

NEW MEXICO'S RENEWABLE PORTFOLIO STANDARD:

AN EVALUATION OF ITS IMPACT ON THE STATE ECONOMY

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with data provided by Dr. Timothy Considine



INTRODUCTION

The Rio Grande Foundation has long taken an interest in energy and regulatory issues facing New Mexico. New Mexico is among the poorest states in the United States and is consistently ranked as having one of the worst business climates in the nation. Unfortunately, while prices change on a regular basis, New Mexico's electricity prices tend to be higher than those of its neighbors.¹

Electricity prices for many New Mexicans will rise further if the State's largest utility, Public Service Company of New Mexico (PNM) gets the 14 percent rate hike it has requested.² Although specifics are hard to come by, a significant portion of this rate hike is coming due to the push for so-called "renewable" energy.³ Other major electricity providers in New Mexico including El Paso Electric and Xcel Energy have recently applied for rate hikes.

New Mexico's high (and rising) prices are somewhat surprising because, also according to the Energy Information Agency, New Mexico was the 10th-largest producing state in the nation in 2013.⁴ Despite its relatively small population, New Mexico produces the 7th-most natural gas and the 12th-most coal among US states.⁵

Among the major state-level energy regulations is the "renewable portfolio standard" (RPS) which strictly regulates electricity production throughout the state.

New Mexico's RPS took its current form in 2007 when the Legislature and Gov. Bill Richardson amended the original RPS requirement that utilities get 10 percent of their electricity needs by 2011 from renewables. Under the 2007 law, utilities must use renewables to obtain 15 percent of their electricity by 2015. That requirement will grow to 20 percent by 2020 absent further legislatively enacted changes.

Also in 2007, New Mexico's Public Regulation Commission (PRC) issued an order and rules requiring that Investor Owned Utilities (IOUs) meet the 20 percent by 2020 target through a "fully diversified renewable energy portfolio." This regulation micromanages how utilities meet the legislature's standard, requiring at least:

- 30 percent of the RPS requirement be met using wind energy,
- 20 percent from solar power,
- 5 percent from other renewable energy technologies, and
- 1.5 percent from "distributed generation" renewable energy technologies for years 2011 through 2014, rising to 3% in 2015.

¹ Energy Information Agency, "Average Price of Electricity to Ultimate Customers by End-Use Sector," http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a.

² Katherine Mozzone and Madeline Schmitt, KRQE Channel 13, "PNM looks to up base rate by 14 percent," April 7, 2016, <http://krqe.com/2016/04/07/public-comment-to-be-heard-at-pnm-rate-hike-hearing/>.

³ Public Service Company of New Mexico, "PNM 2015 Electric Rate Case Summary," http://www.pnmresources.com/~media/Files/P/PNM-Resources/rates-and-filings/27-Aug%202015%20GRC/02_Executive%20Summary.pdf.

⁴ Energy Information Agency, "Rankings, Total Energy Production: 2013," <http://www.eia.gov/state/rankings/?sid=NM#series/101>.

⁵ Energy Information Agency, "New Mexico Energy Profile," <http://www.eia.gov/state/?sid=NM>.

The Rio Grande Foundation previously analyzed issues surrounding New Mexico’s Renewable Portfolio Standard in “The Economic Impact of New Mexico’s Renewable Portfolio Standard,” a paper published along with the American Tradition Institute in February 2011. That paper which relied on the Beacon Hill Institute’s STAMP Model was written by David Tuerck, Paul Bachman, and Michael Head, found that from 2011 to 2020, New Mexico’s RPS would cost rate payers an astonishing \$2.3 billion above and beyond what they would otherwise pay for electricity.⁶

Now, using his own independent analysis techniques, Timothy Considine, PhD, has essentially re-confirmed the 2011 STAMP analysis finding \$405 million in costs to New Mexico’s economy in 2016 with that number growing to \$444 million by 2020. Considine also finds significant job-losses associated with the RPS with more than 3,000 jobs lost annually in 2016 and 2020 and those job losses reduced somewhat in 2030 and beyond.

THE IMPACT OF NEW MEXICO’S RPS

New Mexico has an electricity sector somewhat smaller than Colorado, generating more than 35.8 million MWh with 67 percent coming from coal and 25 percent from natural gas (see Table 33). More than 6 percent of generation comes from wind power. Solar power accounts for 1.1 percent of total generation in 2013 (see Table 33). The following two sub-sections summarize the impacts of existing and future RPS goals on the electricity market and state value added and employment in New Mexico.

TABLE 1: CAPACITY, GENERATION, AND UTILIZATION RATES FOR NEW MEXICO 2013

ENERGY SOURCE	CAPACITY MW	GENERATION MHR	CAPACITY UTILIZATION %
Coal	4,375	24,145,271	0.6300
Geothermal	4	69	0.0020
Hydroelectric	82	91,838	0.1283
Natural gas	3,876	8,975,243	0.2644
Nuclear	0	0	0.0000
Other	3	716	0.0314
Other biomass	7	18,518	0.3203
Other gas	0	0	0.0000
Petroleum	31	57,848	0.2103
Pumped storage	0	0	0.0000
Solar	191	388,041	0.2325
Wind	778	2,193,421	0.3220
Wood	0	0	0.0000
Total	9,345	35,870,965	0.4382

⁶ Rio Grande Foundation, American Tradition Institute,

1.1 IMPACTS ON ELECTRICITY SECTOR

The RPS goal for New Mexico is 15.7 percent of total consumption by 2021 so New Mexico is already almost half way in achieving their standard. The impacts on electricity markets from these goals are presented in Table 34. The RPS eliminate the need for new NGCC capacity in 2016. Afterward, however, the RPS goals marginally reduce the need for additional new NGCC. For instance, in the base case without additional RPS capacity, new NGCC capacity required to balance the market is 47.7 megawatts (MW) in the base case and with RPS incremental NGCC capacity declines to 46.1 MW in 2020.

Slightly over 89 percent of new RPS capacity for New Mexico is supplied by wind power with the remainder met by new solar generating plants. Planned RPS wind and solar capacity to meet the RPS goals are 440.9 and 75.3 MW respectively in 2016. The electricity generation from these new facilities rises from 1.4 million MWh in 2016 to 2.7 million MWh in 2040 (see Table 34).

The increases in average electricity costs from new RPS capacity additions are 3.87 percent in 2016, rising to 6.31 percent in 2020, 5.58 percent in 2025, and 3.81 percent in 2040 (see Table 34). With legacy costs average electricity rates in New Mexico increase 6.18 percent in 2016 due to renewable energy portfolio standards. After 2016, rates increase 6.77 percent in 2020, slightly less than 6 percent in 2025, and 4-5 percent from 2030 to 2040.

TABLE 2: IMPACTS OF RPS ON NEW MEXICO ELECTRICITY MARKET

	2016	2020	2025	2030	2035	2040
New NGCC Capacity						
Without RPS	47.2	47.7	47.8	49.0	50.2	51.4
With RPS	0.0	46.1	46.8	48.5	50.0	51.3
New RPS Capacity						
Wind	440.9	0.0	0.0	0.0	0.0	19.0
Solar	75.3	0.0	0.0	0.0	0.0	3.2
New NGCC Generation						
Without RPS	0.8	7.0	8.8	10.6	12.4	14.3
With RPS	0.0	4.5	6.3	8.0	9.9	11.8
Legacy RPS Generation	2.6	2.6	2.6	2.6	2.6	2.6
New RPS Generation	1.4	2.4	2.4	2.4	2.4	2.7
Average Costs	3.87	6.31	5.58	5.01	4.25	3.81
Electricity Consumption	-0.06	-0.26	-0.40	-0.46	-0.48	-0.47
Average Rates	1.40	2.23	1.99	1.79	1.54	1.42
Average Rates + Legacy Costs	6.18	6.77	5.95	5.30	4.54	3.92

The decomposition of RPS costs for the New Mexico electricity sector appear in Table 35. Direct legacy costs are more than \$140 million in 2016 and remain over \$120 million through the end of the projection period. After including cycling costs and deducting avoided fossil fuel costs, net RPS legacy costs are \$100 million in 2016 and remain over \$72 million in 2040.

The costs arising from new renewable capacity associated to meet New Mexico’s RPS goals are also summarized in Table 35. The direct costs to go from the current 7.2 percent of generation from solar and wind to the 15.7 percent goal of total electricity consumption are \$76 million in 2016 and rise to over \$123 million in 2020 and remain at roughly that level through 2040. After adding cycling costs and deducting for fossil fuel and NGCC capacity costs, the net costs to bring meet the RPS goal are \$28 million in 2016, \$43 million in 2020, and between \$27 and \$30 million thereafter. With subsidies, the total costs of New Mexico’s RPS are \$192 million in 2016, \$205.8 million in 2020, \$192.8 million in 2025, and are more than \$160 million in 2040 (see Table 35).

TABLE 3: COSTS OF NEW MEXICO RPS

	2016	2020	2025	2030	2035	2040
RPS Legacy Costs						
Direct	141.7	137.9	133.3	128.9	124.7	120.6
Cycling Costs	6.2	5.6	5.9	6.0	6.4	6.9
less Fuel Costs	47.2	43.5	45.5	46.6	50.2	54.7
Net RPS Legacy Costs	100.7	100.0	93.7	88.3	80.9	72.8
New RPS Costs						
Direct	76.3	123.9	120.3	116.9	113.5	123.9
Cycling Costs	7.2	6.6	6.9	7.1	7.5	8.2
less Fuel Costs	33.3	25.9	26.1	25.6	23.9	32.5
less NGCC Costs	22.0	61.3	63.7	64.9	68.6	72.3
Net New RPS Costs	28.2	43.2	37.5	33.4	28.5	27.3
RPS Tax Subsidies	63.3	62.6	61.7	60.9	60.1	66.2
Total RPS Cost	192.2	205.8	192.8	182.6	169.5	166.2
CO2 Reductions	4.19	5.17	5.20	5.21	5.22	5.43
Direct RPS Costs	30.79	27.70	25.22	23.34	20.95	18.41
Subsidy Costs	15.13	12.10	11.87	11.68	11.51	12.17
Total Costs	45.92	39.80	37.09	35.02	32.46	30.59

The RPS policies in New Mexico reduce carbon dioxide emissions by 4.19 million tons in 2016 to over 5.4 million tons per year by 2040 (see Table 35). The direct costs per ton of avoided emissions are \$30.77 per ton in 2016 and decline to \$18.41 per ton in 2040 as wind and solar costs decline over time. Tax subsidies, however, are over \$15 per ton in 2016 and remain over \$11 per ton in 2040. The total costs of avoided carbon emissions, therefore, are \$45.92 per ton in 2016 and \$30.59 per ton in 2040.

Assuming a 5 percent discount rate, these RPS carbon abatement costs are above the EPA social cost of carbon suggesting that RPS policies in New Mexico are an inefficient greenhouse gas emission strategy. Under a 3 percent discount rate, however, the total costs per ton of using RPS to reduce carbon emissions is below the social cost of carbon beyond 2020. So from a global cost-benefit perspective, adopting RPS policies in New Mexico could be acceptable. From a New Mexico perspective, however, there are economic impacts resulting from higher electricity rates in the form of losses in economic output and employment. These impacts are now presented and discussed.

1.2 ECONOMIC IMPACTS

By raising retail prices for electricity, RPS goals raise consumer electricity bills and the costs of providing goods and services in the New Mexico economy. These impacts of higher electricity prices are summarized by sector from 2016 to 2040 in Table 36. Annual losses in New Mexico value added range from \$405 million in 2016 to \$444 billion in 2020, and over \$250 million in 2040. Employment levels are 2,000 to 3,000 jobs below employment in the base case without renewable energy portfolio standards (see Table 37).

TABLE 4: IMPACTS OF RPS ON NEW MEXICO VALUE ADDED BY SECTOR

Millions of 2013 Dollars						
	2016	2020	2025	2030	2035	2040
Metals	-1.24	-1.35	-1.19	-1.06	-0.91	-0.78
Paper	-3.71	-4.06	-3.57	-3.18	-2.72	-2.35
Wood	-1.24	-1.35	-1.19	-1.06	-0.91	-0.78
Other Man	-6.18	-6.77	-5.95	-5.30	-4.54	-3.92
Textiles	-0.62	-0.68	-0.59	-0.53	-0.45	-0.39
Minerals	-2.47	-2.71	-2.38	-2.12	-1.82	-1.57
Const.	-72.26	-79.19	-69.60	-61.97	-53.10	-45.92
Trans.	-29.03	-31.81	-27.96	-24.89	-21.33	-18.45
Services	-340.90	-373.63	-328.39	-292.36	-250.52	-216.65
Utilities	53.11	58.21	51.16	45.55	39.03	33.75
Total	-405.12	-444.02	-390.26	-347.44	-297.72	-257.47

TABLE 5: IMPACTS OF RPS ON NEW MEXICO EMPLOYMENT BY SECTOR

Number of Jobs						
	2016	2020	2025	2030	2035	2040
Metals	-9	-9	-8	-7	-6	-5
Paper	-18	-20	-17	-15	-13	-11
Wood	-30	-33	-29	-26	-22	-19
Other Man	-191	-210	-184	-164	-141	-122
Textiles	-7	-7	-7	-6	-5	-4
Minerals	-11	-12	-11	-10	-8	-7
Const.	-605	-663	-583	-519	-445	-385
Trans.	-325	-357	-314	-279	-239	-207
Services	-2,124	-2,328	-2,046	-1,822	-1,561	-1,350
Utilities	147	161	142	126	108	93
Total	-3,174	-3,479	-3,058	-2,722	-2,333	-2,017

These losses from higher electricity prices are partially offset by output and employment gains from building and operating electricity capacity needed to meet RPS goals. These different impacts of RPS on New Mexico value added and employment are summarized in Table 6. For example, in 2016 RPS investments contributed \$178 million in value added and 2,537 jobs. Avoided NGCC investments reduce value added \$11.66 million and reduce employment by 106 jobs in 2016.

Like the other states, the stimulus from RPS investment, however, is not large enough to offset the negative impacts of higher electricity prices. On balance, therefore, net annual losses in value added from New Mexico's RPS goals are \$238 million in 2016, \$444 million in 2020, \$390 million in 2025, and remain over \$250 million through the end of the forecast horizon. Employment levels are 743 jobs lower in 2016, 3,483 jobs lower in 2020, and 3,060 jobs lower in 2025.

TABLE 6: NET IMPACTS OF RPS ON NEW MEXICO VALUE ADDED AND EMPLOYMENT

Millions of 2013 Dollars						
	2016	2020	2025	2030	2035	2040
RPS Invest.	1,091.35	0.00	0.00	0.00	0.00	42.25
Value Added						
Electric prices	-405.12	-444.02	-390.26	-347.44	-297.72	-257.47
RPS Invest.	178.00	0.00	0.00	0.00	0.00	6.87
NGCC Invest.	-11.66	-0.39	-0.24	-0.14	-0.06	-0.02
Net Change	-238.78	-444.41	-390.50	-347.58	-297.78	-250.63
Number of Jobs						
Employment						
Electric prices	-3,174	-3,479	-3,058	-2,722	-2,333	-2,017
RPS Invest.	2,537	0	0	0	0	97
NGCC Invest.	-106	-4	-2	-1	-1	0
Net Change	-743	-3,483	-3,060	-2,724	-2,333	-1,921

In summary, the costs of avoiding carbon dioxide emissions using renewable portfolio standards in New Mexico are higher than EPA estimates of the social cost of carbon, assuming a 5 percent discount rate, but are below the social cost of capital, assuming a 3 percent discount rate after 2020. From a global perspective, therefore, renewable energy portfolio standards in New Mexico may be an efficient means to address global climate change under a relatively low discount rate for future damages associated with global climate change.

From the viewpoint of the New Mexico economy, however, renewable portfolio standards raise electricity costs that, on balance, result in a net reduction in the state's value added and employment, even after accounting for the economic stimulus that building and operating renewable energy facilities provide.

CONCLUSION

New Mexico's RPS is an expensive policy with the highest costs yet to be felt by the State's struggling economy. In 2015, the Republican-controlled New Mexico House of Representatives voted to maintain the 15 percent "renewable" mandate rather than allowing it to rise to 20 percent.⁷ This legislation failed to receive a single committee vote in the Democrat-controlled Senate.

Similar legislation could save New Mexico utility payers millions of dollars annually while leading to the creation (or saving) of thousands of jobs (as opposed to destroying them under the current RPS schedule).

Given New Mexico's historically-high poverty levels and the State's extreme economic challenges, policymakers must consider freezing or repealing the RPS as a means of economic preservation.

⁷ Rep. Larry Scott, "HB 445: Reduce Renewable Portfolio Standards," 2015 Regular Session, <http://www.nmlegis.gov/lcs/legislation.aspx?chamber=H&legtype=B&legno=445&year=15>.