

Opportunities and Barriers for the Clean Energy Transition for Rural Communities in the United States: A Qualitative Interview Approach

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Background

According to the Lancet, climate change is the greatest public health threat of the 21st century.¹ To address it, 180 major medical and public health organizations have identified transitioning to cleaner forms of energy as essential to protect both immediate health from polluting fossil fuels while protecting long-term health from the pernicious effects of climate change, including worsening heat waves, wildfires, and flood and storm events.^{2,3} To achieve the scale of energy needed, rural areas will be essential to a clean energy transition, between having 99% of all onshore wind capacity plus a majority of utility-scale solar capacity.⁴ The Inflation Reduction Act, which is the largest investment the US has made to date in a clean energy transition⁵, incentivizes the development of clean energy projects in fossil fuel communities that are often located in rural areas. Nevertheless, there are multiple barriers however, to the law's implementation in rural communities. Logistical barriers include challenges such as a lack of transmission infrastructure to enable renewable energy projects to connect to the grid⁶. Political barriers include political landscapes that frame a transition to renewable energy as a partisan issue, resulting in the passage of local and state laws that are blocking new renewable energy projects.⁷

This study aimed to interview rural community organizations at the forefront of the clean energy transition. The goal of this study was to scope out the current landscape of transitioning to clean energy by investigating barriers and opportunities to a clean energy transition in rural America. Key themes and lessons for both researchers and advocates from these interviews are shared.

Methods

Our team identified 7 different groups engaged in a rural clean energy transition via an email announcement shared by the Medical Society Consortium on Climate and Health network as well as direct emails to existing partners. Each group participated in a 60-minute semi-structured online interview with the research team. The following organizations were interviewed: Comunidades Organizando el Poder y la Acción Latina (Minnesota), Groundswell

¹ (n.d.). *The Lancet Countdown of Health and Climate Change*. <https://www.thelancet.com/countdown-health-climate>

² (2019). US Call to Action on Climate, Health, and Equity: A Policy Action Agenda. Retrieved June 14, 2024, from <https://climatehealthaction.org/cta/climate-health-equity-policy/>

³ USGCRP, 2016: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 312 pp. <http://dx.doi.org/10.7930/JOR49NQX>

⁴ Saha, D. (2021, August 11). *Why rural America is key to climate change policy*. GreenBiz. Retrieved June 14, 2024, from <https://www.greenbiz.com/article/why-rural-america-key-climate-change-policy>

⁵ Mills, Ryan. "The IRA Is the Largest Climate Investment in US History - Are Utilities Planning Accordingly?" RMI, RMI, 14 Dec. 2023, <https://rmi.org/the-ira-is-the-largest-climate-investment-in-us-history-are-utilities-planning-accordingly/>.

⁶ Malone, Molly. "Transmission Congestion Is Costing Rural Communities." *Transmission Congestion Is Costing Rural Communities*, Center for Rural Affairs, 17 Jan. 2023, www.cfra.org/blog/transmission-congestion-costing-rural-communities.

⁷ *Why Rural America is Key to Climate Change Policy*. (2011, August 11). GreenBiz. Retrieved June 14, 2024, from <https://highlandcountypress.com/growing-maze-state-local-laws-challenging-bidens-green-energy-push#gsc.tab=0>

(DC), Georgia WAND (Georgia), NC Clean Future (North Carolina), Center for Rural Affairs (Nebraska), Clean Wisconsin (Wisconsin), and Sovereign Energy (New Mexico). Each group was awarded a \$250 honorarium. The interviews were focused around the following topics: organizational context and objectives, opportunities, challenges, and strategies, and needs and information gaps. Notes were taken in real-time as well as interview recordings used. The interviews were then coded using Open Coding and Noticing, Collecting, and Thinking coding methods. Linked here are the [interview guide](#), [codebook](#) and [coded interview notes](#).

Results

Communities Served by Our Interviewees

Our interviewees served rural communities from a range of geographic locations in the United States (Figure 1), ranging from the Southwest, to the Midwest and Great Plains, and the South. A common theme that our interviewees shared is that these rural communities are underresourced and low-income. For example, Kim Scott from Georgia WAND shared: “These are usually communities of underserved and under-resourced brown and black people... Many rural communities do not have the same type of amenities and resources to fight issues they currently face.” These communities also tended to have a higher energy burden from poor housing stock. Several of our community partners were explicitly focused on serving minority communities such as Latine communities (COPAL), Black communities (Georgia WAND) and Native communities (Sovereign Energy).



Figure 1: Primary Locations of Interviewed Nonprofits

Organizational Goals

Clean Energy Specific-Goals

There were many shared themes in our interviewees' organizational goals around clean energy. First, there was broad recognition of environmental justice, including the unjust and disproportionate impacts of pollution on rural communities. As Georgia WAND said, "[We are an] environmental and social justice nonprofit...This is a citizens' advisory group that gives constituents a voice in their neighborhoods." Furthermore, many organizations were especially interested in clean energy as a way to build economic opportunity for their communities. "[We were trying to bring in economic opportunities to the tribe via clean energy," as stated by Sovereign Energy.

Multiple organizations had goals of building and scaling programs related to clean energy, such as community solar programs, resilience hubs, energy efficiency programs, renewable energy education, and normalizing clean energy in trusted institutions such as churches and small businesses. Some organizations also worked on infrastructural goals, such as toward building decarbonization and on expanding transmission infrastructure. Groups also focused on policy and advocacy related to clean energy, such as Sovereign Energy's work with tribal offices and the natural resources department to shape strategic energy plans, as well as research programs, such as Clean Wisconsin's science program to "do new and secondary research to contextualize a lot of the advocacy issues."

Non-Clean Energy Organizational Goals

Beyond clean energy, our interviewees often had broader organizational goals. These included supporting new immigrants (Center for Rural Affairs) and meeting immediate community needs such as in health and wellness and workers' rights (COPAL). As COPAL noted, "In 2018 [when COPAL was founded], the goal with COPAL was to acknowledge that the community has immediate needs... but also understand why we were in that cycle of need and what kind of system change do we need to see to not be in that cycle." Multiple organizations were also interested in supporting sustainable food systems in collaboration with farmers.

Most Urgent Community Needs and Priorities

We hoped to understand the broader context for our interviewees, so we asked what were the most urgent community needs. Broader than clean energy, interviewees largely emphasized the need to build economic opportunity. As Center for Rural Affairs shared, "Most rural communities need economic opportunity [due to the] increased tax burden [and] decreasing population." Interviewees also emphasized the lack of technical capacity in their communities: as Sovereign Energy stated, "Capacity building is the MAIN issue. Many tribes don't have the right staffing to do solar. There are other priorities that have to be pushed (education, healthcare) before energy is." Lastly, interviewees also shared how they were addressing immediate community needs as well, such as the lack of benefits for undocumented immigrants. As COPAL shared, "There is an ITIN number for people without legal status to pay their taxes, but they don't get any benefits out of it... [We started a] campaign to educate legislators about ITIN issues." (COPAL)

Clean Energy-Related Priorities

Our interviewees identified urgent priorities for their communities related to clean energy as well. These included the cumulative impacts of air/water pollution due to the history of environmental pollution. There was also a high energy burden; as Groundswell stated, "Energy burden is high; energy is cheap but it is a housing equity issue. There is old housing in extreme disrepair, so it is too expensive to improve it, and families haven't been able to invest." Organizations also identified a lack of education and knowledge around implementing renewable energy; as NC Clean Future shared, "There was a lot of needed education. No one previously had done utility scale solar besides in California. Our work was mostly in educating local elected leaders and county leaders... "

Lastly, there were two key logistical roadblocks to clean energy identified: restrictive zoning laws and a lack of rural transmission infrastructure. As the Center for Rural Affairs shared, "Opposition groups are complex, moving parts but they have the same effect: pushing for restrictions that make it impossible to develop renewable energy at scale. This complicates what developers can do and may chase them away." As NC Clean Future further noted that there can be a lack of rural transmission infrastructure, and further that before linking to the electric grid the required permitting process by utilities for interconnection queues to receive newly generated energy can also cause delays.

Trusted and Not Trusted Messengers

We probed our interviewees regarding the messengers that were felt to be trusted and not trusted in their rural communities. Our interviewees largely identified people who live in and

serve the community as trusted; this includes faith leaders such as pastors, farmers, local business, local government officials and local community groups. As shared by Groundswell, "People who serve the community like pastors, or people in service jobs are trusted."

Messengers who were not trusted tended to include actors who were outsiders and did not build long lasting relationships with the community. These included certain elected officials, educational institutions, companies and outside developers, as well as people from the liberal coastal elite and mainstream media sources. For example, as Georgia WAND shared, "'Educational institutions can be untrustworthy because they only come and go and do not built lasting partnerships...They are also not friendly with data sharing. They want to collect data but do not propose a value-add to the community.'"

Fossil Fuels' Legacy in Communities

Fossil fuels often have had a positive cultural and practical significance to rural communities, making the transition to renewables difficult. The cultural significance of fossil fuels is rooted in a sense of pride and family history of working in the industry. "When climate advocates attack fossil fuels, people that worked in this industry feel personally attacked," said Groundswell. There is a sentiment that workers must continue the family legacy in the fossil fuel industry and tend to the land from which they were raised via fossil fuel extraction, a means by which they have been raised to appreciate. Additionally, rural communities' culture relies on not just being employed by the fossil industry, but also using fossil fuels on a day-to-day basis. For instance, COPAL noted that Latine communities primarily cook with gas stoves, which provide a distinct flavor to their foods. For rural families in Nebraska, coal is a cheap and reliable energy source (Center for Rural Affairs). Fossil fuels have thus become entrenched in how these rural communities live and work.

Meanwhile, the practical significance of the fossil fuel industry is rooted in its economic stability. Groundswell stated that a coal mine or coal power plant "was an important contributor to jobs" in the region of Washington, D.C. Sovereign Energy, which serves several tribal nations in New Mexico, echoed that "for some tribes, fossil fuels are a source of economic opportunity," though this experience is not monolithic because tribes vary in their fossil fuel legacy. Although NC Clean Future and COPAL both agree that the renewable energy industry will generate more jobs than fossil fuels, there is a prevalent fear surrounding the current job security in renewable

energy. According to NC Clean Future, there will inevitably be communities out of work if the refineries close down, and thus rural energy organizations should step in to make the short-term transition to clean energy as seamless as possible.

The fossil fuel industry has also left a negative legacy on rural communities. To start, the sector has contributed to pollution without being held accountable. Georgia WAND states that “some [fossil fuel] companies do not abide by discharge or permit regulations,” which impacts primarily the “brown and black and underserved” communities they operate in. In fact, “one of the cities [that fossil fuel companies] work with was designated one of the worst cities for air quality in Georgia.” (Georgia WAND) Additionally, Sovereign Energy stated that the central challenge in relying on fossil fuels is its excessive water depletion. As a result, air pollution and water depletion emerged as two limitations of fossil fuels.

Initiatives for Clean Energy Adoption

With a better understanding of fossil fuels’ historical legacy, both positive and negative, in rural communities, we wanted to understand which clean energy initiatives these rural energy organizations were undertaking to dismantle fossil fuels’ legacy.

Several initiatives are underway to promote the cost-savings of clean energy. Energy efficiency programs, supported by IRA funding, have been one way to support rural families. The organization NC Clean Future has partnered with faith communities, mostly Christian churches in rural North Carolina, to become beacons of these clean energy initiatives. NC Clean Future hopes that this will provide traction until local elected leaders see the cost-savings and sustainability benefits of renewables. In addition, Clean Wisconsin develops net metering policies designed to pay solar energy system owners for the energy that they add to the grid. That way, there is a financial incentive to adopt clean energy.

Risk mitigation is another key initiative. To accelerate clean energy adoption in the sparsely populated region that Groundswell serves, the organization has focused on resilience hubs, powered by solar energy, rather than individual solar panels because “people are far apart and concerned about keeping lights on” in the event of a natural disaster.

A final theme that emerged was community education. Often, rural energy organizations began with renewable energy projects before transitioning to renewable energy community education. The overarching goal of this is to make the renewable energy transition “family-friendly” and “open to everyone” (COPAL, Sovereign Energy). For instance, COPAL hosts outdoor fishing, maple syrup harvesting, and hiking events and ties these to educational

materials, teaching families how to incorporate daily, environmentally sustainable practices. In a partnership with the Georgia Institute of Technology, COPAL monitors air pollution in public schools through its Clean Air Campaign. They aim to publicize their findings on the effects of air pollution on learning disabilities. Meanwhile, community education in New Mexico tribal nations is adapted to its historical farming communities. Sovereign Energy focuses on agrovoltaic education to resolve the tension between building renewable energy infrastructure and protecting cultural sites. Community education, while varying in organizational approach, is ultimately necessary to inform the community that clean energy resources exist and that the means exist to transition.

Opportunities to Accelerate Clean Energy in Rural Areas

Looking ahead, the greatest areas to accelerate clean energy in rural areas are in the economic, regulatory, and educational realms. NC Clean Future, the Center for Rural Affairs, and Clean Wisconsin are building out 1) renewable energy infrastructure jobs and 2) building payment systems that reward rural farmers for transitioning to clean energy. From the regulatory standpoint, there is an unmet need to design policies that make it easy to implement clean energy initiatives. For instance, Sovereign Energy is communicating with the federal government to permit projects that are clean energy-focused and simultaneously protecting cultural sites. Then, once these clean energy projects have been rolled out, it is essential to inform the community about ways they can get involved. In doing so, they realized that community members were worried about solar panels infringing upon their food production, being aesthetically unappealing, and causing storm water issues. Another community education approach is Clean Wisconsin's: to spotlight farmers who have transitioned to solar energy and their reasons for doing so. By listening to and serving the community in these ways, it may be more feasible to build trust and receptiveness to clean energy.

Barriers to Clean Energy in Rural Areas

While the organizations we interviewed have undertaken innovative clean energy projects, they have also encountered several barriers to implementation. The first is the time it takes to build trust, "especially when you are inside people's houses" where rural communities may view outsiders "as coming in and trying to press urban or city-centered policies." This highlights two sources of mistrust: first, the clean energy transition can literally feel close to home, and second, clean energy advocates may enter rural communities with solutions that are not feasible for that rural setting. Clean Wisconsin similarly voices that "local communities see renewable energy developers as big outsiders or international businesses coming in with

extraction in mind [who don't understand] local community and culture," thus leaving these rural communities feeling exploited.

The second barrier to implementation is regulatory. Local zoning and permitting laws can make it nearly impossible to develop utility-scale solar energy, according to NC Clean Future. Communities may also be tied down to decades-long energy contracts with fossil fuel companies, thus hindering clean energy advocates from developing on that land.

Third, cultural barriers make it difficult to transition to clean energy. This manifests itself in two ways. According to Clean Wisconsin, there is a misconstrued narrative that solar energy and agriculture are incompatible because solar infrastructure is replacing potential farmland. Rural community members may feel that solar "is a threat to being able to feed ourselves." In addition, some are wary that wind turbines have health and safety consequences, even though existing research has shown no association with health problems. Another cultural barrier is the inaccessibility of clean energy information, such as when it is presented by unfamiliar messengers or presented in a foreign language (COPAL).

Finally, a lack of infrastructure has made clean energy adoption challenging. A lack of access to a transmission grid has stalled renewable energy projects, says the Center for Rural Affairs. Communities often lack the time and resources to build out this infrastructure or are not aware that funding exists.

Strategies for Advocates in Rural Communities

Given the above barriers to clean energy in rural communities, we propose a step-by-step guide for clean energy advocates in rural communities based on lessons from our interviews:

1. Listen to community members and employ positive framing: according to Groundswell, advocates must listen to offer solutions that are "better aligned instead of telling people they are doing it wrong." More successful campaigns rephrase "this will make you sicker" to "that would make you healthier" instead.
2. Meet the community's immediate needs: this includes housing, food, and citizenship resources. COPAL addresses these needs first before encouraging community members to be advocates.
3. Design culturally appropriate resources: for instance, COPAL hosts a bilingual website and communicates through existing, trusted messengers in the community.
4. Take time to build trust: with the personal nature of switching to clean energy (ie, the ways they may work, eat, and power their homes), engagement with rural communities

must be longitudinal and demonstrate a commitment to people's energy and livelihood needs.

Research Opportunities and Data Needs

Several research opportunities exist in clean energy research, infrastructure, and policy to promote receptiveness. Clean energy research entails understanding the health and economic impacts of clean energy versus fossil fuel programs. Groundswell has embarked on quantifying these comparisons at the household level. Georgia WAND hopes to collaborate with academic institutions receptive to sharing their data so that the organization can build a stronger case to lawmakers, policymakers, and big industry. In addition, rural energy organizations like Georgia WAND want to build infrastructure around clean energy jobs, such as in food supply, transportation, and clean air. Given the large amount of funding available through the IRA, Groundswell wants to build the infrastructure necessary to scale their existing renewable energy projects. Finally, important questions surrounding clean energy policy remain unanswered. One question that the Center for Rural Affairs aims to tackle is, "Do restrictive zoning standards infringe unnecessarily on the rights of local landowners?" Policy initiatives should center around lowering the barriers restricting rural community members from adopting clean energy.

Discussion

Our interviews with 7 community organizations engaged in clean energy transitions in rural communities in the U.S. revealed several common themes. Organizationally, groups were focused both on overall serving their community's immediate needs as well as working toward clean energy-specific goals. Organizations worked on multiple kinds of clean energy ranging from community solar to wind energy to energy efficiency to building decarbonization. They broadly recognized environmental justice issues, including the disproportionate impact of pollution on rural communities that have faced poverty and disinvestment. They leveraged multiple approaches to achieve these goals, including on-the-ground projects, community education, and research and policy advocacy to support this work.

Our organizations noted key contextual factors for their work. First of all, there was a broad recognition of the urgent community needs, which included economic opportunity, health, citizenship and worker's rights. It was important to address these immediate needs, which could then be an in-road toward conversations about clean energy. Communities also felt a lack of technical capacity in being able to do their work. Furthermore, fossil fuels had played varying roles historically in their communities, ranging from being a primary source of jobs (including

through fossil fuel extraction and/or power plants) as well as a source of community pride, to being a source of harmful pollution.

Our organizations identified trusted messengers for their communities were, broadly, people who lived in and served their communities, including faith leaders, farmers, local government officials and small businesses. They pointed out that many other messengers, such as certain elected officials, academic institutions, certain outside companies, and the liberal elite, were not trusted due to being outsiders and simply coming and going, rather than staying and building lasting partnerships.

Our organizations recognized multiple opportunities to accelerate the transition to clean energy for rural communities. These included emphasizing the economic opportunities of having clean energy on rural land (through job creation and revenue generation), building self-reliance and resilience for having power in case of outages, and educating farmers to dispel the myth that agriculture and renewable energy are incompatible uses of land. More logistically, they also emphasized the importance of streamlining the permitting process, and improving community engagement from advocates, new developers and agencies.

Our organizations, however, also shared the multiple barriers to clean energy in rural areas. Politically, this included significant pushback from opposition groups, including the narrative of solar and agriculture being incompatible and the viewpoint of developers as outsiders. Political opposition has also led to many restrictive zoning laws for local communities. These laws set large setbacks for renewable energy development, setbacks that are often not based on a known, specific health risk, but in practice can make it impossible to develop renewable energy. Similarly, there is a lack of transmission infrastructure and there can be large delays from permitting of new interconnection queues from utilities.

Lastly, our organizations shared lessons for both researchers and advocates. For researchers, they felt that it would be helpful for legal researchers to study whether restrictive zoning laws infringe on private property rights if they are not based on a known health risk. They also felt that it would be helpful to study the health and economic impacts of local clean energy programs. For example, one might study whether the pollution reduction from switching to clean energy has a clear impact on healthcare costs from pollution-related illnesses such as asthma exacerbations or cardiovascular disease. They also encourage academic institutions to share their data with organizations to enable their work and advocacy. For advocates, our organizations share excellent strategies around the importance of taking time to listen to and build trust with rural communities, design culturally appropriate resources, build the civic

engagement of rural community members and move institutions such as agencies and companies to better serve communities.

Conclusion

There is an urgent need to transition to clean energy and combat the health effects of fossil fuels and climate change. Rural communities in the United States must be part of the transition, but little discussion has been shared about this in the research literature. We interviewed 7 nonprofit organizations that work on clean energy issues for rural communities, based in the Southwest, Midwest/Great Plains and South. Interviewees were compensated for their time.

We found that these organizations saw clean energy both as a way to address historical environmental injustices as well as a key source of economic opportunity. These organizations felt barriers in the transition to clean energy included political barriers such as misinformation around solar taking up excess farmland, legal barriers such as unduly restrictive zoning laws limiting renewable energy development, as well as logistical barriers such as the lack of transmission infrastructure to the electric grid in certain areas.

Our interviewees felt that health researchers could aid their work through research on the local health impacts of transitioning from fossil fuels to clean energy, such as through reduced healthcare utilization and expenditures within their local communities. They felt that legal researchers could aid their work through studies on the legality of restrictive zoning laws that are not based on known health risks and could infringe on private property rights. Lastly, our interviewees shared important strategies for clean energy advocates in rural communities, such as taking time to listen to community members and build trust, design culturally appropriate resources, support community member civic engagement, and move institutions such as agencies and utilities to better serve community members.