	Actual	Weather Normalized Actual
2006	1,703					1,786	1,793
2007	1,771	1,853				1,866	1,867
2008	1,807	1,909	1,909			1,838	1,914
2009	1,852	1,954	1,951	1,870		1,866	1,857
2010	1,892	1,990	1,993	1,899	1,893	1,973	1,938
2011	1,926	2,022	2,035	1,929	1,893	1,938	1,924
2012	1,966	2,064	2,080	1,951	1,903	1,948	1,924

Range for 2012:	1903 to 2080	MW
% of lowest forecast:	100% to 109.3%	
% of actual:	98.9% to 108.1%	(weather normalized)

Energy Sales (GWh)	Year of the Forecast						
Year	2006	2007	2008	2009	2010	Actual	Weather Normalized Actual
2006	9,164					9,198	8,272
2007	9,632	9,789				9,495	9,470
2008	9,916	10,076	9,902			9,450	9,476
2009	10,132	10,300	10,186	9,762		9,237	9,287
2010	10,352	10,524	10,387	9,921	9,351	9,456	9,373
2011	10,556	10,524	10,610	10,065	9,360	9,523	9,434
2012	10,783	10,524	10,846	10,233	9,488	na	na

Range for 2011:	9,360 to 10,610	GWh
% of lowest forecast:	100% to 113.3%	
% of actual:	99.2% to 112.5%	(weather normalized)

Source: PNM Response to Interrogatory Staff 1-8
PNM 2011-2030 IRP, Table 8-1, p. 77

PNM Revised Response to Staff 1-18 ("PJO-1R"):

STAFF INTERROGATORY/ REQUEST FOR PRODUCTION 1-18:

Please provide a summary table listing the projected lifecycle savings impact by year and by program based on Appendix C of PNM Exhibit SMB-1 (2012 Energy Efficiency and Load Management Plan) for two years of implementation of the energy efficiency portion of the 2012 program plan only. This table should also provide the sum of projected lifecycle savings impacts by year and across all programs (except load management). If the sum of projected lifecycle savings impacts by year and across programs differs from that shown on Column F of PNM Exhibit PJO-1, describe the reasons for the difference.

REVISED RESPONSE
Steven M. Bean/ Patrick J. O'Connell

Please refer to PNM Exhibit Staff 1-18(A) previously provided for the data requested in table format.

The sum of projected lifecycle savings impacts shown in the exhibit differ from those shown in PNM Exhibit PJO-1 Column F primarily because the calculation of avoided costs was necessarily completed before the 2012 Plan was finalized. PNM has prepared a supplemental analysis of avoided costs in which the final program details as submitted in the 2012 Plan are incorporated. The result of this analysis is shown in PNM Exhibit Staff 1-18(B), previously provided. PNM Table Staff 1-18 compares the sum of projected lifecycle savings impacts by year for all programs in the 2012 Plan compared to the values from the supplemental avoided cost analysis shown in PNM Exhibit Staff 1-18(B) column F.

The sum of projected lifecycle savings impacts in PNM Exhibit Staff 1-18(B) Column F are less than the demand savings shown in PNM Exhibit Staff 1-18(A) to account for:

- the end of the effective lives of prior energy efficiency measures that will occur during the period and
- the energy efficiency savings that are already embedded in the load forecast.

PNM Table Staff 1-18

2013	15,976	17,100
2014	31,763	27,800
2015	31,043	28,900
2016	31,043	24,400
2017	31,043	21,500
2018	29,781	17,200
2019	28,518	15,700
2020	25,951	13,500
2021	23,463	10,800
2022	23,281	6,100
2023	14,215	2,800
2024	2,622	
2025	934	
2026	934	
2027	558	
2028	113	
2029	113	
2030	113	
2031	113	
2032	113	
Sum	291,693	185,800

PNM Exhibit Staff 1-18(B)
2012 Plan Avoided Supply Side Capacity Benefit Calculation – Revised

	Calculate Deferred Capacity Value				
	Baseline Cumulative New Capacity	2012 EE & LM Plan Cumulative New Capacity	Baseline Annual Capital & FOM	2012 EE & LM Plan Annual Capital & FOM	Deferred Resource Benefit
	A	*B*	*C*	*D*	*E = C - D*
Year	(MW)	(MW)	($000)	($000)	($000/yr)
2013	-	-	-	-	-
2014	-	-	-	-	-
2015	40	40	12,941	12,941	-
2016	125	125	36,533	36,533	-
2017	165	125	48,947	35,351	13,596
2018	342	302	76,247	63,028	13,219
2019	342	302	73,540	60,878	12,663
2020	427	387	97,026	84,883	12,143
2021	427	472	93,533	108,972	(15,439)
2022	512	472	117,620	104,993	12,628
2023	552	649	129,155	133,837	(4,682)
2024	729	649	158,021	128,967	29,054
2025	729	649	152,198	123,890	28,308
2026	729	826	146,056	154,474	(8,418)
2027	906	826	176,579	148,758	27,820
2028	906	866	169,866	160,584	9,282
2029	906	866	162,850	154,177	8,673
2030	991	1,043	189,821	186,906	2,915
2031	991	1,043	182,428	179,742	2,686

NPV of Benefit = $60,733.14
Discount Rate = 8.20%

	Calculate 2012 Plan Capacity		
	2012 Plan EE	2012 Plan LM	2012 Plan EE &
	F	*G*	*H = F + G*
Year	(MW-yr)	(MW-yr)	(MW-yr)
2013	17	58	75
2014	28	60	88
2015	29	62	91
2016	24	62	86
2017	22	65	87
2018	17	-	17
2019	16	-	16
2020	14	-	14
2021	11	-	11
2022	6	-	6
2023	3	-	3
2024	-	-	-
2025	-	-	-
2026	-	-	-
2027	-	-	-
2028	-	-	-
2029	-	-	-
2030	-	-	-
2031	-	-	-

Sum of 2012 Plan Capacity = 493

Avoided Capacity Benefit for 2012 Plan ($/kW) = $ 123.24

SUMMARY OF MATHEMATICAL ERRORS

First Mathematical Error:

PNM approach:

Net Present Value of Resource Deferral ($ million):		$	60.7		Source: PJO-1R
	MW-Yr		%		
EE MW-year:	186		37.73%		Source: PJO-1R
LM MW-year:	307		62.27%		Source: PJO-1R
TOTAL MW-Yr	493			Line 8 + line 9	
Average NPV Deferral ($/kW-yr):		$	123.24	Line 5 ÷ line 11	Source: PJO-1R
	MW-Yr		%		
EE MW-year:	292		48.75%		Source: Table Staff 1-18 and Exhibit SMB-1
LM MkW-year:	307		51.25%		Source: PJO-1R
TOTAL MW-Yr	599			Line 17 + line 18	
As Calculated in the TRCs					
EE programs ($ million):		$	36.0	Line 17 * line 13	
LM Programs ($ million):		$	37.8	Line 18 * line 13	
Total		$	73.8	Line 23 + line 24	
Overstatement ($ million):		$	13.1	Line 26 - line 5	

Apportioned approach:

EE Portion of Resource Deferral ($ million)	$	22.9	Line 8 * line 5	
LM Portion of Resource Deferral ($ million)	$	37.8	Line 9 * line 5	
EE Resource Deferral Rate for TRC puproses ($/kW-yr):	$	78.43	Line 31 ÷ line 17	
LM Resource Deferral Rate for TRC puproses ($/kW-yr):	$	123.12	Line 32 ÷ line 18	

Check:

EE	$	22.90
LM	$	37.80
	$	60.70

Second Mathematical Error:

PNM Approach:

Net Present Value of Resource Deferral ($ million):	$	60.7		Source: PJO-1R
Average NPV Deferral ($/kW-yr):	$	123.24	Line 5 ÷ line 11	Source: PJO-1R
Gross up rate for system loss:		7%		Source: PNM Exhibit SMB-1
Gross up rate for reserve capacity		13%		Source: PNM Exhibit SMB-1
Grossed up NPV value	$	149.01	Line 50 * line 52 * line 53	
Calculated Value of Resource Deferral ($ million)	$	73.46	Line 55 * line 11	
Overstatement ($ million):	$	12.8	Line 55 - line 46	
TOTAL OVERSTATEMENT ($ million):	$	25.9	Line 28 + line 57	

OVERALL COST AND BENEFIT ANLYISIS

1/9/2013

	Calculated Deferred Capacity Value (From PNM Exhibit Staff 1-9 Response, PNM Exhibit PJO-1R)					Program Costs Recovered from General Customers (From PNM Exhibit SMB-1)			Energy Savings (From PNM Exhibit Staff 1-5 Response)*		
	Baseline (No EE/No LM) Cumulative New Capacity	2012 EE& LM (EE/LM) Plan Cumulative New Capacity	Baseline Annual Capital & FOM	2012 EE& LM (EE/LM) Plan Annual Capital & FOM	Deferred Resource Benefit	Annual LM Costs	Annual EE Costs	Total Program Costs	LM Energy Savings	LM Energy Savings	Total Energy Savings
	A	B	C	D	E = C - D	F	G	H = -(F + G)	I	J	K = I + J
Year	(MW)	(MW)	($000)	($000)	($000)	($000)	($000)	($000)	($000)	($000)	($000)
2013	0	0	$ -	$ -	$ -	$ (7,433)	$ (15,060)	$ *(22,493)*	$ 30	$ 1,850	$ *1,880*
2014	0	0	$ -	$ -	$ -	$ (7,579)	$ (15,765)	$ *(23,344)*	$ 35	$ 3,989	$ *4,024*
2015	40	40	$ 12,941	$ 12,941	$ -	$ (7,579)	$ -	$ *(7,579)*	$ 39	$ 3,980	$ *4,019*
2016	217	125	$ 40,313	$ 36,533	$ *3,780*	$ (7,579)	$ -	$ *(7,579)*	$ 40	$ 4,133	$ *4,173*
2017	217	125	$ 39,031	$ 35,351	$ *3,680*	$ (7,579)	$ -	$ *(7,579)*	$ 42	$ 4,329	$ *4,371*
2018	302	302	$ 62,587	$ 63,028	$ *(441)*	$ -	$ -	$ -	$ -	$ 4,474	$ *4,474*
2019	387	302	$ 86,194	$ 60,878	$ *25,316*	$ -	$ -	$ -	$ -	$ 5,264	$ *5,264*
2020	387	387	$ 83,088	$ 84,883	$ *(1,795)*	$ -	$ -	$ -	$ -	$ 4,064	$ *4,064*
2021	472	472	$ 106,886	$ 108,972	$ *(2,086)*	$ -	$ -	$ -	$ -	$ 2,878	$ *2,878*
2022	472	472	$ 103,018	$ 104,993	$ *(1,975)*	$ -	$ -	$ -	$ -	$ 2,810	$ *2,810*
2023	649	649	$ 131,971	$ 133,837	$ *(1,866)*	$ -	$ -	$ -	$ -	$ 2,753	$ *2,753*
2024	649	649	$ 127,209	$ 128,967	$ *(1,758)*	$ -	$ -	$ -	$ -	$ 1,548	$ *1,548*
2025	649	649	$ 122,159	$ 123,890	$ *(1,731)*	$ -	$ -	$ -	$ -	$ 234	$ *234*
2026	826	826	$ 152,839	$ 154,474	$ *(1,635)*	$ -	$ -	$ -	$ -	$ 241	$ *241*
2027	826	826	$ 147,149	$ 148,758	$ *(1,609)*	$ -	$ -	$ -	$ -	$ 143	$ *143*
2028	866	866	$ 159,001	$ 160,584	$ *(1,583)*	$ -	$ -	$ -	$ -	$ 19	$ *19*
2029	866	866	$ 152,620	$ 154,177	$ *(1,557)*	$ -	$ -	$ -	$ -	$ 19	$ *19*
2030	1043	1043	$ 185,375	$ 186,906	$ *(1,531)*	$ -	$ -	$ -	$ -	$ 20	$ *20*
2031	1043	1043	$ 178,375	$ 179,742	$ *(1,367)*	$ -	$ -	$ -	$ -	$ 10	$ *10*

NPV =	*$12,009*	*($57,351)*		*$27,000*
Discount Rate =	8.20%	8.20%		8.20%
			TOTAL NPV=	*($18,341)*

NPV =	*$12,798*	*($62,655)*		*$33,836*
Discount Rate =	4.00%	4.00%		4.00%
			TOTAL NPV=	*($16,022)*

NPV =	*$10,750*	*($53,204)*		*$22,438*
Discount Rate =	12.00%	12.00%		12.00%
			TOTAL NPV=	*($20,015)*

* Do not include CO2 or natural gas credits

PNM RESPONSE TO INTERROGATORY AG 1-01
STUDY PERIOD = PLANNING PE
□ 07/12/12 10:18:53 V04.0

2012_AC2_CASE2
RUN BY SJG
2012_AC2_CASE2.SAV

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
LOADS																				
PEAK BEFORE DSM	1992.4	2021	2050.8	2079.9	2110.3	2144.8	2185.4	2225.3	2268.7	2317.9	2359.6	2406.4	2472.5	2503.2	2553.9	2594.9	2674.2	2692.6	2745.2	2786.5
PEAK BEFORE DSM	1992.4	2021	2050.8	2079.9	2110.3	2144.8	2185.4	2225.3	2268.7	2317.9	2359.6	2406.4	2472.5	2503.2	2553.9	2594.9	2674.2	2692.6	2745.2	2786.5
#NAME?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FINAL PEAK	1992.4	2021	2050.8	2079.9	2110.3	2144.8	2185.4	2225.3	2268.7	2317.9	2359.6	2406.4	2472.5	2503.2	2553.9	2594.9	2674.2	2692.6	2745.2	2786.5
%		1.44%	1.47%	1.42%	1.46%	1.63%	1.89%	1.83%	1.95%	2.17%	1.80%	1.98%	2.75%	1.24%	2.03%	1.61%	3.06%	0.69%	1.95%	1.50%
RESOURCES																				
DSM CAPACITY:																				
10 Comverge	24	28	30	32	32	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Enernoc	30	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL DSM CAPACITY	54	58	60	62	62	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTIONS:																				
3 WIND10MW 3	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
10 PNM-E 10	9.9	14.1	14	13.9	13.9	13.8	13.7	13.7	13.6	13.5	13.5	13.4	13.3	13.3	13.2	13.1	13.1	13	12.9	12.9
12 PNM-S 12	12.4	12.3	12.2	12.2	12.1	12.1	12	11.9	11.9	11.8	11.8	11.7	11.6	11.6	11.5	11.5	11.4	11.4	11.3	11.2
96 S16O 96	0	0	0	0	5.7	5.7	5.7	5.6	5.6	5.6	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4	5.3	5.3
97 S15O 97	0	0	0	11.4	11.4	11.3	11.3	11.2	11.2	11.1	11	11	10.9	10.9	10.8	10.8	10.7	10.7	10.6	10.6
98 GEOT15 98	0	0	5.9	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
99 S13O 99	0	8.6	11.4	11.4	11.3	11.3	11.2	11.2	11.1	11	11	10.9	10.9	10.8	10.8	10.7	10.7	10.6	10.6	10.5
100 EEA 100	8.1	17.2	20.9	18.1	14.6	11.7	10.1	8.9	7.2	5.2	1.3	0	0	0	0	0	0	0	0	0
TOTAL TRANSACTIONS	40.4	62.2	74.6	86.2	88.1	85	83.2	81.7	79.7	77.4	73.3	71.7	71.4	71.2	70.9	70.6	70.4	70.1	69.9	69.7
THERMAL GENERATION:																				
1 SANJUAN 1	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
2 SANJUAN 2	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
3 SANJUAN 3	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211	211
4 SANJUAN 4	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241	241
5 FOURCORN 4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
6 FOURCORN 5	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
7 PVERDE 1	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134
8 PVERDE 2	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134	134
9 REEVES 1	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
10 REEVES 2	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
11 REEVES 3	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66
12 DELTA 1	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
13 LASVEGAS 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 AFTNCC 1	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230
16 BH-VAL 1	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145
17 DSM-EE 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 LDBG 1	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
19 LUNA 1	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185	185
242 7FA 1242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	177	177 7FA
243 AERO 1243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	40	40 AERO
244 7FA 1244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177	177	177	177	177	177 7FA
245 7FA 1245	0	0	0	0	0	0	0	0	0	0	0	177	177	177	177	177	177	177	177	177 7FA
246 LMS 1246	0	0	0	0	0	0	0	0	0	85	85	85	85	85	85	85	85	85	85	85 LMS
247 LMS 1247	0	0	0	0	0	0	0	85	85	85	85	85	85	85	85	85	85	85	85	85 LMS
248 7FA 1248	0	0	0	0	0	0	177	177	177	177	177	177	177	177	177	177	177	177	177	177 7FA
249 LMS 1249	0	0	0	0	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85 LMS
250 AERO 1250	0	0	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40 AERO
TOTAL THERMAL	2186	2186	2186	2226	2311	2311	2488	2573	2573	2658	2658	2835	2835	2835	3012	3012	3052	3052	3229	3229
	0	0	0	40	125	125	302	387	387	472	472	649	649	649	826	826	866	866	1043	1043
TOTAL CAPACITY	2280.4	2306.2	2320.6	2374.2	2461.1	2461	2571.2	2654.7	2652.7	2735.4	2731.3	2906.7	2906.4	2906.2	3082.9	3082.6	3122.4	3122.1	3298.9	3298.7

transpose	Capacity	Year
AERO	40	2015
LMS	85	2016
7FA	177	2018
LMS	85	2019
LMS	85	2021
7FA	177	2023
7FA	177	2026
AERO	40	2028
7FA	177	2030

RESERVES	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
TOTAL RESERVE (MW)	288	285.2	269.7	294.3	350.8	316.2	385.8	429.3	384	417.5	371.7	500.2	433.9	402.9	529	487.7	448.2	429.5	553.7	512.2
	288																			
RESERVE MARGIN PERCEI	14.46	14.11	13.15	14.15	16.62	14.74	17.65	19.29	16.93	18.01	15.75	20.79	17.55	16.1	20.71	18.79	16.76	15.95	20.17	18.38
	14.45%																			
CAPACITY MARGIN PERCE	12.63	12.37	11.62	12.4	14.25	12.85	15	16.17	14.48	15.26	13.61	17.21	14.93	13.86	17.16	15.82	14.35	13.76	16.78	15.53
	247.6	*223*	*185.2*	*208.1*	*262.7*	*231.2*	*302.6*	*347.7*	*304.3*	*340.1*	*298.4*	*428.6*	*382.5*	*331.8*	*458.1*	*417.1*	*377.8*	*359.4*	*483.8*	*442.5*
	12.43%	*11.03%*	*9.52%*	*10.01%*	*12.45%*	*10.76%*	*13.85%*	*15.62%*	*13.41%*	*14.67%*	*12.65%*	*17.81%*	*14.66%*	*13.26%*	*17.94%*	*16.07%*	*14.13%*	*13.35%*	*17.62%*	*15.68%*

PNM ENERGY EFFICIENCY AND LOAD MANAGEMENT INCENTIVE

Component 1 - Present value of earnings for program cost (Regulatory Asset Proxy)

Year 1 Program cost:	$ 22,493,227		Exhibit SMB-1, p. 9, Table 3-1
Year 2 Program cost:	$ 23,343,630		Exhibit SMB-1, p. 9, Table 4-4
Discount rate:	8.20%		Exhibit PJO-1

Cap structure:	Ratio	Rate	Weighted Rate	Response to AG1-07
Debt	48.89%	6.39%	3.12%	
Preferred	0.50%	4.62%	0.02%	
Common	50.61%	10.00%	5.06%	
WCC			8.21%	
Amortization	8 years			

Year	2013 Asset value	2014 Asset value	Total Asset Value	Equity return
1	$ 22,493,227	$ -	$ 22,493,227	$ 1,138,382
2	$ 19,681,574	$ 23,343,630	$ 43,025,204	$ 2,177,506
3	$ 16,869,920	$ 20,425,676	$ 37,295,597	$ 1,887,530
4	$ 14,058,267	$ 17,507,723	$ 31,565,989	$ 1,597,555
5	$ 11,246,614	$ 14,589,769	$ 25,836,382	$ 1,307,579
6	$ 8,434,960	$ 11,671,815	$ 20,106,775	$ 1,017,604
7	$ 5,623,307	$ 8,753,861	$ 14,377,168	$ 727,628
8	$ 2,811,653	$ 5,835,908	$ 8,647,561	$ 437,653
9	$ -	$ 2,917,954	$ 2,917,954	$ 147,678
			NPV	$ 7,808,394

Shared incentive to company	$	780,839	@	10.0%	Line 27 * 10%
Shared incentive to customers	$	7,027,555	@	90.0%	Line 27 * 90%

PNM ENERGY EFFICIENCY AND LOAD MANAGEMENT INCENTIVE

Component 2 - Based on Lifetime kWh saved (Fuel & VOM only)

Discount rate: 8.20%

Average Fuel prices per PJO-2

kWh Savings from SMB-1, Appendix C

Year	kWh Saved	Fuel price + VOM	$ Saved
2013	82,379,347	$ 0.02194	$ 1,807,403
2014	157,317,588	$ 0.02421	$ 3,808,659
2015	148,272,588	$ 0.02610	$ 3,869,915
2016	148,272,588	$ 0.02715	$ 4,025,601
2017	148,272,588	$ 0.02842	$ 4,213,907
2018	140,900,384	$ 0.03460	$ 4,875,153
2019	132,580,917	$ 0.03775	$ 5,004,930
2020	99,439,319	$ 0.03882	$ 3,860,234
2021	68,165,778	$ 0.03997	$ 2,724,586
2022	64,687,467	$ 0.04110	$ 2,658,655
2023	62,687,029	$ 0.04231	$ 2,652,288
2024	34,835,301	$ 0.04354	$ 1,516,729
2025	5,077,150	$ 0.04481	$ 227,507
2026	5,077,150	$ 0.04611	$ 234,107
2027	2,941,407	$ 0.04744	$ 139,540
2028	378,516	$ 0.04881	$ 18,475
2029	378,516	$ 0.05021	$ 19,005
2030	378,516	$ 0.05170	$ 19,569
2031	189,258	$ 0.05322	$ 10,072
2032	-	$ -	$ -
TOTAL	**1,302,231,407**		
		NPV	**$ 26,205,672**

Shared savings incentive to company	**$ 2,620,567**	**@**	**10.0%**	Line 70 * 10%
Shared savings incentive to customers	**$ 23,585,104**	**@**	**90.0%**	Line 70 * 90%

TOTAL INCENTIVE TO COMPANY FOR 2013 AND 2014 PROGRAMS **$ 3,401,407** Line 31 + line 73

TOTAL INCENTIVE TO COMPANY PER YEAR **$ 1,700,703** Line 77 ÷ 2

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF NEW MEXICO FOR APPROVAL OF ELECTRIC ENERGY EFFICIENCY PROGRAMS AND PROGRAM COST TARIFF RIDER PURSUANT TO THE NEW MEXICO PUBLIC UTILITY AND EFFICIENT USE OF ENERGY ACTS,	)	**Case No. 12-00317-UT**
PUBLIC SERVICE COMPANY OF NEW MEXICO,	)	
APPLICANT.	)	

AFFIDAVIT OF BRUNO E. CARARRA, P.E.

STATE OF NEW MEXICO)
) **ss.**
COUNTY OF SANTA FE)

I, BRUNO E. CARARRA, P.E., do hereby swear, depose and state as follows:

I hereby attest that I have read the foregoing **DIRECT TESTIMONY OF BRUNO E. CARARRA, P.E.,** and the statements contained therein are true and accurate to the best of my knowledge and information.

, P.E.
BRUNO E. CARARRA, P.E.
1·23·2013
DATE

SUBSCRIBED, SWORN TO AND ACKNOWLEDGED before me this 23rd **day of January 2013.**

NOTARY PUBLIC

My Commission Expires:
9/15/2013

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF NEW MEXICO FOR APPROVAL OF ELECTRIC ENERGY EFFICIENCY PROGRAMS AND PROGRAM COST TARIFF RIDER PURSUANT TO THE NEW MEXICO PUBLIC UTILITY AND EFFICIENT USE OF ENERGY ACTS,	)	**Case No. 12-00317-UT**
PUBLIC SERVICE COMPANY OF NEW MEXICO,	)	
APPLICANT.	)	

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing ***Direct Testimony of Bruno E. Carrara, P.E.,*** issued January 23, 2013, was sent by electronic mail to the individuals listed below.

Benjamin Phillips	Ben.phillips@pnmresources.com;
Mark Fenton	Mark.fenton@pnmresources.com;
Rebecca Dempsey	rdempsey@cuddymccarthy.com;
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Sandra Skogen	Sandra.skogen@state.nm.us;

And Mailed to:

Abelardo Suniga 1721 Villa Contesa Drive, NW Los Lunas, NM 87031	James and Nichol Brown 6104 Bancroft Ct., NE Albuquerque, NM 87111

DATED this **23rd** day of January, 2013.

NEW MEXICO PUBLIC REGULATION COMMISSION

Carmella Apodaca, Paralegal