New Mexico Comprehensive Energy Transition Strategy

Policy Memos - Clear Subsurface Authorities and Definitions

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.

Dr. Van Romero
van.romero@nmt.edu

Memo #7: Clarifying subsurface authorities and definitions for geologic hydrogen, geothermal, and methane

To: Secretary Melanie Kenderdine, New Mexico Energy, Minerals, and Natural Resources Department
From: Comprehensive Energy Transition Strategy (CETS) Team
Date: October 7, 2025
Subject: Clarifying authorities and definitions for geologic hydrogen, geothermal, and methane

Bottom Line Up Front

New Mexico's energy transition depends on unlocking low-carbon resources, such as geothermal and geologic hydrogen, and sustaining emissions reductions through effective methane management. Yet, outdated statutes and fragmented regulatory authority constrain progress: state law currently requires geothermal projects to maintain "no diminishment" of heat, effectively prohibiting commercial development; geologic hydrogen lacks a statutory definition or clear permitting authority; and methane enforcement is hindered by overlapping jurisdictions between the Oil Conservation Division (OCD) and the Environment Department (NMED). To fully leverage New Mexico's potential, it is critical to clarify departmental authorities, identify inter-agency collaboration, and modernize, standardize, and refine legal definitions within existing statutes and laws. A well-defined legislative framework can guide and support the transition to low- and zero-carbon technologies at every stage of development. This memo outlines targeted legislative and regulatory solutions to address these issues: amend the geothermal statute to remove or modify the "no diminishment" clause and clarify the 250°F threshold; amend the Oil and Gas Act to create a legal definition and permitting pathway for geologic hydrogen; and codify methane rules into statute while improving data-sharing and coordination across agencies. Clarifying these authorities and definitions would reduce uncertainty, accelerate investment, and better position New Mexico to advance the state's energy transition.

Issue Statement

For more than a century, New Mexico's economy has been shaped by what lies beneath its surface. Today, that subsurface legacy, traditionally oriented around oil and gas, is evolving. Emerging industries—like geothermal and geologic hydrogen— are gaining ground, and oil and gas are adapting to new climate expectations, notably New Mexico's 2021 Methane Waste Rule mandating 98% gas capture by 2026 and banning routine flaring.[1] Across the board, progress will hinge on clear, consistent rules that give regulators, developers, and investors' confidence.

Across the country, geologic hydrogen is emerging as a promising long-duration energy source for hard-to-electrify sectors—but progress depends on clear rules. States must define geologic hydrogen in statute, assign a permitting authority, and distinguish between natural accumulations and stimulated production, clarifying ownership, pore-space rights, and well classifications along the way.[2] As one developer noted, "We have the technology—we just need regulatory clarity. Right now, we're drilling where we're permitted, not where the best rocks are."[3]

This gap between industry readiness and regulatory uncertainty is evident nationwide, with developers across multiple states reporting being "in contact with states for over a year and still don't know how to permit a well." Others warn that "stimulated and natural hydrogen are not the same, and we need clarity before pilots scale."[4] The U.S. Geological Survey's first national prospectivity map identifies the Four Corners region—including New Mexico—as one of the most promising areas for natural hydrogen accumulation. Combined with the state's research capacity at institutions like Sandia National Laboratories, which are actively working in these arenas, New Mexico can pair world-class technical expertise with early regulatory leadership.

Geothermal energy is also gaining attention as a firm, zero-carbon resource, with analyses projecting up to 90 GW of capacity in the United States by 2050.[5] Still, progress depends on resolving persistent legal and regulatory uncertainty. In most states, geothermal does not fit cleanly within existing subsurface statutes, which then requires regulators to interpret rules originally written for water, mining, or oil and gas. New Mexico, for instance, does not explicitly define geothermal resources in statute, clarify who owns the heat, or designate a single agency to oversee development. This lack of alignment leaves developers navigating overlapping jurisdictions and inconsistent standards, slowing projects and discouraging investment.

At the center of this challenge is an unresolved question: who owns the heat beneath the ground? U.S. law clearly assigns property rights to minerals, oil, and gas, but it remains largely silent on subsurface thermal energy. Some legal scholars contend that geothermal heat is not a discrete substance but a characteristic of the rock itself—neither a mineral nor a water resource—raising uncertainty over whether it should be treated as a private asset, a public resource, or something in between.[6] The absence of a consistent ownership framework complicates leasing, royalties, and liability and ultimately undermines confidence for developers and investors. New Mexico has immense geothermal potential to harness, about 163 GW or sixteen times the state's entire installed electric capacity in 2023 (10.7 GW).[7] If the state anticipates and resolves these legal and regulatory issues, the state is well-positioned to convert its vast geothermal potential into a cornerstone of its clean energy future.

New Mexico has already taken significant steps toward addressing these challenges. In 2022, the Legislature passed the Hydrogen Hub Development Act to create a dedicated

fund, tax credits, and a public-private partnership framework for hydrogen infrastructure, signaling willingness to support the sector.[8] The state also brokered a 150 MW geothermal deal with Meta and XGS Energy, expanding geothermal ambition on the ground.[9] Meanwhile, the State Land Office (SLO) is revising its geothermal leasing rules to modernize its permit regime.[10] At the same time, state agencies continue to strengthen methane mitigation efforts. Satellite data show that New Mexico's methane emissions intensity is now roughly one-third that of Texas, even as Permian Basin production has more than doubled since 2020.[11]

As these efforts advance, the stakes remain high. Rules anchored only in regulation are vulnerable to political change, and new industries cannot scale under legal ambiguity. To sustain momentum in geothermal and geologic hydrogen, and to preserve methane progress, New Mexico must embed clarity through statute. Defining subsurface rights, establishing clear agency authority, clarifying monitoring and liability regimes, and codifying durable standards will reduce risk, attract investment, and ensure continuity across administrations.

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 by modernizing outdated statutes, clarifying regulatory authority for emerging resources, and codifying rules issued through executive order. These findings are described in further detail below.

Ambiguities in state law could hinder geothermal development, but language clarification could remove barriers.

New Mexico's 'diminishing heat' requirement effectively blocks commercial or utility-scale geothermal development on state lands. Under the Geothermal Resources Development Act (N.M. Stat. § 19-13-3 (2017[12])), state law requires that any leases or regulations for geothermal resources "shall require that the geothermal resource not be diminished beneath applicable natural levels." In plain terms, this means regulators cannot approve a project unless the project can guarantee the geothermal heat will never decline below natural conditions. But in well-managed hydrothermal doublet systems, production temperature typically drops on the order of ~0.7 °C per decade around year 20 of operation and then tapers toward ~0.15 °C per decade over longer time scales as the reservoir approaches a new steady state—i.e., renewability with managed drawdown, not zero change.[13] By tying leasing and permitting to a "no diminishment" rule, the statute creates a regulatory roadblock that prevents projects from moving forward.[14]

New Mexico's 250°F geothermal threshold opens the door for legal ambiguity for some projects. New Mexico set a temperature threshold of 250°F to qualify as a geothermal resource. If a geothermal project uses fluids at ≤ 250°F, the state does not treat it as a "geothermal resource" under the Geothermal Resources Development Act; it is then handled primarily under water law and groundwater protection rules. If a project uses fluid with temperature ranges around the 250°F threshold – a binary cycle geothermal plant can operate with water at temperatures as low as 225°F, for instance – it could create regulatory confusion.[15] In most states, geothermal resources are still defined using fixed temperature thresholds, typically between about 85°F and 250°F, to distinguish geothermal resources from ordinary groundwater. As an alternative, the state of Nevada took a different approach by defining geothermal as "the natural heat of the earth" and excluding any specific temperature thresholds.[16]

Potential Solutions

The Legislature could amend the Geothermal Resources Development Act to (a) allow "that the geothermal resource be diminished no more than [an amount determined which would allow commercial geothermal projects]" or (b) redact such language "that the geothermal resource not be diminished beneath applicable natural levels." This approach would better align with how other natural resources are managed, balancing development with protection. The SLO has already proposed repealing and replacing its geothermal leasing rule. The draft rule assumes that the "no diminishment" requirement is satisfied as long as a project obtains a permit from EMNRD and does not impair other users' rights or waste the resource. This change would create a clearer, more predictable permitting process, which would provide much-needed predictability for investors, who will be vital in scaling the technology.

The State Land Office (SLO) could propose rulemaking for geothermal plants whose operations may operate both above and below the 250-degree F threshold to replace the temperature threshold with a temperature-agnostic permitting system. Such a definition would create a level playing field for all technologies, allowing regulators to apply consistent permitting standards. Recent analyses of state regulations note that relying on specific temperature cutoffs can create multiple regulatory regimes and complicate permitting, and recommend that states instead adopt definitions inclusive of all geothermal technologies and focused on how the resource is used and the level of operational risk rather than temperature alone.[17]

New Mexico may have some of the best geologic hydrogen resources in the country, but it lacks a clear legal framework for exploring and producing the resource.

New Mexico does not have a definition for geologic hydrogen, nor does it have explicit statutory or regulatory provisions governing geologic hydrogen. 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)."[18] Unfortunately, hydrogen is not included in current OCD permitting forms, which leaves producers lacking clear regulatory guidance. Under the Oil and Gas Act (§70-2-34)[19], "other non-hydrocarbon gases" are included, which could reasonably be interpreted to encompass hydrogen and imply that OCD oversees the resource. However, this jurisdiction has yet to be definitively determined.

New Mexico lacks a clear regulatory category, or well class, for geologic hydrogen wells. Well classes are how the federal government categorizes underground injection wells based on their intended use and the materials they handle—such as oil, water, carbon dioxide, or experimental fluids—so regulators can apply the appropriate safety and environmental standards. The Underground Injection Control (UIC) program sets these categories under the Safe Drinking Water Act, and while it is a federal system, it applies to wells on both federal and state lands, with most states (including New Mexico) administering the program through EPA-approved "primacy."

Geologic hydrogen does not fit neatly into any existing federal well category, but the UIC system offers a few possible pathways. Class II wells, which are used for oil and gas injection and enhanced recovery, are considered the most practical short-term option because the technology and permitting systems already exist in many states, including New Mexico. This option would allow projects to move forward faster and build on familiar safety and monitoring rules. However, Class II wells were designed for hydrocarbon fluids, not hydrogen, so they may not fully address hydrogen-specific issues such as how it moves, reacts, or is contained underground. Class V wells could be used for early pilot projects because they are meant for experimental or emerging technologies, offering more flexibility but less technical guidance or oversight. Class VI wells, which are used for carbon-dioxide storage, have the strictest standards and longest permitting timelines—sometimes taking years—so applying them to hydrogen too early could slow development.[20]

Potential Solutions

The Legislature could pursue one of two approaches to clarify agency authority over emerging geologic hydrogen development: integrate hydrogen into the existing Oil and Gas Act framework or establish a new, hydrogen-specific subchapter within it. Under the first option, lawmakers could amend the Oil and Gas Act to explicitly include geologic hydrogen as an "other non-hydrocarbon gas," confirming OCD as the lead agency for exploration, spacing, unitization, injection, and reporting. This pathway would leverage familiar permitting systems and correlative-rights tools, allowing faster implementation while still requiring hydrogen-specific provisions such as metering and royalties measured in kilograms or energy-equivalent terms, safety and materials standards, and pilot project

authority. Alternatively, the Legislature could create a dedicated "geologic hydrogen" subchapter that cross-references the Public Regulation Commission (PRC) for pipelines and NMED for air and water protections, while directing SLO to adopt matching lease terms. This second option would take longer to establish but would provide a cleaner, hydrogen-specific statutory framework and clearer interagency coordination.

The Legislature could direct agencies to clarify how geologic hydrogen wells are classified under the UIC program, and could adopt a phased pathway. Because New Mexico has primacy for all UIC well classes I through V, the state could permit early geologic hydrogen pilot projects under Class V, which is suited for experimental or emerging technologies. As the industry develops, Class II wells could provide a more stable framework for commercial-scale operations.[21]

New Mexico's ambitious methane rules and cleanup obligations could benefit from enhanced agency coordination and codification.

New Mexico's methane rules rest on executive action rather than statutory authority. The reliance on executive authority makes the rules vulnerable to reversal or weakening under future administrations. Lawmakers have attempted to address this gap by proposing legislation codifying the Methane Waste Rule into the Oil and Gas Act, but the effort has thus far failed. A separate proposal to strengthen enforcement by raising penalties and increasing fees, meant to make violations more costly, also failed.[22] Specifically, the bill would have raised Oil & Gas Act civil penalties from $2,500/day to $10,000/day (and up to $25,000/day for major/risk-to-health violations) and lifted the cumulative cap to $3.65 million, while tripling several OCD application fees and indexing them to inflation.

While this lack of statutory grounding remains a structural vulnerability, it is notable that the rules have coincided with measurable progress: Permian Basin methane emissions from oil and gas have fallen by roughly 26%,[23] and an independent study found that New Mexico's oil and gas emissions are about half those of Texas.[24] State leaders have touted these results as evidence that New Mexico is ahead of its peers, but sustaining them will hinge on regulatory stability and consistent administrative commitment.

Fragmented authority across state agencies makes coordination one of the most significant challenges in regulating oil and gas emissions. Oversight of oil and gas spans multiple agencies. OCD regulates emissions from oil and gas extraction, refining, and waste management, while NMED and the PRC oversee transport, consumption, and related activities. NMED also administers the Ozone Precursor Rule, which can create duplicative reporting for operators if NMED and EMNRD are not sharing data effectively. To improve coordination, the 2024 Priority Climate Action Plan proposed a Methane Response Project led by NMED (in consultation with EMNRD) to: (1) establish common data sources, including location-specific satellite imagery; (2) streamline cross-agency sharing of

reporting and inspection results; and (3) create a mechanism for inspectors to support both agencies with shared field and data observations.[25]

Potential Solutions

The Legislature could codify New Mexico's methane rules into statute to ensure their durability beyond executive action. Embedding the 2021 Methane Waste Rule in the Oil and Gas Act could provide more long-term certainty for operators and signal that methane mitigation is a permanent policy priority. Other states have taken this approach. For example, Colorado's 2021 Environmental Justice Act (HB 21-1266) codified methane-reduction requirements and directed subsequent rulemakings, ensuring that emission limits, leak-detection standards, and flaring prohibitions remained binding regardless of administrative turnover, a level of statutory protection New Mexico's executive-based rules currently lack.[26]

State agencies could improve coordination by institutionalizing the Methane Response Project proposed in the 2024 Priority Climate Action Plan. By establishing shared data systems, including satellite monitoring and integrated inspection records, the project would streamline reporting, reduce duplicative oversight, and allow the Oil Conservation Division, Environment Department, and Public Regulation Commission to operate from common data sources.

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
Ambiguities in state law could hinder geothermal development, but language clarification could remove barriers.	**The Legislature could amend the Geothermal Resources Development Act to (a) allow "that the geothermal resource be diminished no more than [an amount determined which would allow commercial geothermal projects]" or (b) redact such language "that the geothermal resource not be diminished beneath applicable natural levels**." This approach would better align with how other natural resources are managed, balancing development with protection. The SLO has already proposed repealing and replacing its geothermal leasing rule. The draft rule assumes that the "no diminishment" requirement is satisfied as long as a project obtains a permit from EMNRD and does not impair other users' rights or waste the resource. This change would create a clearer, more predictable permitting process, which would provide much-needed predictability for investors, who will be vital in scaling the technology.

	The State Land Office (SLO) could propose rulemaking for geothermal plants whose operations may operate both above and below the 250-degree F threshold to replace the temperature threshold with a temperature-agnostic permitting system. Such a definition would create a level playing field for all technologies, allowing regulators to apply consistent permitting standards. Recent analyses of state regulations note that relying on specific temperature cutoffs can create multiple regulatory regimes and complicate permitting, and recommend that states instead adopt definitions inclusive of all geothermal technologies and focused on how the resource is used and the level of operational risk rather than temperature alone.
 New Mexico may have some of the best geologic hydrogen resources in the country, but it lacks a clear legal framework for exploring and producing the resource.	**The Legislature could pursue one of two approaches to clarify agency authority over emerging geologic hydrogen development: integrate hydrogen into the existing Oil and Gas Act framework or establish a new, hydrogen-specific subchapter within it.** Under the first option, lawmakers could amend the Oil and Gas Act to explicitly include geologic hydrogen as an "other non-hydrocarbon gas," confirming the Oil Conservation Division (OCD) as the lead agency for exploration, spacing and unitization, injection, and reporting. This pathway would leverage familiar permitting systems and correlative-rights tools, allowing faster implementation while still requiring hydrogen-specific provisions such as metering and royalties measured in kilograms or energy-equivalent terms, safety and materials standards, and pilot project authority. Alternatively, the Legislature could create a dedicated "geologic hydrogen" subchapter that cross-references the Public Regulation Commission (PRC) for pipelines and the New Mexico Environment Department (NMED) for air and water protections, while directing the State Land Office (SLO) to adopt matching lease terms. This second option would take longer to establish but would provide a cleaner, hydrogen-specific statutory framework and clearer interagency coordination.
	The Legislature could direct agencies to clarify how geologic hydrogen wells are classified under the UIC program, and could adopt a phased pathway. Because New Mexico has primacy for all UIC well classes I through V, the state could permit early geologic hydrogen pilot projects under Class V, which is suited for experimental or emerging technologies. As the industry develops, Class II wells could provide a more stable framework for commercial-scale operations.
 New Mexico's ambitious methane rules and cleanup obligations could benefit from enhanced agency coordination and codification.	**The Legislature could codify New Mexico's methane rules into statute to ensure their durability beyond executive action.** Embedding the 2021 Methane Waste Rule in the Oil and Gas Act could provide more long-term certainty for operators and signal that methane mitigation is a permanent policy priority. Other states have taken this approach. For example, Colorado's 2021 Environmental Justice Act (HB 21-1266) codified methane-reduction requirements and directed subsequent rulemakings, ensuring that emission limits, leak-detection standards, and flaring prohibitions remained binding regardless of administrative turnover, a level of statutory protection New Mexico's executive-based rules currently lack.
	State agencies could improve coordination by institutionalizing the Methane Response Project proposed in the 2024 Priority Climate Action Plan. By establishing shared data systems, including satellite monitoring and integrated inspection records, the project would streamline reporting, reduce duplicative oversight, and allow the Oil Conservation Division, Environment Department, and Public Regulation Commission to operate from common data sources.

Stakeholder Overview

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

Table 2. Potential Legislative Champions

Role	Name	District	Justification
Rep.	Patricia Roybal Caballero	13	Primary sponsor of HB 91 (2024) and later HB 289 (2025) to fund geothermal projects
Rep.	Andrea Romero	46	Authored HB 361 to allow oil/gas well conversion to geothermal or storage facilities.
Rep.	Patricia Lundstrom	9	Lead House sponsor of the Hydrogen Hub Development Act (2022)
Senator	Peter Wirth	25	Filed supportive comments into the NMED ozone precursor / methane rule record

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)
- **Quasi-Governmental Entities**: Renewable Energy Transmission Authority (RETA); **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
- **Industry and Developers**: Invenergy;
- **Tribal Governments and Organizations**: Navajo Nation (Navajo Nation EPA); Pueblo Nations
- **Labor and Workforce Organizations**: New Mexico Federation of Labor, AFL-CIO; New Mexico Building & Construction Trades Council;
- **Community-Based and Environmental Organizations**: Conservation Voters New Mexico (CVNM); New Mexico Environmental Law Center (NMELC); Western Resource Advocates (WRA – NM program).

References

[1] New Mexico Climate Action. "EMNRD." https://www.climateaction.nm.gov/emnrd/.
[2] EFI Foundation. *Exploring the Future of Geologic Hydrogen: Defining the Path Ahead*. June 2025. https://efifoundation.org/wp-content/uploads/sites/3/2025/06/EFI-Foundation-Report-Geologic-H2-Workshop.pdf.
[3] Anonymous. Interview conducted by EFI Foundation. August 2025.
[4] Anonymous. Interview conducted by EFI Foundation. August 2025.
[5] Neeley, Josiah, and Philip Rossetti. "State Permitting Challenges: Geothermal." R Street Institute, August 5, 2024. https://www.rstreet.org/commentary/state-permitting-challenges-geothermal/.
[6] Gutiérrez Negrín, Luis C-A. "Who Owns Geothermal Heat? A Version from a Geologist's Perspective." ThinkGeoEnergy, May 23, 2025. https://www.thinkgeoenergy.com/who-owns-geothermal-heat-a-version-from-a-geologists-perspective/.
[7] New Mexico Bureau of Geology & Mineral Resources. *Executive Summary: Unlocking New Mexico's Geothermal Potential. In The Future of Geothermal in New Mexico.* https://geoinfo.nmt.edu/resources/geothermal/futureOfGeothermal/pdfs/ExecutiveSummary_UnlockingNewMexico_sGeothermalPotential.pdf
[8] Office of the Governor, State of New Mexico. "New Mexico to Boost Clean Energy Economy with Hydrogen Hub Development Act," January 25, 2022. https://www.governor.state.nm.us/2022/01/25/new-mexico-to-boost-clean-energy-economy-with-hydrogen-hub-development-act/.
[9] Hochschild, Rob. "NM Strikes a Geothermal Deal with Meta and XGS Energy." *KSFR*, June 13, 2025. https://www.ksfr.org/environment/2025-06-13/nm-strikes-a-geothermal-deal-with-meta-and-xgs-energy.
[10] "NM State Land Office Proposes New Rule for Geothermal Energy Projects," *Source NM*, https://sourcenm.com/briefs/nm-state-land-office-proposes-new-rule-for-geothermal-energy-projects/.
[11] Office of the Governor, State of New Mexico. "New Mexico Methane Rules Slash Emissions by Half Compared to Texas; Reductions Generate $152 M for New Mexico." September 22, 2025. https://www.governor.state.nm.us/2025/09/22/new-mexico-methane-rules-slash-emissions-by-half-compared-to-texas-reductions-generate-152m-for-new-mexico/.
[12] New Mexico Statutes § 19-13-3 (2013). Administration of Act. Justia. Accessed October 6, 2025. https://law.justia.com/codes/new-mexico/2017/chapter-19/article-13/section-19-13-3/
[13] L. Rybach. "Geothermal Energy: Sustainability and the Environment." In *Proceedings of the World Geothermal Congress 2005*, 1–10. Antalya, Turkey, April 24–29, 2005. https://pangea.stanford.edu/ERE/pdf/IGAstandard/EGC/2007/211.pdf
[14] Albuquerque Journal. "Announcement: ad_e33a1269-f7df-5be4-951b-4317706dd9a2." Legal notice. Accessed October 6, 2025. August 25, 2025. https://www.abqjournal.com/legals/community/announcements/legal/ad_e33a1269-f7df-5be4-951b-4317706dd9a2.html
[15] National Renewable Energy Laboratory. "Geothermal Electricity Production Basics." August 27, 2025. https://www.nrel.gov/research/re-geo-elec-production
[16] Nevada Legislature. "Nev. Rev. Stat. § 534A." Nevada Revised Statutes. Accessed October 6, 2025. https://www.leg.state.nv.us/nrs/nrs-534A.html
[17] Levine, Aaron, Faith Martinez Smith, and Heather Buchanan. *Topics and Considerations for Developing State Geothermal Regulations*. Golden, CO: National Renewable Energy Laboratory, September 2023. NREL/TP-6A20-86985. https://www.nrel.gov/docs/fy23osti/86985.pdf.
[18] 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
[19] New Mexico Statutes § 70-2-34 (2024). Regulation, Conservation and Prevention of Waste of Carbon Dioxide, Helium, and Other Non-Hydrocarbon Gases. Justia. Accessed October 6, 2025. https://law.justia.com/codes/new-mexico/chapter-70/article-2/section-70-2-34/

[20] EFI Foundation. *Exploring the Future of Geologic Hydrogen: Defining the Path Ahead*. June 2025. https://efifoundation.org/wp-content/uploads/sites/3/2025/06/EFI-Foundation-Report-Geologic-H2-Workshop.pdf.

[21] Environmental Protection Agency. "State of New Mexico Underground Injection Control Program; Primacy Revisions." *Federal Register* 87, no. 47 (January 3, 2022): 47–51.

[22] New Mexico Legislature. "HB0259 – 2025 Regular Session." Accessed October 6, 2025. https://www.nmlegis.gov/Sessions/25%20Regular/bills/house/HB0259.HTML

[23] S&P Global. "Decline in Permian Basin Methane Emissions Equaled the Annual Carbon Emissions Avoided by Every Electric Vehicle in the United States, New S&P Global Commodity Insights Analysis Finds." Press release, December 23, 2024. https://press.spglobal.com/2024-12-23-Decline-in-Permian-Basin-Methane-Emissions-Equaled-the-Annual-Carbon-Emissions-Avoided-by-Every-Electric-Vehicle-in-the-United-States,-New-S-P-Global-Commodity-Insights-Analysis-Finds

[24] Oliver Milman. "Texas Oil and Gas Operations Emit Double the Methane Pollution of New Mexico, Study Finds." *Guardian* (US edition), November 8, 2023. https://www.theguardian.com/us-news/2023/nov/08/texas-methane-oil-and-gas-study-climate.

[25] New Mexico Environment Department and Energy, Minerals and Natural Resources Department. *New Mexico Priority Climate Action Plan*. Santa Fe: State of New Mexico, March 1, 2024. https://www.climateaction.nm.gov/wp-content/uploads/2024/09/New-Mexico-Priority-Climate-Action-Plan-2024-03-01.pdf

[26] Climate XChange. *Oil and Gas Methane Regulations*. State Climate Policy Dashboard. Updated July 21, 2025. https://www.climatepolicydashboard.org/policies/industry-materials-waste/oil-and-gas-methane.