

*FINAL REPORT
EXECUTIVE SUMMARY*

**Preliminary Economic Feasibility Assessment
of a
Publicly-Owned Electric Utility for the City of Santa Fe
and Santa Fe County**

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by

MSA Capital Partners
for New Energy Economy

INTRODUCTION AND STUDY OVERVIEW

This preliminary assessment is intended to address the key elements of the County's Memorandum of Agreement for this project with New Energy Economy. Study objectives include providing data on electricity sales and trends in the region, costs of implementing a County/City-owned electric utility, the potential market over the next 20 years, impact on electricity rates and bills in comparison to PNM, and importantly, the economic costs and environmental benefits of sharply increased use of renewable energy sources and an Aggressive Energy Efficiency Standard on the region's demand for power.

The study examines three scenarios for servicing the region's power requirements over a 20-year period, from 2013 to 2033. Two alternatives apply to a City and County-owned electric utility, called Santa Fe Public Power (SFPP) in this report: Scenario 1 - purchased natural gas, solar, and wind-sourced power on the wholesale market over 20 years, and Scenario 2 - a combination of purchased power and the acquisition of locally-sited natural gas generation and utility-scale solar by SFPP beginning in 2020, year eight. Both scenarios include distributed generation from customer-scale photovoltaic (PV) solar at a level of 7.5% of the total electric energy supply beginning in 2013 and ramping up to 11.25% in 2028.

The SFPP scenarios are compared to a "Status Quo" scenario which assumes continued ownership and operation of the area's electric utility by PNM. The following table represents a snapshot of SFPP's performance on key indicators compared to the Status Quo in 2028, 15 years after start-up. The percentages remain level through the remainder of the study period ending in 2033, with flat growth in: the ratio of renewables to natural gas in SFPP's fuel mix, customer-scale solar generation, and the impact of the Aggressive Energy Efficiency Standard on residential and commercial per customer usage of electricity.

Year 2028 Scenario Comparisons	SFPP Scenario 1	SFPP Scenario 2	PNM-Status Quo
% of energy efficiency savings	20	20	8
% of energy from renewable sources	45	45	20
% of energy from coal	0	0	60
% of energy sourced in Santa Fe County*	11.25	84	2
% of customer-scale renewable energy	11.25	11.25	0.6

*Customer-scale solar ramps from 7.5% of total energy in 2013 to 11.25% in 2028 and thereafter. In Scenario 2, customer-scale solar also grows to 11.25% in 2028. In SFPP2, partial ownership of an in-county natural gas combined cycle plant in 2020 and SFPP-owned utility-scale solar in the County by 2028 boosts locally-sited natural gas and solar-electricity to 84% of SFPP2's total energy supply. The balance is made up of purchased wind energy through long-term Power Purchase Agreements or on the short-term market.

The tables below compare how much less rates and bills are projected to be for SFPP customers, as a percentage, relative to PNM rates and bills. The base case in Scenarios 1 and 2 includes acquisition costs of \$155 million. To observe the impact on SFPP bills and rates, a sensitivity analysis was completed assuming an additional \$100 million to base case acquisition costs.

In 2015, for the base case, SFPP1 rates are projected to be 15% less than PNM's rates. This is a result of SFPP producing only enough revenue required to cover operating expenses, which does not include the need to make a profit (i.e. a return on capital). In the same year, SFPP bills are projected to be 17% less than the Status Quo because customers will be using less energy as a result of SFPP's Aggressive Energy Efficiency Standard, compared to the Status Quo Scenario.

Scenario 1- Percent SFPP Rates and Bills are less than Status Quo

	<u>2015</u>		<u>2022</u>		<u>2028</u>	
	<u>Base Case</u>	<u>+ \$100 Million</u>	<u>Base Case</u>	<u>+ \$100 Million</u>	<u>Base Case</u>	<u>+ \$100 Million</u>
SFPP vs PNM Rates	15%	11%	12%	9%	20%	18%
SFPP vs PNM Bills	17%	13%	21%	18%	31%	30%

Scenario 2- Percent SFPP Rates and Bills are less than Status Quo

	<u>2015</u>		<u>2022</u>		<u>2028</u>	
	<u>Base Case</u>	<u>+ \$100 Million</u>	<u>Base Case</u>	<u>+ \$100 Million</u>	<u>Base Case</u>	<u>+ \$100 Million</u>
SFPP vs PNM Rates	17%	12%	8%	5%	18%	17%
SFPP vs PNM Bills	19%	14%	17%	15%	29%	28%

The impact to bill payers of implementing more aggressive energy efficiency programs and converting from primarily a coal and nuclear energy strategy are shown in the SFPP/Status Quo-PNM rate and bill comparison above. In all time frames, the cost to the bill payer is projected to be less than the Status Quo scenario. The primary reasons for this are: more aggressive implementation of energy efficiency measures, reduced cost of capital (no need to generate a profit and lower borrowing costs), and reduced administrative expense (lower executive compensation).

Certain cost assumptions in this report have been used to determine SFPP's projected rates and bills compared with the PNM Status Quo scenario. Should the actual SFPP system acquisition costs and other start-up expenses and financing assumptions deviate from those assumed for this report, the rate and bill comparisons will necessarily change as well.

BACKGROUND

Both the City and County of Santa Fe have established aggressive clean energy policy directives – the City in its 2008 “Sustainable Santa Fe Plan” and the County in its 2010 “Sustainable Growth Management Plan.” With those clean energy objectives in mind, both plans mention an interest in investigating the feasibility of establishing a City/County-owned electric utility as an alternative to the existing arrangement – service by Public Service Company of New Mexico (PNM), an investor-owned utility (IOU). Santa Fe County commissioned an “Electrical Distribution System Study for Santa Fe County” (Cibola Engineering, 2008) which confirmed that establishing a public power utility for the Santa Fe region is technically feasible. The study recommended that the City and County of Santa Fe work together and that any technical challenges could be managed with careful planning.

In 2009, the Santa Fe Regional Planning Authority (RPA), consisting of four City Councilors and four County Commissioners, created an Energy Task Force (ETF). The charter of this task force is to recommend specific sustainable energy projects for the City of Santa Fe and Santa Fe County. In a formal letter to the RPA, the ETF requested that a preliminary economic feasibility study be conducted to analyze the potential impact of a City/County public power utility.

As a result, the County of Santa Fe entered into an agreement with New Energy Economy, a local non-profit organization, in 2011 to secure a contractor to complete a preliminary economic feasibility study of a County-Municipal electric utility. New Energy Economy contracted with MSA Capital Partners, a Santa Fe-based consulting firm that specializes in infrastructure finance, with global experience over a 22-year period in feasibility analysis and early-phase preparation of projects in the energy, environmental, and transport sectors. New Energy Economy supervised the contractor’s work and arranged for a report of findings and a public presentation of the study.

MSA prepared the assessment with publicly available information and data from the American Public Power Association, USDOE’s Energy Information Administration, PNM filings with the New Mexico Public Regulation Commission, federal Securities and Exchange Commission and Federal Energy Regulatory Commission, from other area power market and energy sources, consultation with County and City energy staff, and limited field work. The firm worked closely with NEE management and its Board and volunteers. The report’s findings are contained herein.

ASSESSMENT APPROACH

Two scenarios were developed for SFPP and compared to a third “Status Quo” scenario. The Status Quo scenario assumes continued ownership and operation of the utility by PNM.

Area-wide Power Market - The study assumes that beginning in 2013 Santa Fe Public Power will acquire the electric consumer market in Santa Fe County currently serviced by PNM, which comprises around 90% of the total electric demand of residential and commercial customers in the County. County residents served by rural electric cooperatives are not assumed to become a part of SFPP.

Electric energy usage and generation is generally characterized in two manners: 1) over a period of time, measured in gigawatt-hours (GWh), megawatt-hours (MWh), or kilowatt-hours (kWh), (see glossary of terms in Appendix A of the report); and 2) Electricity demand at an instantaneous point in time, measured in megawatts (MW) or kilowatts (kW) – usually referred to as system “load” in the electric utility discipline.

For all three scenarios, projected energy usage is estimated to be 810,000 MWh in 2013, with average daily energy usage of over 2,200 MWh and a customer base of 56,000 residential and commercial meters. In 2013, the base demand is 80 MW, with a peak demand of 160 MW (generally occurring in the summer with the impact of refrigerated air conditioning). Base demand represents the minimum amount of energy demanded from Santa Fe customers at any given time.

The three scenarios are:

1. SFPP1 - Purchased Power: SFPP buys wholesale power. SFPP implements more aggressive energy efficiency measures than what are assumed under the Status Quo scenario, and provides incentives to grow customer-scale solar to 11.25% of total electric energy generation.
2. SFPP2 - Purchased Power/Self-Generation: SFPP buys wholesale power for the first seven years and then builds generation facilities for locally-sited natural gas and utility-scale solar. SFPP implements the same energy efficiency measures and incentives for customer-scale solar as Scenario 1.
3. Status Quo - PNM continues to own and operate the electricity service.

These three scenarios were evaluated over a 20-year period, assuming a 2013 start-up, through 2033. Of course, a 2013 start-up date is not realistic given the significant lead time it would take to establish SFPP. This date is used simply to generate the 20-year analyses. The scenarios and their outcomes from this preliminary analysis are as follows:

SFPP Scenario 1: Santa Fe Public Power utilizes Wholesale Power Purchase

Start-up and Distribution System Acquisition Costs: If Santa Fe Public Power can avoid costly litigation expenses at the outset, it would incur realistic start-up costs of \$49 million, as outlined in Section 4.3. Unforeseen legal and regulatory costs, however, and credit requirements for purchased power could increase these costs to more than \$100 million.

In addition, the new utility would be faced with the acquisition cost of PNM's distribution system. The replacement cost and book value of PNM's entire distribution system were referenced from PNM's 2011 FERC Form 1. Santa Fe's portion of PNM's 2011 revenues (9.2%) was applied to approximate the value of the distribution system serving Santa Fe County. The cost of Santa Fe's distribution system ranges from its declared book value of \$65 million to its replacement cost, estimated to be \$106 million. In order to not underestimate acquisition costs, for the purposes of this study, it was assumed SFPP would pay \$106 million for the distribution system. Start-up and acquisition costs of \$155 million would be financed through a combination of taxable and tax-exempt bond issues.

Energy Efficiency: SFPP will implement energy efficiency measures far beyond what is required of private utilities pursuant to the state Efficient Use of Energy Act (EUEA) This “Aggressive Energy Efficiency Standard” will achieve a 20% reduction in per customer residential and commercial energy usage by 2028. The expense necessary to achieve this target is estimated to be 2.60¢ per kilowatt-hour (kWh) of electricity usage reduced, which is included in the operating costs of the new utility. The aggressive standard doubles the current state requirement contained in the state EUEA which mandates that PNM achieve an energy savings of 10% by 2020, from a 2005 baseline. A recent report by Southwest Energy Efficiency Project (SWEET) indicates that 2% savings per year at a cost of 2.6¢/kWh is achievable. Thus, 20% savings over 15 years is attainable, according to the SWEET report.

Energy Portfolio: In both SFPP scenarios, neither coal nor nuclear-generated energy would be utilized in any time period. The initial (2013) energy portfolio would be composed of 75% natural gas and 25% solar and wind energy, with power acquired entirely in the wholesale market or via contract. The share of renewable energy in the portfolio would rise to 45% by 2028 (year 15 from start-up), and very likely remain at that level until technology for commercial-scale energy storage becomes cost effective. Wholesale power cost assumptions are consistent with quotes for energy purchase that PNM received in 2012.

SFPP Scenario 1- Percent of Energy from Various Sources (rounded)

	<u>2013</u>	<u>2020</u>	<u>2022</u>	<u>2028</u>	<u>2033</u>	<u>Cost \$/kWh*</u>
Natural Gas	75%	70%	66%	55%	55%	0.05
Wind	18%	18%	20%	29%	29%	0.05
Utility-Scale Solar	5%	5%	5%	5%	5%	0.08
Customer-Scale Solar	2%	8%	9%	11%	11%	0.14
% Renewables	25%	30%	34%	45%	45%	

*Costs are in 2012 dollars assumed to escalate annually at 2.0%

Economic Development: This scenario has appreciably greater local economic development and job creation than the Status Quo due to its emphasis on customer-scale renewable energy and more aggressive energy efficiency programs. Santa Fe Public Power would secure 7.5% of its total energy from customer-scale solar in 2020, increasing to 11.25% in 2028. The public utility would support the growth of this local market with incentives, averaging 14¢ per kWh over 20 years, including net metering benefits. Energy efficiency programs also provide significant job creation, mainly through efficiency renovations of existing commercial and residential structures.

Bill/rate impact: In all time frames, the cost to the bill payer is less than continuing to use PNM as the electric provider. The primary reasons for this are: more aggressive implementation of energy efficiency measures, reduced cost of capital (no profit and lower cost of borrowing), and reduced administrative expense (lower executive compensation).

SFPP Scenario 1- Percent SFPP Rates and Bills are less than PNM’s

	2015		2022		2028	
	Base Case	+ \$100 Million	Base Case	+ \$100 Million	Base Case	+ \$100 Million
SFPP vs PNM Rates	15%	11%	12%	9%	20%	18%
SFPP vs PNM Bills	17%	13%	21%	18%	31%	30%

Low Income Rate Considerations: If it desired, SFPP could create “lifeline” rates to assure affordable electric power for its lower income customers. In contrast, PNM does not offer low-income rates. In fact, a NM Supreme Court case currently prevents New Mexico’s investor-owned utilities from having special rates for low-income families.

SFPP Scenario 2: Santa Fe Public Power begins operation with wholesale purchased power and begins local, utility-owned generation in 2020.

Start-up and Distribution System Costs – same as Scenario 1

Energy Efficiency – same as Scenario 1

Energy Portfolio – Santa Fe Public Power would use neither coal nor nuclear-generated energy in any time period. The initial energy portfolio would be composed of 70% natural gas and 30% solar and wind energy, with power acquired entirely in the wholesale market or through contract. The share of renewable energy in the portfolio would rise to 45% by 2028, and very likely remain at that level until technology for commercial-scale energy storage becomes cost effective. Cost assumptions for energy purchases are consistent with quotes for energy purchases that PNM received in 2012. This scenario differs from Scenario 1 by building 126 MW of electric generation facilities in the County: a 66 MW share of a 200 MW natural gas combined cycle power plant in 2020 and 60 MW of utility-scale solar facilities in 2022 and, consequently, phasing down purchased power.

SFPP Scenario 2 – Percent of Energy from Various Sources (rounded)

	<u>2013</u>	<u>2020</u>	<u>2022</u>	<u>2028</u>	<u>2033</u>	<u>Cost \$/kWh*</u>
Natural Gas	70%	70%	66%	55%	55%	0.05
Wind	28%	23%	7%	16%	17%	0.05
Utility-Scale Solar	0%	0%	18%	17%	17%	0.08
Customer-Scale Solar	2%	8%	9%	11%	11%	0.14
% Renewables	30%	30%	34%	45%	45%	

*Costs are in 2012 dollars assumed to escalate annually at 2.0%. By 2028, natural gas and utility-scale solar are locally sited.

Economic Development. This scenario has significantly greater regional economic development potential than SFPP1 and much more than the Status Quo due to its strong focus on locally-based electric generation. Santa Fe Public Power would secure at least 25% of its renewable energy requirement, or 11.25% of the utility's total electric energy needs, from local customer-scale solar by 2028. The public utility would support the growth of this local market with incentives, averaging 14¢ per kWh. Energy efficiency programs also provide significant job creation. This scenario would provide further local economic development by building and operating a locally-sited natural gas combined cycle power plant in 2020 (66 MW of a 200 MW plant) and 60 MW of utility-scale solar capacity in 2022, resulting in locally-sourced generation constituting 84% of total generation by 2028.

Bill/rate impact: In all time frames, the cost to the bill payer is projected to be less than the Status Quo scenario. As with SFPP1, the primary reasons for this are: more aggressive implementation of energy efficiency measures, reduced cost of capital (less profit), reduced administrative expense (less executive compensation), rapidly declining costs of wind, solar, and natural gas vs. the escalating costs of coal-derived electricity, and reduced transmission needs.

SFPP Scenario 2- Percent SFPP Rates and Bills are less than Status Quo

	2015		2022		2028	
	Base Case	+ \$100 Million	Base Case	+ \$100 Million	Base Case	+ \$100 Million
SFPP vs PNM Rates	17%	12%	8%	5%	18%	17%
SFPP vs PNM Bills	19%	14%	17%	15%	29%	28%

Low Income Rate Considerations: Same as Scenario 1.

Status Quo Scenario: PNM Continues to Own/Operate the Utility

This scenario assumes a continuation of PNM’s ownership and operation of the utility.

Start-up and Distribution System Costs: none

Energy Efficiency: PNM is legally obligated by New Mexico’s Efficient Use of Energy Act (EUEA) to achieve by 2020 10% energy savings from system-wide 2005 energy usage through energy efficiency programs. Since the EUEA 10% requirement is based on 2005 usage and doesn’t increase with customer meter growth, the effective or actual energy efficiency rate under the EUEA is less than 10% of current year usage. This scenario assumes that this level is achieved and remains constant beyond 2020. However, it is important to acknowledge that, due to certain cost effectiveness tests in the EUEA, it is conceivable that the EUEA requirement will not be met in 2020.

Energy Portfolio: Over the 20-year analysis through 2033, PNM will continue to meet Santa Fe’s electricity requirements through a combination of coal, nuclear, natural gas-based sources, and renewable energy as defined, and limited in some cases, by regulatory requirements.

PNM is legally required to achieve a fuel mix of 15% renewable energy in 2015 and 20% in 2020 by New Mexico’s Renewable Energy Act (REA). Regulatory oversight and enforcement of the REA is the responsibility of the New Mexico Public Regulation Commission (PRC). This scenario assumes that these levels are achieved and that renewable energy would remain at 20% beyond 2020. Note, however, that due to the REA’s large electric consumer cost cap provision, the actual or “net” renewable energy in PNM’s mix will be less than the 15% and 20% noted above -- possibly more like 13.5% and 18%, respectively.

In addition, the REA has a “reasonable cost threshold” (RCT) provision that allows electric utilities to not meet the 15% and 20% requirements if their renewable energy costs exceed the RCT. The RCT provision has been used by utilities to try to justify providing less renewable energy than the minimums required in the REA. The following table from PNM’s 2011-30 Integrated Resource Plan (IRP) summarizes its long-term generation portfolio. The actual

percentage of renewable energy that PNM has in its generation portfolio in 2015, 2020 and beyond is, therefore, heavily dependent on the future actions of the PRC in its role as the enforcer of the REA - - creating significant uncertainty surrounding whether the REA's minimum requirements will even be achieved. No such renewable energy generation uncertainty would exist in either SFPP scenario.

Status Quo – Generation Portfolio 2013-2033

	<u>2013</u>	<u>2018</u>	<u>2020</u>	<u>2033</u>
Natural Gas, Coal, and Nuclear	90.0%	85.0%	80.0%	80.0%
Solar	2.0%	3.0%	4.0%	4.0%
Wind	8.0%	10.5%	14.0%	14.0%
Non Wind or Solar	0.0%	1.5%	2.0%	2.0%
Customer-Scale/Distributed Gen.*	0.2%	0.5%	0.6%	0.6%
% Renewables	10.00%	15.00%	20.00%	20.00%

*Customer-Scale/Distributed Gen. are not added to total % Renewables, they are counted in Solar

Economic Development: In this scenario, only 2% of electric generation is locally sourced in 2013 and assumed to come from customer-scale solar. The local share rises to 4% in 2033. However, as part of its REA requirements, PNM has constructed 5-10 megawatt solar farms around its service territory in the past few years and while none of these facilities has been located in Santa Fe County in the past, it is possible that PNM will site one locally in the coming years. If this occurs, it would stimulate, of course, additional local economic development for this scenario.

Rate/Bill impacts: Rates in the Status Quo scenario are assumed to continue to increase in line with historical increases, 2.66% annually for residential bills and 1.97% for commercial rates. Bills also increase, adjusted for energy efficiency savings.

CONCLUSIONS AND NEXT STEPS OPTIONS

Although this economic feasibility assessment of Santa Fe Public Power is preliminary in scope, the analyses conclude that the formation of such a utility could yield significant energy, economic, and environmental benefits for electricity consumers and the region as a whole. Given these preliminary findings, it is reasonable to suggest that the concept of a publicly-owned electric utility in Santa Fe deserves further consideration and evaluation by area policymakers.

Among steps needed to advance an inquiry of SFPP's feasibility to the next level are the following:

- 1) Public/Community Education and Outreach and Public Opinion Assessment - A variety of public education and outreach strategies should be initiated to determine the extent to which Santa Fe citizens are aware of the region's current electric power environment (e.g. percent of power generated from traditional and renewable sources, greenhouse gas emissions, state laws regarding renewable energy and energy efficiency, historic rate increases, etc.) In

conjunction with the education and outreach efforts, a variety of public opinion strategies (opinion surveys, town halls, City and County web site feedback, etc.) should be implemented to assess citizens' feelings around energy, environment and electric utility issues.

For instance, a representative sample of Santa Fe citizens across Santa Fe's diverse economic, geographic and cultural base should be polled to determine their attitude toward the existing electricity provider and the service it provides, contribution to global climate disruption, long-term electric utility expenditure concerns, etc.

Questions and public feedback related to the continued use of coal and nuclear for power generation, the availability of Santa Fe's solar and wind resources, for local economic development and job creation and whether current and projected electricity rates are viewed with concern, are central to public considerations for pursuing Santa Fe Public Power. Responses to public opinion initiatives will help guide future steps. If the sampling response is positive to the underlying concept, then a properly funded and organized public education campaign may be warranted as a means of building public understanding of and support for SFPP.

- 2) Refinement of Costs - The preliminary assessment needs to be augmented with a much more refined, technical-level engineering analysis of PNM's load profile in the County, the location, age and condition of PNM's distribution system, and the real extent to which SFPP could acquire and pay for a sustainable power supply sourced entirely from natural gas, solar and wind. Whether this plan could actually be implemented with long-term Power Purchase Agreements in the wholesale market and a small core professional staff to plan and manage SFPP's load, with outsourced operation and maintenance (O/M) and administration services, deserves careful scrutiny.
- 3) PNM's Role – SFPP Scenarios 1 and 2 assume that PNM could be engaged by local policymakers to determine the company's attitude toward a cooperative venture with the City and County. Areas to be addressed might include a lease or lease/purchase of the distribution system, an O/M contract with PNM, and outsourced customer service and billing functions. In this regard, the availability of wholesale renewable energy and transmission capacity from PNM would also be important to clarify. The alternative course of action is a condemnation proceeding by the County/City, possibly requiring five years in the state court system, which is described in Appendix B of the main report.
- 4) Availability of Energy – There is a need to further investigate and characterize wholesale energy markets for near-term availability of natural gas-derived electricity and renewables. Turnkey developers and suppliers should be consulted on the cost and availability of long-term supply contracts for Santa Fe in the range of 100 MW of daily capacity. A technical review of the regional transmission system for capacity constraints, including projects under development, should also be considered.

Santa Fe Public Power may make sense as an alternative to PNM in order to secure a faster transition from coal to an electric power generation mix comprised entirely of natural gas and

renewables, with greater rate stability for consumers, absent the need to make a profit for stockholders, and less expensive administrative overhead. Of course, one of the prime benefits associated with SFPP (especially Scenario 2's locally-sited electric generation resources) is its potential to dramatically stimulate economic development and job creation in the region.

The key is to determine the practicality of such a move, largely determined by the level of public interest and political support, including the ability of a SFPP-type entity to finance and carry start-up and acquisition costs, and, whether clean energy is cost-competitively available in the wholesale market and deliverable to Santa Fe. A broad-based, but more thorough technical analysis of the envisioned SFPP service area's actual power demand, the distribution infrastructure in place, and financial capacity of the local market is needed to help answer these questions.