

**STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD**

**IN THE MATTER OF THE PETITION FOR)
HEARING TO ADOPT NEW REGULATIONS)
AND TO AMEND VARIOUS SECTIONS OF)
20.2.1, 20.2.2, 20.2.70, and 20.2.72 NMAC,)
STATEWIDE CAP ON GREENHOUSE GAS)
EMISSIONS)
_____)**

No. EIB 08-19(R)

PREPARED REBUTTAL TESTIMONY

OF

STEVEN S. MICHEL

ON BEHALF OF

NEW ENERGY ECONOMY

AUGUST 6, 2010

TABLE OF CONTENTS

I.	INTRODUCTION	2
II.	PURPOSE AND SUMMARY OF TESTIMONY.....	2
III.	REBUTTAL TO CRITICISM OF THE PROPOSED RULE.....	5
	A. DEFINITION AND SCOPE FOR EXISTING SOURCES.....	5
	B. DEFINITION AND BASELINES FOR NEW SOURCES.....	7
	C. OFFSETS AND EARLY ACTION.....	10
	D. RULE DESIGN AND COMPLIANCE.....	14
	E. THE 2010 BASELINE.....	19
	F. TRADING OF CREDITS.....	20
	G. REDUCTION OPPORTUNITIES.....	21
	Oil & Gas.....	21
	Electricity.....	24
	H. ENVIRONMENTAL IMPACT.....	28
	I. ECONOMIC IMPACT.....	36
	Oil & Gas.....	36
	Electricity.....	40
	J. MAXIMUM EXPENDITURE.....	48
	K. REVISION PROVISION.....	54
	L. SUNSET PROVISION.....	55
IV.	CONCLUSIONS.....	58

1 **I. INTRODUCTION**

2 Q. PLEASE STATE YOUR NAME?

3 A. My name is Steven S. Michel.

4

5 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

6 A. I am Chief Counsel for the Energy Program of Western Resource Advocates
7 (WRA). WRA is an environmental law and policy center for the interior Western United
8 States. I work in WRA's Santa Fe office.

9

10 Q. HAVE YOU PRESENTED DIRECT TESTIMONY ON BEHALF OF NEW ENERGY
11 ECONOMY IN THIS DOCKET?

12 A. Yes. That testimony was filed with the Environmental Improvement Board on
13 March 2, 2010.

14

15 Q. FOR WHOM ARE YOU PRESENTING THIS REBUTTAL TESTIMONY?

16 A. I am again testifying on behalf of the Petitioner, New Energy Economy.

17

18 **II. PURPOSE AND SUMMARY OF TESTIMONY**

19 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

20 A. NEE has petitioned the Environmental Improvement Board to adopt a rule that
21 regulates greenhouse gas emissions in New Mexico. On July 16, 2010, opponents of the
22 petition filed their testimony. This testimony rebuts the testimony of the opponents.

23

1 Q. WOULD YOU PLEASE SUMMARIZE YOUR TESTIMONY?

2 A. Yes. With the exception of the Coalition of Arizona/New Mexico Counties, which
3 disputes climate change as a concern, all of the testimony in opposition to NEE's petition
4 was sponsored by businesses or industry groups that emit large amounts of greenhouse
5 gases into our atmosphere. The tact they have taken is to claim that NEE's proposed rule
6 will be unworkable and costly to New Mexico's economy, while providing no
7 environmental benefit.¹

8 To be fair, some of the issues and concerns that industry has raised are valid – and
9 NEE is providing revisions to its proposed rule to address them. Specifically, the
10 revisions:

- 11 1) add flexibility to the selection of a baseline period;
- 12 2) narrow the coverage to just CO2 and specific stationary sources;
- 13 3) define new sources to include increased capacity at existing sources;
- 14 4) allow Climate Action Reserve offsets in New Mexico to automatically qualify;
- 15 5) allow sources emitting less than 25,000 mtons/year to opt-in to the regulation;
- 16 6) change the baseline for new oil & gas sources to best available control technology;
- 17 7) clarify how the maximum expenditure limit is calculated; and
- 18 8) sunset the rule no later than 2020.

19 These revisions, as well as some other minor edits, are shown in redlined and clean
20 formats as NEE Exhibits R9 and R10, respectively.

21 In addition to explaining revisions to the proposed rule, my rebuttal also discusses
22 why the remainder of industry's criticism is wrong. I do so topically rather than by

¹ See e.g. Patton at 8

1 witness because much of the industry testimony is duplicative. Overall, I conclude, as I
2 did in my direct testimony, that the proposed regulations will have little if any adverse
3 impact to New Mexico's economy while at the same time reducing greenhouse gas
4 emissions from industry and demonstrating New Mexico's resolve and commitment
5 toward addressing global warming. I believe that New Mexico's actions will demonstrate
6 that States can move forward to address global warming without waiting for Federal
7 action.

8

9 Q. HOW DO YOU RESPOND TO INDUSTRY'S CLAIM THAT THE PROPOSED RULE
10 WOULD ADVERSELY AFFECT NEW MEXICO'S ECONOMY WHILE OFFERING LITTLE
11 ENVIRONMENTAL BENEFIT?

12 A. Industry's position in this case fails to appreciate the full dimensions of the global
13 warming problem that our planet is facing. To put this in perspective, imagine that we
14 are all sitting at the breakfast table on the Titanic when it strikes an iceberg. Yet, none of
15 us are willing to get up to start preparing lifeboats because we are worried that, if we do,
16 someone will take our food.

17 Industry is asking us to not get started because someone might take our food.

18

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1 **III. REBUTTAL TO CRITICISM OF THE PROPOSED RULE**

2

3

4 **A. DEFINITION AND SCOPE OF EXISTING SOURCES**

5 Q. NMOGA WITNESSES SMITH AND KNOWLTON² HAVE ARGUED THAT BECAUSE

6 THE PROPOSED RULE PROVIDES NMED DISCRETION TO DETERMINE WHAT

7 CONSTITUTES A “SOURCE” IN THE OIL & GAS SECTOR, THE IMPACT OF THE PROPOSED

8 RULE IS IMPOSSIBLE TO ASSESS. HOW DO YOU RESPOND?

9 A. I am sympathetic to industries’ claim in this regard. It is reasonable for potential
10 sources to be able to ascertain whether they are likely to be covered, at least initially, by
11 NEE’s proposed regulations. Because of the difficulty of defining a source for some of the
12 connected operations in the oil and gas sector, I agree that the proposed rule should
13 narrow the definition of a source for this sector to include only refineries, compressor
14 stations, gas processing plants and gas treatment (acid gas removal) plants that emit
15 25,000 metric tons or more per year. In addition, because of the currently limited data
16 associated with methane emissions, I also recommend that the greenhouse gases
17 regulated under this proposed rule initially be limited to carbon-dioxide (CO₂). Based
18 upon 2008 emissions reported to NMED, there are about 50 oil and gas facilities in New
19 Mexico that would be covered by this definition. I am attaching to this testimony NEE
20 Exhibit R11, which is the New Mexico Environment Department’s Greenhouse Gas

² Smith at 7, Knowlton at 11

1 Inventory, completed earlier this year, which identifies the specific CO2 emission sources
2 in New Mexico and their 2008 reported emissions.³

3

4 Q. ARE THERE OTHER IMPLICATIONS FROM NARROWING THE “SOURCE”
5 DEFINITION IN THE OIL & GAS SECTOR, AND LIMITING THE COVERED GREENHOUSE
6 GASES TO CO2?

7 A. Yes. Narrowing the definition of a covered source eliminates compliance issues
8 associated with measuring emissions at numerous well-sites and assessing fugitive
9 methane emissions, which were issues raised by several industry witnesses.⁴ The
10 narrower definition and exclusion of methane will reduce the covered greenhouse gas
11 emissions from the oil and gas sector from almost 14 million metric tons (mtons) CO2e
12 per year to about 8 million mtons CO2e per year.⁵ This means that an additional 6 million
13 metric tons of CO2e will be available as offset opportunities for the covered sources,
14 greatly expanding the compliance opportunities under this proposed regulation.

15

16 Q. NMOGA WITNESS PRICE QUESTIONS WHY THE REGULATIONS WOULD EXCLUDE
17 SOURCES THAT REDUCE EMISSIONS BELOW 25,000 MTONS PER YEAR. IS THERE
18 VALIDITY TO MR. PRICE’S CONCERN?

19 A. Yes, there is. A source that can reduce its emissions below 25,000 mtons should be
20 able to continue within the regulation and receive credits usable in the future or for other
21 shared facilities. Similarly, a renewable energy generator that emits less than 25,000

³ See also NMED testimony of Schneider in EIB 10-04R at 4-6

⁴ Smith at 10, Knowlton at 11, Nicholson, Scott at 4, 11-12

⁵ See NMED GHG Inventory, Exh NEE R11

1 mtons should not be penalized by being outside of the regulation and not having the
2 advantage of beating the electricity generation baseline, while a source that emits 25,001
3 mtons would be eligible to receive those credits. To resolve this inequity, the Revised
4 Rule that would allow a source to opt into the regulation if it emits less than 25,000
5 mtons per year. In addition, sources that have zero emissions because they have been
6 retired or are no longer operating would continue to be considered a source for three
7 years, in order to provide an incentive (the award of credits) for early retirement and
8 replacement as an option for compliance.

9

10 **B. DEFINITION AND BASELINES FOR NEW SOURCES**

11 Q. NMOGA WITNESS NICHOLSON TESTIFIES⁶ THAT THE NEE PROPOSAL IS
12 UNCLEAR AS TO WHAT CONSTITUTES A NEW SOURCE WHEN THERE IS A
13 MODIFICATION OR CHANGE AT THE LOCATION OF AN EXISTING SOURCE. NMOGA
14 WITNESS PRICE RAISED A SIMILAR CONCERN. ARE THEY CORRECT?

15 A. I agree with Mr. Nicholson that additional clarity would be helpful in this regard.
16 The Revised Rule clarifies that additional output capacity added to an existing source
17 after 2010 is to be considered a new source regardless of its CO2 emissions.

18

19 Q. BECAUSE YOU ARE NOW NARROWING THE SCOPE OF COVERAGE FOR THE
20 PROPOSED RULE, WILL THIS AFFECT THE BASELINES IN THE RULE?

21 A. Yes, the baselines need to be revised to reflect the specific operations of refineries,
22 processors, treatment plants and compressors. While production facilities, refineries and

⁶ Nicholson at 16

1 processing facilities were included in the original proposed rule, some industry
2 witnesses⁷ testified that the baselines in the original rule were too stringent.

3

4 Q. WHAT BASELINES DOES THE NARROWER RULE PROVIDE FOR REFINERIES,
5 PROCESSING AND TREATMENT PLANTS AND COMPRESSOR STATIONS?

6 A. As the testimony from industry witnesses has indicated, the covered oil & gas
7 facilities present some difficulties in establishing firm baselines. While there exists some
8 industry data that could be used to establish a baseline – for example NMOGA’s witness
9 Price has provided refinery emission averages (0.0281 mtons/bbl) and a study of the
10 Barnett Shale formation⁸ operations has provided emission factors for internal
11 combustion engines used in compressor stations and processing plants (.424 g/hp-hr) –
12 this data may in itself be insufficient. Non-combustion sources of CO₂ emissions can
13 occur at these facilities and, as NMOGA witnesses Knowlton and Price point out,
14 emissions at facilities can vary depending upon the nature of the emission source, the
15 product output and type, and other unique characteristics associated with the facility.
16 Because of these complexities, rather than establishing industry-wide baselines for
17 particular oil & gas facilities, the specific baseline for each facility should be based upon
18 the best available control technology for CO₂, given the processes and equipment being
19 deployed, and its output capacity. The revised baselines are shown in redlined and clean
20 formats in NEE Exhibits R9 and R10.

21

⁷ Smith, Price

⁸ “Emissions from Natural Gas Production in the Barnett Shale Area...,” Armendariz, Southern Methodist University, Ver. 1.1, 1/26/09; NEE Exh. R12.

1 Q. PNM WITNESS BOTHWELL TESTIFIES THAT THE NEW SOURCE BASELINE FOR
2 ELECTRICITY, INITIALLY SET AT 0.5 MTONS PER MWH, IS TOO RESTRICTIVE, AND
3 THAT “THERE IS ESSENTIALLY NO NEW LOAD FOLLOWING NATURAL GAS SOURCE
4 THAT COULD MEET THIS LIMITATION.”⁹ BECAUSE GAS GENERATORS ARE NEEDED
5 FOR RELIABILITY WHEN RENEWABLES ARE DEPLOYED, MS. BOTHWELL CLAIMS THAT
6 THE RULE IS UNWORKABLE. IS SHE CORRECT?

7 A. No. Ms. Bothwell is playing word games.

8 There are two classes of gas plants that are generally available to electric utilities:
9 combustion turbines (CTs) and combined cycle combustion turbines (CCs or CCCTs).
10 Combustion turbines are essentially jet engines that spin a turbine. They are less costly to
11 buy and less efficient than CCs, and are generally used for peak demand periods or “load
12 following.” They will be an economic choice when expected to run 10-20 percent of the
13 time (unless gas prices are exceptionally low). Combined-cycle plants join a combustion
14 turbine with one or more steam turbines that use the waste heat from the combustion
15 turbine. These generators are initially more costly than CTs, but are also significantly
16 more efficient. They are designed to run as intermediate or base-load units (i.e. all the
17 time), but can also be efficiently ramped up and down to accommodate intermittent
18 energy from renewable resources.

19 The proposed rule sets a baseline for new generation of 0.5 mtons per MWh.
20 According to PNM’s 2008 Integrated Resource Plan,¹⁰ a CT will typically emit 1.3 lb/KWh,
21 or 0.59 mtons/MWh. This makes Ms. Bothwell’s “load following” caveat technically
22 correct. However, PNM’s IRP also shows that a CC will emit 0.8 lb/KWh or 0.36

⁹ Bothwell at 12, 17

¹⁰ NEE Exh R13

1 mtons/MWh – substantially less than the baseline in the proposed rule, and nevertheless
2 a generator that can be used to firm intermittent renewables. What this all means is that
3 PNM can easily procure new generation within the baseline level, that this new
4 generation can provide the reliability PNM’s system demands, and that for many years of
5 the proposed rule PNM would actually earn excess credits by installing new CC gas plants.
6 What’s more, if PNM combines its gas generation with renewables, as many utilities do,
7 the blended emissions rate will be far below that established by the new source baselines
8 throughout the life of these regulations.

9

10 **C. OFFSETS AND EARLY ACTION**

11 Q. INDUSTRY WITNESSES SMITH, KNOWLTON AND BOTHWELL¹¹ HAVE TESTIFIED
12 THAT OFFSETS AND EARLY ACTION CREDITS UNDER THE PROPOSED RULE ARE
13 UNCERTAIN, AND SHOULD NOT BE LIMITED TO THOSE LOCATED IN NEW MEXICO. DO
14 YOU AGREE?

15 A. I do not. The standards in the proposed rule for offsets and early action credit are
16 clear, discernable and widely accepted.¹² Those standards require that the offsets or
17 credits be accurately measured, verifiable, enforceable, voluntary, additional and
18 permanent. Allowing NMED to determine whether this standard has been met is
19 appropriate. In other New Mexico environmental regulations, NMED has been provided
20 that type of discretion¹³. Trivializing early action credit availability, as some witnesses

¹¹ Smith at 16-18, Knowlton at 12, Bothwell at 13, 22

¹² See e.g. §20.2.79.115F

¹³ See e.g. 20.2.79.115, 20.2.32.114D

1 do¹⁴, appears to be simply a means to attack the proposed rule – by assuming away the
2 usefulness of the rule’s flexibility features. Given that sources will provide NMED with
3 their justification for why offsets or early action credits should be allowed, there is no
4 reason to believe that if the criteria are met, NMED will deny credit. NMED can evaluate
5 applications on a case-by-case basis.

6 That said, the Climate Action Reserve (CAR), referenced by NMOGA’s witness
7 Knowlton¹⁵, is a reasonable offset protocol that could be provided as a safe harbor for
8 companies procuring offsets. The Revised Rule would allow any New Mexico offsets that
9 are certified by the CAR to be useable for New Mexico rule compliance, and also clarifies
10 that offsets are transferable. The only caveat I would add is that offsets that are not
11 certified by CAR, or are certified by another credible protocol, could still be available for
12 compliance if NMED determines that they meet the established criteria.

13 Regarding the geographic limit in the proposed rule, there is real value to limiting
14 the offsets to New Mexico. I do not believe, as some industry witnesses have suggested,¹⁶
15 that terrestrial and forestation projects are the only New Mexico offsets available. Dairy
16 biogas combustion, methane reduction at landfills, rangeland management¹⁷, and
17 reducing methane from oil & gas operations are among the types of offsets available to
18 industry for compliance. Particularly with the revised coverage in the oil & gas sector,
19 there will be millions of additional tons of offsets available from uncovered sources than
20 were available under the original proposed rule. Offsets provide economic and business

¹⁴ Smith at 8, Bothwell at 13

¹⁵ Knowlton at 18. Ms. Knowlton refers to the “Climate Action Registry,” but the context of her testimony indicates that she intended to reference the “Climate Action Reserve.”

¹⁶ Darnell at 16

¹⁷ CCX is currently considering a rangeland project near Cimmaron – Bill Sauble; See also J.E. de Steiguer “Contributing to the Mitigation of Climate Change Using Rangeland Management,” Rangeland, 2008.

1 activity and gain, and if the regulatory costs are confined to New Mexico, then so too
2 should the benefits of offset development.

3

4 Q. NMOGA WITNESS SMITH, FROM DEVON, CLAIMS THAT THE MAJORITY OF
5 EMISSION REDUCTION PROJECTS AVAILABLE TO HIS COMPANY HAVE ALREADY BEEN
6 UNDERTAKEN AND OPTIONS TO FURTHER REDUCE ARE LIMITED.¹⁸ IF THIS IS TRUE,
7 DOES THAT COMPROMISE THE ABILITY OF DEVON TO COMPLY WITH THE PROPOSED
8 RULE?

9 A. It should not. Mr. Smith indicates that Devon has reduced its emissions 1.75
10 million tons CO₂e since 1990, with 65 percent of those reductions occurring in 2005 or
11 later. So, assuming those reductions are genuine and additional, Devon could qualify for
12 substantial early action credits. And, as mentioned previously, the narrowed scope of the
13 proposed rule now provides substantial additional New Mexico offset opportunities for
14 Devon to use or sell.

15

16 Q. PNM WITNESS DARNELL ARGUES THAT INDUSTRY WILL NOT DEVELOP OFFSET
17 OR EARLY ACTION PROJECTS IF THERE IS ANY UNCERTAINTY AS TO THEIR
18 CERTIFICATION.¹⁹ DO YOU AGREE?

19 A. I do not. It is quite common for utilities, including PNM, to bring projects to the
20 New Mexico Public Regulation Commission for approval and/or cost recovery under
21 standards that are no less defined than those in the proposed rule. These projects include

¹⁸ Smith at 5-6

¹⁹ Darnell at 16-17

1 transmission and distribution system lines and improvements, new generation,
2 purchased power contracts and numerous other items.

3

4 Q. PNM WITNESS BOTHWELL TESTIFIES THAT PNM IS UNLIKELY TO OBTAIN
5 EARLY ACTION CREDIT BECAUSE THE CREDIT IS BIASED AGAINST IT. SHE CITES TO
6 THE FACT THAT THE EARLY ACTION CREDIT IS FOR ACTIONS TAKEN IN 2005 OR
7 LATER, AND THAT PNM DEVELOPED ITS WIND ENERGY CENTER IN 2003.²⁰ IS SHE
8 CORRECT?

9 A. No. The fact that PNM developed its wind resource in 2003 only means that
10 credits from 2003 and 2004 would not be eligible. If PNM's purchase of wind power in
11 2005 or later caused it to reduce emissions at a source below what they would otherwise
12 have been, then early action credit would be available, provided the reductions meet the
13 standards set forth in the proposed rule: voluntary, measurable, verifiable, enforceable
14 and permanent. If PNM's purchase of wind energy was used entirely for compliance with
15 New Mexico's Renewable Energy Act, then it would not be eligible for early action credit
16 because it was not voluntary.

17

18 Q. SPS WITNESS IHLE TESTIFIES THAT EARLY ACTION CREDIT IS ONLY AVAILABLE
19 FOR THE FIRST 12 MONTHS AFTER DEVELOPMENT.²¹ IS HE CORRECT?

20 A. Mr. Ihle has misinterpreted the proposed rule. As the rule is written, all
21 accumulated reductions from 2005 would be eligible for early action credit. In addition, a
22 source's annual baseline emissions would be raised back up to a level which reflected its

²⁰ Bothwell at 13

²¹ Ihle at 7-8

1 emissions before the early action. This feature requires the measurement of 12 months of
2 early action reductions, to correspond to a baseline amount which is also measured
3 annually.

4
5 **D. RULE DESIGN AND COMPLIANCE**

6 Q. NMOGA WITNESS NICHOLSON ARGUES THAT BECAUSE THERE ARE FEW
7 OPPORTUNITIES FOR EMISSION REDUCTIONS AT SOURCES, THERE WILL BE A LARGE
8 NUMBER OF VARIANCE HEARINGS WHICH WILL CONSUME A GREAT DEAL OF NMED'S
9 RESOURCES.²² DO YOU AGREE?

10 A. I do not. First of all, Mr. Nicholson is wrong in his characterization of available
11 opportunities for emission control technologies. Even if he is right, however, the
12 revisions to the proposed rule will provide substantial offset opportunities for
13 compliance, and will limit the number of sources to which the regulations apply. Mr.
14 Nicholson assumes that 112 Title V sources in the oil & gas sector will be subject to these
15 regulations, and that aggregation will add another 688 sources.²³ The actual number of
16 sources which would be subject to the Revised Rule is closer to 50.²⁴

17
18 Q. FARMINGTON/FEUS WITNESS KAPPELMANN TESTIFIES THAT THE REDUCTION
19 TARGETS IN THE PROPOSED RULE - 80% BELOW 1990 LEVELS BY 2050 - ARE VERY

²² Nicholson at 15

²³ Nicholson at 13-14

²⁴ NMED 2010 GHG Inventory; NEE Exh R11

1 AGGRESSIVE, AND THAT THE RULE'S 3 PERCENT PER YEAR REDUCTION
2 REQUIREMENT WILL ACHIEVE THAT GOAL BY 2040.²⁵ IS HE CORRECT?

3 A. No. Mr. Kappelmann neglects to consider that the 3% reductions would at least in
4 part be offsetting growth in the covered sectors. In other words, if emissions from new
5 sources increased New Mexico's CO2 emissions by 3% each year, then the proposed rule
6 would simply be holding New Mexico emissions at their current level. The growth issue is
7 part of the reason why the rule calls for NMED to propose revisions to the rule in 2014,
8 once there is some history to understand how the rule's performance is matching up
9 against what science informs us should be done. And if by chance Mr. Kappelmann is
10 right, and future scientific research indicates that less aggressive measures are all that is
11 needed,²⁶ the 2014 reassessment provides an opportunity for adjustment.

12

13 Q. FARMINGTON WITNESS SIMS ARGUES THAT THE PROPOSED RULE PENALIZES
14 UTILITIES THAT ALREADY HAVE CLEAN ENERGY RESOURCES ON THEIR SYSTEM,
15 BECAUSE THEIR REDUCTION OPPORTUNITIES ARE LIMITED. PNM WITNESS
16 BOTHWELL ECHOES THAT CONCERN²⁷. IS THIS CORRECT?

17 A. No, it is not. Although it is true that the reduction opportunities are less, so are the
18 reduction requirements. In other words, even though all sources must reduce 3% per
19 year from their baseline amount, the tonnage reduction requirement for utilities with
20 cleaner resources is less than that of utilities with higher emitting resources.

21

²⁵ Kappelmann at 11

²⁶ Kappelmann at 28

²⁷ Bothwell at 22

1 Q. CAN YOU PROVIDE AN EXAMPLE TO ILLUSTRATE YOUR POINT?

2 A. Yes. Assume you have two utilities of the same size, each producing 100,000 MWh
3 per year. One uses gas generation and the other coal. The coal utility will emit 100,000
4 mtons per year, and its compliance obligation will be a reduction of 3,000 mtons each
5 year. The gas utility, however, emits only 50,000 mtons per year, so its compliance
6 obligation is an annual reduction of 1,500 mtons each year, half that of the coal utility. In
7 other words, cleaner utilities are rewarded rather than penalized. And, if they can show
8 that their lower emissions were the result of voluntary measures they took since 2005,
9 they may be eligible for early action credits as well.

10

11 Q. FARMINGTON/FEUS WITNESS CRAWFORD/LILLYWHITE TESTIFIES THAT THE
12 RULE IS UNCLEAR AS TO WHETHER THE REQUIRED REDUCTION EACH YEAR IS 3
13 PERCENT OF THE BASELINE EMISSIONS OR 3 PERCENT OF THE EMISSIONS IN ANY
14 GIVEN YEAR. IS THE RULE AMBIGUOUS IN THIS REGARD?

15 A. No, the rule is clear that the reduction requirement each year is 3 percent of the
16 baseline amount, and even provides an example of how the reduction would work.

17 §20.2.100.9B states:

18 Unless otherwise provided in this Part, an existing source shall emit no more than
19 its approved baseline emissions in 2012, and thereafter it shall reduce those
20 emissions by at least three percent (3%) each year. For example, in 2013 an
21 existing source shall emit no more than 97% of its approved baseline emissions,
22 and in 2014 no more than 94% of its approved baseline emissions.
23

24 Q. FARMINGTON/FEUS WITNESS CRAWFORD/LILLYWHITE ALSO CRITIQUES THE
25 RULE FOR NOT ESTABLISHING SPECIFIC PENALTIES FOR NON-COMPLIANCE AND FOR

1 NOT INDICATING WHEN A SOURCE THAT REDUCES EMISSIONS BELOW 25,000 MTONS
2 BECOMES EXEMPT FROM THE REGULATION. ARE THESE CRITIQUES WARRANTED?

3 A. New Mexico rules are often flexible as to the specific penalty that a non-compliant
4 source would be subject to, and often leave that determination to the department or the
5 Secretary based upon the circumstances involved.²⁸ This is consistent with §74-2-12
6 NMSA and the rule follows a similar tact of providing the Secretary with discretion
7 depending upon the particular circumstances of a violation.

8 With respect to when a source ceases to be regulated once its emissions fall below
9 25,000 mtons, Crawford/Lillywhite are correct that the rule could be clearer. As
10 mentioned elsewhere in this testimony, the Revised Rule provides that sources emitting
11 less than 25,000 mtons can opt-in to the regulation in order to obtain credits for
12 reductions beyond those required. In addition, sources that are retired or cease operation
13 would remain regulated for 3 years afterwards in order to receive credit for their zero
14 emissions.

15

16 Q. PNM WITNESS BOTHWELL SUGGESTS THAT THE RULE IS UNCLEAR AS TO HOW
17 PARTICIPANT OWNERS OF SAN JUAN GENERATING STATION THAT HAVE NO OTHER
18 SOURCES IN NEW MEXICO WOULD COMPLY. IS THE RULE UNCLEAR IN THIS RESPECT?

19 A. No, it is not. PNM is the majority owner and operator of San Juan Generating
20 Station (SJGS). Ms. Bothwell's claim is presumably based upon the assumption that there
21 are no emission reduction opportunities at SJGS, and therefore these owners will be
22 unable to comply with the rule. In fact, these participants have several options –

²⁸ §20.2.7.109 NMAC; §20.2.7.116 NMAC

1 assuming for the sake of argument that emission reductions at SJGS are not available. One
2 is to purchase offsets. A second is that PNM will either develop offsets or reduce its
3 emissions at other sources it owns, operates or controls. The rule is clear that credits
4 PNM obtains from other sources can be used to satisfy all of SJGS's reduction
5 requirements – since PNM is the operator of SJGS.²⁹ The costs of those offsets or credits
6 could then be shared among the plants owners.

7

8 Q. SPS WITNESS IHLE RAISES A SIMILAR ISSUE, ARGUING THAT FOR OWNERS OF
9 JUST ONE FACILITY IN THE STATE, THIS PROPOSED RULE WOULD AMOUNT TO “STACK-
10 BY-STACK” REGULATION. IS HE CORRECT?

11 A. No. Mr. Ihle ignores the offset opportunities available to sources for compliance.

12

13 Q. PNM WITNESS BOTHWELL EXPRESSES A CONCERN WITH RESPECT TO PNM'S
14 PURCHASED POWER AND HOW PNM COULD ASSURE THAT THE SOURCES OF THAT
15 POWER WOULD COMPLY, AGAIN ARGUING THAT THE RULE DOES NOT ACCOMMODATE
16 THESE ARRANGEMENTS.³⁰ DO YOU SHARE HER CONCERN?

17 A. I do not. Sources must reduce their emissions to the required levels, and anyone
18 that owns, operates or controls those sources may provide credits or offsets to
19 demonstrate compliance. What control PNM has over the operation of sources that it
20 does not own is between PNM and the owner of the facility.

21

22

²⁹ Proposed NMAC §20.2.100.11A

³⁰ Bothwell at 10

1 **E. THE 2010 BASELINE**

2 Q. INDUSTRY WITNESSES NICHOLSON, KAPPELMANN, BOTHWELL AND OTHERS³¹
3 HAVE ARGUED THAT ESTABLISHING A SOURCE'S 2010 EMISSIONS AS ITS BASELINE IS
4 OVERLY RESTRICTIVE, AND CAN PENALIZE SOURCES WITH UNUSUALLY LOW
5 EMISSIONS DURING THAT PARTICULAR YEAR. IS THIS A VALID CRITIQUE?

6 A. I believe that it is. These witnesses point out that due to business cycle
7 fluctuations, maintenance schedules and other considerations, the emissions in 2010 for
8 a particular source may not be representative of that source's typical emissions profile.
9 NMOGA witness Price, in particular, has argued that new federal regulations for sulfur
10 and benzene gasoline content may require additional equipment, and trigger increased
11 emissions, at refineries.³² In addition, Farmington witness Sims³³ notes that some sources
12 may have existing excess capacity that was developed to accommodate growth, but that
13 would not be eligible for the new source emission baselines when it was utilized –
14 unfairly penalizing that facility³⁴. While several alternatives have been proposed by
15 these witnesses, I believe the best solution is to deal with these situations on a case-by-
16 case basis, as is done in §20.2.74.7 NMAC, and provide NMED discretion to approve an
17 alternative time period that is representative of the source's usual emissions.³⁵ To
18 accomplish this change, the Revised Rule³⁶ preserves 2010 as the default baseline year,
19 but allows a source to propose an alternative period, output level and emissions level that
20 NMED may determine to be more representative of that source's continuing operation.

³¹ Nicholson at 17, Price at 7, Sims at 5, Kappelmann at 12-14, Bothwell at 11-12, Ihle at 6

³² Price at 16

³³ Sims at 6

³⁴ Price at 7

³⁵ §20.2.74.7B and G

³⁶ NEE Exh R10

1 **F. TRADING OF CREDITS**

2 Q. FARMINGTON/FEUS WITNESS KAPPELMANN ARGUES THAT A SINGLE STATE
3 PROGRAM WOULD COST MORE THAN A NATIONAL PROGRAM – PRESUMABLY BECAUSE
4 OF THE OPPORTUNITY IN A NATIONAL PROGRAM FOR LESS EXPENSIVE REDUCTIONS
5 BY TRADING.³⁷ NMOGA WITNESS KNOWLTON, FARMINGTON/FEUS WITNESS
6 CRAWFORD/LILLYWHITE, AND SPS WITNESS IHLE ³⁸ ALSO SUGGESTS THAT A
7 DEFICIENCY IN THE PROPOSED RULE IS THAT IT LACKS TRADING OPPORTUNITIES. IS
8 LACK OF A TRADING MECHANISM A DEFICIENCY IN THE PROPOSED RULE?

9 A. I do not believe that it is.

10 The argument raised by industry is that a trading mechanism, either within New
11 Mexico or with a broader scope, would reduce compliance costs. First, it should be
12 recognized that trading will not necessarily lower costs. To do so, there must be cheaper
13 available reduction opportunities in other sectors or jurisdictions than there are in the
14 covered sectors. For example, if New Mexico’s reductions are cheaper than surrounding
15 jurisdictions, a trading mechanism will not lower the compliance cost for New Mexico
16 sources, and could perhaps increase it if New Mexico’s cheap reductions can command a
17 higher price when sold out of state. This type of situation occurred during electricity
18 deregulation when cheap local generation obtained a higher (marginal cost) price as it
19 was exposed to a greater regional demand – driving up costs in jurisdictions with
20 historically less expensive resources.

21 Theory aside, though, I agree that trading is a feature that can and generally will
22 provide overall economic benefits by allowing the cheapest reduction opportunities to be

³⁷ Kappelmann at 22

³⁸ Crawford/Lillywhite at 3, Ihle at 7

1 tapped. I have not recommended trading in the proposed rule, however, for two reasons.
2 First is that a trading mechanism will add significantly to the complexity of the proposed
3 rule. For a rule limited to New Mexico, as the proposed rule is, the benefits from trading
4 do not justify this added complexity. Second is the substantial flexibility which the rule
5 provides for compliance – with offsets, credits, early action credits, banking and
6 borrowing - as well as the ability to transfer offsets and use all of these features at any
7 source under common ownership, operation or control. The availability of offsets in the
8 non-covered sectors is significant, and should provide many low-cost compliance
9 alternatives for covered sources to look to, without the need for trading.

10

11 **G. REDUCTION OPPORTUNITIES**

12 **Oil & Gas**

13 Q. MOST OF THE INDUSTRY WITNESSES CLAIM THAT THERE ARE FEW
14 OPPORTUNITIES TO REDUCE GREENHOUSE GAS EMISSIONS IN THE OIL & GAS SECTOR,
15 AND THAT THERE ARE NO OFFSET OPPORTUNITIES, MEANING THAT REDUCED
16 PRODUCTION WILL BE THE ONLY WAY TO COMPLY. DO YOU AGREE?

17 A. The literature I have reviewed, as well as the testimony in this case, indicates
18 there are numerous opportunities to reduce GHG emissions in New Mexico's oil & gas
19 operations. Opportunities at the source include engine efficiency improvements and
20 replacements and heater insulation. NMOGA witness Price acknowledges that, in addition
21 to improvements already made (which could qualify for early action credit), energy
22 efficiency alone could provide an additional 5-10% savings in oil refinery processes –

1 based on current technology³⁹. In addition, there are substantial upstream offset
2 opportunities. While industry witnesses cite forestry and terrestrial offsets as being the
3 major sources of offsets in New Mexico, landfill gas, biogas and biomass production or
4 combustion, renewable energy development, and reductions at facilities that fall below
5 the threshold, all present additional greenhouse gas reduction opportunities. Even if
6 these options did not exist however, by narrowing the scope of the proposed regulations
7 for the oil and gas sector to include only refineries, processing and treatment plants, and
8 compressor stations, and by limiting the covered emissions to CO₂, there exists a large
9 volume of greenhouse gas reductions in the industry – from wells to gathering systems to
10 smaller compressors and other facilities falling below the threshold - that become
11 available as offsets. According to NMED's Greenhouse Gas Inventory⁴⁰ these additional
12 offset opportunities will provide millions of metric tons of additional greenhouse gas
13 offset opportunities. NMOGA witness Smith testified that if offsets are allowed from
14 fugitive reductions in the oil and gas sector, this would generate enough credits to
15 provide cost control under the proposed rule. And he also testified that methane control
16 provides more reduction opportunities than controlling CO₂.⁴¹

17
18 Q. NMOGA WITNESS NICHOLSON TESTIFIES THAT THE ONE YEAR PERIOD FROM
19 THE BASELINE YEAR UNTIL THE YEAR REDUCTIONS ARE REQUIRED MAY NOT BE

³⁹ Price at 11

⁴⁰ NEE Exh R11

⁴¹ Smith at 9,15

1 LONG ENOUGH TO DESIGN, ORDER AND INSTALL CONTROL EQUIPMENT. NMOGA
2 WITNESS PRICE ALSO RAISES THIS ISSUE.⁴² IS THIS CONCERN WARRANTED?

3 A. No, it is not. The default baseline year is 2010. In 2012, the source is permitted to
4 emit its baseline amount. The first 3% reduction is not required until 2013. In addition,
5 the ability to “borrow” forward needed credits provided by section NMAC §20.2.100.11E
6 means that the source may defer its reductions until 2014. In all, this provides over three
7 years from the baseline year for the source to implement its control technology – much
8 more than the one year that Mr. Nicholson claims.

9

10 Q. NMOGA WITNESS GANTNER ARGUES THAT A REQUIREMENT TO REDUCE GHG'S
11 BY 3% MEANS THAT COMPRESSORS MUST RUN AT 3% LESS HORSEPOWER, WITH A
12 CORRESPONDING 3% REDUCTION IN GAS PRODUCTION.⁴³ DO YOU AGREE WITH HIS
13 ANALYSIS?

14 A. No, I do not. Mr. Gantner assumes that the only way to comply with NEE's
15 proposed rule is to reduce production. There are other options available to reduce
16 emissions, however, including improved motor efficiency and the use of offsets. These
17 options can allow production to increase while greenhouse gas emissions reduce.

18

19

20

21

22

⁴² Price at 14

⁴³ Gantner at 23

1 **Electricity**

2 Q. PNM WITNESSES DARNELL AND BOTHWELL⁴⁴ ARGUE THAT THERE ARE NO
3 OPPORTUNITIES FOR ELECTRICITY GENERATORS TO REDUCE THEIR EMISSIONS. ARE
4 THEY RIGHT?

5 A. No, they are not. In fact, Tri-State witness Chicanowicz describes a number of
6 them, including many that would cost less than \$50 per mton.⁴⁵ For example, there are
7 opportunities to improve the thermal efficiencies of power plants by improving the
8 thermal efficiency of boilers, lowering the parasitic demand of ancillary equipment, and
9 improving the effectiveness of expansion turbines in using process steam. Each of these
10 methods can improve efficiency by 0.5% to 2%. Fuel switching from coal to natural gas is
11 another option. And while Mr. Chicanowicz cautions about price volatility and supply
12 availability, many industry watchers are now viewing substantially increased natural gas
13 supplies as a means to reduce greenhouse gas emissions in at least the short term. A
14 recent MIT report on the Future of Natural Gas supports these observations.⁴⁶

15 In addition to these opportunities are solar or geothermal augmentation to
16 improve the thermal efficiency of coal plants, and developing additional wind energy to
17 displace fossil-fueled resources. Consumer energy efficiency programs can reduce
18 generator output, and New Mexico's Renewable Energy Act requires substantial amounts
19 of renewable energy to be supplied by New Mexico utilities. Many of these efficiency and
20 renewable opportunities are required under New Mexico law, and therefore would not
21 cause additional financial impacts to utilities.

⁴⁴ Darnell at 13, Bothwell at 18

⁴⁵ Chicanowicz at 6

⁴⁶ "The Future of Natural Gas – An Interdisciplinary MIT Study," Massachusetts Institute of Technology, 2010; NEE Exh R14.

1 Longer term options for CO2 emission reductions include enhanced combined
2 heat and power opportunities at power plants, post-combustion CO2 capture and
3 sequestration, perhaps using oxy-combustion, and pre-combustion CO2 capture and
4 sequestration using integrated gasification combined cycle technologies. Of course,
5 replacement of aging fossil-fueled resources with low or zero emission resources is
6 another long-term option that becomes more economic with time.

7

8 Q. TRI-STATE WITNESS SPIERS TESTIFIES THAT BUILDING A NEW NUCLEAR
9 FACILITY IS ONE OF THE FEW WAYS THAT TRI-STATE CAN COMPLY WITH THIS
10 REGULATION, WHICH HE CLAIMS WILL REQUIRE THAT TRI-STATE REDUCE OUTPUT AT
11 ITS GENERATING PLANTS 3% EACH YEAR. IS THAT REASONABLE?

12 A. Mr. Spiers' scenario assumes that the only way to reduce emissions is for Tri-State
13 to shut down its fossil-fueled generation and replace it with nuclear. In fact there are
14 many much more cost effective opportunities on Tri-State's system to reduce its
15 emissions. For example, Tri-State can deploy a robust energy efficiency program to
16 reduce consumption and thereby emissions. Tri-State is already planning a 30 MW solar
17 facility in Cimarron New Mexico to be on-line by 2011. This facility will provide
18 substantial credits which Tri-State can use for compliance. In addition, Tri-State is
19 examining thermal efficiency opportunities at its Escalante Plant, as well as solar
20 augmentation – which involves deploying solar thermal generation at a coal plant to
21 assist in the production of steam and increase the plant's efficiency. These and other

1 greenhouse gas reduction strategies, long and short term, are detailed in Tri-State's June
2 2009 Greenhouse Gas Management Roadmap.⁴⁷

3

4 Q. MR. SPIERS ALSO TESTIFIES THAT TRI-STATE IS NOT AWARE OF ANY NATURAL
5 GAS GENERATION TECHNOLOGY THAT CAN MEET THE BASELINE REQUIREMENTS OF
6 THE PROPOSED RULE OVER TIME.⁴⁸ IS THAT CORRECT?

7 A. No, it is an incomplete and misleading conclusion. It is correct that as emission
8 reduction requirements build, natural gas plants operating without enhancements and
9 with today's technology would eventually be non-compliant. However, that is far from the
10 whole story. A combined cycle gas plant today will emit about 0.4 mtons/MWh, well
11 below the generation baseline in these rules for 2012. In addition, gas plants are able to
12 ramp up and down to accommodate intermittent, zero-emission, renewable energy such
13 as wind and solar – which can greatly diminish the emission profile of the combined
14 generation. Moreover, improved efficiency technologies for gas plants are likely to play a
15 role in the future. So, when one considers all of the opportunities available to companies
16 like Tri-State, its condemnation of the regulation because a gas plant will not meet an
17 80% emission reduction target in 2050 is simplistic and erroneous.

18

19 Q. HAS THE FARMINGTON ELECTRIC UTILITY SYSTEM (FEUS) EXHAUSTED ITS
20 OPPORTUNITIES TO REDUCE EMISSIONS AT ITS POWER PLANTS, AS
21 FARMINGTON/FEUS WITNESS SIMS CLAIMS?

⁴⁷ NEE Exhibit R15

⁴⁸ Spiers at 4

1 A. No. While FEUS does produce 17% of its energy from “renewable resources,”
2 those resources are in fact all hydro-power.⁴⁹ Farmington has no solar power on its
3 system, despite being located in one of the most solar rich areas of the country.
4 Displacing its fossil fueled generation with solar energy presents a quick opportunity for
5 reducing the utility’s greenhouse gas emissions.

6

7 Q. BUT MR. SIMS SAYS THAT THE PRICE OF SOLAR IS PROHIBITIVE - \$6500 PER
8 MEGAWATT – PLUS THE COST OF BACKUP GENERATION. IS HE WRONG?

9 A. Yes, he is wrong. First of all, I believe Mr. Sims intended to reference a solar price
10 of \$6500 per kilowatt, rather than per megawatt. He testifies that this is a conservative
11 price. That is not the case. PNM has recently contracted for utility-scale solar PV at about
12 \$4500 per kilowatt, and that is before any federal or state tax credits are considered.
13 Those tax credits can be significant, with the New Mexico Investment Tax Credit
14 providing a 6% credit, the Federal Investment Tax Credit providing a 30% credit, and the
15 New Mexico Production Tax Credit providing a credit of 1.5cents - 4.0 cents per KWh.⁵⁰

16 Moreover, Mr. Sims’ claim that FEUS would have to incur the costs of investing in
17 backup generation is also misleading. FEUS already has substantial gas-fired generation,
18 which is well-suited to providing the kind of back-up required by solar generation.

19

20 Q. PNM WITNESS DARNELL⁵¹ TESTIFIES THAT RENEWABLES WILL REMAIN
21 UNDER-DEVELOPED BECAUSE THEIR INTERMITTANCY IMPACTS RELIABILITY, AND

⁴⁹ The NM Renewable Energy Act does not consider hydropower brought on line prior to 2007 to be “renewable.”

⁵⁰ NMPRC case 10-00037-UT, PNM Witness Nix direct testimony at 18.

⁵¹ Darnell at 17

1 BECAUSE ENERGY STORAGE TECHNOLOGIES ARE NEITHER UTILITY SCALE NOR COST
2 EFFECTIVE. IS HE CORRECT?

3 A. No, he is not. PNM currently has 204 MW of wind energy, and almost no solar
4 power – although the Company currently has an application before the NMPRC to build
5 substantial solar into its system. Solar energy compliments PNM’s wind profile well and
6 can be added without jeopardizing system reliability. Moreover, although PNM has not
7 explored the technology, there currently exist several opportunities for energy storage
8 including compressed air energy storage (CAES), pumped hydro-electric storage,
9 batteries and flywheels. Pumped storage and CAES are now commercially available –
10 proven in grid applications, financeable, with supplier warranties and life cycle support.⁵²

11

12 **H. ENVIRONMENTAL IMPACT**

13 Q. NMOGA WITNESSES GANTNER AND KNOWLTON ARGUE THAT REPLACING GAS
14 DRIVEN MOTORS WITH ELECTRIC MOTORS IN COMPRESSORS AND PROCESSING/
15 TREATMENT PLANTS WILL INCREASE GREENHOUSE GAS EMISSIONS AND SHIFT THE
16 COMPLIANCE OBLIGATION TO THE ELECTRICITY SECTOR.⁵³ DO YOU AGREE?

17 A. I do not agree. To support their claim, Mr. Gantner and Ms. Knowlton assume that
18 the replacement electricity will be completely coal-fired. In fact, most utilities have a
19 blend of generation sources serving their customers, and the specific resource that is
20 being used to serve a particular load at a particular time is difficult if not impossible to
21 determine. Electric utilities in New Mexico have gas, coal, nuclear and renewables to

⁵² Energybiz, Vol 7 Issue 4, July/Aug 2010 – Makansi – “Storage Killer Apps. Makansi is executive director of the Coalition to Advance Renewable Energy through Bulk Storage. NEE Exh R16.

⁵³ Gantner at 15; Knowlton at 7-8

1 serve their customers. Moreover, utilities have options to reduce their greenhouse gas
2 profile by deploying renewable energy resources. There is an abundance of solar and
3 wind power potential to complement conventional resources in the San Juan and
4 Permian Basins. Because electric utilities are likewise covered by the proposed rule, their
5 GHG emissions must be reduced as well. So, it is incorrect to conclude that installing
6 electric motors will increase New Mexico's GHG emissions. It is worth noting that Mr.
7 Gantner recognizes that waste heat utilization in electric motors provides a promising
8 efficiency measure to reduce GHG emissions.⁵⁴

9

10 Q. NMOGA WITNESS SMITH ALSO ARGUES THAT CONVERTING COMPRESSORS TO
11 ELECTRICITY WILL RESULT IN HIGHER GREENHOUSE GAS EMISSIONS.⁵⁵ IS THAT TRUE?

12 A. Mr. Smith provides no analysis whatsoever for his claim that electric motors –
13 even if using natural gas as an electric generation fuel source – will emit greater
14 greenhouse gases. He simply asserts this is the case because of “line losses.” Such a
15 simplistic approach has little value. Not only are the relative efficiencies of the gas plant
16 versus the gas compressor relevant but, as I just said, the fuel source for electricity is also
17 very important.

18

19 Q. NMOGA WITNESS PRICE, FARMINGTON/FEUS WITNESS CRAWFORD/
20 LILLYWHITE, EL PASO ELECTRIC WITNESS PATTON AND SPS WITNESS IHLE⁵⁶ ALL

⁵⁴ Gantner at 15

⁵⁵ Smith at 11

⁵⁶ Crawford/Lillywhite at 9, Patton at 5, Ihle at 5

1 QUESTION WHETHER THE REGULATIONS INTEND TO REDUCE GHG EMISSIONS FROM
2 COVERED SOURCES TO ZERO. IS THAT THE INTENT OF THIS RULE?

3 A. No, it is not the intent of the regulations to reduce emissions from sources to zero.
4 Claiming that the regulations would do so is based on a misreading of the provisions
5 which establish a reduction goal based upon an evolving science, and call for the
6 reduction requirements to be periodically adjusted.

7 As the Preamble⁵⁷ to the proposed regulation indicates, the goal is to reduce
8 greenhouse gases emissions in New Mexico to a level consistent with what the most
9 current scientific knowledge and understanding instructs to avoid serious climate change
10 impacts. Currently, that level is 80 percent below 1990 levels by 2050. ⁵⁸The proposed
11 regulations are to be revisited in 2014 for the very reason the Mr. Price suggests, to
12 assure that the regulations proceed on a trajectory that achieves this scientific goal.
13

14 Q. TRI-STATE WITNESS WEHRUM TESTIFIES THAT “CONGRESS IS ALMOST
15 CERTAIN TO ACT ON GHG EMISSIONS CONTROLS, WHETHER THIS YEAR OR IN THE
16 NEAR FUTURE.” DO YOU AGREE?

17 A. Most observers of the federal debate believe it is very unlikely that Congress will
18 act this year, or even before the 2012 election cycle. On July 22, 2010 Senate Majority
19 Leader Reid announced that he would not bring a climate bill to the Senate Floor, saying
20 that he did not have the 60 votes needed, and did not have one Republican vote. Mr.
21 Wehrum’s optimistic outlook is not shared by any political analysis that I am aware of.
22

⁵⁷ NMAC §20.2.100.8

⁵⁸ Intergovernmental Panel on Climate Change (IPCC), 4th Assessment

1 Q. MR. WEHRUM ALSO ARGUES THAT NEW MEXICO'S ADOPTION OF THE
2 PROPOSED RULE IS UNECESSARY, COUNTERPRODUCTIVE AND INEFFECTIVE.
3 FARMINGTON/FEUS WITNESS KAPPELMANN ARGUES THAT A STATE-ONLY APPROACH
4 WILL DO LITTLE TO MITIGATE CLIMATE CHANGE.⁵⁹ DO YOU AGREE WITH THESE
5 WITNESSES?

6 A. I do not. Mr. Wehrum argues that New Mexico's regulation would overlap with
7 federal regulation, and that the emission reductions in New Mexico would not impact
8 global warming or climate change. In other words, New Mexico should do nothing.

9 NEE has never suggested that New Mexico emission reductions, by themselves,
10 would prevent the serious impacts of climate change.⁶⁰ Mr. Wehrum's logic would have
11 no jurisdiction with less coverage than the entire planet address climate change because
12 the problem can only be solved globally. Waiting to act until everyone in the world
13 agrees exactly how to move forward is a recipe for disaster. In addition, while Mr.
14 Wehrum decries regulatory overlap, such overlap is common – for example when
15 pollutants such as nitrogen oxide (NOx) cause both health and visibility impacts, and are
16 regulated to reduce both impacts.

17 New Mexico's proposed regulation can shape the policy debate, demonstrate that
18 States can move forward without waiting for federal action, and help trigger federal
19 action. The United States has a long history of States impacting, shaping and driving
20 federal action. The "Clean Cars" standards initiated in California, adopted by the New
21 Mexico EIB in 2007, and now a national standard, is but one example. Another is the

⁵⁹ Kappelmann at 10

⁶⁰ There can, nevertheless, be ancillary health benefits such as reduced emissions of local pollutants like NOx, SOx, mercury and particulates.

1 appliance efficiency standards adopted in California and Michigan that led the way to
2 federal standards in 1978. Other advantages of New Mexico going forward are that it can
3 get a head start working through how emission reductions are to be accomplished, and
4 can meet its proportionate responsibility to reduce greenhouse gases in the atmosphere.
5 At the same time, as will be discussed later, there is a reasonable likelihood that New
6 Mexico reductions will be provided early action credit under a future federal program.

7 Even Farmington/FEUS witness Crawford/Lillywhite acknowledges that “If
8 adopted there is little question that the NEE proposal will meet its stated goal of
9 demonstrating New Mexico’s resolve to react to global climate change.”⁶¹

10

11 Q. SEVERAL UTILITY INDUSTRY WITNESSES ARGUE THAT “LEAKAGE” WILL
12 FURTHER UNDERMINE ANY GREENHOUSE GAS REDUCTIONS THAT THE REGULATION
13 MIGHT OTHERWISE ACHIEVE.⁶² ARE THEY CORRECT?

14 A. No, they are not. Leakage is one of the most vexing issues in any emission
15 reduction program that does not include an entire market place. It is also one of the most
16 common excuses that opponents of action use to defeat any effort to regulate greenhouse
17 gases.

18 “Leakage” refers to the situation where, in order to avoid compliance, a source
19 manages its operations in a way that shifts emissions to a non-regulated jurisdiction. If a
20 state proposes to move forward with climate regulation, opponents argue that
21 production will be shifted to neighboring states. When a region like the Western Climate
22 Initiative (WCI) seeks to move forward, opponents argue that emissions will be

⁶¹ Crawford/Lillywhite at 10

⁶² Kappelmann at 15, Crawford/Lillywhite at 7, Darnell at 13, Bothwell at 16, Patton at 6, 8

1 transferred to non-participant states or regions. And when federal proposals are
2 advanced, opponents argue that without India and China participating, our emissions will
3 simply be transferred into those markets. Holly's witness Lamp claims that "only action
4 taken at the international level can have a real impact."⁶³

5 As a practical matter, it is impossible to completely prevent leakage, and many of
6 the efforts to do so involve complicated regulatory regimes that, at the end of the day,
7 probably do little. Also worth noting, however, is that opportunities to transfer emissions
8 out of New Mexico are probably very limited. The two sectors that the proposed rule
9 would regulate are linked to New Mexico either by location of the resource (oil & gas) or
10 location of the customer (electric utilities). This is different than other products that can
11 be produced and sold anywhere, and which therefore present more opportunities for
12 leakage.

13 While conceptually one might think it is easy to comply with utility sector
14 reduction requirements by simply ramping down in-state generators and buying dirty
15 power out-of-state, that is not an easy undertaking. Transmission access, fuel prices,
16 availability of power, line losses, reliability concerns and timing all play a role in whether
17 the shuffling of power can in fact occur. Ramping coal plants up and down to
18 accommodate economy (hourly) energy transaction opportunities is rarely economic.
19 Moreover, given the very moderate cost of the proposed rule, it will make little economic
20 sense to shift power out-of-state solely to avoid the cost of this regulation. And many of
21 the studies of leakage potential conclude that it is indeed negligible.⁶⁴ Finally, the 2014

⁶³ Lamp at 5

⁶⁴ Peretz, Neil – "Carbon Leakage Under the European Union Emissions Trading Scheme: Is It a Major Policy Concern?" 23 Tulane Law Journal 57, Winter 2009.

1 re-assessment called for in the proposed rule will provide an opportunity for New Mexico
2 to evaluate whether leakage really is a concern that needs to be addressed.

3

4 Q. PNM WITNESS BOTHWELL SAYS THAT NEE'S PROPOSAL WILL REDUCE PNM'S
5 DEVELOPMENT OF RENEWABLE ENERGY AND ENERGY EFFICIENCY BECAUSE THOSE
6 RESOURCES WILL BECOME LESS COST EFFECTIVE.⁶⁵ IS SHE CORRECT?

7 A. No, she is wrong. In most of PNM's planning and resource development decisions,
8 the Company assumes a CO2 cost of \$20 per mton in 2010, escalating at 2.5% per year.
9 PNM does this as a result of a New Mexico Public Regulation Commission (NMPRC)
10 determination that this level of cost associated with future federal CO2 regulation is a
11 reasonable baseline for the utility to consider. Ms. Bothwell's conclusion that renewables
12 and efficiency become less cost-effective if the NEE proposal is adopted is based upon the
13 backwards assumption that NEE's rule will be implemented instead of federal regulation,
14 rather than before federal regulation. In other words, to reach her conclusion that
15 renewables and efficiency become less cost effective with NEE's rule, Ms. Bothwell must
16 assume that NEE's rule will delay or stop federal legislation, rather than advance it –
17 something no other witness has suggested.

18 In fact, what will happen in PNM's resource procurement plans, if anything, is that
19 renewable energy and energy efficiency will become more cost effective – because PNM's
20 planning will have to consider that high emitting resources will be somewhat more
21 expensive until there is federal legislation. So, the proposed rule will – as logic suggests –

⁶⁵ Bothwell at pp.7-9

1 result in greater utilization of renewable energy and energy efficiency. Not less, as Ms.
2 Bothwell claims.

3

4 Q. MS. BOTHWELL ALSO ARGUES THAT THE PROPOSED RULE WILL REQUIRE PNM
5 TO RE-DISPATCH FROM ITS MOST EFFICIENT GENERATION TO LESS EFFICIENT
6 GENERATION, WHICH WILL ADD COSTS AND EMISSIONS. IS THAT LIKELY TO BE THE
7 CASE?

8 A. It is not. PNM's largest emitting resource, San Juan Generating Station, is baseload
9 generation that typically operates whenever available, meaning when it is not out-of-
10 service for a forced or scheduled outage.⁶⁶ What this means is that if PNM re-dispatches
11 to other generators from SJGS, those other generators will either be Four Corners (which
12 PNM does not operate and is often fully utilized anyway), or some of PNM's gas-fired
13 generation, with substantially less emissions than SJGS. So, while this may be more costly
14 – subject to the maximum expenditure – it will not result in greater emissions, as Ms.
15 Bothwell claims.

16

17 Q. MS. BOTHWELL ASSERTS THAT PNM COULD SPEND \$8 MILLION PER YEAR
18 PURSUANT TO THE EXPENDITURE CAP, AND THAT THIS WOULD PROVIDE VERY
19 LITTLE OPPORTUNITY FOR PNM TO REDUCE ITS EMISSIONS. IS SHE RIGHT?

20 A. No, she is not. Ms. Bothwell assumes that the full \$8 million would be used to build
21 a 1.7 MW solar facility, which would reduce PNM emissions only 1,502 mtons per year.
22 There are, however, many much more economic ways for PNM to reduce its emissions.

⁶⁶ PNM has historically also ramped these units down when renewable resources are on its system and no other resources are operating.

1 For example, PNM can enter into Purchased Power Agreements (PPAs) for renewable
2 energy, which on a year-to-year basis can be much cheaper than a self-build option. For
3 example, utility-scale solar PPA's are currently selling for 12.8 cents per KWh,⁶⁷ and
4 wind is selling in the 5 to 7 cents per KWh range. If PNM were to enter into these types of
5 arrangements, the impact to its emissions would be much greater than Ms. Bothwell
6 portrays. Of course, as Ms. Bothwell mentions, fuel switching to natural gas provides a
7 very economic way to reduce emissions as well.

8

9 **I. ECONOMIC IMPACT**

10 **Oil & Gas**

11 Q. MANY OF THE INDUSTRY WITNESSES⁶⁸ ARGUE THAT ADOPTION OF NEE'S
12 PROPOSED RULE WILL LEAD TO WELLS BEING SHUT IN AND OIL AND GAS
13 PRODUCTION AND OPERATIONS LEAVING THE STATE. HOW DO YOU RESPOND?

14 A. This is a common claim whenever new regulations are proposed for the oil & gas
15 sector. In both Colorado and New Mexico, pit rules have been adopted within the last few
16 years to protect groundwater. During the rules' development, industry vigorously
17 opposed their adoption and threatened that the rules would drive production and
18 operation out of the regulated states. In both states, however, production and rig counts
19 remained strong despite enactment of the new rules. In New Mexico, rig counts were up
20 from 31 in May of 2009 to 63 in May of 2010, and the number of oil and gas producing
21 wells remained constant. Similarly, in Colorado, the number of drilling permits rose 30

⁶⁷ EPE has recently entered into a solar PPA at this price

⁶⁸ Gantner, at 24, Knowlton at 15, Price at 17, Lamp at 2, Scott at 8, Grantham-Richards at 6

1 percent in 2010 over 2009, and the number of wells actually started through June 15
2 exceeded that of any other Rocky Mountain state.⁶⁹

3 To say that adoption of NEE's proposed rule will, in and of itself, cause industry to
4 flee the State is simplistic and wrong. The decision to locate or operate facilities in a
5 particular geographic region is a very complex decision that depends on many factors
6 including:

- 7 1) resource availability
- 8 2) commodity prices
- 9 3) existing and anticipated regulations
- 10 4) ability to obtain regulatory approvals
- 11 5) labor costs and availability
- 12 6) land availability and cost
- 13 7) fuel source cost and availability
- 14 8) electricity costs
- 15 9) transportation costs
- 16 10) water availability
- 17 11) taxes and tax incentives
- 18 12) existing infrastructure
- 19 13) quality of life.
- 20 14) regulatory environment and licensing requirements.

21 In addition, most businesses expect greenhouse gas regulation of some sort to be
22 implemented nationally in the future. Thus, their planning decisions will reflect the

⁶⁹ NEE Exh R17

1 expected cost of that future regulation on their facilities wherever they may be located.
2 New Mexico's advanced implementation will have a very small financial impact on those
3 decisions.

4 The fact of the matter is that the price of oil and gas in commodity markets drives
5 the levels of production and activity in any location much more than the minimal
6 economic impacts of NEE's proposed regulations. As I indicated in my direct testimony,
7 these regulations will have a very small impact on the costs of these commodities and
8 related goods. On the other hand, oil and gas prices typically fluctuate by 100 percent or
9 more, sometimes within months.

10

11 Q. FARMINGTON WITNESS GRANTHAM-RICHARDS IN PARTICULAR TESTIFIES
12 THAT THE PROPOSED REGULATIONS MAY CAUSE LARGE INDUSTRIAL O&G
13 CUSTOMERS SUBJECT TO THE REGULATIONS TO SHIFT THEIR OPERATIONS TO
14 COLORADO OR TEXAS. IS THIS A REAL THREAT?

15 A. It is not. Ms. Grantham-Richards provides no analysis to demonstrate the
16 economics of operation shifting decisions, and caveats her testimony by saying that this
17 may occur if "reduction technology is not available or too expensive or offsets are not
18 available."⁷⁰ Under the proposed regulations there is a cap on the economic exposure
19 these companies will face. Moreover, as revised, the narrower coverage of this rule will
20 free millions of mtons of additional offsets from oil & gas operations for compliance.

21

⁷⁰ Grantham-Richards at 6

1 Q. MS. GRANTHUM-RICHARDS ALSO TESTIFIES THAT THE OIL & GAS INDUSTRY
2 MAY “IMPLODE”⁷¹ IF THE PROPOSED RULE IS ADOPTED, AND GENERALLY PORTRAYS A
3 DOOMSDAY “DEATH SPIRAL” SCENARIO AS A RESULT OF THE PROPOSED
4 REGULATIONS. IS THERE VALIDITY TO THAT?

5 A. There is no validity to those claims. They are accompanied by no analysis and boil
6 down to fear-mongering. In fact, greenhouse gas regulation will likely be a boom for the
7 natural gas industry. Rather than creating Ms. Grantham-Richards’ “death spiral,” these
8 regulations and greenhouse gas regulation in general will likely spur greatly enhanced
9 economic activity in San Juan County. A recent MIT study portrays natural gas as the
10 near-term panacea for reducing greenhouse gases in our atmosphere – particularly as a
11 fuel source for electric generation.⁷² A July 3-9, 2010 article in *The Economist*, “Oil
12 companies’ dash for gas – Vapour trails” agrees with this sentiment.⁷³ And this says
13 nothing about the solar potential in that part of the State.

14

15 Q. HOLLY WITNESS LAMP TESTIFIES THAT NEE’S PROPOSED REGULATION
16 “WOULD UNLEASH CATASTROPHIC CHANGE ON NEW MEXICO’S BUSINESS CLIMATE”
17 AND INCREASE THE STATE’S UNEMPLOYMENT RATE.⁷⁴ HOW DO YOU RESPOND?

18 A. Mr. Lamp provides no analysis, explanation or even logic to support his dire
19 claims. He does say that Holly Corp. has invested more than \$700 million in the past
20 several years to improve and expand the Navajo Refinery. That investment will not be
21 abandoned as a result of the minor impact of the proposed regulation.

⁷¹ Granthum-Richards at 8

⁷² NEE Exh R14

⁷³ NEE Exh R18

⁷⁴ Lamp at 7-8

1

2 Q. MR. LAMP ALSO CLAIMS THAT THE PROPOSED REGULATION WOULD COST HIS
3 COMPANY \$1.1 MILLION PER YEAR, AND THAT HOLLY CORPORATION DOESN'T "HAVE
4 A CASH DRAWER WITH AN EXTRA \$1 MILLION JUST SITTING AROUND."⁷⁵ IS HE
5 CORRECT?

6 A. Only if Navajo Refining, Holly's subsidiary, fully exhausted the maximum cost limit
7 of the regulation would the Company's costs increase by \$1.1 million per year. If Navajo
8 Refining has indeed installed the efficiency measures that Mr. Lamp refers to,⁷⁶ those
9 measures could qualify for early action credit under the proposed regulation and reduce
10 the anticipated cost of this regulation substantially.

11 Regardless of early action, however, Holly Corporation's revenues last year
12 approached \$6 billion. Rather than this regulation affecting its profitability, Holly
13 Corporation stated in its May 2010 10Q report that "[o]ur profitability depends largely on
14 the spread between market prices for refined petroleum products and crude oil prices."
15 In that same 10Q report Holly showed that it had \$95 million "just sitting around" in cash
16 and liquid assets.

17

18 **Electricity**

19 Q. WITNESSES FROM TRI-STATE AND THE ELECTRIC UTILITIES HAVE TESTIFIED
20 THAT NEE'S PROPOSED RULE WILL FORCE UTILITIES TO DEVELOP RESOURCES OUT-OF-

⁷⁵ Lamp at 9

⁷⁶ Lamp at 10-11

1 STATE, DEPRIVING NEW MEXICO OF THE ECONOMIC VALUE OF THOSE RESOURCES.⁷⁷

2 SHOULD THIS BE A CONCERN?

3 A. It should not. In fact, the proposed regulation is likely to encourage more
4 development in New Mexico than out.

5

6 Q. HOW IS THAT?

7 A. The proposed regulations have a baseline for new generation. That baseline is set
8 at 0.5 mtons/MWh in 2012, which is higher than an efficient combined cycle gas plant or
9 renewable resource will require. This means that those resources will provide valuable
10 credits to their owners – whereas out-of-state resources would not. Because in the longer
11 term the New Mexico regulation will sunset, the short-term benefit will not be offset with
12 a long-term New Mexico liability, and the economics may indeed point to a New Mexico
13 location being less expensive.

14

15 Q. EL PASO ELECTRIC WITNESS PATTON ARGUES THAT THE PROPOSED
16 REGULATION WOULD “LIKELY” CAUSE EPE TO LOCATE TWO GAS GENERATORS IN
17 TEXAS RATHER THAN NEW MEXICO.⁷⁸ WILL NEE’S REGULATION, IF ADOPTED, BE THE
18 ONLY CONSIDERATION IN LOCATING NEW ELECTRIC GENERATING FACILITIES?

19 A. Of course not. Choosing a site for new generation is a very complex analysis with
20 many, many variables and considerations. Among the things to evaluate and consider in
21 the location, and operation, of any new electric generation resource are:

22 1) existing and anticipated regulations

⁷⁷ Bothwell at 13, Patton at 9, Ihle at 6

⁷⁸ Patton at 9

- 1 2) ability to obtain regulatory approvals
- 2 3) labor costs and availability
- 3 4) land availability and cost
- 4 5) fuel source cost and availability
- 5 6) transmission constraints, availability and cost
- 6 7) water availability
- 7 8) reliability and need for system voltage support
- 8 9) transmission line losses
- 9 10) tax incentives
- 10 11) existing infrastructure
- 11 12) quality of life.
- 12 13) regulatory environment and licensing requirements.

13 Electric generation development and approval in New Mexico is governed by an
14 integrated resource planning process that examines all of these considerations.

15 Ultimately, any facility that a utility constructs to serve New Mexico customers would
16 need approval by the New Mexico Public Regulation Commission. My opinion is that
17 adoption of NEE's proposed rule will make very little difference in siting decisions and, if
18 it does make a difference, is more likely to drive development into New Mexico than out.

19

20 Q. TRI-STATE WITNESS SPIERS TESTIFIES THAT THE COST OF THIS REGULATION
21 COULD BE AS MUCH AS \$4 BILLION, AND COULD INCREASE COOPERATIVE RATES IN

1 NEW MEXICO BY 40 PERCENT IF THE ENTIRE COST IS BORNE BY THE NEW MEXICO
2 COOPERATIVES.⁷⁹ HOW DO YOU RESPOND?

3 A. Mr. Spiers' analysis is flawed and misleading. First of all, Mr. Spiers assumes that
4 the offset provisions are not available and that there is no maximum economic cost cap.
5 While that may be a regulation he would like to critique, that is not NEE's proposal. In
6 other words, Mr. Spiers has assumed modifications to NEE's proposal that have no basis
7 in fact, and that would make the proposal particularly onerous. He then critiques his own
8 straw-man invention. He may as well have assumed the regulation required 100%
9 emission reductions in the first year.

10

11 Q. WHAT WILL BE THE IMPACT TO TRI-STATE'S MEMBER CONSUMERS IF THIS
12 PROPOSED REGULATION IS ADOPTED?

13 A. Based upon Tri-State's own numbers, the impact will be about a 0.33 percent
14 increase to Tri-State's member consumer electric bills in the first year, growing by that
15 same fraction of a percent in each subsequent year.

16

17 Q. HOW DID YOU DETERMINE THAT?

18 A. Mr. Spiers testifies that Tri-State's system has 1.4 million member consumers that
19 share in Tri-State's costs equally. He also testified that Tri-State's emission footprint in
20 New Mexico was just over 2 million tons CO₂e in 2007.⁸⁰ Emissions of 2 million tons
21 means that Tri-State will be required to reduce its emissions 60,000 additional tons each
22 year. In the most costly scenario, with the \$50/mton expenditure cap being fully

⁷⁹ Spiers at 4

⁸⁰ Spiers at 3

1 exhausted, Tri-State will spend an additional \$3 million the first year, growing by \$3
2 million each year thereafter. This is about \$2 per consumer. If the average consumer
3 spends \$600 per year on electricity, then the impact is 0.33 percent per year.

4
5 Q. EVEN IF TRI-STATE WERE TO REDUCE OUTPUT AT ITS ESCALANTE
6 GENERATING STATION BY 3% PER YEAR, AS MR. SPIERS SUGGESTS, WILL THAT
7 NEGATIVELY IMPACT NEW MEXICO'S ECONOMY, AS MR. SPIERS ARGUES?

8 A. It is impossible to say. Reduced output at Escalante, other things being equal,
9 would be made up by increased output at another facility. That other facility could be a
10 new renewable resource or gas plant, either of which would drive economic activity that
11 would replace and perhaps exceed the activity associated with the Escalante plant – while
12 at the same time providing greater environmental benefits to the State.

13
14 Q. FARMINGTON/FEUS WITNESSES SIMS AND KAPPELMANN⁸¹ ARGUE THAT
15 BECAUSE FARMINGTON'S AVERAGE ELECTRIC RATES ARE LESS THAN \$100 PER MWH,
16 THE 1% PER YEAR AVERAGE IMPACT DESCRIBED IN YOUR DIRECT TESTIMONY IS
17 ACTUALLY MUCH HIGHER FOR FEUS CUSTOMERS. IS THEIR ANALYSIS SOUND?

18 A. No, because Mr. Sims selectively changes only those assumptions that work in his
19 favor. While he may have correctly identified that for FEUS the average rate is \$67 per
20 MWh rather than \$100 per MWh, he neglected to also correct the average emissions on
21 the Farmington system from 0.6 mtons per MWh to the correct level of 0.48 mtons per

⁸¹ Sims at 12; Kappelmann at 14

1 MWh⁸². When one corrects the emission rate on the FEUS system as well, the average
2 rate impact on the Farmington system is 1.07%, not the 1.34% per year level that Mr.
3 Sims claims. This correct number is very close to the example numbers I provided in my
4 direct testimony, which were not intended to exactly reflect the impact to each utility in
5 the State.

6

7 Q. DO ALL OF THE INDUSTRY WITNESSES AGREE THAT THE PROPOSED RULE WILL
8 ECONOMICALLY DESTROY NEW MEXICO?

9 A. No. Farmington/FEUS witness Kappelmann testifies that under NEE's proposed
10 rule "the source is only responsible for the emission reductions and not their total
11 emissions. The source is then able to place financial resources directly at the required
12 emission reduction of 3% per year. This feature could result in a relatively modest initial
13 cost impacts [sic] for effected sources for the first few years of the program provided
14 there is no load growth from 2010 to 2012." ⁸³

15

16 Q. PNM WITNESS BOTHWELL ARGUES THAT THE PROPOSED NEE RULE WILL
17 CONFLICT WITH PNM'S INTEGRATED RESOURCE PLANNING (IRP) PROCESS, AND
18 FORCE UNECONOMIC RESOURCE DECISIONS.⁸⁴ IS SHE CORRECT?

19 A. No, Ms. Bothwell construes the IRP planning process completely backwards.
20 PNM's IRP is designed to examine the anticipated costs and risks of all PNM's resource

⁸² The FEUS system is comprised of 17% hydro energy with zero emissions, 58% gas CCCTs with 0.4mtons/MWh CO2 emissions, and 25% coal energy with 1.0 mtons/MWh CO2 emissions, for a weighted average emission rate of 0.48 mtons/MWh.

⁸³ Kappelmann at 12

⁸⁴ Bothwell at 7

1 choices and develop the most cost-effective portfolio and plan, considering risk and
2 uncertainty, for PNM to follow. The IRP process assesses existing and anticipated laws
3 and regulations and develops a strategy for the Company to follow to minimize its costs
4 and risks. As material events unfold, PNM’s IRP process requires the Company to adjust
5 and notify the NMPRC of how its plan has changed.⁸⁵ Rather than conflicting with the IRP
6 process, the NEE proposal adds certainty as to how the State will regulate PNM’s
7 greenhouse gas emissions. Ms. Bothwell’s reversed thinking argues that future laws and
8 regulations must conform to what PNM has assumed in its IRP, rather than having PNM’s
9 IRP conform to the laws and regulations as they evolve.

10

11 Q. MS. BOTHWELL ALSO TESTIFIES THAT PNM WILL BE UNABLE TO ACHIEVE THE
12 REDUCTIONS REQUIRED WITHIN THE EXPENDITURE CAP, AND THAT IF THE CAP
13 WERE REMOVED, THE PROPOSED RULE WOULD COST PNM \$463 MILLION (2010
14 NPV).⁸⁶ DO YOU HAVE CONCERNS WITH THIS CLAIM?

15 A. I do. It is a completely unverified number based upon some mysterious cost study
16 that PNM did not provide. PNM does not indicate what its load growth assumptions
17 were, what its gas price assumptions were, or even what discount rate it used – much less
18 anything else. PNM will be procuring substantial energy efficiency and renewable
19 resources pursuant to New Mexico law⁸⁷ over the next decade. Those resources, which
20 PNM must obtain regardless of the proposed regulation, will substantially lower the

⁸⁵ §17.7.3.10 NMAC – “Obligation to Notify of Material Changes and Update Action Plan”

⁸⁶ Bothwell at 14

⁸⁷ Renewable Energy Act §62-16-1 et seq. NMSA; Efficient Use of Energy Act §62-17-1 et seq. NMSA

1 incremental cost to PNM for compliance with the proposed rule.⁸⁸ It is not clear what
2 level of renewables and efficiency PNM assumed, nor what impact PNM assigned those
3 resources in reducing PNM's CO2 emissions and cost projections. Nor is it clear whether
4 PNM assumed any offset opportunities or early action credits. In all, without more
5 information, PNM's projection is next to worthless.

6

7 Q. MS. BOTHWELL AND SPS WITNESS IHLE ALSO CLAIM THAT WITH THE
8 PROPOSED RULE UTILITIES WOULD BE PENALIZED FOR ENCOURAGING ELECTRIC
9 VEHICLES OR OTHER TECHNOLOGIES THAT COULD REDUCE EMISSIONS.⁸⁹ IS THIS A
10 FAIR CRITICISM?

11 A. No. This regulation would put a price on CO2 emissions. That price signal will
12 encourage technologies that reduce emissions. The auto industry is already under
13 regulations (Clean Cars) that will control its greenhouse gas emissions. It is appropriate
14 therefore to also price emissions in the electricity sector, so that there is an appropriate
15 carbon price signal for new car development.

16

17 Q. GCC WITNESS ROARK SPECULATES THAT IF THE PROPOSED RULE IS EXTENDED
18 TO THE GCC CEMENT FACILITY IN TIJERAS, THAT FACILITY COULD NOT MEET THE
19 REDUCTION TARGETS. IS THIS SPECULATION AN IMPORTANT FACTOR FOR THE BOARD
20 TO CONSIDER?

⁸⁸ EPE witness Patton testifies that RPS requirements reduce GHG emissions, at 10

⁸⁹ Bothwell at 21, Ihle at 9

1 A. I do not believe that it is. Not only is the industrial cement sector not subject to the
2 proposed regulation, but the cement plant in Tijeras is not subject to NMED jurisdiction.
3 The EIB does not have authority to regulate GCC's greenhouse gas emissions.

4

5 **J. MAXIMUM EXPENDITURE**

6 Q. SEVERAL INDUSTRY WITNESSES⁹⁰ HAVE TESTIFIED THAT THE MAXIMUM
7 ECONOMIC THRESHOLD IN THE PROPOSED RULE IS NOT USEABLE AND OF NO VALUE.
8 HOW DO YOU RESPOND?

9 A. It appears that in order to contest NEE's rule, these witnesses must assume away
10 important features of the rule that provide for compliance flexibility – such as offsets,
11 early action and economic limits. These witnesses, NMOGA's Smith for example,⁹¹ argue
12 that because there are no available reduction opportunities or offsets, sources cannot
13 reduce in any way other than to reduce their output in the State. They then claim that this
14 will economically destroy New Mexico. It is unfortunate that these types of arguments are
15 being made. As other parts of this testimony have described, downsizing or moving
16 production out of New Mexico is a complex decision that is unlikely to turn on the impact
17 of these regulations.

18 The Revised Rule provides for substantial reduction and offset opportunities, and
19 the economic cap provides a limit to the financial impact of these regulations on sources.
20 The Maximum Expenditure provision is specifically designed for instances where the
21 reduction costs may be more than \$50 per mton. NMED will not interpret this limitation
22 in a manner that makes it meaningless or inconsequential. Moreover, even if the industry

⁹⁰ Smith at 16, Spiers at 3, etc.

⁹¹ Smith at 16

1 witnesses were correct, the variance provisions of the Rule and New Mexico law allow for
2 non-compliance if there are genuinely insufficient reduction opportunities for a source.

3

4 Q. NMOGA WITNESS PRICE HAS SAID THAT IT IS UNCLEAR HOW THE MAXIMUM
5 ECONOMIC CAP WOULD WORK.⁹² DO YOU AGREE?

6 A. The maximum economic cap is designed to assure that sources pay no more than
7 \$50 for each metric ton they are required to reduce (3% of their baseline per year), and
8 that if their cost is more than \$50, then their compliance obligation may be reduced. Mr.
9 Price raises the issue of “good faith” design work that ultimately results in zero
10 reductions, and whether that would qualify as an expenditure toward the cap. The rule is
11 clear that if the expenditure was in good faith, and intended to reasonably and effectively
12 reduce CO2 emissions, then it would qualify.

13 Mr. Price also raises the issue of spending more than the economic limit in one
14 year, and whether those dollars carry forward to future years. They do not. The economic
15 cap is a limit on expenditures for CO2 compliance in any year over the level of
16 expenditures in the prior year.

17 Finally, Mr. Price queries how the costs of large or multi-year projects would be
18 accounted for with respect to the economic limit – worrying that if they are all charged to
19 a single year there will be no incentive for more costly projects. The period during which
20 a cost will be considered incurred depends in large part on how the Company accounts
21 for those expenditures. If the Company expenses all costs of a large project in a single
22 year, then it may well exceed the limit. However, for large projects with multiyear

⁹² Price at 14

1 benefits, it is usually more appropriate to capitalize the costs and spread them over the
2 life of the project. In that event, the costs will be spread over the period during which the
3 reductions are achieved, and the \$50 per mton reduction cost limit will match up well
4 with the project costs. If a project results in over-compliance in early years, the rule
5 allows for unlimited banking of credits.

6

7 Q. NMOGA WITNESS KNOWLTON ARGUES THAT AN ECONOMIC CAP ON A SOURCE'S
8 COMPLIANCE OBLIGATION UNDERMINES MARKET MECHANISMS DRIVING LEAST COST
9 REDUCTIONS.⁹³ WHAT IS YOUR RESPONSE?

10 A. Industry representatives have claimed that regulating greenhouse gases will
11 economically harm New Mexico. By establishing a compliance cost cap one can
12 demonstrate mathematically the maximum impact that this regulation will have on the
13 cost of the products subject to the regulation. And one can then show, as I did in my direct
14 testimony, that the impact will be very small. This can help provide comfort to
15 policymakers that the impact of these regulations is bounded. As I also said, though, I do
16 not expect the \$50 per mton cap to be exceeded, given the many estimates for carbon
17 reduction costs that have been circulating in the trade literature. So, I do not expect that
18 the economic cap will need to be invoked – and therefore it will not interfere with market
19 mechanisms or the policy goals of this regulation.

20

21 Q. FARMINGTON/FEUS WITNESS KAPPELMANN CRITIQUES THE MAXIMUM
22 EXPENDITURE LIMIT AS BEING CONTINGENT ON A "VERY SUBJECTIVE" TEST."⁹⁴ SPS

⁹³ Knowlton at 13

1 WITNESS IHLE ALSO RAISES CONCERNS ABOUT SUBJECTIVE STANDARDS FOR CERTAIN
2 PROVISIONS IN THE PROPOSED RULES.⁹⁵ DO YOU AGREE THAT SUBJECTIVE
3 STANDARDS ARE A PROBLEM?

4 A. No, I do not. To qualify for compliance under the maximum expenditure limit, a
5 source must demonstrate that it made a “good faith” effort to “reasonably and effectively”
6 comply with the reduction requirement, and that it spent \$50 times 3% of its baseline
7 emissions for that year’s reduction requirements. Mr. Kappelmann is presumably
8 referring to the “good faith” and “reasonably” standards in this section of the proposed
9 rule for his criticism that the standard is subjective.

10 “Good faith” obligations and “reasonableness” standards are common in law and
11 business, and courts and agencies are used to enforcing both “good faith” and
12 “reasonableness” requirements. There is nothing novel about requiring an applicant to
13 have made a “reasonable” and “good faith” effort toward compliance. Furthermore, these
14 types of standards are common in the existing regulations enforced by the department.

15 Rule 20.2.90.11 relates to penalties for violations to the Air Bureau’s Field Citation
16 rule. This rule assesses different fine levels depending on whether the violator has
17 demonstrated “cooperation in compliance,” certainly a subjective standard. This same
18 rule also states that “[i]n determining the amount of a penalty to be assessed pursuant to
19 this section, the person issuing the field citation shall take into account the seriousness of
20 the violation, any good faith effort to comply with the applicable requirements and other
21 relevant factors.” (emphasis added). Similar use of a good-faith standard is found in

⁹⁴ Kappelmann at 13

⁹⁵ Ihle at 4

1 NMPRC Rule 17.9.573.13, relating to renewable energy requirements for electric utilities,
2 and in the New Mexico Rules of Professional Conduct for attorneys.

3 “Reasonableness” standards are even more common in New Mexico laws and
4 administrative rules. Examples just within New Mexico’s air regulations include NMAC
5 §20.2.7.113, §20.2.18.7, §20.2.70.304, §20.2.72.208, §20.2.79.112, §20.2.79.114 and
6 §20.2.90.111.

7

8 Q. INDUSTRY WITNESSES DIFFER ON THEIR INTERPRETATION OF HOW THE
9 MAXIMUM EXPENDITURE PROVISION WOULD WORK. NMOGA WITNESS PRICE, FOR
10 EXAMPLE, UNDERSTANDS THE LIMIT TO BE A CONSTANT 3% OF THE BASELINE TIMES
11 AN ESCALATING \$50.⁹⁶ FARMINGTON/FEUS WITNESS KAPPELMANN, HOWEVER,
12 TESTIFIES THAT THE LIMIT “TRACKS THE PROPOSED RULE REDUCTION
13 REQUIREMENTS” AND WOULD “INCREASE BY AN ADDITIONAL 3% PER YEAR.”⁹⁷
14 WHICH IS CORRECT?

15 A. Mr. Kappelmann’s understanding is correct. The Maximum Expenditure is an
16 annual increase over the compliance costs for the previous year. To assume, as Mr. Price
17 does, that the limit remains constant but for the inflation adjustment to the \$50, would
18 mean that essentially the same limit would apply in the first year of the regulation, when
19 the required reduction is 3%, as in the 5th year, when the required reduction has grown
20 to 15%.

⁹⁶ Price at 13

⁹⁷ Kappelmann at 16

1 However, because the language in the proposed rule could have been clearer in
2 this regard, the Revised Rule clarifies the intent that the limit each year is the amount
3 expended over the prior year's compliance cost.

4
5 Q. MS. BOTHWELL OF PNM TESTIFIES THAT BECAUSE PNM'S AVERAGE RATE IS
6 LESS THAN \$100 PER MWH, THE 0.9 PERCENT IMPACT IS NOT ACCURATE FOR PNM'S
7 CUSTOMERS.⁹⁸ IS SHE CORRECT?

8 A. She is right that the impact is different – it will be less. While PNM's average rate
9 may be less than \$100 per MWh today, Ms. Bothwell neglects to mention that PNM has a
10 21% rate increase request pending before the New Mexico Public Regulation
11 Commission. This is on top of two increases to PNM's rates over the last two years
12 totaling 16%.⁹⁹ If the current request is granted, which will be decided before this
13 proposed rule's first compliance period, PNM's average rate across its system¹⁰⁰ in 2012
14 will be \$114.40 per MWh¹⁰¹ - and the maximum expenditure from the proposed
15 regulation would be 0.79 percent of its rates each year.

16 It seems a bit ironic that PNM is complaining so vigorously about the proposed
17 rule's impact of less than 1 percent per year, while at the same time seeking to have raise
18 its rates 40 percent¹⁰² since 2008.

19
20

⁹⁸ Bothwell at 19

⁹⁹ NEE Exh R19

¹⁰⁰ Weighted average of PNM-Northern and PNM-Southern (TNMP)

¹⁰¹ NMPRC Case 10-00086-UT – projected \$964 million revenues across 8.431 GWh; Mayhew direct testimony at 19 – Table JAM-1; PNM Exh JAM-4, pp 1&2.

¹⁰² A 21% increase on top of a 16% increase compounds to a 40% increase

1 **K. REVISION PROVISION**

2 Q. INDUSTRY WITNESSES HAVE ARGUED THAT THE REVISION SECTION OF THE
3 PROPOSED RULE ADDS UNCERTAINTY AND INDICATES THAT THE RULE IS
4 INCOMPLETE AND NEEDS FURTHER STUDY.¹⁰³ WHAT IS YOUR RESPONSE?

5 A. The opportunity to revise the proposed rule based upon NMED's experience with
6 its implementation and evolving scientific information would exist whether or not there
7 was a revision provision in the Rule. Any interested person can petition the Board to
8 revise its rules at any time.¹⁰⁴

9 While industry witnesses argue that the revision provision is evidence that the
10 rule needs more study, that is not what is needed. Only by implementing the proposed
11 rule will regulators and others be able to assess how well it is working. And, most
12 important, the proposed rule recognizes that our knowledge of the science of climate
13 change is evolving and that the rule should adjust to the best information science
14 provides. Industry witnesses claiming the proposed rule needs more study are actually
15 seeking "paralysis by analysis."

16

17 Q. MS. BOTHWELL ASSERTS THAT THE NEE PROPOSAL HAS NO PROVISION TO
18 ACCOMMODATE LOAD GROWTH.¹⁰⁵ IS SHE CORRECT?

19 A. No, she is not. The rule explains that the 2014 reassessment is designed, in part, to
20 assess how emissions from new sources have affected the overall emission levels in the
21 State, and how that corresponds to the most current scientific information and advice.

¹⁰³ Darnell at 18, Bothwell at 15

¹⁰⁴ §74-1-9 NMSA

¹⁰⁵ Bothwell at 16

1 **L. SUNSET PROVISION**

2 Q. PNM WITNESS DARNELL ARGUES THAT NEW MEXICO SHOULD IMPLEMENT
3 “POLICIES THAT COMPLIMENT, BUT DO NOT DUPLICATE OR CONFLICT WITH, THE
4 EFFORTS AT THE FEDERAL LEVEL TO DEVELOP A NATIONAL CLIMATE CHANGE
5 PROGRAM.”¹⁰⁶ DOES NEE’S PROPOSED RULE CONFLICT WITH ANY FEDERAL PROGRAM
6 TO ADDRESS CLIMATE CHANGE?

7 A. No, it does not. Congress has been unable to pass a comprehensive federal law to
8 address climate change. If Congress does pass a law that caps greenhouse gas emissions,
9 the NEE proposed rule would sunset by its own terms.

10

11 Q. PNM WITNESS DARNELL AND SPS WITNESS¹⁰⁷ IHLE ALSO ARGUE THAT THE
12 SUNSET PROVISION IS NOT SUFFICIENT BECAUSE IT COULD CAUSE NEW MEXICANS TO
13 PAY FOR GREENHOUSE GAS REDUCTIONS TWICE – ONCE UNDER STATE REGULATION
14 AND AGAIN UNDER FEDERAL LAW. IS THIS A VALID CONCERN?

15 A. No, it is not. PNM and SPS are already planning their systems in anticipation of
16 federal law that would regulate and price greenhouse gases. That system planning
17 assumes there will be a cost per mton of emitted CO2 between \$8 and \$53 (with a base
18 case of \$20) beginning in 2010 and escalating at 2.5% per year.¹⁰⁸ NEE’s proposed rule is
19 no more likely to result in a double payment than PNM’s or SPS’s own planning.
20 Furthermore, the logical extension of SPS’s and PNM’s argument is that New Mexico

¹⁰⁶ Darnell at 19

¹⁰⁷ Ihle at 21

¹⁰⁸ Electric Integrated Resource Plan for the Period 2008-2027, Public Service Company of New Mexico, September 16, 2008.

1 should never regulate anything because it might be inconsistent with some future federal
2 regulation. This does not make sense.

3 Finally, it is important to recognize that most of the federal proposals considered
4 by Congress have had provisions to accommodate early reductions. For example, Section
5 795 of the Waxman-Markey bill (American Clean Energy and Security Act - ACES) would
6 provide allowances for early action pursuant to State programs. Similarly, Title II of the
7 Kerry-Lieberman bill (American Power Act -APA) would amend Section 740 of the Clean
8 Air Act to provide credit for early action pursuant to State programs. Reductions
9 pursuant to NEE's proposed rule could qualify for early action credits.

10

11 Q. MANY OF THE INDUSTRY WITNESSES COMPUTE THE TOTAL COST OF THE
12 PROPOSED RULE EACH YEAR OUT TO 2050 OR BEYOND, ADD THOSE COSTS UP, AND
13 THEN PROVIDE THAT TOTAL AS REPRESENTATIVE OF WHAT THESE PROPOSED
14 REGULATIONS WILL COST NEW MEXICO.¹⁰⁹ IS THAT A VALID WAY TO PORTRAY THIS
15 PROPOSED RULE?

16 A. It is not. It is simply a way to get to a very large number. For example, FEUS
17 witness Kappelmann looks out to 2050 and testifies that the cost of this regulation will be
18 over \$900 million. Tri-State witness Spiers goes out to 2040, and with some very creative
19 assumptions comes up with a cost of \$4 billion. Other witnesses employ similar
20 calculations, with NMOGA's witness Price going out all the way to 2060.

21 There are several reasons why these calculations misrepresent the impact of this
22 rule. First is that the rule will sunset once a regional or federal cap is in place. Second is

¹⁰⁹ Kappelmann at 19, Spiers at 3, Price at 13

1 that it is unreasonable to assume the reduction trajectory of this rule will remain
2 constant for 30 to 50 years. As some of the industry witnesses point out, such an
3 assumption could result in negative emission requirements – an absurd result. Finally,
4 the rule requires that NMED propose adjustments to the rule in 2014 to comport with
5 what the most recent scientific information instructs.

6 As a practical matter, if no federal or international greenhouse gas emission
7 reduction requirements are enacted in a time-frame that allows an opportunity to avoid
8 the most serious impacts of climate change, then our efforts to address the issue in New
9 Mexico may as well cease also. So, to address industry’s concern that New Mexico’s
10 regulation would go on indefinitely, the Revised Rule includes a 2020 sunset date.

11

12 Q. THE NEW MEXICO ENVIRONMENT DEPARTMENT HAS SUBMITTED A LETTER TO
13 THE BOARD STATING THAT NEE’S PROPOSED RULE IS CONSISTENT WITH NMED’S
14 PROPOSED CAP & TRADE, AND THAT BOTH PETITIONS COULD BE IMPLEMENTED BY
15 THE BOARD. DO YOU AGREE?

16 A. Yes, I do. NEE’s proposed rule is designed so that if both petitions are granted, the
17 two rules would go into effect sequentially rather than simultaneously. In other words,
18 there would be no overlap. NEE’s rule sunsets at the time that a source begins to reduce
19 emissions pursuant to NMED’s proposed rule or any other regional or federal cap. It is
20 important that the NEE petition be adopted because of the risk that the NMED rule might
21 be delayed or halted.

22

23

1 **VI. CONCLUSIONS**

2 Q. DO YOU HAVE ANY FINAL COMMENTS?

3 A. Yes. PNM witness Ron Darnell has testified that: “[t]he real question – and it is a
4 high stakes question – is whether the Federal government or the State of New Mexico can
5 be most effective at regulating GHG emissions.” I do not believe that is the question at all,
6 because it presumes that we have a choice between State and Federal regulation. We do
7 not, and we have no time to waste.¹¹⁰ The real question, in my mind, is whether action by
8 New Mexico approving NEE’s petition may help advance efforts to combat global
9 warming. If the answer is yes, then NEE’s petition should be approved.

10 I urge the Board to take this very important first step, and adopt the Revised Rule
11 proposed by New Energy Economy.

12

13 Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

14 A. Yes it does.



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¹¹⁰ See “Study ties climate uncertainties to economies of U.S. states” Sandia National Laboratories, August 2, 2010, NEE Exh R20.