New Mexico Comprehensive Energy Transition Strategy

Policy Memos - Innovation in Clean, Firm Power Generation

About CETS

The Comprehensive Energy Transition Strategy (CETS) is an initiative of the Energy, Minerals and Natural Resources Department (EMNRD) to develop New Mexico's first integrated roadmap for delivering reliable, affordable, safe, and sustainable energy. Launched in May 2025, the strategy will provide analysis and recommendations to guide near-, mid-, and long-term policy. These Draft Policy Memos form the CETS baseline analysis, combining research on existing policies and regulations with stakeholder engagement across the state legislature, agencies, industry, and advocacy organizations. Phase 2 (October 2025 - June 2026) will feature more extensive engagement and finalized recommendations.

Where New Mexico Stands Today

This context provides the foundation for the Phase I policy memos that follow.

Strong fiscal foundation
oil and gas revenues (currently about 40% of the general fund) and permanent funds that can support economic diversification.

Exceptional energy resources
including solar, wind, geothermal, and existing infrastructure with potential for regional transmission.

Community and workforce expertise
engaged Tribal and local communities, supportive policies, national laboratories, and skilled energy workforce.

Exposure to more extreme weather
increasing heat, droughts, and storms challenge grid resilience, energy reliability, and communities.

Phase 1: Policy Memos

New Mexico has made substantial progress in advancing its energy transition. Building on strong existing efforts, the policy memos in this phase identify strategic opportunities, implementation gaps, and enforcement challenges across nine critical areas:

1. **Innovation in Clean, Firm Power Generation**
Examines clean, firm power options—geothermal, nuclear, carbon capture, hydrogen, hydropower, and long-duration storage—to ensure reliability, affordability, and durable community support, advancing the energy transition.

2. **Grid Modernization**
Investigates how to align New Mexico's grid with its energy transition and economic growth goals and outlines targeted reforms to accelerate deployment and improve resilience.

3. **Electricity Transmission Capacity Expansion**
Examines the planning and permitting challenges that limit timely transmission deployment and outlines potential solutions to support transmission expansion to accelerate the clean energy transition.

4. **Decarbonization of the Building Sector**
Focuses on targeted reforms to strengthen the Sustainable Buildings Tax Credit, making it more equitable, transparent, and effective in driving building decarbonization statewide.

5. **Workforce Readiness and Equitable Opportunity**
Highlights opportunities to improve alignment between policy design and implementation, ensuring that New Mexico's clean energy investments deliver broad, equitable, and lasting economic benefits for its residents.

6. **Policy Implementation**
Examines how enhancing agency capacity, authority, tools, and resources can strengthen effective implementation of New Mexico's energy transition.

7. **Clear Subsurface Authorities and Definitions**
Explores how greater clarity for geologic hydrogen, geothermal, and methane can reduce uncertainty, attract investment, and advance New Mexico's energy transition.

8. **Energy Systems Data and Emissions Reporting**
Identifies data and governance gaps that limit New Mexico's ability to manage its energy transition effectively and outlines how to achieve close to real-time data visibility, evaluate policy impacts, and measure progress.

9. **Investing in the Future: Revenue Diversification**
Considers diversifying New Mexico's revenue base as the energy transition progresses into growing clean energy industries, reducing fiscal volatility, and stabilizing revenues.

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Memo #1: Innovation in clean, firm power generation: Support a mix of technologies to meet both interstate and intrastate energy needs

To: Secretary Melanie Kenderdine, New Mexico Energy, Minerals, and Natural Resources Department
From: The Comprehensive Energy Transition Strategy (CETS) team
Date: October 7, 2025
Subject: Innovation in clean, firm power generation: Support a mix of technologies to meet both interstate and intrastate energy needs

Bottom Line Up Front

New Mexico's path to 100% carbon-free electricity by 2045 requires scaling a diverse set of clean, firm resources – defined as zero- or low-carbon electricity that is available whenever and for as long as needed – including geothermal, nuclear, carbon capture, hydrogen, hydropower, and long-duration storage, to complement the state's fast-growing wind and solar generation. The state is well-positioned to lead with world-class renewable resources, a vibrant innovation ecosystem, and an emerging clean-tech sector, but faces persistent challenges: high capital costs, fragmented permitting, community distrust from past uranium mining, and reliability risks as renewable penetration deepens. This memo outlines opportunities and barriers across clean firm technologies and proposes targeted legislative and regulatory solutions, such as dispatch modeling, flexible clean energy standards, expedited permitting with community benefits agreements, and new tools to de-risk geothermal and geologic hydrogen exploration. With the right portfolio of low- and zero-carbon power sources, New Mexico can take the necessary steps to ensure reliability, affordability, and durable community support in the next phase of the energy transition.

Issue Statement

New Mexico is at a crucial juncture in its clean energy transition: building enough reliable, clean, firm power to complement its fast-growing wind and solar resources, which rank tenth and second in the nation, respectively.[1] Meeting the state's goal of 100% carbon-free power by 2045 will require a diversified portfolio that can ensure reliability, affordability, and resilience even in extreme conditions. Without clean firm power, New Mexico would have to overbuild renewables and transmission to maintain reliability and meet clean energy targets, driving up costs and straining the grid.

The region's electricity demand is expected to grow by more than 40% by 2040.[2] Demand drivers include urban population growth, industrial expansion, and increased electrification, with the industrial sector already consuming 40% of the state's electricity.[3]

High-growth industry drivers include the BorderPlex, SpacePlex, healthcare, and data centers to support artificial intelligence. In other words, load growth means economic growth.

New energy investments are already working to meet rising demand, as one major expansion is projected to generate up to $5 billion in economic impact over the next five years.[4] While New Mexico currently exports about 50% of its generation, this sustained industrial demand growth will require additional clean, firm capacity to meet the state's clean energy goals and maintain grid reliability for both local needs and regional export.[5]

At the same time, New Mexico is uniquely positioned to lead the region in renewables development. As one stakeholder put it, the state's role in the Western Interconnect is "unique and non-replaceable," a statement that refers to New Mexico's exceptional wind resources and existing long-haul transmission capacity, making it central to decarbonization efforts across the West. Further, the state's Energy Transition Act (ETA) requires that 80% of New Mexico's generation mix be renewables by 2040, which reduces the potential for other clean energies like nuclear and hydrogen, and for other options like decarbonizing the state's existing fossil-fired fleet.

Intermittent renewables, like wind and solar, are often framed as competing with low- or zero-carbon dispatchable sources like geothermal, nuclear, hydrogen, and fossil-fueled electricity with carbon capture and storage (CCS). Yet, that lens fails to acknowledge how the grid services offered by clean, firm generation enable even higher penetrations of wind and solar. In this memo, "clean" means zero or low-carbon sources, "firm" means power that can provide electricity whenever and for as long as it is needed, and "dispatchable" refers to resources that can be turned on or off to meet demand but may not be available indefinitely (for example, batteries or hydropower with seasonal constraints).[a] Intermittent and clean firm energy sources are complementary, not competitive, and the state needs all the generation it can bring online to support New Mexico's goals and serve growing demand across the Southwest region.

Utilities and co-ops are on track to meet 2025 renewable energy targets under the ETA, but higher penetrations of renewables are raising concerns around reliability and affordability. As of 2024, approximately half of New Mexico's in-state electricity generation comes from renewables, including 37% from wind and 13% from solar.[6] Utilities have reported that they are on pace to satisfy the 40% renewable portfolio standard requirement for 2025, with some already ahead of schedule.[7] Further, the Public Regulation Commission (PRC) noted in its 2024 report to the legislature that power purchase agreement (PPA) rates as of 2022

[a] Dispatchability can be categorized in two ways. *Technically* dispatchable resources are those that can physically generate power whenever needed, while *economically* dispatchable resources are those that can be called upon when it is cost-effective, meaning their operating costs are low enough to compete in the market at a given time. In this memo we focus on the technically dispatchable definition to capture the full spectrum of technologies that could be available to New Mexico in the future.

were quite low at $25.49/MWh.[8] These PPA prices are far below the threshold the legislature set for requiring purchases under the Renewable Energy Act, now at $72.41/MWh.[9] However, that threshold only addresses the energy costs, not the full system cost. Further, third parties like LevelTen Energy have observed increasing PPA prices nationally, averaging $64.43/MWh as of Q2 2025.[10]

However, these successes in meeting renewable energy targets have sparked growing concerns about the reliability and affordability of the grid. As one stakeholder put it, "reliability goes hand in hand because without firm resources, there's potential for brownouts and blackouts in extreme weather conditions, which gets worse every year." Further, modeling of Public Service Company of New Mexico (PNM)'s system shows that operating the grid with intermittent renewables alone requires significant overbuilding, raising the specter of "gold-plated" systems that burden ratepayers with higher costs.[11] As one stakeholder cautioned, "utilities will have to overbuild systems for renewables to be primary because they're not firm and call-able like traditional capacity." These concerns are compounded by the loss of federal tax credits for wind and solar under the Trump Administration's One Big Beautiful Bill, which will further increase costs.

New Mexico is uniquely positioned to lead in developing solutions. The state's national laboratories, universities, and emerging startups are advancing a diverse set of projects in clean, firm technologies, creating a pipeline from research to deployment. Sandia National Laboratories has pioneered geothermal drilling techniques and advanced closed-loop system designs that reduce water requirements, while Los Alamos National Laboratory is developing advanced microreactors and novel carbon monitoring tools.[12,13] New Mexico Tech has built statewide geothermal resource maps and is leading regional partnerships on carbon capture and storage. Los Alamos and Navajo Technical University partnered to establish a fellowship that is yielding research on fuel cell technologies and additive manufacturing.

These research strengths have already translated into commercialization successes: Albuquerque-based Pajarito Powder, born from Los Alamos and the University of New Mexico catalyst research, is now a global supplier of hydrogen fuel cell and electrolyzer materials, and BayoTech, spun out from Sandia, is deploying modular hydrogen generators manufactured in New Mexico. Combining the capabilities of the national laboratories with union partnerships to expand apprenticeship programs that connect cutting-edge research to skilled jobs in deployment can give New Mexico a competitive edge going forward.

However, the transition to these technologies is not without challenges. Emerging clean, firm generation technologies face hurdles like high capital costs, regulatory uncertainties, community distrust, and outdated grid infrastructure that requires upgrades to integrate diverse energy sources. Moreover, ensuring these projects are developed at the speed required to meet New Mexico's renewable energy targets will demand a modernized regulatory process that distinguishes between domestic consumption and export markets,

accounts for distinct urban versus rural deployment strategies, and coordinates efforts between state, federal, and Tribal entities.

EFI Foundation survey data from New Mexico reinforces this concern: more than half of respondents (53%) cited outdated or conflicting regulations as barriers to electricity system improvements, while 54% pointed to similar gaps in energy supply permitting and regulation. Several respondents pointed to "coordination challenges between state, federal, and Tribal authorities" as persistent obstacles. With the right policies, regulatory support, and strategic investments in emerging technologies, New Mexico can lead the way in demonstrating how clean, firm power generation can complement wind and solar to enable a more sustainable, resilient energy future. This memo outlines two complementary pathways for achieving that vision: (1) leveraging carbon capture and storage to convert new and existing fossil-fueled and biomass resources into sources of clean, firm electricity and modest state revenues, and (2) advancing emerging clean, firm technologies that foster innovation, strengthen community engagement, and create long-term, high-quality jobs across the state.

Supporting Analysis

This analysis draws on three primary sources: (1) review of relevant statutes, regulations, and policy frameworks; (2) semi-structured interviews with stakeholders across state agencies, industry, and advocacy groups; and (3) survey responses from over 60 stakeholders representing government, industry, community organizations, and research institutions. The triangulation of these methods reveals significant opportunities to accelerate New Mexico's clean energy transition through strategic technology deployment. These findings are described in further detail below.

Carbon capture and storage could enable New Mexico to convert existing fossil-fueled electricity production and biomass resources into sources of clean, firm power and modest state revenues.

Changes to the Section 45Q tax credit for carbon capture and storage could create a pathway for retrofitting the state's fossil-fired fleet for $0.02-0.07 per kWh. Today, natural gas already serves as a fast-ramping, dispatchable resource that helps balance fluctuations in wind and solar output. Pairing these plants with CCS technology would allow the state to preserve those grid services while substantially reducing carbon emissions. Historically, developers seeking the 45Q tax credit could earn up to $85/metric ton of captured carbon if it was permanently stored in geologic formations. If that carbon was instead used for enhanced oil recovery (EOR), the developer could only receive up to $60/metric ton. EFI Foundation's cost analyses estimate that even after factoring in $85/ton for the 45Q tax credit, adding CCS to existing coal plants would still cost between $11-$50/ton, and for natural gas, between $38-$92/ton. Put another way, the cost is higher

than the value of the 45Q tax credit, making projects unprofitable absent other sources of revenue.[14]

Under the One Big Beautiful Bill passed by Congress in July 2025, using captured CO_2 for EOR now qualifies for the full $85/metric ton. Building upon the EFI Foundation's CCS cost analyses, a rough estimate puts the cost of adding CCS to an existing natural gas-fired power plant and using the captured CO_2 for EOR at about $53/ton (net of the 45Q tax credit), which translates to about $0.02/kWh if the plant is run consistently.[b] If the plant is not run as often, that cost could rise to $198/ton, or $0.07/kWh. With average residential electricity prices of $0.14/kWh, such retrofits would still represent an additional 13%-50% increase.[15] Such an approach inevitably reduces emissions less from a lifecycle perspective compared with geologic storage of the captured CO_2, but the specific impacts for New Mexico would need to be rigorously analyzed. As a result, pursuing CCS with EOR must be considered within the context of affordability and the state's emissions reduction goals.

Biomass energy with carbon capture and storage (BECCS) could help New Mexico tackle two pressing challenges at once: wildfire risk and firm clean power. One interviewee estimated that the state currently treats only 14,000 acres of forest a year, compared to the 1.5 million acres needed for healthy forests, leaving millions of tons of low-value wood and slash unutilized. In fact, on the western side of the state, New Mexico has an estimated 1.4 million tons of forest biomass that could be used for energy purposes, though the techno-economics of exploiting that resource must be more fully investigated.[16] BECCS facilities could convert this material into firm and clean electricity while capturing and storing the carbon, producing net-negative emissions and further mitigating risk to wildfires. One interviewee raised the prospect of the biomass industry supporting energy transition goals, asking, "We're going to have a massive supply, so what do we do with it?"

BECCS also holds promise as a rural economic development tool. As the EFI Foundation *Taking Root* report highlights, BECCS can create economic value by linking forest restoration and wildfire mitigation to energy production, turning overstocked biomass into a feedstock stream that improves forest health while reducing project costs.[17] Interviewees noted the absence of private-sector firms capable of processing forest residues, combined with a looming workforce succession crisis in forestry and biomass sectors. By anchoring new markets in rural and Tribal communities, BECCS projects could create stable demand for forestry services, offer retraining opportunities for oil and gas workers, and channel investments into areas historically bypassed by large-scale renewable projects.

[b] These figures assume higher cost first-of-a-kind deployment using low-cost utility financing costs of 9.6%. They also assume additional revenues of $20/ton for selling the captured CO_2 and a reduction in storage costs from $30/ton down to $15/ton. Given New Mexico's plethora of CO_2 pipelines, the transport costs may be lower than the assumed $15/ton.

Federal permitting slows carbon storage development, hampering efforts to add CCS to coal- and gas-fired power plants, but New Mexico's push for Class VI primacy could streamline approval timelines. The state is actively pursuing Class VI primacy from the U.S. Environmental Protection Agency (EPA), which would authorize New Mexico's Oil Conservation Division (OCD) to directly regulate CO_2 injection wells, streamlining permitting and reducing project risk. In 2025, the legislature enacted HB 485, the Geologic Carbon Dioxide Storage Stewardship Act, which clearly establishes that pore space belongs to the surface estate, creating a foundational legal framework for long-term storage rights and liability. Importantly, the Navajo Transitional Energy Company (NTEC)—a Navajo Nation enterprise—was awarded $6.55 million by the U.S. Department of Energy (DOE) for a Front-End Engineering Design (FEED) study to evaluate retrofitting Four Corners Power Plant with carbon capture technology. However, the project was included on a list of 321 projects canceled by DOE in October 2025.[18] The continued operation of the plant could preserve 600 jobs and $183 million per year in economic impact to the Navajo Nation while maintaining regional grid reliability.[19]

New Mexico's significant carbon storage potential could become a growing revenue source through stewardship fees—particularly as geologic projects scale. A presentation to the legislature by the New Mexico Institute of Mining and Technology notes that New Mexico has the potential to store up to 26 billion tons of carbon dioxide within the state's geologic formations.[20] The state also has some of the most robust carbon dioxide transportation infrastructure. Under House Bill 458, the state proposes a stewardship fee of $0.10 per ton stored. While valuable, this rate is modest compared to Louisiana's structure, where operators pay $7.50 per ton for sequestration, generating substantially higher revenues for local and state governments.[21]

Potential Solutions

The Legislature could appropriate funds for EMNRD to commission a wind and solar dispatch map for New Mexico. Such an analysis could help identify potential resource reliability risks and pinpoint where clean, firm power may be most valuable. As shown in a California CCS case study, wind, solar, and hydro outputs vary seasonally and are not complementary, with some periods stretching seven to ten days when wind generation is minimal and solar cannot meet peak demand.[22] These types of gaps raise questions about the adequacy of storage, the need for redundant fuel-supported generation, and the benefits of stronger regional grid connections. Applying a similar analysis in New Mexico would provide regulators and utilities with a clearer picture of when and where renewables can be relied upon, as well as the necessary mix of firm resources, storage, and transmission to maintain reliability and contain costs. Such an analysis would complement RETA's upcoming transmission and storage planning analysis, which will identify areas where transmission and storage should be deployed.

The Legislature could revise the ETA to maintain the requirement of 100% clean energy while allowing a greater proportion of the generation mix to include low- or zero-

carbon, but not necessarily renewable, sources. Michigan offers a relevant model: in 2023, it adopted legislation requiring utilities to achieve 60% renewables by 2035 and 100% clean energy by 2040, defining "clean" to include renewables as well as other low-carbon resources such as nuclear and natural gas with carbon capture and storage.[23] This approach preserves ambitious decarbonization goals while giving utilities flexibility to deploy firm, low-carbon technologies that ensure reliability. A similar framework in New Mexico would better align incentives with its diverse resource mix and position CCS as a viable tool for decarbonizing existing natural gas assets.

Emerging clean, firm technologies offer opportunities for technological innovation, proactive community engagement, and long-term demand for workers.

New Mexico has enormous geothermal potential. Although development has been limited to date, new investments and innovations are positioning the state as a national leader. The opportunity is transformative: the state holds over 163 gigawatts of geothermal capacity, or about 16 times the state's installed electricity generation capacity.[24] However, this figure includes low-temperature resources more conducive to building heating and cooling. A DOE analysis estimated a more modest deployment potential of around 5 GW of enhanced geothermal by 2050.[25] Looking nationally, estimates suggest U.S. geothermal resources are so great that next-generation geothermal could power the country for thousands of years.[26] These resources could serve diverse applications, from utility-scale electricity generation to industrial heat production and building heating and cooling through ground-source heat pumps. Despite this potential, development has been limited in New Mexico. The only active utility-scale facility today is the 15-MW Lightning Dock plant in the state's southwest.

Sandia National Laboratories' work on geothermal can bolster the state's innovation edge in supporting emerging clean firm power technologies. Much of this work is done in partnership with geothermal operators, service companies, universities, and government agencies, ensuring innovations are tested in real-world conditions.[27] Recently, Sandia researchers also led computational modeling of closed-loop geothermal systems, simulating millions of design variations to evaluate their economic viability and inform DOE cost targets.[28]

Geothermal resources can potentially be brought online quickly and help mitigate downturns in oil and gas drilling. Emerging techniques for next-generation geothermal production benefit from existing oil and gas infrastructure and industry expertise. Some geothermal developers see a pathway to bringing new geothermal generation capacity online in as little as 18 months, faster than any other form of clean firm power.[29] They describe how geothermal developers can use idle oil and gas rigs when drilling declines. For example, as of October 2025, rig counts in New Mexico had dropped to 96, down from 111 in March of 2024, leaving over a dozen rigs available for other uses. [30,31]

The legislature has passed a series of bills to expand funding, lower barriers, and create incentives for both utility-scale and distributed geothermal projects. In 2025, HB 2 tripled the annual allocation to the Geothermal Projects Development Fund from $5 million to $15 million, supporting detailed feasibility studies that help reduce risk for early-stage projects.[32] Recognizing the overlap between oil and gas infrastructure and geothermal potential, HB 361 created a legal pathway for converting existing wells for geothermal power or energy storage—an approach that experts note could save significant drilling costs and enable faster scaling.

When asked what additional policy improvements would be most impactful, less fragmented permitting emerged as a common theme in EFIF's interviews. As one interviewee put it, "Once we start, we have to know we can get the right permits. In Colorado, for instance, they've made an effort to put all that permitting into one department rather than having five different places to go to get a permit."

Hydrogen offers diverse clean energy applications, and New Mexico's geologic hydrogen potential provides an opportunity to advance clean firm power. Many modern gas turbines are being designed or retrofitted to be "H_2-ready" (capable of burning hydrogen blends or even 100% hydrogen).[33] Clean hydrogen also supports the energy transition by enabling decarbonization in areas such as industrial fuel use and heavy transportation, where electricity is not a practical substitute.[c] The U.S. Geological Survey's first national assessment of geologic hydrogen notes that "particularly high concentrations have been found in the midcontinent region, around the Four Corners area (Arizona, Colorado, New Mexico, and Utah)."[34]

Sandia and Los Alamos National Laboratories are also leading innovation on geologic hydrogen. Sandia is developing research on subsurface storage, hydrogen generation processes, and modeling tools to evaluate production pathways in underground formations.[35] Los Alamos is leading DOE–funded projects, such as the GeoHydRA initiative, which seeks to accelerate natural hydrogen production through geochemical and hydromechanical stimulation, and the OPERATE-H_2 platform, which develops risk assessment and optimization tools for underground hydrogen storage.[36] [37] Such innovative initiatives are essential for scaling geologic hydrogen into the next breakthrough clean energy solution.

Public perception linking hydrogen to fossil fuel expansion creates political barriers that require community engagement. Local opposition often frames hydrogen as a

[c] In heavy industry, processes such as steelmaking, cement production, and high-temperature chemical manufacturing require heat levels far beyond what can be delivered efficiently through electrification. In transportation, sectors such as long-haul trucking, shipping, and aviation face limits from battery weight, range, and refueling time, making electricity alone insufficient. Hydrogen provides an energy-dense, storable, and flexible alternative that can deliver the necessary power and reliability in these hard-to-electrify applications.

mechanism to extend the life of the oil and gas industry, leading to distrust of new initiatives regardless of potential environmental or economic benefits. For example, local reporting frames a decision to move away from building a hydrogen pipeline in the northwest corner of the state and instead building one that would carry natural gas as a surprise and betrayal.[38] Stakeholders noted that this skepticism mirrors resistance to proposals, such as using treated produced water for industrial purposes. As one interviewee stressed, "hydrogen can look a zillion different ways, so to just discount it outright doesn't do service to the opportunities. It has to be clean, and that's our job as regulators to make sure it's clean". Even when framed as non-consumable applications, such efforts have faced rejection.

These dynamics underscore how longstanding grievances against the extractive sector complicate efforts to position clean hydrogen as part of New Mexico's clean energy transition. Engaging thoughtfully with host communities is crucial to addressing these concerns and advancing clean hydrogen responsibly. Clean hydrogen will be an essential complement to clean electricity, providing a flexible, storable energy carrier for sectors that are difficult to electrify. Moreover, in New Mexico, blue hydrogen can play a near-term role by leveraging the state's existing natural gas supply and CCS potential.

Coal-to-nuclear conversions offer a promising pathway to repurpose existing infrastructure while preserving and transitioning local workforces, though developers must contend with deep distrust of the nuclear industry based on historical uranium mining. In Wyoming, TerraPower and PacifiCorp are developing an advanced nuclear demonstration at PacifiCorp's retiring Naughton coal site in Kemmerer and have emphasized retraining and employing much of the existing workforce in plant construction, operations, and maintenance.[39] The project's site was selected after an evaluation process that included meetings with community members and local leaders across multiple candidate towns—each of which expressed strong interest—with Kemmerer ultimately named the preferred location near the retiring coal units.

By co-locating at former coal sites, developers can leverage transmission interconnections, water rights, and a skilled workforce already in place, reducing project costs and helping preserve local tax bases. For workers, it creates an easier transition with continuity of employment and wages rather than displacement. If pursued in New Mexico, a coal-to-nuclear pathway could help stabilize communities like those around Four Corners while advancing the state's clean power and economic diversification goals.

In Northwest New Mexico, particularly on Tribal lands, the legacy of uranium mining has left deep social, environmental, and health impacts that fuel skepticism toward new nuclear projects. Community members often point to contamination and inadequate remediation as reasons to distrust proposals for advanced reactors or interim waste storage, with many stakeholders viewing nuclear development as a continuation of extractive harms.

Potential Solutions

The Legislature could authorize the Commissioner of Public Lands to issue Research & Demonstration Leases for state trust lands. These leases would allow universities, laboratories, startups, and private developers to temporarily test emerging energy technologies—including novel drilling techniques for geothermal, geologic hydrogen exploration, or carbon storage—without requiring the full commercial leasing framework designed for long-term resource extraction. Components of the leases could include (i) short, defined terms (e.g., up to two years, with limited renewals), (ii) fair market compensation, (iii) bonding and reclamation requirements, (iv) environmental and cultural resource protections, and (v) compatibility provisions to ensure required permits from other departments (e.g., OCD) are secured.

To comply with the Enabling Act's fiduciary duty to manage trust lands for the benefit of public schools and other beneficiaries, the enabling statute should expressly require that Research & Demonstration Leases meet fair-market standards. If the Legislature wished to authorize in-kind or below-market compensation (e.g., data sharing or workforce training in lieu of cash rent), Congressional action or approval from the U.S. Department of the Interior may be necessary to ensure compliance with federal trust obligations.

The Legislature could amend the Public Utility Act to expressly authorize the PRC to create expedited "fast lanes" for approving Certificates of Public Convenience and Necessity (CPCNs) for new generation resources—including nuclear—that demonstrably advance New Mexico's ETA targets for zero-carbon electricity. As a condition of accessing these accelerated pathways, developers would be required to enter into binding Community Benefits Agreements (CBAs) with host communities. This approach would tie faster permitting to enforceable commitments on local hiring, workforce retraining, environmental protections, and direct community investments, ensuring that benefits flow to the regions most directly affected. States like New York have embedded CBAs in renewable and transmission siting processes to balance speed with equity, showing how engagement and accountability can be codified without slowing deployment.[40]

The Legislature could also amend other state permitting statutes beyond the PUA—including those governing the Environment Department (Chapter 74), the State Land Office (Chapter 19), and the Office of the State Engineer (Chapter 72)—to establish similar "fast lanes" for projects that commit to binding CBAs. This would create a consistent cross-agency framework: developers who want accelerated approvals must deliver enforceable local benefits. Such a model would encourage early, structured collaboration between developers and host communities, reduce litigation risk, and speed progress on the clean energy transition while building durable public trust in large-scale energy infrastructure.

The PRC could introduce creative rate designs to enable advanced clean technology deployment while protecting ratepayers from cost burdens. In Nevada, Google worked with the utility NV Energy to create a *Clean Transition Tariff* that allowed the utility to buy Fervo's enhanced geothermal power while ensuring ordinary ratepayers do not see higher bills.[41,42] Under the deal, Google covers the added cost of geothermal compared to cheaper options like solar or gas, while the utility and its customers benefit from having a new 24/7 clean power source on the grid. Regulators approved the approach because it proved that advanced clean resources can be integrated without shifting costs onto households or small businesses. Further, DOE has indicated an openness to hosting such energy projects on DOE lands if they support AI infrastructure development, potentially providing an opportunity to bring projects online more quickly.[43]

EMNRD could convene a multi-party Geothermal & Geologic Hydrogen Resource Mapping Consortium—bringing together New Mexico Tech/UNM, Sandia, Los Alamos, USGS, ARPA-E, and industry—to develop high-precision subsurface playbooks that lower exploration risk. The initiative would align with USGS's efforts to assess terrestrial hydrogen potential (e.g., high-pressure subterranean H_2 systems) alongside geothermal mapping, and build on ARPA-E's H2@Scale / Subsurface Hydrogen programs that fund novel exploration strategies.[44,45] The consortium could merge New Mexico's legacy data with new geophysical and geochemical surveys, using national-lab partnering structures (e.g., CRADAs or Work-For-Others agreements) to accelerate joint tool development and field experimentation.[46] Outputs would include an open web atlas of geothermal and hydrogen play fairways, with layered metrics (temperature, permeability proxies, existing well logs, projected hydrogen pressure zones) available to developers, regulators, and communities. Funding could require developer cost shares or in-kind participation. Over time, the consortium could commission focused drilling campaigns for the most promising zones, publish transparent methods, and integrate feedback from local and cultural stakeholders to ensure equitable deployment.

Summary of Potential Solutions

Key
Solution may be pursued through:
Legislative Action
Administrative/Regulatory Action

Table 1. Feasible and Impactful Solutions

Gap	Feasible and Impactful Solutions
	**The Legislature could appropriate funds for EMNRD to commission a wind and solar dispatch map for New Mexico. Such an analysis could help identify potential resource reliability risks and pinpoint where clean, firm power may be most valuable.** As shown in a California CCS case study, wind, solar, and hydro outputs vary seasonally and are not complementary, with some periods stretching seven to ten days when wind generation is minimal and solar cannot meet peak demand. These types of gaps raise questions about the adequacy of storage, the need for redundant fuel-

Carbon capture and storage could enable New Mexico to convert existing fossil-fueled electricity production and biomass resources into sources of clean, firm power and modest state revenues.	supported generation, and the benefits of stronger regional grid connections. Applying a similar analysis in New Mexico would provide regulators and utilities with a clearer picture of when and where renewables can be relied upon, as well as the necessary mix of firm resources, storage, and transmission to maintain reliability and contain costs. Such an analysis would complement RETA's upcoming transmission and storage planning analysis, which will identify areas where transmission and storage should be deployed.
	The Legislature could revise the ETA to maintain the requirement of 100% clean energy while allowing a greater proportion of the generation mix to include low- or zero-carbon, but not necessarily renewable, sources. Michigan offers a relevant model: in 2023, it adopted legislation requiring utilities to achieve 60% renewables by 2035 and 100% clean energy by 2040, defining "clean" to include renewables as well as other low-carbon resources such as nuclear and natural gas with carbon capture and storage. This approach preserves ambitious decarbonization goals while giving utilities flexibility to deploy firm, low-carbon technologies that ensure reliability. A similar framework in New Mexico would better align incentives with its diverse resource mix and position CCS as a viable tool for decarbonizing existing natural gas assets.
 Emerging clean, firm technologies offer opportunities for technological innovation, proactive community engagement, and long-term demand for workers.	**The Legislature could authorize the Commissioner of Public Lands to issue Research & Demonstration Leases for state trust lands.** These leases would allow universities, laboratories, startups, and private developers to temporarily test emerging energy technologies—including novel drilling techniques for geothermal, geologic hydrogen exploration, or carbon storage—without requiring the full commercial leasing framework designed for long-term resource extraction. Components of the leases could include (i) short, defined terms (e.g., up to two years, with limited renewals), (ii) fair market compensation, (iii) bonding and reclamation requirements, (iv) environmental and cultural resource protections, and (v) compatibility provisions to ensure required permits from other departments (e.g., OCD) are secured. To comply with the Enabling Act's fiduciary duty to manage trust lands for the benefit of public schools and other beneficiaries, the enabling statute should expressly require that Research & Demonstration Leases meet fair-market standards. If the Legislature wished to authorize in-kind or below-market compensation (e.g., data sharing or workforce training in lieu of cash rent), Congressional action or approval from the U.S. Department of the Interior may be necessary to ensure compliance with federal trust obligations.
	The Legislature could amend the Public Utility Act to expressly authorize the PRC to create expedited "fast lanes" for approving Certificates of Public Convenience and Necessity (CPCNs) for new generation resources—including nuclear—that demonstrably advance New Mexico's ETA targets for zero-carbon electricity. As a condition of accessing these accelerated pathways, developers would be required to enter into binding Community Benefits Agreements (CBAs) with host communities. This approach would tie faster permitting to enforceable commitments on local hiring, workforce retraining, environmental protections, and direct community investments, ensuring that benefits flow to the regions most directly affected. States like New York have embedded CBAs in renewable and transmission siting processes to balance speed with equity, showing how engagement and accountability can be codified without slowing deployment.
	The Legislature could also amend other state permitting statutes beyond the PUA—including those governing the Environment Department (Chapter 74), the State Land Office (Chapter 19), and the Office of the State Engineer (Chapter 72)—to establish similar "fast lanes" for projects that commit to binding CBAs. This would create a consistent cross-agency framework: developers who want accelerated approvals must deliver enforceable local benefits. Such a model would encourage early, structured collaboration between developers and host communities, reduce litigation risk, and speed progress on the clean energy transition while building durable public trust in large-scale energy infrastructure.

	The PRC could introduce creative rate designs to enable advanced clean technology deployment while protecting ratepayers from cost burdens. In Nevada, Google worked with the utility NV Energy to create a *Clean Transition Tariff* that allowed the utility to buy Fervo's enhanced geothermal power while ensuring ordinary ratepayers do not see higher bills. Under the deal, Google covers the added cost of geothermal compared to cheaper options like solar or gas, while the utility and its customers benefit from having a new 24/7 clean power source on the grid. Regulators approved the approach because it proved that advanced clean resources can be integrated without shifting costs onto households or small businesses. Further, DOE has indicated an openness to hosting such energy projects on DOE lands if they support AI infrastructure development, potentially providing an opportunity to bring projects online more quickly.
	EMNRD could convene a multi-party Geothermal & Geologic Hydrogen Resource Mapping Consortium—bringing together New Mexico Tech/UNM, Sandia, Los Alamos, USGS, ARPA-E, and industry—to develop high-precision subsurface playbooks that lower exploration risk. The initiative would align with USGS's efforts to assess terrestrial hydrogen potential (e.g., high-pressure subterranean H_2 systems) alongside geothermal mapping, and build on ARPA-E's H2@Scale / Subsurface Hydrogen programs that fund novel exploration strategies. The consortium could merge New Mexico's legacy data with new geophysical and geochemical surveys, using national-lab partnering structures (e.g., CRADAs or Work-For-Others agreements) to accelerate joint tool development and field experimentation. Outputs would include an open web atlas of geothermal and hydrogen play fairways, with layered metrics (temperature, permeability proxies, existing well logs, projected hydrogen pressure zones) available to developers, regulators, and communities. Funding could require developer cost shares or in-kind participation. Over time, the consortium could commission focused drilling campaigns for the most promising zones, publish transparent methods, and integrate feedback from local and cultural stakeholders to ensure equitable deployment.

Stakeholder Overview

The following table and list highlight examples of legislative champions (lawmakers who have sponsored or supported policies relevant to clean, firm power) and other stakeholders whose roles, expertise, or influence intersect with clean, firm power issues in New Mexico.

Table 2. Potential Legislative Champions

Role	Name	District	Justification
Senator	Liz Stefanics	39	Chair of Senate Conservation and Water & Natural Resources Committees; supportive of geothermal and energy storage legislation and sponsor of statewide clean energy deployment bills.
Rep	Meredith Dixon	20	Vice Chair of House Appropriations & Finance; active in supporting funding streams for clean energy innovation, including geothermal and CCS-related investments.
Rep	Angelica Rubio	35	Advocate for equitable clean energy transition; co-sponsored legislation on workforce retraining relevant to geothermal and hydrogen.
Senator	Mimi Stewart	17	Senate President Pro Tempore; supported legislation establishing the Community Benefit Fund and funding for geothermal and transmission expansion.

Preliminary List of Key Stakeholders

- **Regulatory Agencies**: Public Regulation Commission (PRC); Oil Conservation Division (OCD), Energy Conservation and Management (ECAM)
- **State Agencies**: Energy, Minerals, and Natural Resources Department (EMNRD); State Land Office (SLO); New Mexico Finance Authority (NMFA)
- **Quasi-Governmental Entities**: Renewable Energy Transmission Authority (RETA); State Investment Council (SIC)
- **Investor-Owned Utilities and Cooperatives**: Public Service Company of New Mexico (PNM); El Paso Electric; SPS/Xcel Energy; New Mexico Rural Electric Cooperative Association and member co-ops; Tri-State Generation & Transmission; Western Farmers Electric Cooperative
- **Research and Technical Institutions**: Sandia National Laboratories; Los Alamos National Laboratory; New Mexico Tech (NMT); University of New Mexico (UNM); Navajo Technical University (NTU)
- **Industry and Developers**: Pajarito Powder; BayoTech; XGS Energy; Holtec International; Pattern Energy; Invenergy; SunZia Transmission
- **Tribal Governments and Organizations**: Navajo Nation (through Navajo Transitional Energy Company); All Pueblo Council of Governors; Jicarilla Apache Nation (geothermal and hydrogen resource potential)
- **Labor and Workforce Organizations**: New Mexico Building and Construction Trades Council; International Brotherhood of Electrical Workers (IBEW); Tribal workforce training programs in collaboration with NTU and local unions
- **Community-Based and Environmental Organizations**: NM Coalition of Sustainable Communities; Conservation Voters NM Education Fund; Four Corners Economic Development; Diné CARE (Citizens Against Ruining our Environment)

References

[1] New Mexico State Land Office. "Office of Renewable Energy." https://www.nmstatelands.org/divisions/commercial-resources/renewable-energy/.

[2] Energy Conservation and Management Division, New Mexico Office of the Energy, Minerals, and Natural Resources Department. "Electric Grid Modernization Update." January 10, 2025. https://www.emnrd.nm.gov/ecmd/wp-content/uploads/sites/3/ECAM-Electric-Grid-Modernization-Update-1.10.25.pdf.

[3] Xcel Energy. "Xcel Energy Announces Portfolio of New Power Projects to Meet Growing Demand in Texas and New Mexico." News release, July 18, 2025. https://newsroom.xcelenergy.com/news/xcel-energy-announces-portfolio-of-new-power-projects-to-meet-growing-demand-in-texas-and-new-mexico.

[4] Ainvest. "Xcel Energy to Invest $5 Billion in New Power Projects in Texas and New Mexico to Meet Growing Electricity Demand by 2030." July 18, 2025. https://www.ainvest.com/news/xcel-energy-invest-5-billion-power-projects-texas-mexico-meet-growing-electricity-demand-2030-2507/.

[5] Ainvest. "Xcel Energy to Invest $5 Billion in New Power Projects in Texas and New Mexico to Meet Growing Electricity Demand by 2030." July 18, 2025. https://www.ainvest.com/news/xcel-energy-invest-5-billion-power-projects-texas-mexico-meet-growing-electricity-demand-2030-2507/

[6] U.S. Energy Information Administration, "New Mexico State Energy Profile," last updated June 20, 2024, https://www.eia.gov/state/analysis.php?sid=NM.

[7] New Mexico Public Regulation Commission, "2024 PRC Report to the Legislature on the Renewable Portfolio Standard," July 1, 2024, https://www.prc.nm.gov/wp-content/uploads/2024/07/RPS-Report-6-28-Final.pdf

[8] New Mexico Public Regulation Commission, "2024 PRC Report to the Legislature on the Renewable Portfolio Standard," July 1, 2024, https://www.prc.nm.gov/wp-content/uploads/2024/07/RPS-Report-6-28-Final.pdf

[9] New Mexico Public Regulation Commission, "2024 PRC Report to the Legislature on the Renewable Portfolio Standard," July 1, 2024, https://www.prc.nm.gov/wp-content/uploads/2024/07/RPS-Report-6-28-Final.pdf

[10] LevelTen Energy, "Q2 2025 NA PPI Executive Summary," 2025. https://go.leveltenenergy.com/Q2_2025_NA_PPI_ExecSummary.

[11] GridLab, "The Moonshot 100% Clean Electricity Study," *GridLab*, August 2023, https://gridlab.org/portfolio-item/the-moonshot-100-clean-electricity-study/

[12] Sandia National Laboratories, "New Tool Models Viability of Closed-Loop Geothermal Systems," November 20, 2023, https://energy.sandia.gov/news/new-tool-models-viability-of-closed-loop-geothermal-systems/.

[13] [13]Los Alamos National Laboratory, "ZiaCore Heat Pipe," https://www.lanl.gov/media/news/0515-ziacore-heat-pipe

[14] EFI Foundation, *Unlocking Private Capital for Carbon Capture and Storage Projects in Industry and Power*, April 2025, https://efifoundation.org/wp-content/uploads/sites/3/2025/04/Unlocking-Private-Capital-for-CCS-Projects-in-Industry-and-Power.pdf

[15] Project InnerSpace, “The Future of Geothermal in New Mexico”, June 2025. https://projectinnerspace.org/resources/Future-of-Geothermal-in-New-Mexico.pdf

[16] Ram Kumar Adhikari, Tomasz B. Falkowski, and Joshua L. Sloan. "Identifying Optimal Locations for Biochar Production Facilities to Reduce Wildfire Risk and Bolster Rural Economies: A New Mexico Case Study." SSRN, April 9, 2024. https://ssrn.com/abstract=4789085

[17] EFI Foundation, *Taking Root: A Policy Blueprint for Responsible BECCS Development in the United States* (Washington, DC: EFI Foundation, June 2023), https://efifoundation.org/wp-content/uploads/2023/06/Taking-Root-Final.pdf

[18] Maeve Allsup, "SCOOP: These Are the 321 Awards DOE Is Canceling," Latitude Media, October 2, 2025, https://www.latitudemedia.com/news/scoop-these-are-the-321-awards-doe-is-canceling/

[19] Navajo Transitional Energy Company, "Navajo Transitional Energy Company Awarded $6.55 Million by the U.S. Department of Energy for Carbon Capture Study at Four Corners Power Plant," September 12, 2024, https://navenergy.com/navajo-transitional-energy-company-awarded-6-55-million-by-the-u-s-department-of-energy-for-carbon-capture-study-at-four-corners-power-plant/

[20] Robert Balch and Mark Pedrotty, "Carbon Capture and Storage: An Introduction," New Mexico Institute of Technology, presented to Water Resources Committee, October 28, 2024,

https://www.nmlegis.gov/handouts/WNR%20102824%20Item%208%20CO2%20Rescue%20CCS%20DAC%20and%20Pore%20Space.pdf

[21] Shannon Heckt, "Local Governments in Louisiana Want Revenue Reward from Carbon Capture Risks," Louisiana Illuminator, January 15, 2025, https://lailluminator.com/2025/01/15/local-governments-in-louisiana-want-revenue-reward-from-carbon-capture-risks/

[22] EFI Foundation and Stanford University, *An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions*, October 2020. https://efifoundation.org/wp-content/uploads/sites/2/2022/03/CaliforniaCCS_Report_Oct20-1.pdf

[23] Michigan House Fiscal Agency, "Clean and Renewable Energy Standards: Legislative Analysis of Senate Bill 271 (S-3)," revised November 1, 2023, https://www.Legislature.mi.gov/documents/2023-2024/billanalysis/House/pdf/2023-HLA-0271-43C8EB2C.pdf

[24] Project InnerSpace, New Mexico Tech, and New Mexico Bureau of Geology and Mineral Resources, *The Future of Geothermal in New Mexico*, June 2025, https://projectinnerspace.org/resources/Future-of-Geothermal-in-New-Mexico.pdf

[25] Chad Augustine, et al., "Enhanced Geothermal Shot Analysis for the Geothermal Technologies Office," National Renewable Energy Laboratory, NREL/TP-5700-84822, January 2023, https://docs.nrel.gov/docs/fy23osti/84822.pdf

[26] Clean Air Task Force. "Introduction: The Next Clean Energy Frontier—Superhot Rock Geothermal Pathways to Commercial Liftoff." February 2025. https://www.catf.us/2025/02/introduction-next-clean-energy-frontier-superhot-rock-geothermal-pathways-commercial-liftoff/

[27] Sandia National Laboratories, "Geothermal Research," https://energy.sandia.gov/programs/renewable-energy/geothermal-research/

[28] Sandia National Laboratories, "New Tool Models Viability of Closed-Loop Geothermal Systems," November 20, 2023, https://newsreleases.sandia.gov/geothermal_modeling/

[29] Anonymous. Private discussion at Climate Week NYC event, "Keep Finance Flowing: Clean Electricity Finance Roundtable". September, 2025.

[30] Oil & Gas Journal. "*North America Rig Numbers Unchanged at 739.*" *Oil & Gas Journal*, October 4, 2024. https://www.ogj.com/drilling-production/news/55321172/north-america-rig-numbers-unchanged-at-739

[31] YCharts. "*New Mexico Inland Rotary Rigs.*" Accessed October 7, 2025. https://ycharts.com/indicators/new_mexico_inland_rotary_rigs

[32] New Mexico Legislature, House Bill 2, 2025 Regular Session, https://www.nmlegis.gov/Sessions/25%20Regular/final/HB0002.pdf

[33] GE Vernova, "Hydrogen-Fueled Gas Turbines," GE Vernova, https://www.gevernova.com/gas-power/future-of-energy/hydrogen-fueled-gas-turbines..

[34] U.S. Geological Survey, "USGS Releases First-Ever Map of Potential for Geologic Hydrogen in U.S.," news release, January 16, 2025, https://www.usgs.gov/news/national-news-release/usgs-releases-first-ever-map-potential-geologic-hydrogen-us

[35] Sandia National Laboratories, "Geologic Hydrogen Capabilities," accessed October 1, 2025, https://energy.sandia.gov/programs/fossil-energy/subsurface-storage/geologic-hydrogen-capabilities/geologic-hydrogen/

[36] Los Alamos National Laboratory, "OPERATE-H2 Optimize Underground Hydrogen Storage," accessed October 1, 2025, https://www.lanl.gov/engage/collaboration/feynman-center/tech-and-capability-search/oh2

[37] U.S. Department of Energy ARPA-E, *Project Descriptions: Geologic Hydrogen Program*, January 2025, https://arpa-e.energy.gov/sites/default/files/2025-01/Project%20Descriptions_GeologicHydrogen.pdf

[38] Emily Holden, "Many on Navajo Nation Blindsided by Hydrogen Pipeline Change," KRWG, May 24, 2025, https://www.krwg.org/regional/2025-05-24/many-on-navajo-nation-blindsided-by-hydrogen-pipeline-change

[39] Jessica Lovering and Jameson McBride, "Efforts to Accelerate Permitting Could Learn a Thing or Two from Nuclear Energy," *Utility Dive*, April 24, 2023, https://www.utilitydive.com/news/permitting-transmission-renewables-nuclear-energy-advanced-reactors-nuscale-terrapower/648358/

[40] New York State Energy Research and Development Authority, *Accelerated Renewable Energy Growth and Community Benefit Act for Local Governments*, March 2021, https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Fact-Sheets/Accelerated-Renewables-Fact-Sheet.pdf

[41] Nevada Public Utilities Commission, *DOCKETS - 24-06014 - ORDER - 5/14/2025 - AGN - UEL - SPP*, accessed October 3, 2025, https://ob.nv.gov/puc/api/Document/AXUvG0B2dkTpoPsrd9U3RhUSbtA1%C3%81XX2rzf5W1t%C3%89PZ0F8zf98apfHz03qynKrGzCOBfWLNxKfE2D3bbcwjxpims%3D/?OverlayMode=View

[42] Carl Linvill, Shawn Enterline, David Farnsworth, Camille Kadoch, Mark LeBel, and Nancy L. Seidman, "24/7 Carbon-Free Electricity Transition Tariffs: A Regulatory Tool for Accelerating Decarbonization," Montpelier, VT: Regulatory Assistance Project, March 2024, https://www.raponline.org/wp-content/uploads/2024/03/rap-linvill-enterline-farnsworth-kadoch-lebel-seidman-24-7-carbon-free-electricity-transition-tariffs-summary-2024-march.pdf

[43] U.S. Department of Energy. "*AI Infrastructure on DOE Lands: Request for Information.*" Office of Policy, July 2024. https://www.energy.gov/policy/ai-infrastructure-doe-lands-request-information

[44] U.S. Department of Energy ARPA-E, "U.S. Department of Energy Announces $20 Million to 16 Projects Spearheading Exploration of Geologic Hydrogen," news release, February 8, 2024, https://arpa-e.energy.gov/news-and-events/news-and-insights/us-department-energy-announces-20-million-16-projects-spearheading-exploration-geologic-hydrogen

[45] U.S. Geological Survey, "USGS Releases First-Ever Map of Potential for Geologic Hydrogen in U.S.," news release, January 16, 2025, https://www.usgs.gov/news/national-news-release/usgs-releases-first-ever-map-potential-geologic-hydrogen-us

[46] Idaho National Laboratory, *Quick Reference to Partnering with DOE's National Laboratories*, June 2023, https://inl.gov/content/uploads/2023/06/Quick-Reference-to-Partnering-Final.pdf