PNM EXHIBIT PJO-5

Consisting of 32 pages

PNM EXHIBIT PJO-5

Part 1 of 3

Consisting of 6 pages

PNM Exhibit PJO-5

Part 1 of 3

Overview of Replacement Power Methodology

In order to ensure system reliability and meet targeted reserve margins, PNM evaluated renewable, natural gas and nuclear generation alternatives as replacement power for retirements at the San Juan Generating Station. The replacement alternatives were incorporated into PNM's resource planning modeling software by Ventyx called Strategist® to determine the mix of resource additions. First, all existing resources and new resource alternatives are incorporated into Strategist®. This includes providing the model with associated fuel and operating expenses for existing resources and all revenue requirements for new resource alternatives. Next, Strategist® produces resource portfolios that will meet the targeted reserve margins for the PNM system over a 20-year planning period. Each portfolio of resources is then economically dispatched to derive a total system cost for the given portfolio. All resource portfolios are then ranked based upon a net present value of future system costs to determine the least cost portfolios, consistent with traditional regulated utility resource planning. The optimization of resource portfolios consists of evaluating all costs, including capital, fuel and operating expenses for future resource additions.

Replacement Power Alternatives

Fifteen different generation resources were available to use to replace the 340 MW or 783 MW of coal that were assumed to be retired. The list of resource alternatives, along with a narrative describing each resource, is shown below:

1. 250 MW of new combined cycle gas generation
2. 204 MW of new combined cycle gas generation
3. 177 & 143 MW new gas turbine
4. 93 MW of new reciprocating engines
5. 85 MW new gas turbine
6. 40 MW new gas aeroderivative turbine
7. 100 MW of new wind generation
8. 20 MW of new solar PV generation
9. 50 MW of new solar thermal generation
10. 10 MW of new geothermal generation
11. 134 MW of existing nuclear generation (Palo Verde 3)
12. 200 MW of new coal generation
13. 200 MW of new nuclear
14. 250 MW of existing combined cycle generation
15. 78 MW of existing coal generation (San Juan Unit 4)

250 MW of New Combined Cycle Gas Generation

For this option PNM assumes a 1x1 combined cycle gas turbines, which provides a relatively high efficiency rating. The 250 MW size represents a typical manufactured capacity for this type of configuration using high efficiency turbines. The 250 MW combined cycle gas turbine ("CCGT") is modeled assuming a $1,545/kW installed capital cost and approximately a 6,950 Btu/kWh heat rate. Unlike gas turbines, combined cycle plants require large amounts of water to condense the steam cycle. To reduce water usage and associated costs, PNM assumed this CCGT will utilize hybrid or dry cooling technology. This additional cost is included in the installed capital pricing above. PNM used the EPRI Technical Assessment Guide (TAG) database as the source of the unit characteristics and adjusted the TAG data for 5,000 feet above sea level. PNM assumed that this resource could only utilize the available transmission from the San Juan Plant to PNM load centers in north central New Mexico. Thus, this option was only applicable for a four unit retirement at the San Juan Plant. PNM also assumed a $10 million cost to build a new gas pipeline from an interstate pipeline to the San Juan plant.

204 MW of New Combined Cycle Gas Generation

PNM models a 1x1 combined cycle gas turbine option, which also provides a relatively high efficiency rating and does not exceed PNM's current largest generation unit at this size. The 204 MW size represents a typical manufactured capacity. The 204 MW CCGT is modeled assuming a $1,780/kW installed capital cost and about a 7,100 Btu/kWh heat rate. Installing a larger unit may decrease the capacity cost and heat rate, but would increase costs for reliability reserves on PNM's system. Unlike gas turbines, combined cycle plants require large amounts of water to condense the steam cycle. To reduce water usage and associated costs, PNM assumed this CCGT will utilize hybrid or dry cooling technology. This additional cost is included in the installed capital pricing above. PNM used the EPRI TAG database as the source of the unit characteristics and adjusted the TAG data for 5,000 feet above sea level. This resource was assumed to bypass any major transmission upgrades by siting it near PNM's largest load center, near the Albuquerque/Santa Fe area.

177 & 143 MW New Gas Turbine

The 177 MW and 143 MW gas turbines ("GT") are modeled as heavy frame units. The 177 MW option is modeled with 9,790 Btu/kWh heat rate and $979/kW installed capital cost, and the 143 MW option is modeled with 10,142 Btu/kWh heat rate and $1,006/kW installed capital cost. PNM used the EPRI TAG database as the source of the unit characteristics and adjusted the TAG data for 4,000 feet above sea level. The 177 MW and 143 MW sizes represents typical manufactured capacity. This technology can help PNM maintain system voltage, regulation if needed, and spinning reserve requirements. These resource are expected to require relatively little acreage and minimal amounts of water. Thus, these resources were assumed to bypass any major transmission line or upgrades and allowing PNM to site within WECC Path 48 in north central New Mexico.

93 MW New Reciprocating Engines

The 93 MW reciprocating gas engines is based upon operating ten smaller sized reciprocating engines at a heat rate of 8,900 Btu/kWh heat rate and $1,521/kW installed capital cost. Reciprocating engines can operate over the full ranges and offer maximum load following flexibility. PNM used the EPRI TAG database as the source of the unit characteristics. This resource was assumed to bypass any major transmission upgrades and allow PNM to site it within WECC Path 48 in north central New Mexico.

85 MW New Gas Turbine

The 85 MW GT is based upon a typical manufactured size of aero-derivative hybrid gas turbine with a 9,150 Btu/kWh heat rate and $1,679/kW installed capital cost. Similar to the 177 MW CT shown above, this unit can provide quick start capability (full operating load in 10 minutes) with a proven track record. PNM used the EPRI TAG database as the source of the unit characteristics and adjusted the TAG data for 5,000 feet above sea level to represent typical siting conditions around New Mexico. This resource was assumed to bypass any major transmission upgrades and allow PNM to site it within WECC Path 48 in north central New Mexico.

40 MW New Gas Aeroderivative Turbine

The 40 MW option is based upon one 40 MW aero-derivative turbine at a 9,800 Btu/kWh heat rate and $1,644/kW installed capital cost. PNM used the EPRI TAG database as the source of the unit characteristics and adjusted the TAG data for 5,000 feet above sea level. Similar to the 85 MW GT shown above, this unit can provide quick start capability (full operating load in 10 minutes) to help maintain system reliability. This resource was assumed to bypass any major transmission upgrades and allow PNM to site it within WECC Path 48 in north central New Mexico.

100 MW Wind Resource

The state of New Mexico offers abundant and excellent wind resources. This option is assumed to be a new 100 MW wind facility, located in NM and would be procured through a third party entity under a long term power purchase agreement at the rate of $44.41/mwh levelized over a thirty year life. Based on previous RFPs, PNM used an average of costs to provide a proxy for this resource. This option assumes minimal interconnection costs and does not assume any transmission upgrade costs as this depends heavily on the location of a new wind facility and access to the PNM transmission system. Therefore, required transmission upgrades would need to be evaluated on a case by case basis.

20 MW Solar PV Resource

This option based upon a new 20 MW, single axis tracking solar PV facility, located in NM with a $2,085/kW installed capital cost based upon expected costs from developers. PNM used two different cost options to take into account the current federal investment tax credit being reduced from 30% to 10% beginning in 2017. PNM assumes that solar facilities interconnecting to the PNM system will provide approximately 72% of the installed capacity to meet reserve margin requirements. As the penetration of solar increases on PNM's system it will begin to affect the

system peak hour during the summer. PNM applies a declining contribution to reserve margin with each successive resource addition made. This option assumes very minimal interconnection costs and does no transmission upgrade costs as this resource is expected to be located on PNM distribution facilities.

50 MW Solar Trough

This option based upon a 50 MW parabolic trough technology of which PNM would participate in as part of larger project (>100 MW) to take in account larger economies of scale. This proxy alternative would be located in NM with a $4,178/kW installed capital cost without storage and $7,291/kW with three hour storage based upon EPRI TAG estimates. PNM used two different technology options to account for storage. PNM assumes that solar facilities interconnecting to the PNM system with storage will provide approximately 100% of the installed capacity to meet reserve margin requirements. This option assumes very minimal interconnection costs and does not include transmission upgrade costs.

10 MW Geothermal Resource

Using information gather from the past few RFPs that PNM has issued, PNM believes that some potential still exists for new geothermal resources. Based on previous RFPs, PNM used an average of costs to provide a proxy for this resource from a third party developer at an expected PPA rate of $131.49/mwh levelized over a thirty year life. This option assumes minimal interconnection costs and does not assume any transmission upgrade costs as this depends heavily on the location of the geothermal resource and the ability to access transmission. Therefore, geothermal alternatives would need to be evaluated on a case by case basis.

134 MW Existing Nuclear Generation (Palo Verde Unit 3)

PNM has capacity rights to 134 MW of Palo Verde Nuclear Generating Station from Unit 3 which is not currently in ratebase. As part of PNM Resources merchant offerings, PNM has assumed that PV Unit 3 could be transferred at a cost of 2,500 $/kW beginning in 2018. The current lease expires in 2046. PNM has assumed that transmission rights can be secured and held to be able to deliver generation to the Four Corners hub. From there, with the retirement of San Juan Generating Station Units 2 & 3 retirement, there will enough transmission service available to generation to load.

200 MW New Coal Generation

The 200 MW of coal generation based upon participation in a coal plant of a larger size. PNM used the EPRI TAG database as the source of the new unit characteristics complete with environmental controls such as selective catalytic reduction and carbon capture. Based on EPRI TAG estimates, PNM assumes cost of $5,195/kW. This resource was assumed to bypass any major transmission upgrades and allow PNM to site it within WECC Path 48 in north central New Mexico.

200 MW New Nuclear Generation

The 200 MW of nuclear generation based upon participation in a plant of a larger size. PNM used the EPRI TAG database as the source of the new unit characteristics to provide a proxy for the new

nuclear costs currently undergoing the licensing process for other utilities. Based on EPRI TAG estimates, PNM assumes cost of $6,102/kW. Although those processes are currently for plants sited on the eastern side of the US, PNM only used this simulate the cost to build nearer to load. This resource was assumed to bypass any major transmission upgrades and allow PNM to site it within WECC Path 48 in north central New Mexico.

250 MW Existing Combined Cycle Generation

The 250 MW of market based combined cycle generation based current oversupply of generation in the west. PNM believes there are possibilities in today's market to purchase a portion of a larger merchant project based on prices publicized by other utilities purchasing (approximately $700/kW). In order for this to be a viable alternative as a replacement option in 2018, PNM expects that it will have to obtain transmission services for a period of two years before commencement of any power delivery in 2018 to the Four Corners hub. This cost has been included in the costs for this alternative. Since the Arizona market appears to have opportunities to purchase merchant facilities, the performance of this alternative is based on summertime conditions in Phoenix. Final costs, performance, location and viability would depend upon the results of an RFP process.

78 MW Existing Coal Generation (San Juan Unit 4)

As part of the current ownership mix, PNM has the ability to increment capacity at San Juan Unit 4. PNM included a 78 MW incremental addition as a resource alternative.

Modeling Assumptions

		Data	Duration
Planning Period		2014-2033	
Cost of Capital (After-tax)		8.18%	
Inflation		2.5%	per year
Escalation on O&M		2.5%	per year
Escalation on Fuel (natural gas)		Varies	Pace Global pricing assumptions
Escalation on Fuel (coal/nuclear)		Varies	nuclear - 2.5% per year after 2020
Property Tax Rate		2.45%	
Property Tax Rate		4.66%	solar technologies only
Federal Incentives			
	Solar (ITC)	30% (prior 2017)	
	Solar (ITC)	10% (post 2017)	
State Incentives			
	Solar(AEC)	10%	
	Solar(PTC)	Varies	10 years, caps at 200 GWh

Depreciation for New Resource Options	Book Life	Book Method	Tax Method
Nuclear	40 yrs	Straight Line	15 Yrs MACRS
Coal	40 yrs	Straight Line	20 Yrs MACRS
Combined Cycle	40 yrs	Straight Line	20 Yrs MACRS
Combustion Turbine	40 yrs	Straight Line	15 Yrs MACRS
Solar	40 yrs	Straight Line	5 Yrs MACRS

Other Modeling Assumptions	Amount	Source/Reference/Notes
Annual Reserve Margin Target	14%	Higher than 13% Resource Stipulation to account for uncertainty in DR Programs, Wind, Solar and DG contribution at peak
Carbon Emission Cost Adder (CO2)	Varies	Beginning in 2020, Pace Global pricing assumptions
Capacity factor for Wind alternative	39%	Based on results from RFPs issued
Capacity factor for existing PV resources	26.7%	Based on NREL data
Capacity factor for new PV resources	26%	Based on EPRI Study for NM CSP
Capacity factor for new solar thermal resource:	28%/100%	Based on NREL data (without storage)/with storage
Contribution to Peak (% of Nameplate)		
Wind	5%	Based on historical data of existing wind facilities
Solar PV Technologies (fixed tilt)	55%	Based on Historical Performance
Solar PV Technologies (single axis tracking)	varies	begins at 72% then declines thereafter; based on NREL & RFP data