

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

**IN THE MATTER OF THE APPLICATION)
OF PUBLIC SERVICE COMPANY OF NEW)
MEXICO FOR REVISION OF ITS RETAIL)
ELECTRIC RATES PURSUANT TO ADVICE)
NOTICE NOS. 397 AND 32 (FORMER)
TNMP SERVICES),)**

Case No. 10-00086-UT

**PUBLIC SERVICE COMPANY OF NEW)
MEXICO,)
Applicant)**

**DIRECT TESTIMONY AND EXIBITS
OF
WILLIAM STEINHURST**

April 15, 2011

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List of Exhibits

NEE EXHIBIT WS-1	Resume of William Steinhurst
NEE EXHIBIT WS-2	PNM Exhibit NEE 2-1 provided in response to discovery
NEE EXHIBIT WS-3	World Resource Institute Fact Sheet
NEE EXHIBIT WS-4	PNM Exhibit Staff 2-18 provided in response to discovery
NEE EXHIBIT WS-5	PNM Exhibit NEE 1-3 provided in response to discovery
NEE EXHIBIT WS-6	Excerpt from Frequently Asked Questions New Mexico Environment Department Proposed Greenhouse Gas Cap-and-Trade Rule Updated June 8, 2010

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1 **1. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your name and occupation.**

3 A. My name is William Steinhurst, and I am a Senior Consultant with Synapse
4 Energy Economics (Synapse). My business address is 32 Main Street, #394,
5 Montpelier, Vermont 05602.

6 **Q. Please describe Synapse Energy Economics.**

7 A. Synapse Energy Economics is a research and consulting firm specializing in
8 energy and environmental issues, including electric generation, transmission and
9 distribution system reliability, ratemaking and rate design, electric industry
10 restructuring and market power, electricity market prices, stranded costs,
11 efficiency, renewable energy, environmental quality, and nuclear power.

12 **Q. Please summarize your work experience and educational background.**

13 A. I have over thirty years of experience in utility regulation and energy policy,
14 including work on renewable portfolio standards and portfolio management
15 practices for default service providers and regulated utilities, green marketing,
16 distributed resource issues, economic impact studies, and rate design. Prior to
17 joining Synapse, I served as Planning Econometrician and Director for Regulated
18 Utility Planning at the Vermont Department of Public Service, the State's Public
19 Advocate and energy policy agency. I have provided consulting services for
20 various clients, including the Connecticut Office of Consumer Counsel, the
21 Illinois Citizens Utility Board, the California Division of Ratepayer Advocates,
22 the D.C. and Maryland Offices of the Public Advocate, the Delaware Public
23 Utilities Commission, the Regulatory Assistance Project, the National Association
24 of Regulatory Utility Commissioners (NARUC), the National Regulatory
25 Research Institute (NRRI), American Association of Retired Persons (AARP),
26 The Utility Reform Network (TURN), the Union of Concerned Scientists, the
27 Northern Forest Council, the Nova Scotia Utility and Review Board, the U.S.
28 EPA, the Conservation Law Foundation, the Sierra Club, the Powder River Basin

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1 Resource Council, the Southern Alliance for Clean Energy, New Energy
2 Economy, the Oklahoma Sustainability Network, the Natural Resource Defense
3 Council (NRDC), Illinois Energy Office, the Massachusetts Executive Office of
4 Energy Resources, the James River Corporation, and the Newfoundland
5 Department of Natural Resources.

6 I hold a B.A. in Physics from Wesleyan University and an M.S. in Statistics and
7 Ph.D. in Mechanical Engineering from the University of Vermont.

8 I have testified as an expert witness in approximately 30 cases on topics including
9 utility rates and ratemaking policy, prudence reviews, integrated resource
10 planning, demand side management policy and program design, utility financings,
11 regulatory enforcement, green marketing, power purchases, statistical analysis,
12 and decision analysis. I have been a frequent witness in legislative hearings and
13 represented the State of Vermont, the Delaware Public Utilities Commission
14 Staff, and several other groups in numerous collaborative settlement processes
15 addressing energy efficiency, resource planning and distributed resources.

16 I was the lead author or co-author of Vermont's long-term energy plans for 1983,
17 1988, and 1991, as well as the 1998 report *Fueling Vermont's Future:*
18 *Comprehensive Energy Plan* and Greenhouse Gas Action Plan, and also
19 Synapse's study *Portfolio Management: How to Procure Electricity Resources to*
20 *Provide Reliable, Low-Cost, and Efficient Electricity Services to All Retail*
21 *Customers*. In 2008, I was commissioned by the National Regulatory Research
22 Institute (NRRI) to write *Electricity at a Glance*, a primer on the industry for new
23 public utility commissioners, which included coverage of energy efficiency
24 programs. In 2011, NRRI commissioned a second edition of that work.

25 My resume is attached to this testimony as NEE Exhibit WS-1.

26 **Q. On whose behalf are you testifying in this case?**

27 A. I am testifying on behalf of New Energy Economy (NEE).

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1 **Q. Have you previously testified before the New Mexico Public Regulatory**
2 **Commission (the Commission)?**

3 A. No, I have not.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to consider whether Public Service Company of
6 New Mexico ("PNM" or the "Company") investments in certain environmental
7 upgrades, along with other capital outlays that may or may not have been made
8 specifically as environmental upgrades, were prudent and should be allowed
9 recovery. I also address the question of coordination between the company's
10 integrated resource plan (IRP) activities and its rate case requests. I also review
11 certain environmental regulations that are likely to affect the operations and
12 economics of PNM's coal plants.

13 **Q. How is your testimony organized?**

14 A. My testimony is organized as follows:

- 15 1. Introduction and Qualifications.
- 16 2. Summary of Conclusions and Recommendations.
- 17 3. Environmental Regulations
- 18 4. Clean Air Act Visibility Rule
- 19 5. Clean Air Act Toxics Rule For Utility Steam Generating Units
- 20 6. Clean Air Act National Ambient Air Quality Standards (NAAQS)
- 21 7. Clean Water Act Cooling Water Intake Rule
- 22 8. Clean Water Act Effluent Limitation Guidelines
- 23 9. Resource Conservation and Recovery Act Coal Combustion Residuals Disposal
- 24 Rule
- 25 10. Summary of Expected Capital Expenditures
- 26 11. Prudence and the Company's Proposal
- 27 12. Recommendations

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2. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. Please summarize your primary conclusions.

A. My primary conclusions are summarized as follows:

(1) The company seeks recovery in this proceeding for the capital and operating costs of various upgrades to and capital maintenance investments at the San Juan Generating Station (San Juan or SJGS) and the Four Corners Power Plant (Four Corners), possibly including various environmental upgrades (the Current Case Retrofits). Previously and, perhaps in this proceeding, the company sought recovery for a package of environmental upgrades at San Juan referred to by the company as the "San Juan Environmental Upgrade Project." The Current Case Retrofits may include some portion of the capital or operating costs of a package of environmental upgrades to San Juan.¹

(2) Over the near- to mid-term, the company faces substantial additional costs due to known and likely environmental regulations that will have to be made to keep San Juan and Four Corners in operation, and the company knew or should have known that those known and likely regulations would impose such costs. In this testimony, I use the term Emerging Retrofits to refer to future upgrades that (1) may be required by such regulations and (2) would impose such costs.

(3) The available evidence indicates that the company failed to determine whether either the Current Case Retrofits or the San Juan Environmental Upgrade Project would be cost effective in the light of those known and likely environmental regulations. Failure to determine whether the Current Case Retrofits are cost effective in the face of those known and likely future costs, which the company knew or should have known would be required, constitutes imprudence. Likewise, failure to determine whether the San Juan Environmental Upgrade Project retrofits were cost effective in the face of

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1 those known and likely future costs, which the company knew or should have
2 known would be required, constitutes imprudence.

3 (4) For the above reasons, proposed settlement in this proceeding, as a
4 package, does not benefit ratepayers, is not in the public interest, and would
5 violate important regulatory principles and practices. Specifically, the
6 settlement would violate the important regulatory principles of just and
7 reasonable rates and least cost planning because that settlement allows
8 imprudent costs to be recovered, fails to correct or penalize past imprudent
9 acts, and condones or, at least, fails to cure imprudent decisions and resource
10 planning practices. Furthermore, given the evidence presented in this
11 testimony, it will be seen that the company has failed to provide substantial
12 evidence in the record of this proceeding that the proposed settlement will
13 establish rates in this proceeding in a way that is fair, just and reasonable, and
14 in the public interest.

15 To summarize, the company took a short sighted approach to upgrading San Juan
16 to meet environmental concerns (the San Juan Environmental Upgrade Project)
17 and wasted time and ratepayer money because it did not consider the full range of
18 environmental requirements that it knew or should have known could affect the
19 plant. Delaying consideration of a broader range of environmental needs has also
20 imposed avoidable environmental costs for a number of years, contrary to the
21 public interest, including but not limited to negative impacts on public health.
22 Capital investments in San Juan and Four Corners for which the company is
23 seeking recovery in this proceeding (the Current Case Retrofits) have
24 compounded the burden on ratepayers. If the company had done the right thing in
25 the first place, ratepayers and the public would not have suffered these adverse
26 effects.

¹ See, for example, PNM Exhibit NEE 2-1, attached to this testimony as NEE Exhibit WS-2, for a list of the elements of the San Juan Environmental Upgrade Project.

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1 **Q. Please summarize your primary recommendations.**

2 A. The Commission should disallow the costs of the company's Current Case
3 Retrofit investments and the San Juan Environmental Upgrade Project, including
4 associated operation and maintenance (O&M) costs and costs due to lost output
5 from the affected plants, unless and until the company shows decisively that
6 incurring the costs of those retrofits, including but not limited to those requested
7 in this case, was prudent in light of known and likely future investments and were
8 in keeping with least cost principles.²

9 The Commission should also require the company to provide a full analysis and
10 accounting for the impact of existing and upcoming environmental regulations
11 affecting its power plants, as well as the full range of options for addressing those
12 regulations, including both supply- and demand-side resources. That analysis
13 should consider costs facing the existing fleet that include not only the costs
14 requested for meeting environmental compliance criteria today, but also the
15 capital and operating expenses associated with reasonably anticipated
16 environmental retrofits and other environmental mitigation requirements, as well
17 as a price on carbon dioxide (CO₂) representative of likely regional and federal
18 policies on greenhouse gas emissions. Such analyses should provide the
19 Commission and intervenors with an opportunity to evaluate the proposed
20 investments in the context of the full range of costs that the company will face at
21 its units in order to determine if ratepayers should bear the costs.

² By "costs due to lost output from the affected plants," I mean the cost of replacement power or additional production needed by the company due to any plant or unit downtime caused by the installation or operation and maintenance of the Current Case Retrofits or the San Juan Environmental Upgrade Project, plus the cost of additional production or replacement power needed by the company due to either parasitic loads or reduced capacity at any plant or unit caused by the operation of the Current Case Retrofits or the San Juan Environmental Upgrade Project, less the variable costs of production avoided at the plants or units affected by the installation and operation of the Current Case Retrofits or the San Juan Environmental Upgrade Project.

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Q. Will you provide the details of the environmental compliance requirements likely to be faced by San Juan and Four Corners?

The following section describes environmental regulations that can reasonably be expected to impact PNM coal plants. Due to the number of regulatory regimes and the evolving nature of the rules, and the fact that these rules can be and have been interpreted differently for different regions and resources depending on ambient conditions, plant type, fuels, economic viability, and other factors, this analysis can be quite intricate. However, a certain level of detail is required to present the whole picture of compliance costs that will ultimately be faced by ratepayers for the continued operation of PNM coal plants.

In my opinion, no reasonable decision can be made on the future viability of these plants without explicitly addressing each of the current and likely regulations in a consistent and cohesive manner and evaluating their combined impact on the costs and operations of the plants, as well as how that impact affects rates and the public interest, including externalized health costs to New Mexicans.

3. ENVIRONMENTAL REGULATIONS

Q. Are PNM's coal plants subject to federal laws protecting human health and the environment?

A. Yes. The company's coal units are subject to EPA regulations under the Clean Air Act (CAA), the Clean Water Act (CWA), and the Resource Conservation and Recovery Act (RCRA), among other statutes.

Q. Which Clean Air Act rules directly affect PNM's coal plants?

A. There are three regulatory areas under the CAA that directly affect the company's coal fleet, including:

- The existing Regional Haze rule (requiring best available retrofit technology or "BART"), designed to improve visibility in National Parks and other Class 1 public lands;

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- 1 • The proposed Air Toxics rule for utility steam generating units, designed
2 to protect human health and wellbeing by reducing emissions of hazardous
3 air pollutants (HAPs) and mercury (Hg) from oil and coal-burning units;
4 and
- 5 • The proposed strengthening of National Ambient Air Quality Standards
6 (NAAQS) on ozone (O₃) sulfur dioxide (SO₂), and particulates (PM_{2.5}),
7 designed to protect human health, reduce premature mortality, and reduce
8 environmental harms from emissions.

9 **Q. Which Clean Water Act rules directly affect PNM's coal plants?**

- 10 A. There are two CWA regulations, currently being finalized by the EPA, that would
11 reasonably be expected to affect PNM's coal plants:
- 12 • the proposed Cooling Water Intake Structures rule, designed to protect
13 fisheries and aquatic organisms from being trapped by cooling water
14 screens, or uptake into cooling systems,
- 15 • and the expected Effluent Limitation guidelines, planned for 2012-2014,
16 restricting toxic releases into waterways from steam power plant structures
17 and effluent ponds

18 **Q. Which Resource Conservation and Recovery Act rules directly affect PNM's**
19 **coal plants?**

- 20 A. The EPA proposed rules in June 2010, and intends to release a final rule in early
21 2012 regulating the disposal and storage of coal ash to prevent toxic releases into
22 ground and surface waters.

23 **Q. In your opinion, when should PNM have known that these regulations could**
24 **have a material financial impact upon its coal plant operations and costs?**

- 25 A. The company knew or should have known of these regulations well in advance of
26 making its investments in the Current Case Retrofits and of making the San Juan

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1 Environmental Upgrade Project investments, and knew or should have known that
2 proposed regulations would result in a need for additional costly environmental
3 upgrades (Emerging Retrofits). While the specific form of likely regulations is
4 still evolving, the likelihood that a suite of regulations would affect coal-fired
5 power plants has been well known for a number of years. The full suite of
6 regulations discussed in this testimony have been generally expected by the
7 industry since 2007, with some in the works since 1972.

8 A “Fact Sheet” prepared by the World Resource Institute (WRI) indicates that
9 steam plant operators were, or should have been, well aware that additional
10 environmental compliance obligations would be imposed on their fleets. See NEE
11 Exhibit WS-3. For all of the above mentioned rules, WRI calculated that, prior to
12 November 2010, utilities had anywhere from three (3) to thirty-eight (38) years to
13 anticipate and plan for more stringent regulatory regimes, depending on the
14 regulation. This document includes a figure prepared by the Edison Electric
15 Institute (EEI), the primary electric industry trade group, detailing EEI’s
16 expectations for environmental regulations that will affect the electric industry.

17 Given all of this, PNM’s management and its planning staff certainly knew, or
18 should have known as of 2007, that costs of such Emerging Retrofits would be a
19 vital consideration in evaluating the future costs associated with the company’s
20 coal fleet.

21 **Q. Did the company demonstrate awareness of these recent and emerging**
22 **regulations in its most recent Integrated Resource Plan?**

23 A. Not completely. In the 2008 IRP, the company considered only two issues in its
24 section on Governmental & Regulatory Uncertainty.³ Those were federal carbon
25 legislation and an ongoing energy efficiency rulemaking. Carbon legislation was
26 addressed by various scenario runs at different carbon costs, while the energy
27 efficiency rulemaking was not reflected in any quantitative risk analysis. In any

³ PNM IRP at 139-140.

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event, it is clear that the company knew that environmental requirements would only escalate. For example, in an August 2008 brochure *Energy for today and the future: Environmental upgrades at San Juan Generating Station*, the company admitted that “expectations for environmental performance and costs for construction [would] continue to rise in the future.”⁴ In addition, in December 2008 NEE filed its Petition before the New Mexico Environmental Improvement Board to reduce carbon emissions. Also, In January 2007, PNM joined a federal effort, USCAP, to reduce carbon pollution.⁵ Clearly, the company knew about future costs of carbon-related coal production and should have reflected that knowledge in its management decisions and resource planning no later than 2007.

4. CLEAN AIR ACT REGIONAL HAZE RULE

Q. Please describe the Clean Air Act’s Regional Haze Rule

A. The Clean Air Act defines as a national goal the remedying of existing visibility impairment that results from manmade air pollution in all “Class I” areas (e.g., most national parks and wilderness areas). *See* 42 U.S.C. § 7491(a)(1). EPA’s implementing rules require states to create plans to achieve natural visibility conditions by 2064 with enforceable reductions in haze-causing pollution from individual sources and other measures to meet “reasonable further progress” milestones. *See*, generally 40 C.F.R. §51.308-309.

The Clean Air Regional Haze Rule was issued in 1999, and revised in 2005. A key component of this program is the imposition of air pollution controls on existing facilities that impact visibility in Class I areas. Specifically, the rules stipulate that “best available retrofit technology” (BART) limits be developed for such facilities on a case-by-case basis that would then guide emissions controls

⁴ This brochure was reproduced as part of PNM Exhibit NEE 2-1D, a confidential discovery response.

⁵ *See*, for example, *PNM Parent Company Joins Major Businesses and Environmental Leaders in Call for Swift Action on Global Climate Change*, January 22, 2007, available at http://www.pnm.com/news/2007/0122_climate.htm, accessed 4/15/11.

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1 choices. EPA requires BART to be evaluated for the air pollutants that impact
2 visibility in our national parks and wilderness areas—namely sulfur dioxide
3 (SO₂), nitrogen oxides (NO_x) and particulate matter (PM). Under the Clean Air
4 Act, states have the primary responsibility for developing plans to implement
5 these requirements, but EPA must approve those plans if the plans comply with
6 EPA’s regulations; if EPA finds the plans do not fully meet its regulations, EPA
7 must adopt a federal implementation plan and BART requirements that comply
8 with its regulations. Affected facilities must comply with the BART
9 determinations as expeditiously as practicable but no later than five years from the
10 date EPA approves the state plan or adopts a federal plan.

11 **Q. Which PNM coal plants are subject to BART compliance under the Regional**
12 **Haze Rule?**

13 A. The New Mexico Environment Department concluded that San Juan Generating
14 Station is subject to BART. This determination is reflected in the New Mexico
15 State Implementation Plan for Regional Haze (“Regional Haze SIP”).⁶

16 **Q. When is the compliance deadline for the BART requirements?**

17 A. BART must be met as expeditiously as practicable and no later than five years
18 after EPA approves the state’s regional haze plan or adopts a federal plan. New
19 Mexico has not yet submitted its plan to the EPA. The EPA has demonstrated that
20 it will not accept the plan as submitted. In December of 2010, the EPA announced
21 a proposed rule specifically requiring the San Juan generating station to meet
22 more stringent NO_x limits than proposed in the New Mexico Regional Haze SIP
23 by installing selective catalytic reduction (SCR) technology. Pending either a final
24 federal rule or a revised and accepted New Mexico rule, and pending approval in
25 2011 or 2012, I would expect a compliance deadline no later than 2017.

⁶ Regional Haze SIP, Section 309(g), New Mexico Environment Department. February 28, 2011.

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1 **Q. What are the BART determinations for PNM coal plants in the New Mexico**
2 **regional haze plan?**

3 A. The New Mexico BART determinations for San Juan include fabric filter
4 baghouses on all four units, and selective non-catalytic reduction (SNCR) on all
5 four units. These BART determinations are reflected in the proposed Regional
6 Haze SIP.

7 **Q. Has the US EPA approved the New Mexico BART requirements?**

8 A. While the New Mexico Environment Department has finalized the Regional Haze
9 SIP, the plan has not yet been submitted to the EPA, and the EPA has not yet
10 approved the plan.

11 **Q. What compliance actions has PNM taken to date regarding the Regional**
12 **Haze Rule and BART requirements?**

13 A. Prior to the BART findings, PNM had invested in capital projects to meet the
14 terms of a consent decree with the Grand Canyon trust, amongst others. These
15 investments included low-NO_x burners (LNB) with overfire air, and a fabric filter
16 baghouse. Collectively, these upgrades are part of the San Juan Environmental
17 Upgrade Project.

18 **Q. Are PNM's current compliance actions sufficient to meet the Regional Haze**
19 **Rule?**

20 A. No. Under the proposed Regional Haze SIP, San Juan would require at least
21 SNCR at all four units. However, in December of 2010, the EPA proposed a rule
22 specifically disapproving a portion of the New Mexico Regional Haze SIP, ruling
23 that the San Juan Generating Station had to meet a more stringent NO_x limit
24 under both the Regional Haze rule and the "good neighbor" provision of the
25 National Ambient Air Quality Standards (NAAQS) rule. The rule states:

26 For NO_x emissions, we are proposing to require the SJGS to meet an
27 emission limit of 0.05 pounds per million British Thermal Units
28 (lb/MMBtu) individually at Units 1, 2, 3, and 4. This NO_x limit is

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1 achievable by installing and operating SCR. For SO₂, we are proposing
2 to require the SJGS to meet an emission limit of 0.15 lb/MMBtu.⁷

3 If the EPA rule effectively requiring SCR technology at San Juan is finalized, the
4 company will have inadequately planned for future capital expenditures.

5 **5. CAA TOXICS RULE FOR UTILITY STEAM GENERATING UNITS**

6 **Q. Please describe the proposed Clean Air Act Toxics Rule (Utility MACT)**

7 A. After a lengthy study, in 2000, EPA found it was necessary to regulate toxic air
8 emissions (or hazardous air pollutants or HAPs) from utility steam electric
9 generating units. As a result of that finding, EPA must adopt strict emission
10 limitations for hazardous air pollutants that are based on the emissions of the
11 cleanest existing sources. *See*, Clean Air Act §112(d). These emission limitations
12 are known as Maximum Achievable Control Technology (MACT). Although
13 EPA was required to adopt MACT standards within two years after issuing its
14 finding in 2000, the rules have been tied up in litigation. Nevertheless, utility
15 companies have or should have known about forthcoming air toxics rules for
16 more than ten years.

17 On March 16, 2011, EPA proposed MACT emission limits for electric generating
18 units. The final utility MACT rule will establish emission limits for various toxic
19 pollutants including mercury, acids gases and non-mercury metals. As required
20 under the Clean Air Act, the EPA's proposed emissions limitations for existing
21 units are based on emissions achieved at the lowest emitting 12% of thermal
22 power units in the nation. The best-controlled units in the country use wet
23 scrubbers (i.e., wet FGD systems), selective catalytic reduction (SCR) systems,
24 and baghouses to control HAPs, and thus, these controls may likely be required to
25 meet the emission limitations of the final rule. Activated carbon injection (ACI)
26 will also likely required to control mercury.

⁷ EPA Docket EPA-R06-OAR-2010-0846, *announced* December 21, 2010.

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1 In the proposed rule, EPA describes controls that will comply with a MACT rule,
2 finding that combinations of existing control technologies, such as FGD scrubbers
3 and SCR are useful in conjunction with fabric filters and ACI for reducing
4 mercury emissions:

5 EPA projects that for acid, companies will likely use dry scrubbing
6 and sorbent injection technologies rather than wet scrubbing. For
7 non-Hg metal HAP controls, EPA has assumed that companies
8 with ESPs [electrostatic precipitators] will likely upgrade them to
9 FFs [fabric filter baghouses]. As a number of units that in the
10 MACT floor for non-Hg HAP metals only had ESPs installed, this
11 is likely a conservative assumption. For Hg, EPA projects that
12 companies will comply either through the collateral reductions
13 created by other controls (e.g. scrubber/SCR combination) or ACI.
14 [proposed rule, p442]

15 **Q. Which PNM units are eligible for compliance with Utility MACT?**

16 A. Both the San Juan and Four Corners units are eligible for compliance with Utility
17 MACT.

18 **Q. When is the compliance deadline for the Utility MACT rule?**

19 A. The MACT emission limits must be met within three years of EPA's issuance of a
20 final MACT rule. Pursuant to an April 15, 2010 consent decree, EPA is required
21 to issue a final utility MACT rule by November 16, 2011. Therefore, utility units
22 will be required to comply with the MACT emission limits no later than the
23 beginning of 2015.

24 **6. CLEAN AIR ACT NATIONAL AMBIENT AIR QUALITY STANDARDS**
25 **(NAAQS)**

26 **Q. Please describe the proposed CAA NAAQS**

27 A. EPA promulgates "National Ambient Air Quality Standards" (NAAQS) pursuant
28 to the authority granted by Clean Air Act § 109 (42 U.S.C. §7409). Primary
29 NAAQS are set to protect public health and secondary NAAQS protect public

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welfare. The NAAQS are supposed to be evaluated and revised if necessary to protect public health and welfare at five year intervals. EPA is currently working to improve NAAQS for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone, and fine particulate matter known as PM_{2.5}.

New standards for these pollutants will trigger the process for designating areas as either in “attainment” or “nonattainment” with the new standards. In nonattainment areas, sources must automatically comply with emission reduction requirements known as “Reasonably Available Control Technology” (RACT), and new sources, including major modifications at existing sources, must comply with very strict emissions reductions consistent with “lowest achievable emissions reductions” (LAER) as well as obtain emission offsets.

For areas that are designated nonattainment in New Mexico and other states where PNM has facilities, the company must develop a plan to bring the air quality into compliance with the applicable NAAQS. Those plans may contain additional emissions reduction requirements at specific plants.

Compliance with the NAAQS is typically required within five years after EPA designates areas as nonattainment.

Q. When are the new NAAQS expected, and what are the expected compliance deadlines?

A. The compliance deadlines are as follows:

- **SO₂:** EPA adopted a new one hour average NAAQS for SO₂ in 2010. [75 Fed. Reg. 35520 (June 22, 2010)]. States have until June 3, 2011 to designate nonattainment areas. Given the time it will take for EPA to approve those designations, we expect a compliance deadline in 2017.
- **NO₂:** EPA adopted a new one hour average NAAQS for NO₂ in 2011. [75 Fed.Reg. 6474 (February 9, 2010)]. EPA expects to do initial nonattainment designations by January 2012 with additional areas designated based on the implementation of a new air monitoring network

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1 in 2016 or 2017. Compliance will be required within five years of these
2 designations.

3 • **Ozone:** The EPA has proposed a new standard, and a final rule is expected
4 by July 29, 2011. [75 Fed. Reg. 2938 (Jan. 19, 2010)]. Assuming it will
5 take two years after this for EPA to adopt nonattainment area designations,
6 a compliance deadline is expected in 2018.

7 • **PM_{2.5}:** the proposed rule is expected from EPA by mid-2011. States have
8 one year from the time the standard is final to designate nonattainment
9 areas, with one more year for EPA to finalize those areas. A compliance
10 deadline could reasonably be expected in 2019.

11 **Q. Are PNM plants currently in compliance with the *existing* NAAQS?**

12 A. No. The EPA proposed a rule in December of 2010, discussed in the BART
13 section above, which specifically disapproves of a recent New Mexico SIP
14 addressing the “good neighbor” requirements of the Clean Air Act pertaining to
15 1997 ozone NAAQS. The rule requires the San Juan unit to meet stringent NO_x
16 and SO₂ limits.

17 **Q. Are areas in the San Juan/Four Corners air shed expected to be in**
18 **nonattainment in light of the new NAAQS?**

19 A. Yes. Based on the finding above, and preliminary mapping by the EPA, I expect
20 that the San Juan / Four Corners region will be in nonattainment for at least
21 ozone.

22 The new one-hour standard for ozone is expected to be between 0.060 to 0.070
23 parts per million, lower than the 0.075 parts per million standard set in 2008. With
24 this lower standard, using air quality data from 2006 to 2008, EPA expects that

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1 three counties, San Juan, Sandoval, and Bernalillo, in proximity to both San Juan
2 and Four Corners could be in nonattainment.⁸

3 Depending on how the State of New Mexico chooses to implement air quality
4 plans in these counties, both San Juan and Four Corners plants may be compelled
5 to reduce ozone emissions. These plants could feasibly require selective catalytic
6 reduction (SCR) for ozone attainment status.

7 **7. CLEAN WATER ACT COOLING WATER INTAKE RULE**

8 **Q. Please describe the proposed CWA Cooling Water Intake Structure rule**

9 A. On March 28, 2011, the EPA proposed a long-expected rule implementing the
10 requirements of Section 316(b) of the Clean Water Act at existing power plants.
11 *See*, 33 U.S.C. § 1326. Section 316(b) requires "that the location, design,
12 construction, and capacity of cooling water intake structures reflect the best
13 technology available for minimizing adverse environmental impact." Under this
14 new rule, EPA set new standards reducing the impingement and entrainment of
15 aquatic organisms from cooling water intake structures at new and existing
16 electric generating facilities.

17 The rule provides that:

- 18 • Existing facilities that withdraw more than two million gallons per day
19 (MGD) would be subject to an upper limit on fish mortality from
20 impingement, and must implement technology to either reduce
21 impingement or slow water intake velocities.
- 22 • Existing facilities that withdraw at least 125 million gallons per day would
23 be required to conduct an entrainment characterization study for
24 submission to the Director to establish a "best technology available" for
25 the specific site.

⁸ Proposed Revisions to National Standards for Ground-Level Ozone, Maps, January 6, 2010, EPA.

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1 **Q. Will PNM plants need to comply with the cooling water rule?**

2 A. Yes. According to 2008 data submitted to the Energy Information Administration
3 (EIA) by PNM and other operators, I expect that every PNM coal unit exceeds the
4 2 MGD threshold.⁹ The company would therefore be required to submit a plan,
5 and potentially install new technology, to reduce water withdrawals.

6 The Four Corners units report a total facility water withdrawal in 2008 well in
7 excess of the 125 MGD threshold (estimated at 356 – 408 MGD), and would
8 therefore need to comply with the second provision of this rule.

9 The cooling water intake rule is designed to reduce impacts associated with once-
10 through cooling, used for example Four Corners units. It is likely that the
11 compliance mechanism for such high withdrawal units will require retrofits to
12 cooling towers where feasible.

13 **Q. When are the compliance deadlines for the new rule?**

14 A. The new rule is expected to be finalized in 2012, and the regulations would
15 become effective within 60 days thereafter. EPA stipulates that “as proposed,
16 facilities would have to comply with the impingement mortality requirements as
17 soon as possible.”¹⁰ However, facilities would have five years and up to eight
18 years on appeal to comply with the impingement mortality requirements; and up
19 to eight years at the discretion of the Director to comply with the entrainment
20 provisions. Therefore, I would expect a compliance deadline, at the latest, in 2017
21 for impingement, and 2020 for entrainment.

⁹ Withdrawal data reported to the EIA in Form 860 (2008) on cooling water intake structures, as well as generation data reported to the EIA in Form 923 (2008).

¹⁰ *NPDES—Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities*. EPA. p. 262 (March 28, 2011).

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1 **8. CLEAN WATER ACT EFFLUENT LIMITATION GUIDELINES**

2 **Q. Please describe the emerging effluent limitation guidelines under the Clean**
3 **Water Act**

4 A. The Clean Water Act requires EPA to develop “effluent limitation guidelines” –
5 clear rules for what large industrial sources of water pollution can discharge into
6 nearby waters. *See* 33 U.S.C. § 1311; 40 C.F.R. 423. These rules must consider
7 what is “economically achievable” and must be updated at least once every five
8 years to keep up with improving treatment technology. Although EPA is supposed
9 to update its rules regularly, the power plant rules were last updated in 1982, and
10 so are almost thirty years out of date.

11 On September 15, 2009, EPA announced an intent proceed with a rulemaking on
12 effluent guidelines for wastewater discharges from steam electric plants, including
13 nuclear and fossil-fired plants.

14 In May of 2010, the EPA distributed a survey to 733 steam electric facilities,
15 including units owned by PacifiCorp, to request information about onsite waste
16 storage and disposal (i.e. ash ponds), management of storage facilities, and
17 leachate sampling.

18 The EPA has identified wastewaters from flue gas mercury control systems,
19 regeneration of the catalysts used for SCR, wastes from FGD units, and coal
20 combustion residual storage ponds as waste streams that warrant attention. I
21 therefore expect that the new effluent limitation guidelines will address toxic
22 releases from point sources or coal ash ponds.

23 **Q. When are the compliance deadlines for the new rule?**

24 A. A final rule is not expected until 2013, and requirements are expected on a
25 permit-by-permit basis, which could take up to five years. Therefore, I would
26 expect effluent limitations for steam electric plants to be in place between 2015
27 and 2018.

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**9. RESOURCE CONSERVATION AND RECOVERY ACT COAL
COMBUSTION RESIDUALS DISPOSAL RULE**

Q. Please describe the emerging coal combustion residuals (CCR) disposal rule under the Resource Conservation and Recovery Act (RCRA)

A. Coal-fired power plants generate a tremendous amount of ash and other residual wastes, which are commonly placed in dry landfills or slurry impoundments; regulations governing the structural integrity and leakage from these installations vary. However, the risk associated with these installations was dramatically revealed in the catastrophic failure of the ash slurry containment at the Kingston coal plant in Roane County, Tennessee in December 2008, releasing over a billion gallons of slurry and sending toxic sludge into tributaries of the Tennessee River.

On June 21, 2010, EPA proposed regulation of ash and FGD wastes, or “coal combustion residuals” (CCR) as either a Subtitle C “hazardous waste” or Subtitle D “solid waste” under the Resource Conservation and Recovery Act (RCRA). *See*, 75 Fed. Reg. 35127 (June 21, 2010).

The coal combustion rulemaking was forced by a combination of missed statutory deadlines and court orders. The current rulemaking is 30 years overdue.

If the EPA classifies CCR as hazardous waste, a cradle-to-grave regulatory system applies to CCR, requiring regulation of the entities that create, transport, and dispose of the waste. Under a Subtitle C designation, the EPA would regulate siting, liners, run-on and run-off controls, groundwater monitoring, fugitive dust controls, and any corrective actions required; in addition, the EPA would also implement minimum requirements for dam safety at impoundments.

Under a “solid waste” Subtitle D designation, the EPA would require minimum siting and construction standards for new coal ash ponds, compel existing unlined impoundments to install liners, and require standards for long-term stability and closure care.

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1 The EPA is currently evaluating which regulatory pathway will be most effective
2 in protecting human health and the environment without resulting in unintended
3 consequences or resulting in unnecessarily burdensome requirements. In 1999, the
4 EPA released a series of technical papers to Congress documenting cases in which
5 damages are known to have occurred from leakages and spills from coal ash
6 impoundments.¹¹ In the current proposed rule, the EPA recognizes a substantial
7 increase in the types of potentially toxic CCR from air pollution control
8 equipment, including FGD, SCR, and ACI.

9 Use of more advanced air pollution control technology reduces air
10 emissions of metals and other pollutants in the flue gas of a coal-
11 fired power plant by capturing and transferring the pollutants to the
12 fly ash and other air pollution control residues. The impact of
13 changes in air pollution control on the characteristics of CCRs and
14 the leaching potential of metals is the focus of ongoing research by
15 EPA's Office of Research and Development (ORD). [75 Fed. Reg.
16 35139 (June 21, 2010).]

17 In my opinion, the weight of evidence presented by the EPA over three decades of
18 study, and increasing concern about the toxicity of CCR will likely lead to a
19 Subtitle C "hazardous waste" designation by the EPA for CCR.

20 **Q. Do CCR impoundments at PNM coal plants currently present a hazard to**
21 **either public safety or the environment?**

22 **A.** Yes. To inform the rulemaking process, in 2009, EPA requested information from
23 specific facilities and impoundments at coal-fired power plants. Arizona Public
24 Service (APS) submitted information on coal ash impoundments at the Four
25 Corners station in March, 2009. APS reported that the two major impoundments
26 at the site were both designated by the New Mexico Office of the State Engineer
27 with a "Significant Hazard Potential." A "significant" hazard rating is defined by
28 a failure that would cause economic loss, environmental damage, or cause other
29 major damage. The EPA did not collect a survey from the San Juan station, but

¹¹ *Technical Background Document for the Report to Congress on Remaining Wastes from Fossil Fuel Combustion: Potential Damage Cases*. March 15, 1999. EPA

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1 aerial photographs indicate that there are large-scale holding ponds or
2 impoundments at the site.

3 **Q. Will PNM plants need to comply with coal ash disposal rules?**

4 A. Yes. If the EPA designates CCR as hazardous waste (Subtitle C), all of the PNM
5 coal units or the facilities which process wastes from the unit, could be subject to
6 significant new oversight and regulation at all stages of waste creation,
7 transportation, and disposal. If the EPA designates CCR as solid waste (Subtitle
8 D), units which dispose waste into unlined impoundments would be required to
9 renovate disposal ponds to prevent leakage.

10 According to the proposed rulemaking, “EPA has estimated that in 2004, 31% of
11 the CCR landfills and 62% of the CCR surface impoundments lacked liners, and
12 10% of the CCR landfills and 58% of the CCR surface impoundments lacked
13 groundwater monitoring.” [75 Fed. Reg. 35151 (June 21, 2010).]

14 **10. EXPECTED CAPITAL EXPENDITURES**

15 **Q. Please summarize the range of costs that the company’s coal plants may face**
16 **over the next decade, according existing rules and proposed regulations**
17 **described above.**

18 A. Based on the existing regulations and my understanding of the emerging
19 regulations, the company will be required to install a range of retrofits to meet
20 environmental compliance obligations at various coal plants discussed in this rate
21 case. These retrofits include, at the least, selective catalytic reduction (SCR)
22 activated carbon injection (ACI), coal ash remediation for coal combustion
23 residuals (CCR), cooling towers or new water intake structures, and potentially
24 liquid effluent controls.

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11. PRUDENCE AND THE COMPANY'S PROPOSAL

Q. What are the costs that the company is seeking to recover and that you conclude are imprudent?

A. With respect to the San Juan Environmental Upgrade Project investments, the company has provided an investment value of \$160,887,044, excluding AFUDC, and did not provide a value for AFUDC or for PNM's jurisdictional share of that amount. NEE Exhibit WS-2. I understand that any portion of PNM's share of that amount that is already being collected in or has been collected in rates was done so pursuant to rate case settlements. For that reason, I recommend disallowance of the total amount of PNM's jurisdictional share of the San Juan Environmental Upgrade Project investment and associated other costs, as I explain further below.

In addition, the company seeks recovery of investments of \$95,126,567 for investments cleared in 2010 and 2011, as well as CWIP on those investments. Prefiled testimony of Patrick J. Themig, 6/1/2010, Table PJT-2. An additional amount of \$17,099,022 (not including any CWIP) is sought for investments at Four Corners. Those investments, along with their associated other costs, should also be disallowed as imprudent. These amounts are the costs for the investments I referred to earlier in this testimony as the Current Case Retrofits. Those investment amounts set out in Mr. Themig's Table PJT-2 may include some portions of the San Juan Environmental Upgrade Project investments, but that does not alter my recommendation, only the ultimate dollar amount involved.

With respect to all of the amounts described in this answer, the company is in the best position to determine the correct dollar values and should be required to do so in a compliance filing subject to review by the other parties to this proceeding and an opportunity for hearing.

Q. Has the company presented information sufficient for the Commission to be able to evaluate the prudence of the capital investments in pollution control proposed for recovery in the current docket?

A. No. As explained in Section 2 of this prefiled testimony, the available evidence indicates that the company failed to determine whether the either the Current Case

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1 Retrofits or the San Juan Environmental Upgrade Project would be cost effective
2 in the light of those known and likely environmental regulations. Failure to
3 determine whether the Current Case Retrofits are cost effective in the face of
4 those known and likely future costs, which the company knew or should have
5 known would be required, constitutes imprudence. The company has presented
6 testimony by witnesses to provide information supporting the fact that those
7 investments were actually made, but not that they were prudent. While that
8 information was necessary to support recovery, it is not sufficient to demonstrate
9 prudence. As explained above, the amount that the company is requesting in this
10 rate case, as for the amounts it has been collecting under prior rate case
11 settlements that reflected in some manner the outlays for the San Juan
12 Environmental Upgrade Project, is only a portion of the costs that it is likely to
13 face over the next few years for environmental compliance activities at its power
14 plants (including the Emerging Retrofits). Beyond the pollution controls that are
15 likely to be required to comply with current and upcoming EPA rules, the
16 question of what costs are likely to arise due to emissions of greenhouse gases,
17 such as CO₂, presents a potentially significant cost to the company. The likely
18 costs for greenhouse gas control regimes must be addressed in any reasonable
19 review of the cost effectiveness of investments aimed at the continued operation
20 of a power plant with high carbon emissions. In fact, four of the company's
21 generating stations account for over 51% of the total New Mexico CO₂ reported
22 to the New Mexico Air Quality Bureau as required by regulations 20.2.73 NMAC
23 and 20.2.87 NMAC. NEE Exhibit WS-6.

24 **Q. Why should the company act on emerging greenhouse gas costs?**

25 A. There are several reasons. First, it would be absurd to assume the company is not
26 well aware of the national activity on climate change legislation in Congress and
27 rulemaking at the EPA. Clearly, the company knows that such legislation is a
28 potential emerging cost and that the EPA proposed rule is, as well. Second, New
29 Mexico has adopted two Greenhouse Gas Reduction Programs—NMAC
30 20.2.350, effective January 1, 2011, and NMAC 20.2.100, to be effective January

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1 1, 2013, should the former fail to be implemented. It is noteworthy that in
2 opposing that rule before the Environmental Improvement Board, the company
3 did so on the grounds that it supported national legislation. In this regard, it is
4 important to note that San Juan is a very large emitter of CO₂. For example the
5 four San Juan units emitted over 8,500,000 tons of CO₂ in only the first nine
6 months of last year. NEE Exhibit WS-5.

7 **Q. Please explain your understanding of prudence determinations and their**
8 **effect in a rate case.**

9 A. While I am not an attorney, my lay understanding is as follows. In general, only
10 prudently incurred expenses, including recovery of and on prudently incurred
11 investments used and useful for the provision of utility service, may be recovered
12 in retail rates, and only prudent investments used and useful for the provision of
13 utility service may be included in rate base. Conversely, imprudently incurred
14 expenditures are traditionally disallowed. A rate-regulated utility traditionally
15 enjoys a rebuttable presumption that its expenditures and investments are prudent.
16 That presumption is rebutted by factual evidence demonstrating imprudent utility
17 expenditures. Once that presumption has been rebutted, then the burden shifts to
18 the utility to provide evidence of its prudence sufficient:

19 (1) to form the basis for a finding of prudence; and,

20 (2) to overcome any evidence to the contrary.

21 Generally speaking, investments allowed recovery in one rate case are not subject
22 an additional prudence review in a subsequent rate case. However, I understand
23 that the costs for the San Juan Environmental Upgrade Project have never been
24 subjected to a fully litigated rate case and have been collected so far only under
25 settled rate cases, so they remain open to review, as do all the costs in Table PJT-
26 2 cited above.

27 **Q. Please explain your understanding of prudence determinations in New**
28 **Mexico.**

29 A. It is my understanding that New Mexico statute NMSA 62-3-1 relevant to rate

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1 determinations by the Commission. That section, in relevant part, states that “It is
2 the declared policy of the state that the public interest, the interest of consumers
3 and the interest of investors require the regulation and supervision of public
4 utilities to the end that reasonable and proper services shall be available at *fair,*
5 *just and reasonable rates* and to the end that capital and investment may be
6 encouraged and attracted so as to provide for the construction, development and
7 extension, *without unnecessary duplication and economic waste*, of proper plants
8 and facilities and demand-side resources for the rendition of service to the general
9 public and to industry.” [*Emph. added*]

10 In this case, PNM’s decision to implement the San Juan Environmental Upgrade
11 Project and the Current Case Retrofits count as imprudent for several reasons.
12 First, due to the many Emerging Retrofits, installing the San Juan Environmental
13 Upgrade Project and Current Case Retrofits are unnecessarily duplicative and
14 economically wasteful at this time and, so, is imprudent for that reason, as well as
15 under the general meaning of imprudence. This is because PNM may be forced to
16 completely revamp its pollution controls once the final EPA rules are issued. The
17 proposed investments may result in inefficiencies by installing controls that may
18 be redundant, unnecessary or obsolete. Second, company management chose to
19 exercise its discretion and to investment in a shortsighted selection of controls in
20 such a way that ratepayers may bear substantial and unnecessary costs. Costs that
21 are unnecessarily duplicative and economically wasteful are a clear abuse of
22 discretion by the management of an enterprise entrusted with the public good and,
23 so, imprudent for that reason. Third, the most basic duty of a public utility is to
24 provide adequate service at just and reasonable rates, but the San Juan
25 Environmental Upgrade Project and Current Case Retrofit costs have not been
26 shown to be necessary for least cost utility service over the long term. Therefore,
27 rates that include recovery for these costs are inimical to the public interest, create
28 economic waste, and would be, by definition in excess of fair, just and reasonable
29 rates and imprudent for that reason, as well.

30 PNM has made shortsighted expenditures for pollution control equipment. Those

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1 expenditures do not qualify as “used and useful” property because they have not
2 been prudently incurred expenses.

3 The investments in the San Juan Environmental Upgrade Project and Current
4 Case Retrofits, which the utility seeks to put into rate base, are not “used and
5 useful” for several reasons. First, EPA has not yet finalized a regional haze rule
6 under the Clean Air Act, thus, the company has no way of knowing whether its
7 shortsighted retrofit work will meet federal requirements. If, as discussed above, it
8 is likely or certain depending on the particular regulation, additional or different
9 technology is ultimately required, the company will have to go back and expend
10 additional resources meeting EPA requirements. Thus, the company unnecessarily
11 acted shortsighted manner.

12 Second, PNM has not reflected a number of likely federal requirements that will
13 require additional expenditures on control technology (Emerging Retrofits). In
14 this way, the company is asking ratepayers to fund piecemeal work that could be
15 done more efficiently once it has a better understanding of the full suite of
16 requirements. The San Juan Environmental Upgrade Project and Current Case
17 Retrofit capital investments proposed for recovery by PNM in this proceeding
18 have not been shown to be necessary or the most cost effective long term
19 selection to meet the currently applicable and likely emerging EPA standards.

20 Thus, the San Juan Environmental Upgrade Project and Current Case Retrofit
21 investments are not prudent for the company to have at this time because the final
22 pollution control requirements are not yet known. It would have been far more
23 efficient, and a better use of ratepayer funds, to wait until EPA issues final rules
24 that definitively describe the required work. To do otherwise risks installing
25 expensive pollution controls that fall short of meeting EPA requirements and
26 would therefore require a new round of investment and shutdowns.

27 The company is asking ratepayers to bear the risk that the San Juan
28 Environmental Upgrade Project and Current Case Retrofit investments will be a
29 necessary part of (or useful alongside and compatible with) the Emerging Retrofit

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1 investments that will be required to meet final EPA rules. As discussed above, at
2 this time these investments are not “used and useful” because the final EPA rules
3 may call for a different suite of pollution controls. It is inappropriate for PNM to
4 force ratepayers to bear this risk where the choice to assume such risk is entirely
5 within the control of management. *See, for example, Pacific Power & Light Co. v.*
6 *Public Service Com'n of Wyoming* 677 P.2d 799, 806 (1984) (“If [the utility]
7 gauged the risk with the intention that the loss would be borne by consumers,
8 there would be no risk at all for [the utility] (the stockholders). This fact might
9 encourage [the utility] to venture into activities having a very small chance of
10 economic success with the knowledge of no loss to it should the activity fail...”).
11 To the extent PNM management decided to make these shortsighted investments,
12 shareholders should bear the risk of these investments until such time as the utility
13 can conclusively demonstrate that the retrofits are necessary and sufficient to
14 meet EPA standards.

15 **Q. Can you identify the other costs that the company is likely to incur, and that**
16 **ratepayers would be asked to bear, in the near- to mid-term for Emerging**
17 **Retrofits?**

18 A. Yes, in broad terms. As described above, the EPA is poised to promulgate a series
19 of rules that will apply to generating units in the electric sector, including the
20 company’s fleet of generating units. The rules will address air emissions, coal
21 combustion residue, water intake and water effluent. The company is likely to
22 face additional costs for Emerging Retrofits associated with rules and regulations
23 that are currently under development.

24 **Q. Has the company presented information about additional costs that would**
25 **ultimately be charged to ratepayers?**

26 A. So far as I am aware, the company has not quantified many of these known and
27 likely costs, making it very difficult to do a comprehensive evaluation of the full
28 cost to ratepayers of continuing to operate specific plants in the company’s fleet.

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1 **Q. Why should the Commission consider costs other than those proposed for**
2 **recovery in the current docket?**

3 A. Determination of the prudence of the company's investment and the most
4 economically efficient resource choices requires a comprehensive and detailed
5 assessment of the costs associated with a variety of options. This assessment must
6 include a full understanding of all of the known costs associated with specific
7 options, as well as an understanding and evaluation of costs that can reasonably
8 be anticipated for specific options. While the company is not seeking cost
9 recovery for all of the upcoming costs in this docket, it is not possible to evaluate
10 the prudence of these expenditures in isolation from known and likely upcoming
11 expenditures.

12 **Q. Please explain how a rate case is related to the company's IRP process.**

13 A. An integrated resource planning process, by definition, must abide by two broad
14 principles. First, all resources must be considered—and considered on a “level
15 playing field.” Second, the IRP process must deliver an integrated portfolio of
16 resources with the mix of resources that will provide adequate and reliable service
17 at the lowest life cycle cost, with the life cycle cost comparisons (between
18 resources or portfolios) and with an acceptable level of risk to ratepayers. The
19 company has been engaged in IRP for years, and it is appropriate that the
20 company's rate requests be consistent with these principles of IRP.

21 **Q. Is it not quite difficult for utilities to plan for compliance given the sheer**
22 **number of regulatory activities that EPA is currently undertaking?**

23 A. There is no question that anticipating upcoming regulations is challenging.
24 However, EPA is explicitly pursuing a multi-pollutant plan to enable companies
25 to take a comprehensive approach to planning for compliance. In January, 2010,
26 EPA announced its intention to ensure better air quality, and promote a cleaner
27 and more efficient power sector and have strong but achievable reduction goals
28 for SO₂, NO_x, mercury, and other air toxics.¹² The Company's request comes at a

¹² Lisa P. Jackson, *Seven Priorities for EPA's Future*, available at
<http://blog.epa.gov/administrator/2010/01/12/seven-priorities-for-epas-future/>. Accessed 4/8/11.

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1 time when EPA is explicitly coordinating its regulatory activities in order
2 facilitate companies planning and decision-making about investments in existing
3 electric generating units. For example, EPA states

4 EPA is coordinating this action on GHGs with a number of other
5 required regulatory actions for traditional pollutants including the
6 Utility MACT rule, the Transport Rule and New Source
7 Performance Standards for criteria pollutants. Together, EGUs
8 will be able to develop strategies to reduce all pollutants in a more
9 efficient and cost-effective way than addressing these pollutants
10 separately.¹³
11

12 In other words, PNM is asking for recovery of a tip of the iceberg, before decision
13 makers and ratepayers have a full understanding of the magnitude of later, related
14 costs.

15 The company's shortsighted actions are all the more imprudent because EPA
16 Administrator Jackson has emphasized the agency's efforts to take a multi-
17 pollutant sector-based approach to regulation in order to provide certainty and
18 clarity.¹⁴

19 The company argues that many of the Current Case Retrofits and the San Juan
20 Environmental Upgrade Project retrofits are for projects that are "... required for
21 reliable operation under and ongoing compliance with the 2005 Consent Decree"
22 or are "... a components [sic] of the San Juan Environmental Improvement
23 project required by the 2005 Consent Decree." NEE Exhibit WS-4 at 5 ff. While
24 the 2005 Consent Decree specified that the San Juan Environmental Upgrade
25 Project retrofits were to be made, the company still had alternatives. The company
26 could have negotiated for the 2005 Consent Decree to be satisfied by more

¹³ EPA Fact Sheet; *Settlement Agreements to Address Greenhouse Gas Emissions From Electric Generating Units and Refineries*; December 2010. Available at:
www.epa.gov/airquality/pdfs/settlementfactsheet.pdf

¹⁴ Lisa Jackson, *Remarks on the 40th Anniversary of the Clean Air Act, As Prepared*; September 14, 2010. Available at
<http://yosemite.epa.gov/opa/admpress.nsf/a883dc3da7094f97852572a00065d7d8/b6210c1d1d49b7a4852577fb006f435a!OpenDocument>. Accessed 4/8/11.

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sweeping environmental upgrades that would have addressed not only existing requirements, but also Emerging Retrofit requirements. The company could have considered repowering San Juan, in whole or in part. The company could have considered increased and accelerated demand-side management investments, new generation construction, power purchases, or a combination of those as alternatives to performing the San Juan Environmental Upgrade Project retrofits on one or more of the San Juan units. In short, the company has not demonstrated that it lacked alternatives to meeting its customers' energy service needs at a lower long-term (life cycle) cost. In evaluating such major investments in existing capacity for recovery from ratepayers, the Commission should be rigorous in its scrutiny and require the utility to go beyond simply the question of whether a particular retrofit is mandated for continued operation.

Q: Why is it not sufficient for the company to determine the cost-effectiveness of the retrofits currently required for compliance with rules or the 2005 Consent Decree?

A. Such an evaluation would be incomplete, ignores relevant planning information that the company's management knows or should know, and could put ratepayers at risk for the costs of investments that, when considered as part of a whole, might not be cost-effective. But the company is pursuing a piecemeal approach—requesting cost recovery approval for the San Juan Environmental Upgrade Project and Current Case Retrofits rather than considering the full costs to ratepayers of continuing to operate. Without factoring in the full range of known and likely costs that ratepayers would have to bear, it is not possible to assert that the power plants in question produce low-cost generation. A piecemeal approach to evaluating capital upgrades to existing power plants ignores the 40-year-plus trend of steadily increasing and tightening environmental regulation in the United States. It is reasonable for the Commission and the company to assume additional regulation and additional regulatory costs will be imposed. Doing so will support evaluation of individual compliance expenditures within a broader context of the full range of compliance obligations and costs that the company is likely to face at a particular unit rather than reviewing compliance obligations one by one.

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1 The company's piecemeal approach to evaluating the upcoming costs of
2 compliance deprives ratepayers of the benefit of a comprehensive review and
3 prudence determination. In general, the scope of the Commission's consideration
4 of the company's proposal should reflect a multi-pollutant approach to evaluating
5 the known and likely costs of continued operation and retrofit, rather than
6 considering one regulation at a time. The company should provide information to
7 the Commission and parties now that permits such an evaluation. It is not
8 reasonable to put ratepayers at risk of having to fund multiple modifications or
9 retrofits to meet compliance obligations if, taken as a whole, those compliance
10 activities are less economical than alternatives.

11 The summaries of upcoming environmental requirements presented above
12 evidence the potential synergistic magnitude of existing and proposed regulatory
13 requirements. These mandates will inevitably inform utilities decisions as they
14 make future resource allocations to meet customer demand and determine the
15 most appropriate investments for recovery from ratepayers. Given the sheer
16 number and wide coverage of these mandates, it will be essential that, for future
17 planning purposes and rate treatment, the Commission and the utilities consider
18 their potential impact in a comprehensive, rather than singular, case-by-case basis.
19 A step-wise, consistent decision-making process for deciding whether to retrofit
20 existing plants, new plants or employ some other resource will be essential to
21 ensuring the best outcome for ratepayers. When evaluating alternatives, utilities
22 must consider the market cost of existing, unused natural gas capacity, the cost of
23 a new combined cycle natural gas plant, as well as that of wind, other renewables,
24 demand response, and energy efficiency, in comparison to the specific retrofit
25 costs faced by an individual unit.

26 It is critical for companies to consider a reasonable range and intensity of risks
27 and uncertainties, particularly those associated with environmental regulation.
28 These include carbon costs, ozone regulation, mercury regulation, coal
29 combustion waste risks and requirements, and a lengthy list of pending regulatory
30 issues, as discussed above. I recommend that the company be directed to include

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1 the costs and risks of existing and emerging regulations on a joint, multi-pollutant
2 basis in evaluating investment plans, even when the final form or timing of a
3 regulation is unknown, given the capital intensive and long-lived nature of
4 investments in the electric industry.

5 **12. RECOMMENDATIONS**

6 **Q. What recommendations do you have for Commission?**

7 A. I recommend that the costs of the company's San Juan Environmental Upgrade
8 Project and Current Case Retrofit investments be disallowed for recovery unless
9 and until the company shows decisively that the incremental capital costs
10 requested in this case are prudent in light of known and likely future investments
11 and are in keeping with least cost principles. That disallowance should include not
12 only the capital costs of the San Juan Environmental Upgrade Project and Current
13 Case Retrofits, but also any associated operation and maintenance (O&M) costs
14 and costs due to lost output from the affected plants. By "costs due to lost output
15 from the affected plants," I mean the cost of replacement power or additional
16 production needed by the company due to any plant or unit downtime caused by
17 the installation or operation and maintenance of the San Juan Environmental
18 Upgrade Project and Current Case Retrofits, plus the cost of additional production
19 or replacement power needed by the company due to either parasitic loads or
20 reduced capacity at any plant or unit caused by the operation of the San Juan
21 Environmental Upgrade Project and Current Case Retrofits, less the variable costs
22 of production avoided at the plants or units affected by the installation and
23 operation of the San Juan Environmental Upgrade Project and Current Case
24 Retrofits.

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1 **Q. What if construction has already started or has been completed on one or**
2 **more of the imprudent upgrades that is being proposed for cost recovery in**
3 **this proceeding?**

4 A. Their costs should still be disallowed. The disallowances I recommend are fully
5 consistent with traditional ratemaking, whether or not the imprudent investment
6 has already been made, in whole or in part.

7 **Q. What if additional investment in a specific imprudent upgrade is being**
8 **proposed for recovery, but some of that upgrade's cost had already been**
9 **allowed in rate base in a prior rate case?**

10 A. The Commission should disallow as imprudent that portion of the investment not
11 already allowed into rate base by prior Commission Order. The Commission
12 should also consider, now and in the future, whether any of those or similar
13 investments (that is, investments now found to have been imprudent but which
14 had been allowed into rate base by prior Commission Order) are used and useful
15 in the provision of utility service. Under traditional ratemaking practice, the cost
16 of investments that have already been allowed into rate base (whether by an
17 explicit finding of prudence or in accordance with a utility's presumption of
18 prudence), but which are no longer used and useful (if they ever were) may be
19 subject to a disallowance, the extent of which is within the Commission's
20 discretion. Please note that this is consistent with and does not alter my
21 recommendation regarding costs that may have been or are being recovered under
22 settled rate cases.

23 **Q. Do you have additional suggestions for the Commission?**

24 A. Yes. I urge the Commission to take a proactive approach to ensure sound
25 decision-making and to ensure that the Commission has sufficient information to
26 evaluate company decisions that could result in significant costs to ratepayers. In
27 particular, the Commission should consider establishing a comprehensive and
28 consistent process for considering utility proposals for major investments in
29 existing generating units that would include consideration of all existing and
30 emergent environmental rules and regulations likely to effect the plants under

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1 consideration during its lifetime. In general, the Commission's guidelines for such
2 a process should require:

3 (1) A thorough inventory and description of all the relevant resource
4 options, together with an assessment of their costs, benefits, uncertainties and
5 risks, as well as the probabilities of those risks,

6 (2) An objective analysis of how those uncertainties and risks affect the
7 performance of various resource plans individually and in combination,

8 (3) Development of a plan relying on a portfolio of resources that manages
9 risk and uncertainty to a reasonable level while delivering the lowest life cycle
10 cost over the fullest possible range of plausible future scenarios.

11 If the company fails to do so or fails to coordinate its rate requests with its IRP
12 planning processes and principles, it would be reasonable for the Commission to
13 consider imposing a penalty in the form of a reduction to the company's allowed
14 rate of return.

15 **Q. Does this conclude your testimony?**

16 A. Yes, it does.

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