



Empowering New Mexico: New Mexico's Energy Transition Through an Equity Lens

July 2023

NM EPSCoR

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EXECUTIVE SUMMARY

This report highlights the importance of a just energy transition and presents existing efforts in the state of New Mexico. The report is divided into three main dimensions that are essential for a successful transition: (1) social political equity and community wellbeing; (2) economic empowerment and workforce development; and (3) environmental justice and climate resilience.

The report starts by discussing the concept of a just energy transition and its relevance to New Mexico, highlighting the importance of equitable and inclusive changes in the energy sector. It also recognizes the need for a just transition to address the historical disparities borne by marginalized communities, and it underscores the potential benefits that could be reaped through initiatives like the Justice 40 and the Energy Transition Act (ETA).

The first section on 'Social Political Equity and Community Wellbeing' explores key aspects such as energy equity, community empowerment, government support, and the intersection of health and energy transition. It outlines the challenges of energy access disparities, the role of community participation, the importance of supportive policy frameworks, and the public health implications of the energy transition.

The second section on 'Economic Empowerment and Workforce Development' delves into the creation of inclusive economic opportunities, the development of workforce resilience, and the importance of capacity building for a robust transition. This section emphasizes the need to harness renewable energy, stimulate the energy industry, develop a resilient workforce, and invest in education and capacity building to foster economic growth and resilience.

The third section on 'Environmental Justice and Climate Resilience' discusses the necessity of addressing environmental pollution disparities, managing natural resources effectively, and implementing climate resilience strategies. The report underscores the importance of centering environmental justice in the transition, advocating for sustainable practices, and prioritizing resilience in climate policies and actions.

In conclusion, the report highlights the complexity and multifaceted nature of the energy transition in New Mexico. It emphasizes the need for comprehensive planning, prioritizing equity and inclusion, supporting economic diversification, developing supportive policy frameworks, fostering collaboration, enhancing education, and tracking progress. The report reiterates that just energy transition is a journey requiring continuous collaboration, community engagement, and a firm commitment to justice and equity.

FORWARD

Purpose of the Event

The Town Hall on New Mexico Energy Transition through an Equity Lens will explore the equity and justice elements of New Mexico's transition from fossil fuel based and renewable source based energy.

Aim of the White Paper

The objective of this report is to provide an impartial presentation of existing efforts and policies in the realm of just energy transition. It seeks to avoid making subjective judgments regarding their effectiveness or adequacy, focusing instead on providing a comprehensive overview of the current landscape.

Convener

The New Mexico Experimental Program to Stimulate Competitive Research (NM EPSCoR) is funded by the National Science Foundation (NSF) to improve the ability of the state's academic institutions to carry out cutting-edge science and engineering research in areas of importance to New Mexico. The current five-year award, the NM Sustainable, Modular, Adaptive, Resilient, Transactive (SMART) Grid Center, aims to “investigate the fundamental challenges to transition the existing electricity transmission and distribution infrastructure into a SMART grid and develop supporting knowledge, national talent, and an informed public. The New Mexico SMART Grid Center will develop research capacity and education programs to support a modern electric grid built on the principles of distribution feeder microgrids (DFMs), and empower a diverse, next-generation workforce through industry partnerships, education, and public outreach.”¹

Report Authors

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¹ New Mexico EPSCoR. (n.d.)

INTRODUCTION

The concept of a just energy transition has gained prominence as a critical framework in the pursuit of a sustainable and equitable energy future.² A just energy transition is defined by a shift from fossil-fuel dependent systems towards renewable energy sources, while ensuring that this shift is done in a manner that is both equitable and inclusive. It acknowledges the multifaceted nature of such a shift, incorporating the social, economic, and environmental dimensions of the transition. The framework also acknowledges that certain communities and workers have historically borne disproportionate burdens from the fossil fuel industry and from pollution, and it aims to empower these marginalized communities through active involvement in decision-making processes.

The Justice 40³ initiative, introduced by the Biden administration in January 2021, exemplifies these principles by directing federal agencies and grantees to allocate at least 40% of clean energy and climate funding benefits to disadvantaged and marginalized communities. The City of Albuquerque became the first city in the nation to establish a parallel local policy.⁴ New Mexico, with its marginalized communities that have been disproportionately affected by pollution and the fossil fuel industry, has the potential to benefit greatly from the Justice 40 initiative.

The Energy Transition Act (ETA)⁵, passed in the 2019 New Mexico Legislative Session, establishes a 100 percent zero-carbon electricity mandate and also creates a mechanism for providing workforce transition and community economic development funding when coal-fired power plants shut down. New Mexico has also established the Sustainable Economy Task Force, a group expressly tasked with developing a plan to equitably move the state away from a fossil-fuel economy.

As New Mexico navigates its energy transition, it faces a complex landscape of challenges and opportunities in promoting equity and justice. An understanding of the social, economic, and environmental dimensions shaping this transition is necessary for gauging its implications and identifying potential pathways towards a more sustainable and just energy future. However, the extent to which these efforts will fully address the needs of marginalized communities and the potential impacts of these policies are areas that require further exploration and evaluation.

A just and sustainable energy transition requires active participation from the government, communities, and all relevant interested parties. While various initiatives represent notable attempts in progressing towards this goal, the outcomes of these efforts remain to be assessed. The complexity of the path ahead should not be underestimated, as it demands careful orchestration to ensure that the benefits of the transition are fairly distributed and that the burdens do not disproportionately impact marginalized communities. Ongoing research, thorough evaluation, and continuous dialogue are paramount in steering towards an energy future that not only strives for sustainability and prosperity but also aims for inclusivity, equity, and justice.

² Swarnakar et al. (2022)

³ Justice40 Initiative. (2022)

⁴ Albuquerque Becomes First City in Nation to Advance Justice40. (n.d.)

⁵ Energy Transition Act Committee. (n.d.)

SOCIAL POLITICAL EQUITY AND COMMUNITY WELLBEING

The social political dimensions of an energy transition are complex, touching upon areas such as equitable access, community wellbeing, and inclusive decision-making. In New Mexico, with its diverse communities and disparities, these complexities are magnified.

Exploring Energy Equity

Access to affordable and reliable energy is crucial for just energy transition. However, there are persistent inequities in energy access that disproportionately affect marginalized communities.⁶ In New Mexico, residents residing in rural, low-income, and underserved communities face the challenge of allocating a substantial portion of their income towards utility bills. On average, those living below the poverty line spend as much as 15% of their income solely on energy bills.⁷ A just energy transition may necessitate addressing these disparities and ensure equitable energy access and affordability for all.

Challenges in Energy Access

In New Mexico, certain communities, particularly those in remote rural areas and tribal lands, have historically faced challenges in accessing reliable and affordable energy services. Communities grappling with energy disparities might experience either a complete absence of power access or limited connectivity to the primary power grid. As a result, they often rely on expensive and environmentally detrimental alternatives like diesel generators or propane to fulfill their energy needs.⁸ This limited energy access not only impacts their daily lives but also impedes economic development and educational opportunities. New Mexico has implemented initiatives aimed at expanding energy access to underserved areas through renewable energy solutions. For instance, the New Mexico Tribal Infrastructure Fund⁹ has been involved in supporting energy infrastructure projects.

Striving for Energy Affordability

Energy affordability is essential for equitable energy access, particularly for low-income households. High energy costs can exacerbate economic disparities and force families to make difficult choices between meeting their energy needs and other essential expenses. In New Mexico, targeted programs and policies have been established with the goal of promoting equitable energy affordability. For example, the New Mexico EnergySmart Weatherization Program^{10,11}, which relies primarily on federal funds, provides low-income households with energy-saving upgrades, such as insulation, efficient appliances, and weatherization measures. Another example is the Low Income Home Energy Assistance Program, which provides federal subsidies for heating costs during the winter for eligible persons and families.^{12,13} In addition, the Community

⁶ Brown et al. (2020)

⁷ Pacyniak. (2021)

⁸ Begay et al. (2021)

⁹ Tribal Infrastructure Fund. (n.d.)

¹⁰ Weatherization Assistance Program. (n.d.)

¹¹ Energy Smart Weatherization Program. (n.d.)

¹² Low Income Home Energy Assistance Program. (n.d.)

¹³ Pacyniak. (2022)

Energy Efficiency Development (CEED) Block Grant Act will provide targeted low-income energy efficiency improvements to communities with the highest energy burden.¹⁴¹⁵ By reducing energy consumption, these improvements are intended to lower utility bills and ease the financial burden on vulnerable households, with the added goal of making their homes more energy-efficient. The Low-Income Solar Act¹⁶ aims to make solar energy more accessible to low-income households in New Mexico. Through this program, eligible households receive financial assistance and incentives to install solar panels, enabling them to generate their own clean energy and reduce their reliance on the electric grid. This not only lowers their energy costs but also contributes to environmental sustainability.

Paths to Energy Security and Independence

Energy security extends beyond ensuring reliable access to energy; it also includes efforts to prevent any community or individual from shouldering disproportionate burdens during the transition. The Community Solar Act¹⁷ enables the development of community solar projects, providing an opportunity for residents who cannot install solar panels on their own properties to benefit from renewable energy. Through this program, individuals can subscribe to a shared solar array and receive credits on their electricity bills for the energy produced. The program is intended to offer a wider range of residents the opportunity to participate in the clean energy transition.¹⁸¹⁹

Community Engagement and Empowerment

Community empowerment is essential elements of a just energy transition. Meaningful participation of communities in the decision-making processes and the ownership of energy projects not only fosters inclusivity but also enhances the overall success and sustainability of the transition.²⁰ Strengthening community participation, enhancing community empowerment and ownership, and fostering collaborative partnerships for community benefits would elevate the efficacy of the energy transition in New Mexico.

Community Involvement in Energy Transition Initiatives

Community participation is often viewed as a key element in energy transition efforts, involving community members in the planning, implementation, and monitoring of energy projects. By incorporating local knowledge, values, and aspirations, decision-making processes become more inclusive and representative. This is intended to foster transparency, trust, and shared responsibility among interested parties. The Sustainable Economy Advisory Committee brings together members of disadvantaged communities and Native American tribes to advise the Sustainable Economy Task Force in developing a strategic plan.²¹ New Mexico Energy, Minerals, and Natural Resources Department's Renewable Energy Transmission Authority (RETA)²² actively seeks public input through town hall meetings and community workshops to gather perspectives on

¹⁴ N.M. STAT. ANN. § 62-17A-2(J)

¹⁵ New Mexico Legislature passes Community Energy Efficiency Development Block Grant Act. (2022)

¹⁶ New Mexico Legislature. (n.d.)

¹⁷ Community Solar. (n.d.)

¹⁸ Community Solar Act, S.B. 84, N.M. Leg. (2021 Reg. Sess.) (enacted); 2021 N.M. Laws Ch. 34

¹⁹ Pacyniak et al. (2022)

²⁰ Perlaviciute et al. (2018)

²¹ Power 4 New Mexico Our Sustainable Economy. (n.d.)

²² New Mexico RETA. (n.d.)

renewable energy projects and transmission line development. The Energy Transition Act (ETA) Advisory Committee²³ includes diverse interested parties and experts who work together to develop strategies and recommendations for a just transition to clean energy. These forums aim to provide platforms for discussions, informed by multiple perspectives, and help shape policy.

Initiatives Focusing on Marginalized Voices

Inclusive and equitable decision-making are vital in energy policy.²⁴ In order to foster a just and inclusive energy transition, community engagement and empowerment play a crucial role.²⁵ Organizations like Pueblo Action Alliance²⁶, Somos Un Pueblo Unido²⁷, Naeva²⁸, Power 4 New Mexico²⁹, The New Energy Economy³⁰, and Youth United for Climate Crisis Action (YUCCA)³¹ actively promote community involvement in shaping energy policies, recognizing the importance of inclusive and equitable decision-making. By creating platforms for dialogue, these organizations aim to amplify the voices of marginalized communities, ensuring their interests are represented in policy discussions. While community organizations have a critical role in advocating for equitable energy policies, it is equally important to acknowledge the influence and impact of business-focused groups in this transition. For example, the Green Chamber of Commerce³² seeks to advocate for sustainable business practices and environmental justice by aiming to amplify the voices of local businesses and communities. The Hispano Chamber of Commerce³³ advocates for the Hispanic and small business community by empowering individuals in Albuquerque and New Mexico through economic growth. The New Mexico Chamber of Commerce³⁴ provides a platform that amplifies the voices of the business community, ensuring their perspectives are heard and valued in policy processes.

Establishing Collaborative Partnerships Aimed at Community Benefits

Collaborative partnerships among interested parties, including community members, policymakers, industry representatives, and non-profit organizations, are vital in driving New Mexico's just energy transition. These partnerships are intended to harness collective resources, knowledge, and expertise to address community priorities and aim for the equitable distribution of benefits. Community Benefits Agreements (CBAs)³⁵ are agreements between energy project developers and the affected communities, outlining the specific benefits that will be provided. For instance, the Pattern Energy Community Benefits Agreement in SunZia is a voluntary renewable energy initiative.³⁶ With an estimated economic impact of \$20.5 billion, the project will generate 3,500 megawatts of wind power, enough to transition over three million homes to clean

²³ Energy Transition Act Committee. (n.d.)

²⁴ Tarekegne et al. (2022)

²⁵ Taliep. (2022)

²⁶ Pueblo Action Alliance. (n.d.)

²⁷ Somos un Pueblo Unido. (n.d.)

²⁸ Naeva. (n.d.)

²⁹ Power 4 New Mexico. (n.d.)

³⁰ New Energy Economy. (n.d.)

³¹ YUCCA. (n.d.)

³² New Mexico Green Chamber of Commerce. (n.d.)

³³ Albuquerque Hispano Chamber of Commerce. (n.d.)

³⁴ New Mexico Chamber of Commerce. (n.d.)

³⁵ Community Benefit Agreement (CBA) Toolkit. (n.d.)

³⁶ Higgins. (2023)

energy. The project is set to create thousands of jobs during construction and support over 100 permanent positions.³⁷

Government Support and Collaborative Governance

Government support and policy frameworks play a crucial role in facilitating community engagement and fostering a just energy transition. By engaging in payment-based support, supporting equitable grid access, prioritizing environmental protection, promoting community planning, and investing in capacity building, policymakers can create an enabling environment that prioritizes justice, fairness, and inclusivity.³⁸ These intentional actions pave the way for a more sustainable and equitable future, ensuring that historically marginalized communities are at the center of decision-making processes and empowering all individuals to participate in and benefit from the energy transition.

Addressing Indigenous Rights and Sovereignty in Energy Transition

Upholding Indigenous rights and sovereignty is a fundamental pillar for achieving a just energy transition. In the United States, the legal landscape surrounding Indigenous rights highlights the importance of Indigenous support and partnerships in crucial areas such as project development, access to capital, and maintaining a social license. It highlights the perceived need for interested parties to actively address Indigenous rights, including Free, Prior, and Informed Consent (FPIC)³⁹, and navigate the evolving expectations and legal frameworks within energy transition projects.⁴⁰

Policy Incentives and Regulations

Government policies often act as influential drivers in the renewable energy sector. Certain policies, for instance, encourage renewable energy development by setting standards for utilities to derive a specified percentage of their energy from renewable sources. These policies aim to facilitate the transition towards renewable energy and seek to level the playing field for all interested parties, with the objective of fostering growth within the sector. For example, the General Appropriation Act of 2023⁴¹ prioritized economic and workforce development by appropriating “a \$15.4 million general fund special appropriation to the Workforce Solutions Department for energy transition workforce training” and “\$5.9 million for energy transition economic assistance.” By allocating funding for energy transition workforce training and economic assistance, the state shows its intent to support impacted communities and aims to ensure they benefit from the transition.

³⁷ SunZia will transform New Mexico's economy. (2023)

³⁸ Leonhardt et al. (2022)

³⁹ Free, Prior and Informed Consent (n.d.)

⁴⁰ Barabash et al. (2023)

⁴¹ New Mexico Legislative Finance Committee. (2023)

Dedicated Funding Streams for Transition Equity Initiatives

To ensure equity in the energy transition, it is crucial to establish dedicated funding streams that prioritize marginalized communities. Allocating resources specifically for initiatives focused on equity and justice is an approach intended to address historical disparities and provide support that can potentially enable communities to participate more fully in the transition. For example, the Inflation Reduction Act (IRA)⁴² is a federal initiative that presents opportunities to allocate funds towards environmental justice programs, renewable energy projects, and community-led initiatives aimed at addressing the disproportionate impacts of climate change on marginalized communities. Dedicated funding streams aim to contribute to the development of affordable and clean energy solutions in underserved areas, improve energy efficiency in low-income households, and create job training programs for disadvantaged populations. Moreover, these funding mechanisms can enhance community resilience to climate impacts and ensure diverse perspectives are considered in decision-making processes.

Strategies for Collaborative Governance and Interagency Coordination

Promoting collaborative governance and interagency coordination is paramount for achieving a just energy transition that addresses the diverse needs of communities. The Interagency Climate Change Task Force⁴³ stands as an example of how government agencies can come together to advance energy policies and programs in harmony with social and environmental justice objectives. This platform is intended to enable cooperation and the exchange of knowledge, with the goal of ensuring that decision-making processes are inclusive and informed.

The Interplay Between Health and Energy Transition

The impacts of energy transition on health and wellbeing are key considerations in achieving a just and sustainable future.⁴⁴ As New Mexico shifts towards cleaner energy sources and moves away from fossil fuels, there is a perceived need to assess and address potential health implications, highlight the public health benefits of renewable energy, and attempt to mitigate any disproportionate health burdens during the transition.

Evaluating Health Implications of Energy Transition

Assessing the health implications of the energy transition is crucial for achieving equitable outcomes across communities. New Mexico Environmental Public Health Tracking program⁴⁵ highlights the disproportionate burden of air pollution and degraded water quality faced by marginalized communities near fossil fuel extraction and power generation sites. Reducing emissions is seen as a potential benefit for communities with a high percentage of people of color, lower-income individuals, or those with health vulnerabilities. However, current state policies are insufficient to achieve climate pollution reductions.⁴⁶ Additionally, conventional energy extraction


⁴² The Inflation Reduction Act Delivers Affordable Clean Energy for New Mexico. (2022)

⁴³ Meet the Interagency Climate Change Task Force. (n.d.).

⁴⁴ Baker et al. (2021)

⁴⁵ New Mexico Tracking. (n.d.)

⁴⁶ Pacyniak et al. (2023)



methods like coal mining and hydraulic fracturing pose risks to water quality and quantity, potentially contaminating water sources and depleting groundwater reserves. To address these inequities, there is a perceived need to design climate pollution policies with an emphasis on public health benefits.⁴⁷

Addressing Health Factors in Energy Transition

To achieve equity in the energy transition, addressing disproportionate health burdens affecting marginalized communities and vulnerable populations is crucial in New Mexico. The New Mexico Public Regulation Commission unanimously voted to require utility PNM to transition from coal-fired generation to renewable energy at the San Juan Generating Station. This decision aligns with the state's Energy Transition Act, which aims for 100 percent carbon-free electricity generation by 2050. While clean energy advocates support the move, concerns have been raised about grid reliability and the potential economic impact on the region. The carbon capture proposal by Enchant Energy may still be considered as an alternative.⁴⁸ Additionally, the Albuquerque-Bernalillo County Air Quality Control Board has ordered a hearing on a proposed regulation that would require consideration of the cumulative air pollution impacts related to any new air pollution permit. If adopted, this would be one of the first “cumulative impacts” regulations adopted in the nation.⁴⁹

Social and political dimensions of energy transition highlight equitable energy access, community participation in decision-making, government support and collaborative governance, and the health implications of different energy choices. Through objective examination of these areas, the chapter offers a comprehensive understanding of the social facets of New Mexico's energy transformation journey.

⁴⁷ Pacyniak et al. (2023)

⁴⁸ Chamberlain. (2020)

⁴⁹ New Mexico Environmental Law Center. (2023)

ECONOMIC EMPOWERMENT AND WORKFORCE DEVELOPMENT

The economic dimensions of a just energy transition are vital for creating inclusive opportunities, fostering workforce development, and promoting education and capacity building.⁵⁰ In New Mexico, a state heavily reliant on the fossil fuel industry, transitioning to a clean energy economy presents unique challenges and opportunities.

Fostering Inclusive Economic Opportunities

New Mexico can create inclusive economic opportunities during the energy transition by leveraging its renewable energy resources, stimulating the renewable energy industry, and supporting small businesses and entrepreneurship. By harnessing abundant solar and wind power, the state can drive job creation and economic growth. Incentives and research in the renewable energy sector attract investment and foster innovation. Additionally, supporting local entrepreneurs in the clean energy industry enhances economic resilience. Capitalizing on these opportunities fosters a fair and sustainable energy transition, benefiting all New Mexicans.⁵¹ While the benefits are potentially substantial, the realization of these opportunities comes with challenges, including the necessary investments, workforce training, and policy amendments.

Encouraging Growth in Renewable Energy Industries

New Mexico, abundant in solar and wind power, holds the potential to transition to a more sustainable energy system while fostering economic equity. By prioritizing the development of clean energy sectors, the state can stimulate economic diversification and create new job opportunities, particularly for those in disadvantaged communities. This emphasis has the potential to attract green investments, leading to a more balanced distribution of wealth and resources. Prime examples of such efforts are the Solar Market Development Tax Credit (SMDTC)⁵² and the Renewable Energy Production Tax Credit (REPTC)⁵³. These programs provide financial benefits and tax incentives to eligible producers, encouraging the proliferation of renewable energy projects including solar farms, wind projects, and residential/commercial solar installations. These initiatives, while creating demand for skilled labor, also have the potential to generate local prosperity. By proactively stimulating the growth of green industries and businesses, New Mexico can effectively address climate change, distribute the benefits of the energy transition evenly, and pave the way for an inclusive, resilient, and prosperous future. Despite the significant opportunities presented by the transition, challenges persist, including infrastructure upgrades, market volatility, technological progress, environmental considerations, and evolving regulations. These factors should be considered in order to manage and influence sustainable growth effectively.

⁵⁰ Baker & Tims (2019)

⁵¹ Siciliano et al. (2021)

⁵² Solar Market Development Tax Credit (SMDTC). (n.d.)

⁵³ Renewable Energy Production Tax Credit (REPTC). (n.d.)

Supporting Small Business Growth and Entrepreneurship

A fair energy transition presents a unique chance to support and expand small businesses and entrepreneurship. In New Mexico, initiatives actively encourage participation in the clean energy sector, notably in solar installation companies and other renewable energy-focused businesses. Local renewable energy businesses serve as valuable resources, providing assistance, guidance, and access to financing options for small businesses involved in renewable energy technologies. They play a vital role in the clean energy supply chain, supporting activities such as solar panel installation, energy efficiency consulting, and electric vehicle infrastructure deployment. By empowering and supporting small businesses in the energy transition, New Mexico not only fosters economic diversity and resilience but also creates local job opportunities and contributes to the state's sustainable development objectives. It's crucial; however, to acknowledge the challenges these businesses face, such as limited access to capital, complex regulations, and competition with larger, established firms.

Building Workforce Resilience for Energy Transition

Developing a resilient and adaptable workforce is a cornerstone of a just energy transition. Workforce development strategies, including upskilling and training programs for energy transition careers, can help ensure job security and employee well-being during this transition. By investing in these initiatives, New Mexico can empower individuals to navigate the evolving energy landscape, acquire necessary skills, and adapt to new job opportunities. These actions not only support individual career growth but also enhance the overall stability and readiness of the communities.

Empowering the Workforce through Tailored Training and Education Programs

New Mexico promotes an equitable workforce transition by providing robust training and education programs in the energy sector. The state's educational institutions play a pivotal role in equipping individuals with the necessary skills and knowledge for clean energy careers. New Mexico's existing education structure, particularly the two-year institutions, provide a strong foundation for training and credentialing in the green workforce.⁵⁴ For example, North American Wind Research and Training Center at Mesalands Community College offers practical training, where students can conduct maintenance and repairs on the College's operational 1.5 megawatt wind turbine.⁵⁵ Central New Mexico Community College offers comprehensive training and certifications in renewable energy fields, focusing on solar installation and energy efficiency.^{56,57} Santa Fe Community College has established three new certificates for technicians: automation and controls, distributed energy technologies, and information technology support for Smart Grids and Microgrids.⁵⁸ The University of New Mexico collaborates with industry partners to develop programs that align with clean energy sectors.⁵⁹ New Mexico State University emphasizes research and development in renewable energy, fostering innovation and creating job opportunities. The New Mexico

⁵⁴ New Mexico Clean Energy Workforce Development Study. (2020)

⁵⁵ North American Wind Research and Training Center at Mesalands Community College (n.d.)

⁵⁶ Electrical Trades. (n.d.)

⁵⁷ Photovoltaic (Solar) Energy. (n.d.)

⁵⁸ Facilities Management. (n.d.)

⁵⁹ Center for Emerging Energy Technologies (n.d.)

Institute of Mining and Technology specializes in renewable energy research.⁶⁰ San Juan College provides training and certification programs in various energy-related fields, including renewable energy and energy efficiency.⁶¹ Additionally, microcredentials integrate workforce needs into the curriculum, offering targeted training in renewable energy technologies, energy efficiency, and environmental justice. Curricula embed essential industry skills helps students earn recognized credentials. Such credentials should be structured in a "stackable" fashion, allowing individuals to gather a series of certificates and degrees. This progression not only enhances their marketable skills but also paves the way for opportunities in higher-paying roles.⁶² These educational initiatives not only enhance workforce resilience but also foster a sense of empowerment among individuals as they transition to new careers in the clean energy sector.

Promoting Resilience with Job Assistance and Transition Support

To facilitate a smooth energy transition, it is essential to provide job placement and transition support. The New Mexico Workforce Connection⁶³ offers a statewide network of resources and funding opportunities for training programs, ensuring individuals have access to the necessary resources to thrive in clean energy careers. The New Mexico Economic Development Department⁶⁴ administers grant programs like the Job Training Incentive Program (JTIP)⁶⁵, specifically designed to support targeted industries, including clean energy. These programs promote job placement and career advancement. Furthermore, the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD)⁶⁶ offers grants and partnerships for workforce development in the clean energy field, enabling individuals to acquire the skills needed for employment in the evolving energy sector. Collaborations between local utility companies like PNM and training institutions are also crucial, as they provide funding and apprenticeship programs, fostering job opportunities and creating a skilled workforce. These concerted efforts ensure that individuals receive the necessary support for a successful transition, driving the growth of the clean energy sector and enhancing economic resilience in New Mexico.

Prioritizing Job Security and Worker Wellbeing During Energy Transition

During the energy transition, ensuring job security and worker wellbeing is paramount. In New Mexico, various initiatives have been implemented to address these concerns and facilitate a just and equitable transition. Collaborations between government agencies, energy companies, and community organizations have resulted in the establishment of programs and support services for workers. These include job placement services, training and upskilling opportunities, access to healthcare, and financial counseling. By providing these resources, workers are empowered to navigate the changing energy landscape and secure stable employment in the emerging clean energy sectors. Furthermore, a strong emphasis is placed on worker health and safety standards to create a safe working environment. These collective efforts, focusing on

⁶⁰ Current Research. (n.d.)

⁶¹ School of Energy. (n.d.)

⁶² New Mexico Clean Energy Workforce Development Study. (2020)

⁶³ New Mexico Workforce Connection. (n.d.)

⁶⁴ New Mexico Economic Development Department. (n.d.)

⁶⁵ Job Incentive Training Programs. (n.d.)

⁶⁶ New Mexico Energy, Minerals and Natural Resources Department. (n.d.)

job security and worker wellbeing, not only mitigate potential adverse effects of the energy transition but also serve to empower the workforce economically in the evolving energy sector.

Capacity Building and Its Economic Implications

Capacity building may play a pivotal role in the economic aspects of just energy transition. It has the potential to facilitate the understanding of clean energy complexities for individuals and communities, contributing to economic growth and resilience. Investment in clean energy research and innovation within capacity building could drive technological advancements, stimulate entrepreneurship, and attract investment, with the potential outcome being job creation and economic opportunities. Additionally, fostering energy literacy and awareness through capacity building could lead to informed decision-making and active community engagement. It might enable individuals to partake in the energy transition, comprehend the economic implications, and advocate for equitable policies. Therefore, capacity building could fortify the economic foundations of just energy transition by potentially promoting innovation, encouraging economic diversification, and enabling communities for sustainable and inclusive growth.

The Role of Clean Energy Research and Innovation

Social entrepreneurship and innovation are increasingly perceived as potential facilitators for just energy transition.⁶⁷ To advance the energy transition in New Mexico, substantial investments have been made in clean energy research and innovation. Los Alamo National Laboratory's Intermountain West Energy Sustainability & Transitions (I-WEST)⁶⁸, which has outlined a technology roadmap to tackle the region's unique energy challenges. These include persistent drought and dependence on fossil fuels. I-WEST's approach prioritizes collaboration across the region to potentially create an equitable energy transition strategy. They aim to reduce carbon emissions and promote economic growth, which could contribute to a resilient and prosperous future. As the United States sets ambitious targets for carbon emissions, timely and strategic investments in clean energy systems are deemed critical. In addition to research efforts, support mechanisms, such as Small Business Innovation Research (SBIR) grants⁶⁹ are available to entrepreneurs in the field of energy transition and the clean energy economy, offering potential access to the necessary funding and support for their innovative ideas. The NM SMART Grid Center is a 5-year, \$24 million research project to modernize the electricity grid and develop a diverse and highly-qualified workforce. Researchers at UNM, NMT, and NMSU are collaborating to investigate how to integrate renewable energy sources and support community energy resilience and independence through microgrids.⁷⁰

Boosting Energy Literacy and Awareness within Communities

Increasing energy literacy and awareness within communities may enhance energy transition and bolster regional resilience.⁷¹ Current efforts include energy education campaigns delivered through various media channels, community workshops, and


⁶⁷ Manjón Rodríguez et al. (2022)

⁶⁸ Intermountain West Energy Sustainability & Transitions (n.d.)

⁶⁹ New Mexico Small Business Innovation Research (SBIR) Grant (n.d.)

⁷⁰ New Mexico EPSCoR. (n.d.)

⁷¹ Chodkowska-Miszczuk et al. (2021)



seminars. Energy fairs and expos present clean energy technologies and offer educational resources. Energy-related topics have been integrated into school curricula to ensure students acquire foundational knowledge. Partnerships with energy companies, nonprofits, and community groups have led to targeted energy education programs. Moreover, informal science organizations, like museums and science centers, are well-positioned to share renewable energy information and highlight career pathways with the general public. For example, Explora, located in Albuquerque, highlights smart grids and renewable energy sources in a hands-on exhibit in their new teen center, X-Studio.⁷² The aim of these initiatives is to broaden the understanding of clean energy, energy efficiency, and the benefits of renewable resources. Information on clean energy opportunities is disseminated through TV, radio, and social media across New Mexico. Engaging a variety of audiences and addressing local energy issues may help to cultivate a culture that is open to sustainable energy practices. Initiatives of this nature have the potential to encourage community engagement, raise awareness, and contribute to a broader shift towards more sustainable energy practices. However, research indicates that a unified, state-wide information campaign can further enhance this process.⁷³ Such a campaign could be more effective if it includes information about the timeline for clean energy transition, forthcoming job opportunities, and the necessary skills and certifications needed in this sector. The scope and effectiveness of these initiatives require further study and evaluation.

The economic dimensions of just energy transition highlights the essential need for robust educational programs and proactive transition support to equip the workforce for clean energy careers. It emphasizes the need to prioritize job security and worker wellbeing during this transition. Additionally, the chapter sheds light on the significance of capacity building, promoting energy literacy, and investing in clean energy research and innovation to foster economic resilience and stimulate entrepreneurship. The collective efforts outlined herein, aim to guide a just, equitable, and sustainable energy transition in the state.

⁷² Explora Opens XStudio Teen Center. (n.d.)

⁷³ New Mexico Clean Energy Workforce Development Study. (2020)

ENVIRONMENTAL JUSTICE AND CLIMATE RESILIENCE

The environmental justice and climate resilience aspects of a just energy transition are critical for addressing historical disparities, empowering marginalized communities, and fostering sustainability. In New Mexico, a state rich in diverse natural resources and grappling with the effects of climate change, integrating environmental justice and resilience into its energy transition presents a complex interplay of challenges and opportunities.

Environmental Justice Considerations

The energy transition in New Mexico places a strong emphasis on environmental justice considerations, recognizing the urgent need to address historical disparities and ensure equitable outcomes for all communities.⁷⁴ As the state moves towards a more sustainable and clean energy future, it becomes essential to understand and address the environmental injustices and disparities that have disproportionately impacted marginalized populations. This section delves into the multifaceted aspects of environmental justice, exploring effective strategies to rectify these inequities, promote fair distribution of environmental benefits, and actively involve communities in decision-making processes. By centering environmental justice considerations, New Mexico can pave the way for a just and inclusive energy transition that uplifts communities, protects public health, and fosters long-term sustainability for both people and the planet.

Addressing Environmental Injustices and Disparities

Environmental justice is a core principle aimed at rectifying historical and persistent environmental disparities that have disproportionately affected marginalized communities. In New Mexico, a stark illustration of this is evident in the legacy of uranium mining on tribal lands, including Laguna Pueblo.⁷⁵ The adverse consequences of uranium mining include extensive environmental contamination and associated health risks for the community. To redress this injustice, comprehensive cleanup and remediation strategies are being implemented, accompanied by the provision of healthcare and support services for affected individuals. In the South Valley of Albuquerque, predominantly low-income and minority neighborhoods are disproportionately exposed to air pollution from nearby refineries and highways.⁷⁶ Efforts to rectify this include policies to improve air quality, support renewable energy alternatives, and establish guidelines for fair access to clean and healthy environments. By prioritizing environmental justice considerations, New Mexico can take meaningful steps towards addressing the environmental injustices faced by marginalized communities like Laguna Pueblo and South Valley, promoting healing and equitable development.

⁷⁴ Ramírez. (2021)

⁷⁵ Blake et al. (2017)

⁷⁶ Villa. (2022)

Promoting Equitable Distribution of Environmental Benefits

Promoting equitable distribution of environmental benefits is a key focus in New Mexico's energy transition, and the Solarize Santa Fe⁷⁷ is one initiative that aims to achieve this. By leveraging bulk-purchasing power, the program helps homeowners of all income levels overcome financial barriers and install solar energy systems, enabling them to save money on their energy bills. This initiative ensures that the benefits of renewable energy are accessible to a wider range of residents, including those facing financial challenges. Additionally, the program's outreach efforts, such as partnering with Santa Fe Public Schools and focusing on demographics that reflect the city's population, demonstrate a commitment to equity and inclusion. By expanding access to solar energy, the Solarize Santa Fe pilot program not only contributes to a reduction in carbon emissions but also promotes economic empowerment and cost savings for homeowners. Such initiatives are vital in ensuring an equitable distribution of environmental benefits throughout New Mexico's energy transition.

Engaging Communities in Environmental Decision Making

Meaningful community engagement lies at the heart of achieving environmental justice and fostering a just energy transition. The significance of involving communities in decision-making processes has been recognized in New Mexico. Two key examples that highlight this commitment are the Energy Transition Act and the Community Solar initiative. One example is The Coalition Of Sustainable Communities New Mexico⁷⁸, a collective of local governments representing diverse geographic and cultural backgrounds. New Mexico is working towards ensuring that policies and projects take into account the impacts on marginalized communities, thereby empowering them to shape the energy transition.

Natural Resources Management and Climate Mitigation

The success of the energy transition is potentially impacted by the effective management of natural resources and proactive climate mitigation efforts.⁷⁹ The adoption of renewable energy sources and the practice of responsible natural resource management are considered ways in which individuals and communities in New Mexico can potentially contribute to social and ecological wellbeing. Climate action extends beyond individual efforts and involves advocating for policies that drive positive change, supporting renewable energy projects, and raising awareness about the importance of sustainable living. Embodying environmental stewardship and taking tangible steps towards climate action are seen as potential paths for New Mexico to influence the health and resilience of the planet, with implications for future generations.

Balancing Renewable Energy Development and Conservation Priorities

Promoting environmental equity in New Mexico's energy transition necessitates the sustainable management of natural resources. Strategies for responsible resource management must include preservation of biodiversity and the protection of

⁷⁷ City of Santa Fe. (n.d.)

⁷⁸ Coalition of Sustainable Communities New Mexico (CSCNM). (n.d.)

⁷⁹ Zhang et al. (2023)

ecosystems. The Natural Lands Protection Act⁸⁰ plays a significant role in balancing renewable energy development and conservation priorities in New Mexico. This act identifies and safeguards ecologically significant lands, critical habitats, and culturally important areas, ensuring that renewable energy projects are developed with a balanced approach. The integration of the provisions of the act into the energy transition is aimed at ensuring renewable energy development in New Mexico occurs alongside the preservation of vital ecosystems and conservation priorities. This approach aims to facilitate the sustainable management of natural resources while meeting renewable energy goals, with the intent of promoting an environmentally responsible energy transition.

Preserving Ecosystems, Biodiversity, and Cultural Heritage

Preserving ecosystems, biodiversity, and cultural heritage is crucial in New Mexico's energy transition, exemplified by the Natural Heritage Conservation Act.⁸¹ This act protects the state's natural heritage, customs, and culture through funding conservation, agricultural easements, and land restoration. The integration of its provisions represents New Mexico's efforts towards preserving invaluable resources. The act identifies and safeguards unique natural heritage resources, including rare species, ecosystems, and culturally significant areas. Funding mechanisms support land and water conservation for forests, watersheds, wildlife habitats, agriculture, recreation, and habitat restoration. This approach underlines the perceived value of ecosystems, biodiversity, and cultural heritage in environmental equity and the energy transition process.

Implementing Climate Change Mitigation Strategies

To effectively tackle the challenges posed by climate change and curtail greenhouse gas emissions, New Mexico is actively implementing a diverse array of climate change mitigation strategies. Governor Michelle Lujan Grisham's Executive Order 2019-003⁸² sets the foundation for New Mexico's proactive approach in addressing climate change and reducing greenhouse gas emissions. Through this order, the state establishes ambitious climate mitigation goals and forms an interagency Task Force dedicated to mitigating climate impacts and emissions. The Task Force integrates climate adaptation and mitigation practices into agency policies, ensuring that New Mexico takes proactive measures in its energy transition. It focuses on targeted strategies aligned with renewable energy objectives and environmental equity priorities. The executive order is a key element in New Mexico's approach to addressing climate change and attempting to lead a just energy transition, recognizing the importance of climate change mitigation in its environmental stewardship efforts. It provides a comprehensive framework for sustainable and equitable climate mitigation efforts across the state. Furthermore, EMNRD has launched the Climate Policy Bureau to address climate change and support the state's transition to a sustainable future. This bureau will contribute to reducing greenhouse gas emissions, growing the green economy, and developing a statewide Climate Action Plan. The scope of its work encompasses supporting state agencies in

⁸⁰ Natural Lands Protection Act. (NMSA 1978 §§ 75-5-1 to 75-5-6)

⁸¹ Natural Heritage Conservation Act (NMSA 1978 75-10-1 to 75-10-9)

⁸² Governor Michelle Lujan Grisham. (2019)

integrating climate change practices, administering resilience-building programs, and improving the Climate Risk Map⁸³ to provide a clearer understanding of climate hazards.

Climate Resilience and Adaptation Strategies

Climate resilience and adaptation strategies impact just energy transitions.⁸⁴ As we confront the challenges of climate change, it is essential to develop strategies that enhance our ability to withstand and adapt to its impacts. These strategies ensure that vulnerable communities are protected, critical infrastructure is resilient, and ecosystems are conserved. By prioritizing climate resilience and adaptation in the energy transition, New Mexico can create equitable outcomes that benefit all individuals and communities.

Promoting Resilient Energy Infrastructure

Promoting resilient energy infrastructure is a crucial aspect of New Mexico's commitment to climate resilience and achieving a just energy transition. The state has implemented various initiatives to enhance energy system resilience and adaptability. For instance, the Pueblo of Laguna has implemented a microgrid system to provide reliable and independent energy supply.⁸⁵ By integrating solar photovoltaic energy systems on community buildings in multiple villages, the Pueblo of Laguna has increased their energy self-sufficiency and minimized dependence on the main electrical grid. Initiatives like this represent some of New Mexico's strategies to promote resilient energy infrastructure with the aim of ensuring reliable and sustainable energy sources for all communities. By investing in resilient energy infrastructure, New Mexico can enhance energy system efficiency, reduce vulnerabilities to climate-related risks, and foster a more equitable and resilient energy future.

Enhancing Water Resource Management

Enhancing water resource management is a critical component of building resilience and ensuring a just energy transition in New Mexico. The state's arid climate and limited water availability underscore the need to prioritize sustainable water management practices. New Mexico recognizes that the management of water resources, including addressing the challenges associated with produced water, is essential to promote environmental equity in the energy transition. The implementation of the New Mexico Produced Water Act⁸⁶ provides regulations and guidelines for the treatment and reuse of produced water from oil and gas operations, with the intention of reducing strain on freshwater resources and minimizing potential environmental impacts. By integrating water management strategies into the energy transition, New Mexico can mitigate the potential impacts on water availability, protect ecosystems, and ensure equitable access to this vital resource.

Building Resilient Communities


To achieve a just energy transition, New Mexico must build resilient communities by acknowledging the significance of environmental justice, climate action, and the interconnectedness of the food, energy, and water nexus in fostering resilience and

⁸³ New Mexico Climate Risk. (n.d.)

⁸⁴ Aldieri et al. (2021)

⁸⁵ Pueblo of Laguna – 2022 Project. (n.d.)

⁸⁶ New Mexico Produced Water. (n.d.)



equitable outcomes.⁸⁷ Regenerative agriculture practices enhance soil health, water retention, and agricultural system resilience while promoting sustainable land use practices. Community gardens and urban agriculture projects, such as the Grow the Growers program⁸⁸ and the Agri-Cultura Cooperative Network⁸⁹, contribute to the food, energy, water nexus by providing fresh, locally grown food, enhancing food security, and fostering community self-sufficiency. These efforts aim to address climate change, promote environmental equity, and enhance the overall resilience of the food system. By prioritizing resilient communities and natural systems, New Mexico seeks to ensure equitable distribution of the benefits of the energy transition, aiming to foster environmental justice and long-term sustainability.

Environmental justice and climate resilience in the context of a just energy transition highlights the pressing need for comprehensive strategies to combat climate change and bolster community resilience. This chapter emphasizes the necessity to acknowledge and address long-standing environmental injustices, whilst fostering a resilient future for all communities. Furthermore, it underscores the importance of inclusive community engagement, capacity building, and strategic investments in resilient infrastructure to promote environmental sustainability and resilience against climate-related impacts. The collective actions discussed herein strive to guide New Mexico towards an energy transition that is considerate of environmental justice and prepared for the effects of climate change, ultimately aspiring to cultivate a more sustainable and resilient future for all residents of the state.

⁸⁷ Yadav et al. (2021)

⁸⁸ Bernalillo County. (n.d.)

⁸⁹ Agri-Cultura Network. (n.d.)

CONCLUSION

The journey towards an energy transition in New Mexico encompasses both tremendous promise and inherent challenges as the state grapples with climate change and endeavors to construct a sustainable future. A just energy transition necessitates an unwavering commitment to the principles of equity and justice. This commitment ensures that both the benefits and costs of the transition are distributed equitably.

The pursuit of social equity in this energy transition demands action in a broad range of areas. This includes guaranteeing access to affordable energy for all, fostering community well-being, and uplifting historically marginalized communities. However, achieving these goals necessitates profound societal, behavioral, and systemic changes, complemented by enduring investments.

Economic empowerment within this transition requires comprehensive efforts: nurturing an inclusive and diverse economic environment, promoting workforce resilience, and enhancing the capacity of communities through targeted education and development initiatives. These aims extend beyond the scope of short-term actions; they call for long-term strategic investments and an unwavering commitment to transforming economic structures, labor market trends, and educational systems to be more inclusive and equitable.

In committing to environmental justice and climate resilience, the energy transition requires targeted efforts in several domains: redressing environmental inequities, advocating for sustainable resource management, and enacting robust climate resilience strategies. The successful realization of these goals requires a paradigm shift, demanding immediate action, long-term strategic planning, and a sustained commitment to realigning policies, practices, and societal attitudes with the principles of environmental justice, sustainability, and resilience.

Inclusive policy frameworks that promote equitable decision-making and environmental justice are pivotal to this transition. They provide an avenue to rectify historical disparities and equip historically marginalized communities with opportunities to actively participate in and benefit from climate solutions. By incorporating these principles into the energy transition, New Mexico can embark on a challenging but indispensable journey towards a sustainable and equitable future. Drawing on its strengths and confronting the complex tasks ahead, New Mexico stands on the threshold of a pivotal moment in its energy transition journey.

To translate these challenges into opportunities for a just energy future, the state must:

- **Design a Comprehensive Energy Transition Plan:** Address social, economic, political, and environmental dimensions of the transition while considering the state's unique needs and opportunities. Inclusive planning processes are key to integrating diverse perspectives towards sustainable and equitable outcomes.
- **Establish Supportive Policy Frameworks:** Develop proactive and progressive policies and regulations to facilitate the energy transition. These should encourage the shift towards clean energy, promote renewable energy deployment, and assure an equitable distribution of benefits.

- **Prioritize Equity and Inclusion:** Uphold principles of equity and inclusion. Encourage participatory, transparent, and inclusive decision-making processes to ensure diverse voices, especially from marginalized communities. Contribute meaningfully to shaping the energy landscape.
- **Advocate for Health and Wellbeing:** Understand and mitigate the direct and indirect impacts of climate change and environmental factors on public health. Strive for equal access to health services for all communities and consider the health implications of environmental decisions in policymaking.
- **Encourage Economic Diversification:** Promote economic diversification in alignment with the clean energy sector. Invest in workforce development and training initiatives to encourage a diverse economic landscape that create job opportunities in sustainable industries.
- **Foster Research and Innovation:** Cultivate a conducive environment for research and technological innovation. Encourage collaboration among different entities to enhance our understanding of energy transition dynamics and develop innovative, efficient, and equitable energy solutions.
- **Redress Historical and Ongoing Injustices:** Acknowledge and implement strategies to rectify historical and ongoing environmental injustices. This includes prioritizing investments in communities that have been disproportionately affected by pollution and industrial impacts, with the goal of advancing their social, economic, and environmental wellbeing in the process of energy transition.
- **Implement Climate Resilience and Adaptation Strategies:** Integrate strategies of resilience and adaptation into the energy transition plan, taking into account potential future climate scenarios and their impact on energy supply, demand, and infrastructure stability.
- **Enhance Education and Awareness:** Increase public understanding of clean energy benefits, environmental sustainability, and the importance of a just transition. Engage in education and outreach to enhance energy literacy and foster informed decision-making and advocacy.
- **Monitor and Evaluate Progress:** Implement robust mechanisms to track and evaluate the energy transitions progress. Regular evaluations ensure that the transition fulfills its promise of fairness and inclusivity, providing opportunities for course correction and continual improvement.


The energy transition in New Mexico is not a one-size-fits-all process. It demands continuous collaboration, community engagement, and a firm commitment to justice and equity. By prioritizing the wellbeing of communities and ecosystems, New Mexico can strive towards an inclusive energy system. The state's path towards a sustainable future where clean energy is tightly intertwined with equity and justice requires collaboration, innovation, and thoughtful policy design and implementation.

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