



UNLEASHING NEW MEXICO'S POTENTIAL

Creating a
high-employment,
high-innovation
clean energy economy

By New Energy Economy



new energy economy

Addressing the Climate Challenge
With Bold Solutions



Executive Summary

New Mexicans face a choice: Should we accept a status quo defined by stagnant wages, high unemployment, and rising pollution? Or should we opt to invest in innovation, competitiveness, sustainability, and self-reliance?

Ask New Mexicans, and the answer will be nearly unanimous: People want a high-employment, high-innovation clean energy economy.

With abundant sun and wind resources, hardworking people, and an ever-increasing technical capacity, New Mexico is poised for an extraordinary accomplishment: To become the first state to achieve a 100% renewable electricity sector.

This report lays out a specific and achievable path to such a transition over the next two decades. The report provides a detailed overview of the rationale for a clean energy transition. It concludes with actionable steps for state policymakers to help realize this vision.

The transition to a high-employment clean energy economy starts with the state's largest electricity utility, Public Service Company of New Mexico (PNM). Through the addition of 700 megawatts (MW) of solar power and 1750 MW of wind power by 2035—a development that is both technically and financially feasible—it will be possible for PNM to meet the needs of its 500,000 customers (households and businesses). By setting this needed goal, New Mexicans can drastically reduce the state's air pollution, carbon emissions, and water usage while creating thousands of new jobs and facilitating the emergence of new advanced energy businesses, responsive to the yearnings of people in the state. It's a win-win proposition for our economy and our quality of life.

Across the political spectrum, people want clean air and water and new drivers of job growth and economic development. Eighty-four percent of New Mexicans support renewable energy. The clean energy transition will help manage rising risks of climate change, setting a far-reaching example of how states can exercise leadership and achieve a low-carbon economy. At the same time, the clean energy transition can lessen our dependence on unpredictable energy markets and volatile foreign governments. Crucially, the expansion of energy choice strengthens the forces of market competition in a crucial sector of our state's economy.



New Mexico policymakers can take clear and immediate steps to realize the promise of a high-employment clean energy economy. Specifically, this report recommends:

- **Free and Competitive Markets:** Require competitive market-based assessments such as RFPs for all new resource acquisitions in order to allow investor-owned utilities, regulators, and energy consumers to evaluate and compare all energy options before acquiring new energy supplies to ensure cost-effectiveness and transparency. Additionally, eliminate utility biases toward capital-heavy fossil fuel and nuclear projects.
- **Empower Communities to Make Their Own Energy Choices:** Allow people to pool their energy load and make purchasing decisions collectively through Community Choice Aggregation to reduce costs, create local jobs, and meet shared energy objectives like sustainability and price stability. Community Choice Aggregation (CCA) allows local governments to pool their electricity load, so that they can purchase or generate power on behalf of their residents, businesses, and municipal institutions. The idea of CCA is to work in partnership with a region's existing utility, which can continue to delivery power, maintain and manage the grid, manage billing and other customer services, while allowing communities to select their energy supplies.
- **Strong Statewide Standards:** Building on the success of New Mexico's existing Renewable Portfolio Standard (RPS) law and those in other high-performing states, strengthen clean energy targets to reflect the preference of 84% of New Mexicans and realize the vision of an all-renewable electricity sector.

The ultimate objective of this report is to demonstrate that a comprehensive clean energy transition is not only feasible—it's necessary and it's already underway. The costs of wind and solar have declined exponentially over the past decade: In 2016, solar and wind became cheaper than any fossil fuel capacity. Concurrent with these falling costs, political support for renewables has risen to unprecedented levels.



New Mexico is poised to become an active driver and beneficiary of this trend. The transition to a 100% renewable electricity sector in New Mexico can happen with a series of clear steps:

- Undertake a responsibly-timed phase-out of existing coal and nuclear power plants:
 - Retire all remaining units of San Juan Generating Station (SJGS) by the end of the coal contract, which currently expires in mid-2022.
 - Terminate interests in 114 MW at Palo Verde Nuclear Generating Station Units 1 and 2, whose current leases expire in 2022 and 2023.
 - Retire 200 MW of coal at Four Corners Power Plant (FCPP) by 2025.
 - Withdraw from the remaining 288 MW of capacity at Palo Verde by 2030.
- Bring 1,200 MW of new solar and wind capacity online over the next 10 years and another 1,200 MW of new solar and wind capacity over the following 10 years.
- Adopt usage of large-scale energy storage systems.

The timing of these steps enables New Mexico to realize the benefits of a considerable economic stimulus through the construction of new clean energy generation facilities, while managing economic adjustments over time. A core principle of this clean energy transition is that it must be fair for all New Mexicans—providing improved livelihoods while lessening dependence on polluting fuels. It must also place those impacted by fossil fuel development and the closure of the state’s coal plants at the center of the transition process in order to ensure a “just” transition.

This energy transition respects our state’s land-based economic traditions while generating new opportunity for our people. Our current path has made our state’s economy vulnerable to the boom and bust of fossil fuel development and has failed to produce adequate employment, affordable energy, or sustainable environmental conditions. Thankfully, we now have a new, vital and viable path that encourages innovation, sustainability, competitiveness, and resilience. It’s up to New Mexican residents and policymakers to take steps today to ensure that we realize this vision.

An Ambitious & Feasible Energy Plan to Invest in New Mexico's Common Good

The United States is trailing behind other countries in renewable energy deployment. Leadership at the state level is particularly important given the barriers to national progress. The world's warming, and extreme weather events associated with human suffering, entered "truly uncharted territory" in 2016, according to the World Meteorological Organization (WMO). In its annual State of Global Climate report released in March 2017, the WMO confirmed 2016 was the hottest year on record, documented the new low for Arctic sea ice, and projected that changes in the Arctic and melting sea ice will continue to push extreme temperatures through 2017, even without 2016's strong El Niño influence. Climate disruption is already threatening our food and water supplies and is expected to be a leading cause of forced migration worldwide. In addition, costs incurred by changing climate patterns are estimated as high as \$60 trillion. (NOAA and Nature: 2015). Across the globe we are experiencing record high temperatures, unprecedented famine for tens of millions, and rising sea levels that threaten hundreds of millions worldwide. In the United States, almost 40 percent of the population lives in relatively high-population-density coastal areas. Coral reefs are spawning ground for a quarter of all marine species. They provide food for over 500 million people in 94 countries and territories. Rising sea temperatures could lead to the annual bleaching of 99 per cent of the world's reefs within the century. (Scientific Reports 2017). We've already lost 40% of the phytoplankton which is responsible for 50% of our global oxygen.

In New Mexico, we are experiencing reduced snowpack which translates into less water for agriculture and drinking. Scientists say we will have no forest here by 2050 because of forest die-off from bark beetles and drought. (Nature Climate Change 2017). Early false springs, torrential rains, and deep droughts have already seriously impacted agricultural production this year.

Climate change will impact nearly every aspect of New Mexico's economy. A recent study done by researchers at the Sandia National Laboratory considered impacts of temperature increases and precipitation declines on the half dozen industries with the greatest water consumption (e.g., agriculture, utilities, mining, chemical manufacturing). The study found that economic damages from increasing water scarcity and costs will be spread widely throughout the rest of the state's economy. There will be higher input costs, lower consumer incomes and spending, population changes and changes in the state's inter-regional competitiveness. Retail trade, food manufacturing and construction will be among the sectors most severely affected by these secondary effects but no sector will emerge unscathed. This study found New Mexico to be among the states with the largest projected percentage losses in income and employment, even though the full range of possible future heat, drought, and precipitation impacts was not considered and optimistic assumptions about adaptation to future water shortages were adopted.

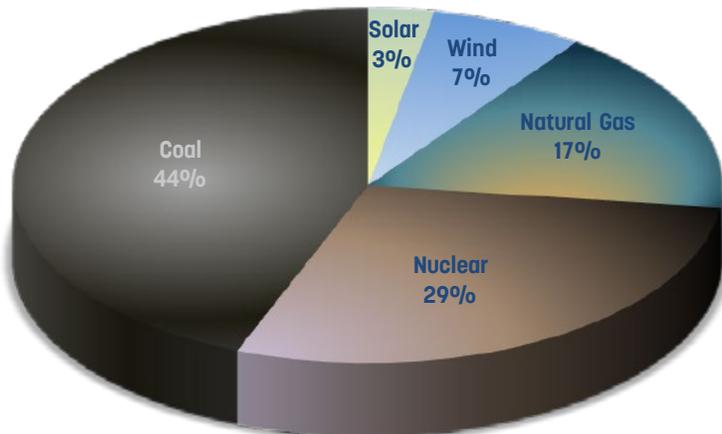
In addition to the Sandia study, the University of Oregon working with economists from the University of New Mexico produced a study, titled "An Overview of Potential Economic Costs to New Mexico of a Business-As-Usual Approach to Climate Change" and undertook an effort to estimate the direct economic costs of climate change to the New Mexico economy. Twenty-one estimation methods were brought to bear: the results must be considered approximations as indirect costs arising from reduced spending and employment were not included. Nonetheless, the results show the cost impact of climate change rising rapidly, doubling between 2020 and 2040 to \$3.3 billion per year.

New Mexico has potential to lead the nation's clean energy transition. In doing so, the state can accelerate economic growth and job creation while strengthening free choice in energy markets and making a bold contribution to address climate change.

New Mexico has made considerable progress over the past decade. Over \$1.4 billion in capital investments have already gone into the state's wind farms, and wind producers provide an estimated \$2.4 million annually in lease payments to landowners in the state. As solar prices have fallen dramatically—production is now 100 times cheaper than in 1978—the state's generation capacity has grown accordingly. Solar now powers the equivalent of 150,000 homes in New Mexico and the industry accounts for more than 2,900 solar jobs in 2016, a 54 percent increase from the year prior, when the state had 1,899 jobs.

But the state remains far from reaching its potential. Despite the strong and rising popularity of residential solar and high-profile development of utility-scale solar and wind, renewables are projected to remain only a relatively small portion of New Mexico's overall energy mix in 2018 unless we implement bold policy changes.

2018 Energy Mix for PNM Ratepayers



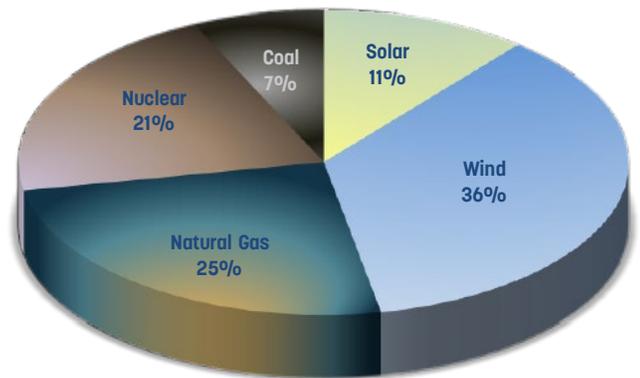
This report lays out a path to rapid and cost-effective growth for the clean energy sector moving forward. The focus of the report is on the specific policy choices that underlie the status quo as well as specific actions that state policymakers can take in the years ahead to realize the promise of clean energy transition. The report is built on an ambitious but achievable vision that is illustrated in the following charts.

Underlying this vision and the accompanying analysis is a focus on a responsible and just process. While climate change is an urgent challenge and the economic opportunities of energy transition are great, the report recognizes that the move to a clean energy sector must happen on a realistic timeframe and must start from an accurate assessment of the economic situation and current energy assets. It must also address the needs of those most directly impacted. The approach described in this report seeks to minimize costs while achieving ambitious environmental goals and maximizing employment and economic growth opportunities.

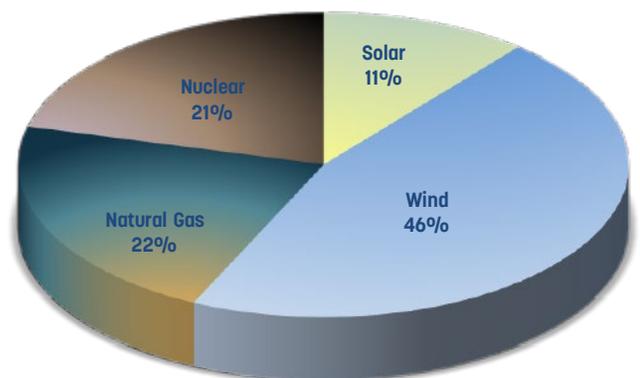
In April 2017, PNM announced that it is more cost effective to shutter the San Juan Generating Station in 2022 and the Four Corners Power Plant in 2031 because both plants will be uneconomic. But fourteen years is a very long transition time and if we wait we will miss opportunities for New Mexico's renewable energy leadership, including concomitant job growth, water savings, and health and environmental benefits. Both these plants are a drag on the economy *at this time*. The time to transition is now.

New Energy Economy's Proposed Transition

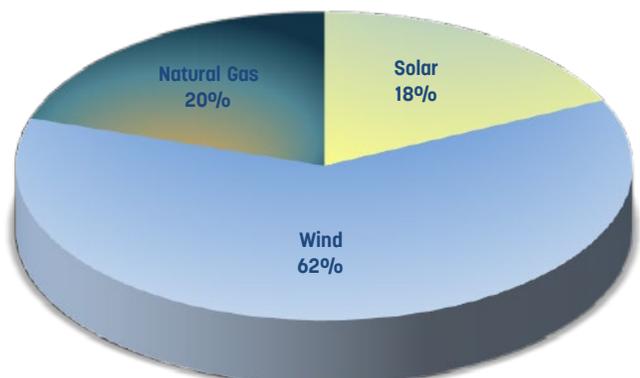
2023 Energy Mix



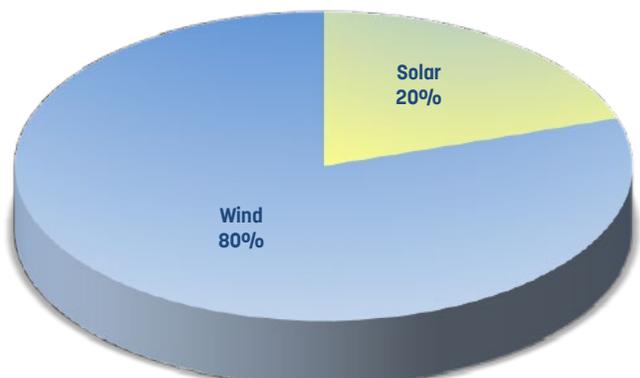
2025 Energy Mix



2030 Energy Mix



2035 Energy Mix



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www.NewEnergyEconomy.org.

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