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HOW GRID PROJECTS GET STUCK

Four Cases in Long-Distance Transmission
Development in the United States



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**How Grid Projects Get Stuck:
Four Cases in Long-Distance Transmission Development in the United States**

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Principal Authors

**Stephen Ansolabehere
Parrish Bergquist
Major Eason
Daniel Alain Evrard
Quinn Lewis
Elizabeth Thom**

Additional Contributors:

Jason Beckfield and Ana Martinez

INTRODUCTION

Over the past two decades, efforts to build long-distance electric transmission lines in the United States have been undermined by any number of setbacks. Ambitious projects that firms thought would take a decade to complete have dragged on for the better part of two decades. That pace of transmission development is slow by any standard. It is particularly concerning given the aspirations to decarbonize the U.S. economy and the centrality of electricity in achieving those goals.

This study examines four cases of long-distance transmission development in the U.S. They involve very different circumstances and designs. They are located in four different areas of the country that are currently grappling with the challenges presented by developing long-distance, high-capacity transmission lines. Three of these cases are specific transmission lines, and one is a process. All four cases also involve very different developers and very different strategies taken by those developers to build long-distance transmission. Some were initiated by utilities; others were designed by firms seeking to operate independently within the electricity markets. Some went primarily through privately owned farmland, others through federal and state forests and park lands. All ran into political opposition from property owners, local towns, environmental groups, and incumbent energy firms. All involved extensive regulatory proceedings in front of state agencies, political battles in state legislatures, and legal challenges in state, and sometimes federal, courts.

The first case is the proposed NECEC-HQ line, which will run through the state of Maine to connect Canadian hydropower to Massachusetts. The state of Massachusetts chose this project following a Request for Proposals to meet that state's demand for low-GHG electricity and its

Regional Greenhouse Gas Initiative (RGGI) commitments. The line runs through a relatively remote area of Maine.

The second case is the proposed Grain Belt Express line, which will connect wind power in Kansas and Nebraska to Illinois and Indiana. Grain Belt Express was designed by a merchant firm, Clean Line, which sold the project to Entergy. The Grain Belt Express line runs primarily through private land, which had to be acquired either by the companies or through eminent domain.

The third case is the proposed Gateway West line, which will connect wind power in Wyoming to eastern Oregon. It is being developed by utilities (Idaho Power and PacifiCorp), and the strategy is to run the line mainly through public lands and tribal lands to avoid controversies over private land acquisition. That strategy, however, triggered extensive scrutiny from federal agencies and prolonged legal battles over endangered species.

These three projects, involving different development strategies and different developers, have each taken about the same amount of time to reach construction: roughly 15 years. This pattern shows that, regardless of who the developers are or what sort of design they follow, it appears to take more than a decade for a long-distance transmission line in the U.S. to move from design to final approval.

The fourth case is the Texas Competitive Renewable Electricity Zone (CREZ). The Texas CREZ is a process rather than a specific transmission line. It was one of several CREZ organizations set up in the 1990s to foster the development of renewables on a large scale. CREZ involved an explicit decision to engage the public early in the planning process in exchange for shortening the time for permits and review. Many of the reforms in permitting, especially regarding public engagement, were built into CREZ. The case study is motivated by

two main questions. How successful has CREZ been? And what lessons might it hold for reform elsewhere?

We selected four different cases because this enabled us to see the common themes and challenges in long-distance transmission development. The four cases illustrate how the regulatory and public engagement processes influence decisions over permitting and siting transmission lines. They show where considerations of broader economic benefits and costs were taken into account, and where they were not. They reveal where public engagement improved design and siting and the consequences of when developments failed to take public concerns into account. In short, these four cases reveal how grid projects get stuck, and how they can eventually move forward.

Front and center in these conflicts are concerns about place – land, towns, ecosystems – and how they are affected by industrial development. Long-distance transmission lines have lasting effects on a place. They require towers 100 to 200 feet tall. They cut a long corridor wider than an interstate highway and stretch for hundreds of miles. Unlike a highway, though, they do not bring more business to an area, but rather run through farms, forests, and towns, carrying electricity that is generated in a far-off place to users who live in another far-off place.

Objections to long-distance transmission lines are often driven by the concerns of those who live near proposed lines and bear the burdens of industrial development that brings them little or no direct benefit. We interviewed people who brought those objections, as well as the firms that proposed the transmission lines and the government officials who had to make key decisions about approvals and permits for those lines.

The objections took four forms:ⁱ

- Recognition

- Process
- Distributional Consequences
- Restoration

Recognition involves acknowledging and respecting the rights of the people who are on the land or respect for the communities and ecosystems that currently exist. Many of the people we interviewed pointed to ways in which developments were conceived and initiated without adequately taking existing communities into account. Often, the solutions that people pointed to was to run the transmission line along existing highway or railway, rather than through farmland or forests.

Process involves the procedures through which people are consulted about proposed transmission projects. Many people said that they were only consulted in a meaningful way once the plan was already established. They wanted to be involved in the process from the beginning to the end.

Distributional consequences take the form of the benefits and costs of a project. Power lines cut through many communities in order to deliver power elsewhere. That unavoidable feature of long-distance transmission means that those in the path of a power line bear the burdens without many direct benefits. Our interviewees had many ideas for how those burdens could be offset, ranging from payments to the state government to co-location of other services, such as broadband internet lines, to an “ownership stake” in the power line.

Restoration requires keeping or restoring the area to its original state to the greatest extent possible and having as minimal an impact on existing ecosystems as possible. The most common request we heard was for power lines to be buried. That would likely add to the costs, but it would involve the least disruption to the landscape, at least aesthetically.

These four themes – recognition, process, distributional consequences, and restoration – emerged in all our cases: the NECEC-Hydro-Quebec project, Grain Belt Express, Gateway West, and Texas CREZ. The case studies draw upon dozens of interviews conducted primarily over Zoom between May and November of 2023.ⁱⁱ For each case, we interviewed the developers, the state regulators responsible for permit approvals, organizations that opposed the development, people in local communities, including county and municipal leaders and private citizens, and lawyers, journalists, and others who are involved in controversies involving land use and infrastructure development.

The resulting themes emerged out of the narratives people shared with us about what happened, why they thought events unfolded as they did, and how the process could have been handled better. The accounts here reflect our interpretation of what was told to us. During our interviews, we asked each participant how they learned about the proposed transmission line, the timeline of events, what their role was, what controversies arose, and how they and others handled them. We also asked them what they thought about the project overall; what they thought explained the long time delay; and what specific actions firms, governments, and communities could take to improve the process. When two or more people gave us the same account of a situation, we took that as corroboration. We avoid reporting views that were controversial among the participants in the study or for which we could find no corroboration across interviews or news accounts.

This study was written in conjunction with a companion study on the overall process of transmission line development, entitled *Crossed Wires: A Salata Institute-Roosevelt Project Study of the Development of Long-Distance Transmission Lines in the United States*.

Case 1: New England Clean Energy Connect

Introduction

New England is no stranger to long winters and cold temperatures. However, the particularly harsh winter of 2012-2013, which featured weeks-long cold snaps and a record-breaking blizzard that dumped several feet of snow from New York to Maine, exposed major weaknesses in the region's power system. In a report issued by ISO New England in February 2013, the transmission organization placed blame for the region's vulnerability during these extreme weather events on its "growing dependence on natural gas for power generation," and a "lack of secure fuel arrangements," when fuel supply chains come under stress.ⁱⁱⁱ During the winter storm, natural gas prices in New England were nearly nine times the rate in other parts of the country, leading wholesale electricity prices to spike more than 300 percent compared to the previous year.^{iv}

But the challenges facing the New England power grid were not isolated to extreme conditions; ISO New England warned for several years of the acute risks facing the system. The severe weather merely underscored how the situation had likely become "unsustainable," according to the nonprofit transmission group.^v The closure of a pair of nuclear power plants shortly thereafter, without concrete plans to replace the non-gas capacity, only increased threats to the system.^{vi}

These events made it clear to leaders from each of the region's six states that ensuring the reliability of New England's power grid would require increasing transmission capacity and introducing alternative energy sources. Improving energy infrastructure would also help states meet their own climate goals, as governors and legislatures in the region began devising public policies to reduce greenhouse gas emissions. Despite the shared agreement that transmission was

a key priority, not all states had the means to finance such large-scale developments. Bigger states in the region, like Massachusetts, stepped in with their own plans for procurement. Legislation passed in 2016 by Republican Governor Charlie Baker committed Massachusetts to investing in renewable energy sources, particularly offshore wind and hydropower from Canada.^{vii} Getting this new generation into the state meant building out new transmission.

In March 2017, Massachusetts issued a request for proposals (RFP) for projects that could meet these generation and transmission needs. To incentivize development, Massachusetts electricity customers would pay for the transmission build out.^{viii} The state received 46 bid packages from major utilities and generators in the region.^{ix} A project called Northern Pass initially won the bid. The proposed project—a partnership between the utility company Eversource and the Canadian-based hydropower company, Hydro-Quebec—planned to deliver power from Canada to Massachusetts via a transmission corridor in New Hampshire.^x When Northern Pass failed to secure the required permits in New Hampshire, Massachusetts turned to another Hydro-Quebec project, called the New England Clean Energy Connect (NECEC).^{xi} Instead of passing through New Hampshire, this somewhat smaller version of the project linked Canadian hydropower to Massachusetts through transmission lines in Maine. And in this iteration, Hydro-Quebec partnered with Central Maine Power (CMP), a subsidiary of the energy company Avangrid (whose parent company is the Spanish firm Iberdrola).^{xii}

Nearly seven years later, the NECEC project has yet to be completed. Despite receiving all the necessary permits and approvals at the state and federal levels, the project was delayed for several years by opposition in Maine from incumbent firms, a statewide grassroots movement, environmental groups, and elected officials in the statehouse. Opposition to the transmission development culminated in a statewide referendum vote during the 2021 election. Campaign

spending on the referendum surpassed \$100 million, setting a record for the state.^{xiii} Mainers voted in favor of suspending construction on the NECEC and preventing the development of future “high impact” transmission lines by a margin of 60 to 40.^{xiv} A year later, the Maine Supreme Court ruled the referendum vote unconstitutional, paving the way for the project to begin once again.^{xv} Additional legal battles delayed construction until the summer of 2023.

How did the development of the NECEC transmission line—a project intended to invest in clean energy sources and reduce greenhouse gas emissions in Massachusetts and the broader region—ignite such an intense political and legal fight? In this chapter, we examine why the NECEC project became so fraught, exploring various junctures where conflicts arose between different stakeholder groups. Several themes emerge, and we discuss each in turn: (1) siting decisions; (2) the distribution of costs and benefits; (3) community engagement; and (4) firm competition. Drawing on insights from the case study, we conclude with recommendations for future grid infrastructure planning, especially for lines that cross state and international borders.

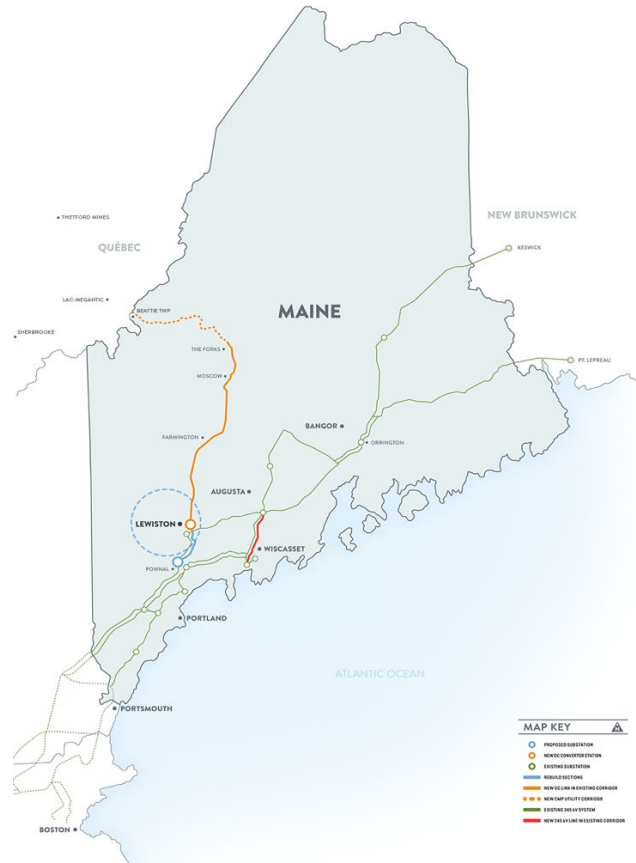
Project Overview: The New England Clean Energy Connect

The New England Clean Energy Connect consists of a 145-mile-high voltage, direct current (HVDC) transmission line connecting hydroelectric power generated in Quebec with a new DC substation in Lewiston, Maine.^{xvi} The proposed line is capable of bringing 1,200 megawatts of hydropower onto the grid, which would make it one of the largest sources of clean energy in the region. More than half of the line builds upon existing transmission corridors owned and operated by Central Maine Power (CMP); about 54 miles of new transmission lines runs through forested areas in Franklin and Somerset counties until it reaches the Canadian border.^{xvii}

Figure 1 maps out the proposed lines from Canada into Maine. The orange dashed line illustrates the new portion of the transmission corridor. The solid orange line depicts where the new line will expand upon existing utility lines, ultimately connecting to the New England grid via the converter station in Lewiston. The green lines represent existing 345 kV lines operated by CMP and the red shows where sections of these lines will be upgraded as part of the project. According to the NECEC, the proposed route takes into account existing transmission corridors and represents “the shortest of all identified paths from Quebec,” providing “the lowest cost path to the New England energy market.”^{xxviii} The NECEC expects to build approximately 830 transmission structures along the corridor, with average poles measuring about 95 feet tall.^{xix}

As described above, the costs of building the \$1 billion NECEC line will be assumed by electricity customers in Massachusetts.^{xx} The NECEC promises to lower wholesale energy costs for consumers across New England by introducing a more competitive energy source into the mix.^{xxi} Estimates from the project’s initial proposal pinned annual wholesale energy savings at \$40 million for Mainers over 20 years and \$150 million for ratepayers in Massachusetts.^{xxii} Initial estimates also stated the development would generate an annual increase of \$4 million in property taxes for “Maine communities that host the project,” and an overall \$18 million increase in property taxes across the state.^{xxiii} Moreover, it promised that building the line over a five- to six-year period would create over 1,000 direct and indirect jobs in the state.^{xxiv}

Figure 1: Map of the proposed NECEC Line



Source: NECEC Project Map.^{xxv}

In order to begin construction on the project, developers for the NECEC needed to secure five permits, three from state agencies in Maine and two from federal agencies because the lines cross international borders. They included: permits for the Site Location of Development and Natural Resource Development Act from the Maine Department of Environmental Protection (MDEP); Certificate of Public Convenience and Necessity from the Maine Public Utilities Commission (MPUC); Certification for Transmission Facilities in Unorganized Territories from the Maine Land Use Planning Commission (LUPC); permits from the U.S. Army Corps of Engineers (USACE); and a Presidential Permit from the U.S. Department of Energy (DOE).^{xxvi} Some additional local permits were required for construction. Several of these processes also

included environmental impact assessments. By 2021, the project had received approvals from all the necessary state and federal agencies to begin construction.

While the NECEC divided the environmental community in Maine, several conservation advocates voiced their support for the project as a means to reduce the region's reliance on oil and natural gas. Other supporters included trade and business associations, and coalition groups such as Mainers for Clean Energy Jobs. After securing additional benefits for Mainers from the NECEC's developers, Democratic Governor Janet Mills issued a statement in support of the project in 2019. She called it a chance for Maine, "the most heating oil dependent state in the country," to "wean off of fossil fuels."^{xxvii}

From Permits to Politics: How Opposition to the NECEC Emerged

Opposition to the NECEC materialized from many sides, each with their own concerns about different aspects of the project. Some of the most forceful challenges came from the small towns and communities situated along the corridor's path in Franklin and Somerset counties. Community leaders and residents we spoke with in these counties recalled first hearing about the project in the spring and summer of 2018. The Select Board of the Town of Caratunk, one of the 38 towns or townships located along the transmission route, was first approached by CMP about a letter of support for their permit application in March 2018. A representative from the company attended a meeting of the Select Board and "pitched a brief, overview presentation" of the project.^{xxviii} According to a Selectman we spoke with, the impression CMP gave was that the NECEC would benefit the community and that town leaders would have a seat at the table as the project developed. During the short presentation, CMP emphasized the millions of dollars in property tax revenue the development would bring to the area. At this stage, the company left out

details about where exactly the lines would run. The Caratunk Select Board issued a general letter of support for the project a few days following CMP's presentation.^{xxix}

Shortly after, leaders in Caratunk discovered a memorandum of understanding had been signed between CMP and a few local business owners to handle mitigation funds, essentially bypassing the Select Board in the decision-making process. This behind-the-scenes dealmaking left town leaders feeling as though they had been deceived by representatives from CMP. It also gave them the impression that they would not have much say over the project and its impact on the community. As these events unfolded, Caratunk town leaders learned more details about the NECEC project through conversations with the Natural Resource Council of Maine. They grew increasingly concerned about the siting of the project, the costs Caratunk and surrounding towns would have to bear for the build out, the potential harms to the environment and their primary industry—outdoor recreation and tourism—and the possibility that the NECEC's hydropower would crowd out other renewable energy sources. The Select Board had already given its support for the development of a solar farm in Caratunk, which they believed would be threatened by this new transmission line.^{xxx} The more they learned, the more skeptical they became that CMP and its partners were acting in good faith.

We heard similar stories from other community members in the area, who recalled first learning about the project in May 2018. There was not widespread knowledge about the NECEC around town and few people knew many details about what it would entail. A town hall later that summer with Thorn Dickerson, the lead developer from CMP and Avangrid, gave residents the impression the project was already a done deal. As one person who attended the meeting expressed to us, why did it feel as though residents had such limited information and so little say in the process? How was it possible that a project of this scale, one of the largest developments

since the Maine turnpike, could circumvent public input or scrutiny? Frustrations boiled over among residents whose lands and livelihoods would be impacted by the proposed line. They channeled their energy into forming a group of concerned citizens and stakeholders, which eventually evolved into a full-fledged grassroots movement. The group became known as “Say NO to NECEC,” amassing more than 10,000 members and a significant following on Facebook.^{xxx1}

Meanwhile, the town of Caratunk’s Select Board issued a statement rescinding its letter of support for the NECEC line. It was one of 25 towns situated along the proposed transmission route to rescind its support or formally oppose the project.^{xxxii} Figure 2 highlights the communities along the corridor who officially opposed building the line. Other county commissions and labor groups also signaled their disapproval.^{xxxiii} In the letter stating its objections, the Caratunk Select Board cited concerns about the environmental impact of the project, the benefits Caratunk residents and Maine ratepayers would receive, the prospects for other renewable energy projects in the area, and the trustworthiness of CMP.^{xxxiv}

A Grassroots Movement Takes Off in Maine

The grassroots movement to stop the transmission line mobilized a diverse set of actors. During a time of heightened political tensions, the movement was surprisingly nonpartisan, attracting Mainers from both the political left and right. Environmental advocacy groups, such as the Natural Resource Council of Maine (NRCM) and the Maine chapter of the Sierra Club, were early partners in the effort. They helped raise awareness around environmental justice issues related to the project and assisted with coordinating allied stakeholders. Organizers with the

Sierra Club elevated concerns about how indigenous communities and wetland habitats would be affected by flooding from the hydropower development in Canada.

Figure 2: Map of towns that registered their opposition to the NECEC.



Source: Graphic by Michael Fisher, *Portland Press Herald*, 2019.^{xxxv}

They raised other issues about the amount of carbon released in the process of generating hydroelectric power. In fact, the NECEC project divided environmentalists across the state. Some viewed it as a necessary step toward addressing the climate emergency and moving away from fossil fuels. Others questioned whether it was a genuinely renewable energy source and saw it as a threat to the state’s commitment to other sources, such as wind and solar. They believed

the line came at too high a cost to the local environment compared to other options. Organizers we spoke with recalled the tensions these issues raised among their respective coalitions.

Other members of the movement included residents who were protective of their land and deeply skeptical of CMP. Their distrust of the Maine-based utility company stemmed from a history of poor service, especially in rural parts of the state, and mismanagement of a new billing system that caused thousands of billing issues over the course of several years. After an investigation, the Maine PUC levied a \$10 million penalty on the company for its errors.^{xxxvi} CMP regularly ranks among the lowest in customer satisfaction according to J.D. Power estimates, a sign of its unpopularity among ratepayers.^{xxxvii} The utility was the primary messenger promoting the NECEC line in the community, and some joined the opposition effort out of frustration with the firm. Prior negative experiences made them wary that CMP could be trusted as partners. Additional concerns were raised by residents who were uneasy about the involvement of foreign entities—Hydro-Quebec in Canada and Avangrid’s parent firm in Spain—intervening in the power grid. They joined the opposition out of fear the project could expose the region to national security risks.

This diverse mix of partners also involved the financial backing of other incumbent utility firms, including natural gas and nuclear power companies like NextEra, Vistra Energy, and Calpine, who had their own interests in stopping or delaying the NECEC.^{xxxviii} The introduction of hydroelectric power into New England’s grid would likely drive down wholesale electricity prices, hurting the incumbents’ bottom lines. In response, they joined forces with the grassroots movement. Organizers we spoke with, many of whom are outdoor enthusiasts committed to renewable energy, admitted this was a somewhat awkward arrangement. But they needed the financial resources to pay legal fees and other expenses. Staying in the fight required

more funds than their weekly \$5 Friday dinners could raise, and this partnership would help them reach their goal.

There were plenty of chances for this eclectic coalition to fracture, but the disparate groups and interests—many joining forces for the first time—were united by their shared objective to halt the NECEC project. The environmental groups teamed up with leaders from Say NO to NECEC to mobilize their respective members. They took advantage of every opportunity to participate in the public process, attending and testifying at public hearings, submitting public comments to state and federal agencies, advocating for legislation in the state house, knocking on doors, and collecting signatures for petitions. More than 1,300 public comments were submitted for a hearing about the project at the Maine PUC, indicating the level of engagement and coordination on the issue. The Town of Caratunk’s First Selectman, Liz Caruso, intervened at the PUC and DOE permitting hearings. At the PUC meeting in January 2019, Selectman Caruso cross-examined representatives from CMP for three hours over environmental impact, communication, and siting concerns.^{xxxix} Nevertheless, a few months later the PUC approved the project’s Certificate of Public Convenience and Necessity. In 2020, it received three additional permits from state and federal agencies, and in January 2021 the project received its Presidential Permit from the DOE, thus completing the permitting process.

But the grassroots movement would not be deterred. Organizers worked closely with the NRCM on a citizen’s initiative to get the NECEC project on the ballot for a referendum vote. Doing so required knocking on doors and collecting signatures in the middle of the Maine winter and at the height of the COVID-19 pandemic. Despite these challenges, organizers succeeded in getting enough signatures to put the issue on the ballot in the November 2021 election. The question on the ballot posed the following:

“Do you want to ban the construction of high-impact electric transmission lines in the Upper Kennebec Region and to require the Legislature to approve all other such projects anywhere in Maine, both retroactively to 2020, and to require the Legislature, retroactively to 2014, to approve by a two-thirds vote such projects using public land?”^{xl}

Effectively, the question asked whether voters supported prohibiting construction of the NECEC line and whether a two-thirds vote should be required on any high impact transmission lines. Nearly 60 percent of Maine voters voted “yes.” The ballot measure won in all but one of the state’s 16 counties and in each of the towns that publicly opposed the NECEC.^{xli} It was a major win for the grassroots movement that effectively blocked construction of the project.

The referendum dealt a major blow to the NECEC and its developers, CMP and Hydro-Quebec, who had already begun construction on the corridor. However, litigation over the referendum quickly made its way through the courts. Less than a year after the vote, the Maine Supreme Judicial Court unanimously overruled the referendum. The justices carefully noted they were not weighing the merits of either the project or the citizen’s initiative; they answered the “limited question” of whether retroactively stopping the project would violate the NECEC project’s due process. On that question, the justices said, “our answer is yes,” and remanded the case to a lower court.^{xlii} A second court victory for the NECEC in the spring of 2023 sealed the deal, paving the way for construction to begin again. Parts of the referendum did survive, though. The NECEC would likely be the last high impact transition line built in the state without legislative approval.

We turn now to the four major themes that emerge from the case study: (1) siting decisions; (2) distribution of costs and benefits; (3) community engagement; and (4) firm

competition. We explore how each contributed to project delays and mobilized opposition to the NECEC.

Siting Decisions

One of the first points of conflict over the NECEC development had to do with siting of the 54 miles of new transmission line in the Upper Kennebec River Valley. The scarcely populated region is best known for its pristine waterways, mountains, and large, intact forests. Outdoor recreation is the primary industry, with opportunities for world-class rafting, hiking, hunting, camping, fishing, and snowmobiling. Many residents in the area are registered Maine Guides who lead outdoor excursions for visitors looking to experience the nature and wildlife. The region also features the Old Canada Road National Scenic Byway, one of the state's celebrated roadways.^{xliii}

Siting of the NECEC line raised two sets of concerns, one environmental and one economic. Environmental groups, such as the NRCM, worried about the impact the line would have on the area's natural habitats. They argued that the clearing required to build out the corridor would disrupt the local ecosystem and threaten wildlife.^{xliv} Town leaders in Caratunk also registered concerns about the height of the poles—nearly 100 feet tall—in a forest canopy that only reaches 60 feet high. They feared the fire risk this might pose to the forest, in a remote area without any kind of organized fire or emergency response infrastructure. In fact, the Maine State Federation of Firefighters wrote a letter to the governor in 2019 outlining their safety concerns and expressing frustration over a lack of consideration of the hazards the project posed to their members. They argued it would be challenging to respond to an emergency along the corridor, which risked putting fire and other response personnel in harm's way.^{xlv}

The height of the lines also posed scenic concerns. Standing nearly 40 feet above the forest canopy, the poles would be visible from just about anywhere, and especially from nearby mountaintops and hiking trails. Critics of the transmission line accused CMP and its partners of not sufficiently studying the potential impact of the project on the area's local economy, including its year-round recreation and tourism industries. They particularly worried about the effect on the snowmobiling and rafting industries, whose trails and riverways crisscross the corridor route. Residents were also apprehensive about how the line might affect local property values and small businesses.

The core of the issue is that CMP and its partners did not consult thoroughly with towns in the Upper Kennebec River Valley over siting of the project. Leaders we spoke with said representatives from CMP never approached them about siting in advance of seeking their support. During cross examination at the Maine PUC, CMP admitted they never studied or considered burying the DC line. This would have been much more expensive to build but might have assuaged concerns about the environmental and economic impacts of the project. It is also unclear why developers chose to run the transmission line through forested lands instead of down Route 201, which is an already industrialized area. In the end, the lack of communication and transparency around these siting decisions helped fuel opposition to the project.

Distribution of Costs and Benefits

Another point of conflict had to do with perceptions about who stood to benefit from the NECEC line and who would bear the costs for building and maintaining it. From the outset, residents in Maine were skeptical that the project—which was initiated by Massachusetts lawmakers—would benefit them economically or help them achieve their renewable energy

goals. It felt to many Mainers as though they had to sacrifice the integrity of their land to serve the interests of those living in Massachusetts. In many ways, the NECEC inflamed longstanding political and cultural tensions between the two states. Maine, a smaller, more rural state felt it was being bossed around by its larger, more urban neighbor. Opponents of the project strategically exploited these frustrations with Massachusetts. Television and radio ads leading up to the referendum vote decried that the project was designed for Massachusetts, not Maine.

Aside from the rhetoric around the NECEC development, many residents along the corridor route doubted the figures CMP provided them about the economic benefits of the project. Their reservations stemmed from a sense that the utility company had not thoroughly investigated the economic impacts the line would have on local industries. Moreover, the Town of Caratunk's assessors found that CMP "overinflated the proposed valuations" of the project and overstated the amount of revenue that would come from property tax increases.^{xlvi} This made community members doubt whether they would benefit at all financially from the project. During testimony at the Maine PUC in 2019, residents also expressed skepticism that CMP's mitigation package would really cover the costs that Somerset County stood to bear for construction of the project.^{xlvii} So, even though Massachusetts electricity customers would pay for the line's construction, the lack of clarity on how exactly the NECEC would affect local communities' bottom lines intensified opposition to it. This opened the door for opponents to claim the project would generate billions for the companies at the expense of Maine communities. They said it was a bad deal for the state.

Prior negative experiences with CMP also made residents question whether the hydroelectric power would be cost effective and reliable. Some doubted that the proposed infrastructure would be enough to satisfy demands for the hydropower; others simply lacked

faith in CMP as a utility provider. There was also a disconnect about how the NECEC line would lower energy costs for Maine ratepayers when the clean energy was destined for consumers in Massachusetts. Above all, many in Maine feared that the hydropower development would crowd out opportunities to invest in other new renewable energy sources like wind and solar. They believed building the NECEC line meant sacrificing their own ability to pursue new clean energy sources. Worse yet, they felt they had no say in the matter.

Community Engagement

Perhaps the biggest source of conflict between the NECEC developers and Maine residents was over community engagement. As we have noted throughout this case study, there were several instances where developers either did not consult community members over important decisions (siting) or they met with only a small set of stakeholders, leaving others in the dark (mitigation). As one community member told us, the project seemed to go out of order—developers solicited community input and support *after* major decisions about the project were already settled, instead of before. Details about the line appeared from behind closed doors and seemed rushed. At the very least, the lack of clear communication gave the public the impression developers had not been forthright; at the very worst, it left people feeling they had been taken advantage of, lied to, and deceived.

After its customer service and billing system blunders, these sentiments only added to the distrust many Mainers felt toward CMP. As the project developed, these negative experiences motivated people to testify at public hearings and submit public comments in opposition to the line. The “overwhelming majority of the more than 1,300 public comments” received by the Maine PUC, “questioned CMP’s trustworthiness.”^{xlvi} These comments and other public

testimony led the commission to conclude that CMP had, “failed to comply with several of the core goals of its Communications Plan,” and “failed to acknowledge or take responsibility for its outreach and communication shortcomings.”^{xlix} The lack of contrition for these failures by representatives from CMP during the proceedings demonstrated, “an unsettling disregard for certain members of the host communities,” according to the PUC.¹ These criticisms from the commission—which unanimously approved the NECEC line—corroborated the frustrations shared by the community.

Our interviews also revealed an important mismatch between CMP’s approach to selling the project to the public and the values and priorities of the host communities. Initially, CMP led with how much the transmission line would increase property tax revenues and lower wholesale energy prices for residents. While these financial benefits would certainly be welcomed by the community, this approach took for granted the extent to which Mainers in this region simply want to be, “stewards of their land.”^{li} They feel a deep attachment to place and the forests, mountains, rivers, and ecosystems that make up it.^{lii} Their objections to the corridor and its nearly 100-foot utility poles were not merely aesthetic; no matter how economically beneficial the project would be, it would meaningfully alter their home environment. People we spoke with believed the developers did not take these concerns seriously. They felt they were being *told* what would happen to their homes and how they would benefit, without any agency over these decisions. This ultimately activated a willingness to fight to defend their land and communities. A poorly executed community engagement plan and a misunderstanding of key priorities provoked opposition to the transmission line.

Firm Competition

Finally, we highlight a more structural explanation for the conflicts that materialized over the NECEC project. The case illustrates how reforms passed by the Federal Energy Regulatory Commission (FERC) to create more competition among generators have had some unanticipated consequences for expansion of the power grid. Today, most transmission development in New England originates with ISO-NE, the regional transmission organization regulated by FERC and charged with planning transmission expansion. Typically, ISO-NE identifies a need for new transmission and orders a utility to build a new project to meet that need. ISO-NE can also solicit proposals to address the identified need. The NECEC was developed outside of those ISO-NE processes. Instead, Massachusetts ordered the utilities it regulates to procure transmission that could help the Commonwealth achieve its clean energy targets. As lawyers and policymakers we spoke with attested to, it costs millions of dollars to submit a bid for such a project. There are only a handful of companies in the country with the personnel and financial resources to engage in these processes. “You already have to be a major player,” one lawyer who specializes in this field told us.^{liii} This means that a small number of firms are regularly competing with one another over potential projects.

The list of bids that were submitted in response to Massachusetts’s RFP illustrates this point.^{liv} A small number of firms put forward several proposals, including Hydro-Quebec, which submitted three versions of hydropower projects with different developers. When the Northern Pass project failed to materialize, the NECEC project was selected. Thus, the other firms who were not selected have every incentive to try to delay or derail the winning bid. They become sources of competition beyond the single RFP cycle and are invested in the long game. And given that they are major players in the field, they have the finances to mount significant opposition, as was the case with the NECEC.

On the incumbent side, new generation and transmission projects mean that new power sources will be introduced into the grid, lowering wholesale prices, and hurting profits. Therefore, incumbent firms also have incentives to block or delay new developments in order to protect their business interests. This was especially true in New England because natural gas (and to a lesser extent, nuclear power) was so dominant at the time. Experts we spoke with said this new source of economic competition is underappreciated by regulators and stakeholders. Few predicted how involved incumbent firms would become with public opposition to the NECEC line or how much money they would spend to fight it.

The firms who helped organize opposition to the NECEC were well-funded and sophisticated players. Companies such as NextEra Energy, Vistra, and Calpine teamed up with local grassroots movements to challenge the project. They were especially effective in bankrolling the referendum campaign. For example, a group funded by NextEra called Mainers for Local Power spent upwards of \$26 million according to campaign finance records.^{lv} Drawing on an analysis published by the *Portland Press Herald*, that comes to about \$108 per “yes” vote. CMP and Hydro-Quebec fought back with \$48 million of their own, spending roughly \$289 per unsuccessful “no” vote.^{lvi} This tit-for-tat among energy companies propelled spending on the ballot initiative to top \$100 million, marking a new state record. Even though competitor firms eventually lost out when the courts upheld the NECEC project, they successfully delayed the project by at least two years. The NECEC development illustrates how competitive bidding processes can produce a kind of winner’s curse.

Conclusions and Recommendations

Experts agree that the U.S. must significantly expand grid infrastructure to meet the nation's clean energy goals. Connecting sources of renewable energy with places far from where it is most effectively generated will require building new transmission capacity at scale. While public opinion is generally very favorable toward renewable energy sources, transmission remains less popular. This is especially true when transmission infrastructure—electrical poles, wind turbines, and solar panels—is built on previously undisturbed land and when host communities, who bear the brunt of these interruptions, do not believe a development's costs outweigh its potential benefits.^{lvii}

The years-long battle over development of the NECEC line in Maine captures the multifaceted nature of these challenges. Delivering hydroelectric power from Quebec onto the New England grid required crossing an international border. Reaching Massachusetts, the initiator of the project, required traveling through one of three state borders. When New Hampshire denied permits for a transmission line, Massachusetts selected Hydro-Quebec's second bid, which proposed expanding a line through Maine. Traversing several jurisdictions increases the possibility of confronting obstruction. In the case of the NECEC, opposition came primarily from communities in Maine who felt caught in the middle of a project designed with Massachusetts in mind and developed by a utility company they did not trust. A grassroots movement teamed up with other incumbent firms to fight a lengthy political and legal struggle, and nearly won. It has been seven years since the RFP and construction on the project is just now beginning in earnest.

While the NECEC line will eventually be built, delays to the project have resulted in steep cost increases. According to Avangrid, owner of CMP, construction costs have gone up by \$500 million, bringing the total budget to about \$1.5 billion.^{lviii} These increases will likely be

passed on to Massachusetts electricity customers who were always slated to pay for the project. Some are concerned that the delays and mounting costs may deter other clean energy generators and developers from making plans to invest in future projects in the region.

Drawing upon our stakeholder interviews, we conclude with a brief set of recommendations for improving the process of developing transmission projects and minimizing possible conflicts.

(1) Communication

The conflicts that arose over the NECEC line revealed an information gap in Maine that neither developers nor other stakeholders adequately filled. At times, it was unclear who the appropriate messenger should be. Government officials in Maine and Massachusetts did not feel it was their place to intervene and neither did ISO New England, the region's transmission authority. Without trustworthy partners, this communication gap allowed misinformation to circulate about the NECEC, which undermined faith in the project.

Ultimately, we believe this responsibility falls on developers. Companies must take a proactive and sincere approach to communication with affected communities, listening and responding to their concerns. We recognize that RFP timelines are short, but once a project receives the green light, developers need to get out into the community as early as possible to talk with people, collect feedback, and incorporate any adjustments or changes. This begins with *listening* to communities first and engaging in meaningful conversations with them. After listening, developers need to come up with workable solutions. One success story comes from conversations developers of the NECEC had with host communities over their lack of broadband access. Responding to these concerns, developers committed \$15 million in additional fiber optic capability to extend broadband to areas near the transmission route.^{lix} These and other economic

and environmental benefits derived directly from open communication, making the transmission line more palatable for some.

We also recommend identifying trusted messengers who can attend community events as partners on the ground. Forming these relationships will help generate respect and credibility in the community. Moreover, these partners are likely to hold developers accountable for sticking to their community engagement plans. Such an approach requires a serious investment of time, money, and personnel. However, we believe making these investments up front will save companies from having to defend the project against opponents later in the process.

(2) State policy and capacity

Several people we spoke with identified challenges at the state level for building out new clean energy generation and transmission. We recommend a renewed focus on developing a shared vision for renewable energy at the state level and investing in state agencies to meet these goals. In the fight over the NECEC line, some were concerned the development would commit Maine to hydroelectric power, crowding out wind and solar. They received few signals from state government about where hydropower fit in with the broader vision for Maine's clean energy future and this helped contribute to the project's gridlock. Collectively agreeing on a shared set of concrete policy priorities would help clarify what the state's clean energy economy looks like in the future. Establishing shared agreements ought to involve building bottom-up coalitions of support, instead of top-down concessions.

But it will not be enough to focus on goals alone. It will also be necessary to update procedures for implementing these objectives in a timely way. Permitting is an easy target for reducing bottlenecks, but striking the right balance between speed and due process remains a challenge. One idea involves making siting and permitting more collaborative by working with

other agencies, such as state departments of transportation. They oversee many existing highways, railways, and other corridors that might present an opportunity for creatively implementing new transmission.^{lx}

Achieving these shared objectives requires enough staff in state offices and agencies to carry out these functions—especially permitting—within reasonable time frames. There must be enough state capacity to meet the demands of the new clean energy economy.

(3) Lessons from King Pine Wind

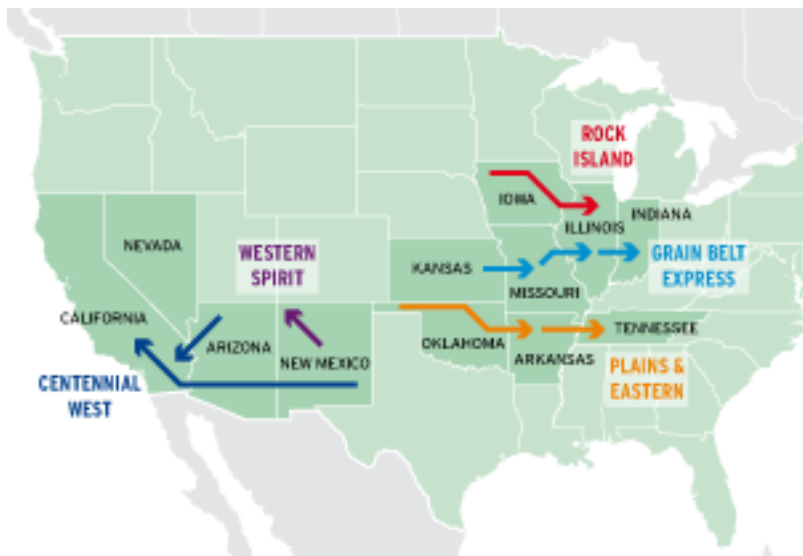
Lastly, we turn to a recent wind development project called King Pine Wind in Aroostook County, Maine’s northernmost county. Like the NECEC, King Pine Wind is a project that combines new generation with new transmission, carrying a proposed 1,000 megawatts of wind power onto the grid via a 160-mile transmission line.^{lxi} As a result of the 2021 citizen initiative, the development of this kind of high impact line in Maine is subject to legislative approval. To get out ahead of critics, the developers of the project, LS Power and Longroad Energy, sought approval from the Maine state Legislature early in the process. Four months later they received it, paving the way to acquire permits with more security about the project’s future.^{lviii} We view this early-approval strategy as a viable way to build credibility and state buy-in on future transmission projects in Maine; in doing so, it may reduce uncertainty and the probability of miscommunications or misaligned priorities.

Case 2: Grain Belt Express

Background

The Grain Belt Express (GBX) transmission line was the brainchild of business executive and former Texas congressional candidate Michael Skelly. In 2009, Skelly founded Clean Line Energy Partners, a private developer of high-voltage direct-current (HVDC) interstate electric transmission lines. Skelly's vision was to build highly efficient lines to link low-cost, clean energy generated in the Midwest to energy markets in the South and on the coasts. Within three years, Clean Line had announced five ambitious projects with a combined projected capacity to transmit over 15,000 MW of renewable power across the United States: Rock Island, Grain Belt Express, Plains & Eastern, Western Spirit, and Centennial West (Figure 3).^{lix}

Figure 3: Clean Line Energy Partners Proposed HVDC Transmission Projects



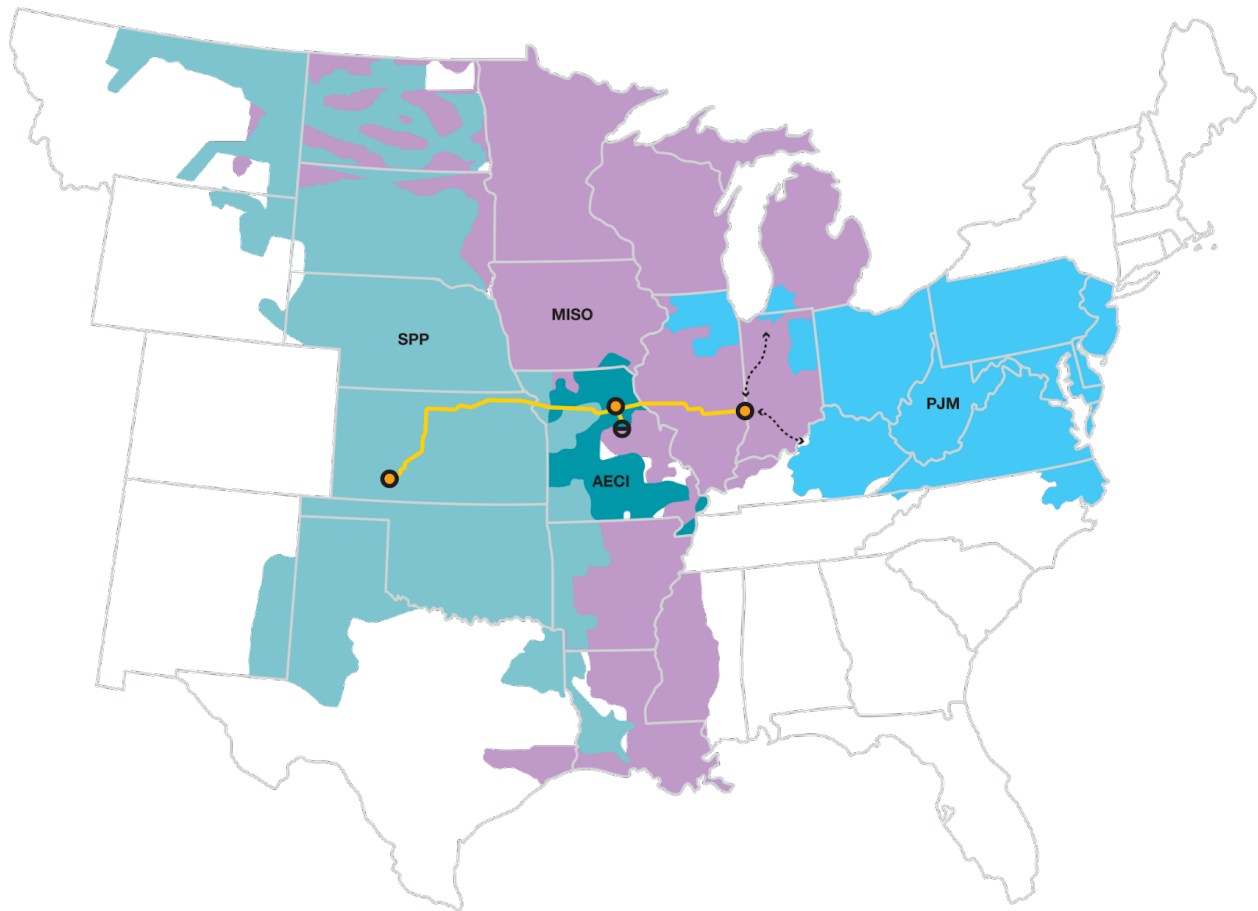
In the beginning stages of planning and permitting, Clean Line Energy Partners looked like it might revolutionize transmission in the United States. It would do so by using ultra-efficient high-voltage direct-current transmission technology to carry cheap, clean electricity from sunny, windy states in the Midwest to demand centers hundreds of miles away. Due to its

aggressive fundraising, the company could have easily grown to a multibillion-dollar player in American energy transmission. Various sources report five rounds of fundraising and over \$100 million invested from contributors ranging from private equity firms to the U.K.-owned company National Grid.^{lx} There is no public valuation of Clean Line Energy Partners at its peak; they had at least 45 employees at their headquarters, and their own projections estimated that the combined cost of their projects to be well over \$10 billion.

In 2011, Clean Line proposed the Grain Belt Express (GBX) project, a 780-mile high-voltage direct-current electric transmission line that would carry wind-generated electricity from Kansas across Missouri and Illinois and into Indiana. The project was designed primarily as a long-haul transmission line to deliver 3,500 megawatts (MW) of electricity to the eastern MISO and PJM distribution networks. Still, the original proposal included a converter station in eastern Missouri, which would allow for the distribution of up to 500 MW of electricity within Missouri and Illinois.

Clean Line applied for its initial state-level permits between 2011 and 2014. Extensive legal battles and political conflicts have delayed the project for over a decade, particularly in Missouri and Illinois.^{lxi} In 2018, Clean Line sold the project to Invenenergy, which subsequently submitted a proposal to expand the project's capacity by 25%. According to Invenenergy, the construction of the GBX will generate roughly 22,300 temporary jobs, while its operation will create about 960 full-time jobs. After the Invenenergy expansion, the GBX proposes over 800 miles of transmission across four states, slated to deliver clean energy to 3.2 million homes (Figure 4).^{lxii} The expected price tag of the GBX currently hovers at \$7 billion.^{lxiii}

Figure 4: Grain Belt Express Transmission Line Project Proposal



Regulatory challenges

Clean Line would need to obtain Federal Energy Regulatory Commission and all four states' permission to operate as a utility including, crucially, the authority to use the power of eminent domain to secure rights of way. Clean Line began this process in the states where the line would begin and end. In March 2011, Clean Line applied to the Kansas Corporation Commission for a certificate of public convenience and necessity (CPCN) to transmit electricity. Kansas granted the permit in October 2011.^{lxiv} In November 2012, Clean Line requested approval from the Indiana Utility Regulatory Commission (IURC) and had similar good luck. In

May 2013, the IURC granted its approval.^{lxv} Clean Line was also required to obtain Federal Energy Regulatory Commission (FERC) authorization to charge negotiated rates for transmission services. FERC granted this approval in May 2014.^{lxvi}

Regulatory trouble arose in the two states that would serve primarily as conduits for electricity. In April 2015, Clean Line filed for a CPCN from the Illinois Commerce Commission (ICC). The ICC issued the permit in November of the same year under an expedited process defined in the Illinois Public Utilities Act. In December, the Illinois Farm Bureau appealed the decision and sued the ICC,^{lxvii} arguing that the commission did not have the statutory authority to use the expedited process to grant approval to an entity that was not a public utility. In May 2018, the Illinois Fifth District Appellate Court reversed the ICC's approval on two grounds. First, the court ruled that the ICC lacked the statutory authority to use the expedited approval process for an entity that is not a public utility. Second, the court reasoned that Clean Line did not qualify as a public utility because it did not own, manage, or operate electric transmission equipment within the state of Illinois. Clean Line found itself in a catch-22: the company could not gain approval to operate as a utility in Illinois because it was not a utility in Illinois.

Meanwhile, Clean Line was facing a different set of regulatory challenges in Missouri. It filed its request for a certificate of convenience and necessity (CCN) with the Missouri Public Service Commission (MPSC) in March 2014. In July 2015, the MPSC denied the application, finding that Clean Line had failed to demonstrate that GBX was "needed for grid reliability," "economically feasible," or "promotes the public interest."^{lxviii} The MPSC based its decision regarding public interest on substantial public opposition to the project, as expressed in public comments submitted to the commission. It based its determination regarding public need on a hyperlocal conceptualization of "need" centered on grid reliability within Missouri and

compliance with the Missouri renewable electricity standard. The MPSC's logic also privileged incumbent institutions by arguing that GBX was not needed because it was not submitted to the MISO regional planning process. MISO is a membership-based entity, and the vast majority of its members are utilities, electric power producers, and the owners of existing transmission infrastructure.^{lxix} As such, its economic incentives are slanted against the incorporation of electricity sold by an upstart such as Clean Line.

In August 2016, Clean Line fortified its case to the MPSC and re-applied for its CCN. In the intervening years the company had set up a power purchase agreement with the Missouri Joint Municipal Electric Utility Commission (MJMEUC). This helped Clean Line make the case that GBX was needed within the state of Missouri. Businesses including Walmart and industry and retail groups testified at the hearing to demonstrate public need for the project. Clean Line had also approached county governments to obtain their permission to build electric transmission poles or lines across county roadways. The MPSC had noted in its 2015 permit denial that Missouri law^{lxx} requires utilities to obtain such assent.

In August 2017, the MPSC denied Clean Line its CCN again, this time because Clean Line had not obtained the requisite approvals from all counties along the GBX route.^{lxxi} The decision was based on a March 2017 ruling by Missouri's Western District Court of Appeals. In that case, the Court had overturned the MPSC's decision to grant a CCN for a new power line to the state's major utility, Ameren, conditional on Ameren's obtaining the full slate of county assents, which the utility had not yet obtained. (See *Neighbors United Against Ameren's Power Line v. Public Service Commission of Missouri and Ameren Transmission Company of Illinois*. T.523 S.W. 3d 21 Mo. Ct. App. 2017.)

Clean Line appealed the MPSC's decision, the Eastern District Court of Appeals ruled that the MPSC had erred in denying the CCN, and the appeals court transferred the case to the Missouri Supreme Court. The Missouri Supreme Court abrogated the part of the Western District's decision requiring county assents and remanded the case to the MPSC. In March 2019, the MPSC granted the CCN to Invenenergy, which by this time had purchased GBX from Clean Line.^{lxxii}

Invenenergy now had its regulatory approvals from Kansas, Indiana, and Missouri, but still lacked authority to construct a power line in Illinois. In 2021, the Democratic-controlled Illinois Legislature passed a law paving the way for the project to move forward in that state. The Energy Transition Act in effect ordered the ICC to approve the Grain Belt Express project. It did this by allowing a "qualifying direct current applicant" that does not own, manage, or operate transmission equipment within the state to apply for a CPCN. The law declares that the ICC "shall grant" the CPCN if the ICC finds that the application meets relevant criteria. The law's criteria for making this determination seemed narrowly tailored to include the high-voltage, high-capacity design of GBX and its plan to connect with MISO and PJM. The law also specifically stipulates that the interregional connection points fall within the definition of "public need."^{lxxiii} In March 2023, the ICC granted to Clean Line the CPCN to construct GBX, with the condition that the company commence construction within 5 years.^{lxxiv} This order did not include the right to use eminent domain in cases where landowners are unwilling to negotiate an easement with Invenenergy. Instead, Invenenergy filed for eminent domain separately, and the ICC ultimately granted this authority.^{lxxv} At present, Invenenergy is planning to build the project in two phases. The company is undergoing environmental impact review under the National

Environmental Policy Act, to obtain approval for a Department of Energy loan guarantee for the western phase of the project.^{lxxvi}

Public challenges

Throughout the process of obtaining permits, GBX spurred considerable public opposition, which contributed to its regulatory challenges. In 2017 and 2023, we conducted interviews with county commissioners, local supporters and opponents, local government officials, representatives from the developer, and union representatives to understand their perspectives. Recall that in 2017, the project was still owned by Clean Line. The Missouri PSC had denied its regulatory approval twice. The Illinois Commerce Commission had approved the project but was defending itself against the appeal brought by the Illinois Farm Bureau (an appeal that was not decided until spring 2018). By fall 2023, Invenergy had taken over the project. The Missouri PSC had reversed its decision to reject the project at the Missouri Supreme Court's direction, and the ICC had approved the project at the Illinois Legislature's direction. These shifts presented a distinctive opportunity to examine whether attitudes, process, and understandings of the project had changed in the intervening years.

As mentioned above, the MPSC cited strong public opposition to GBX as one reason for determining that the project did not serve the public interest. To understand community concerns more deeply, we talked about the project with representatives from many of the groups who filed comments and otherwise participated in the MPSC regulatory process. These included organized groups of landowners called the Missouri Landowners Alliance, the Eastern Missouri Landowners Alliance, Block Grain Belt Express, Concerned Citizens and Property Owners of Illinois, and the Illinois Farm Bureau. Overall, when we recontacted people who had opposed the

project in 2017, they continued to oppose the project in 2023. None felt that their concerns about the project had been addressed in the intervening years. They mistrusted Invenergy as much as they had mistrusted Clean Line, and they were worried about the precedent established by allowing a merchant developer to operate as a utility and specifically to use eminent domain to obtain easements. In this section, we describe the themes that emerged from perspectives that community members and their political representatives presented in the conversations we had with them.

Skepticism about project benefits and uncertainty about its costs

Project opponents tended to be skeptical that GBX would provide any benefit to their community, either in the form of economic development, electricity access, or grid reliability. Whereas union representatives touted the benefit of a new power line for electrical workers' jobs in the affected states, many individuals did not believe that jobs would accrue to local communities. Instead, they thought that jobs associated with the power line would be taken by workers passing through, "like a traveling circus." It was significant that some local community members did believe that jobs would accrue locally. These people described a community history rooted in manufacturing. They believed that the power line would represent an opportunity to resuscitate local industry to serve the growing transmission industry more broadly.

Many local residents and, indeed, the Missouri Public Service Commission, objected to the project on the basis that it was not necessary. This argument rests on a localized definition of "need" in the context of local or, at highest, state-level electricity production and consumption. Residents of the communities along the route did not view the provision of electricity in faraway communities—even within their state—as sufficient to justify the project from the perspective of

public need. When we asked specifically about Invenergy's expansion of the project to provide more electricity within the state of Missouri, project opponents did not find this to be a compelling justification for the project. Moreover, individuals cited a lack of engagement with the MISO regional transmission planning process as evidence that the project was not needed. Project opponents expressed a strong sense of loyalty to the local utility (Ameren) and the RTO (MISO) as the legitimate providers of public services and the appropriate arbiters of grid capacity questions. One individual told us:

Most transmission lines are requested by the RTOs, but this line wasn't called for by the RTO. It's not a part of the grid. ... It's like a private toll road, if someone wanted to build a road to go cross-country should they have eminent domain to take land and charge motorists? We didn't think so, they should have public use and public need criteria, that's what most states have done and new lines were only built if requested by the RTO. This was neither: there is no public use/ public need, nor was it asked for by the RTO. Not only was it like a toll road, but a toll road that local people can't access and use, it's like a toll road with no off-ramps.

Of course, Skelly's original vision was to provide an interconnection that would be, in part, a pass-through interconnection *between* RTOs. The expressed public loyalty to the RTO planning process highlights the tension between the vision of an efficient national grid and the fragmented institutions through which the current grid is set up.

In all the interviews we conducted, nobody supported the project on the basis of its ability to meet local energy production needs. Instead, project supporters tended to view electricity needs at higher levels of geographic aggregation. They viewed the power line, and the clean energy associated with it, as a symbol of modernity and progress for the nation. Some even viewed siting the line as an opportunity for rural communities to serve the national good.

County officials provided reasonable explanations to support diametrically opposed expectations for the project's financial implications. One county assessor explained that revenues from a pipeline that crosses the county generates 35% more revenue than all of the farmland in

the county combined. He believed that the power line would generate similar amounts of revenue, since it would be assessed by the same formula as the pipeline. Another county commissioner expressed concern about a decline in tax revenues from properties crossed by the power line. He explained that any individual landowner would receive payments from the developer in return for the right to build structures on their land and to access the land for construction and maintenance. However, the tax-assessed value of the land parcel would fall because of the easement. This would either result in reduced local tax revenues and associated declines in funding for public services, or increases in taxes on other landowners to compensate. Both scenarios raise concerns for local officials and landowners. These perspectives on the project highlight a tension between individual-level and community-level costs and benefits.

Likewise, the project's physicality sparked a diversity of concerns. In 2017, our respondents compared the GBX experience with prior experiences they had had with pipeline developers. They drew on this comparison to make practical and aesthetic arguments against siting GBX in their communities. First, the owners of land that would be crossed by the power line asserted that they would be more willing to host an underground pipeline because they are accustomed to farming around pipelines. By contrast, an overhead transmission line with large towers would disrupt farming operations. Second, underground pipelines do not disrupt the aesthetic quality of rural landscapes; the cost of constructing such pipelines would be borne by neighboring properties as well. Several individuals said they would support the power line if it were underground. Others recommended siting the line in existing rights of way rather than cutting across farmland. To be sure, some interview respondents downplayed purely aesthetic objections to GBX, arguing that the landscape is already crisscrossed by electric transmission and distribution lines.

By 2023, community members had a new basis for supporting their objections to the GBX footprint: the SOO Green Link HVDC transmission line proposed to cross the state of Iowa.^{lxxvii} This project uses a similar transmission technology as GBX, with the crucial distinction that it will run underground. Knowledge of this project gave opponents a concrete example of a technologically and economically viable alternative to the physical design proposed by Clean Line and, later, Invenergy.

Advocates for clean energy recognize the importance of providing and communicating benefits for communities along the route of long-haul transmission lines. We asked the director of a national clean-energy advocacy organization whether Clean Line could have done anything differently to avoid generating such strong local opposition. This individual responded that it is crucial to identify and express economic and grid-reliability benefits to build local support. However, this argument falls flat for community members who are concerned about local grid reliability and asked to accept a project that will only improve grid reliability hundreds of miles away.

Mistrust toward the developers and dissatisfaction with siting and approval process

Our interviewees also expressed a strong sense of distrust toward the developers and deep dissatisfaction with the process by which the project was developed and communicated to communities. In Missouri in particular, respondents viewed Clean Line's process as dishonest. Clean Line's strategy was to begin building support for the transmission line among local leaders, including county commissioners and farm bureau leadership, prior to directly approaching landowners and the broader community. Interview respondents told us that the company had approached county boards, outside of regularly scheduled board meetings, to obtain the county

boards' support prior to obtaining the CCN from the Public Service Commission. They understood that Clean Line had told county board members that they already had MPSC approval, which was untrue. One landowner told us that she found out about the line, which would cross the property, through her farm bureau president, because Clean Line had approached him to ask him to help build public support. The president saw that the line crossed our interview respondent's property and called her to ask if she had heard about it. This spurred her to call her neighbors and legislative offices, and she found that none of her neighbors had heard about the project, whereas state legislators and county commissioners had. Some of the boards signed onto the project as a result of these meetings. Project opponents were incensed that these meetings were not included in the agenda of county board meetings, and several county boards later rescinded their support in response to public pressure. Their outrage was kindled when they discovered agendas and slide decks for Clean Line conference presentations with insulting titles like "Going BANANAS with NIMBYs" and "Marketing to Mayberry." Community members perceived Clean Line's approach to community engagement as devious, opaque, disrespectful, and insulting.

Some community members were also dissatisfied with Clean Line's communication with individual landowners. On this dimension, several individuals contrasted Clean Line with pipeline developers. They described receiving a notice in the mail that the pipeline would cross their property, whereas a pipeline developer would have shown up in person to begin finding mutually agreeable solutions. Landowners argued that this approach would allow them to dictate where on their properties the line would run. Several viewed the company as indifferent to this detail, which is quite material to affected landowners. As one landowner put it, the developer

should be looking for the "least invasive approach. ... Don't hold the landowner at arm's length and then at the end come in and try to negotiate."

In this respect, Clean Line's leadership agreed with the community's assessment of the process's ineffectiveness. Michael Skelly told us that the NEPA permitting process is designed in such a way as to generate opposition. The classic NEPA process involves generating alternative scenarios for the project, presenting them to the public, collecting public comments, and discerning which alternative emerges as the best (or, in Skelly's assessment of public perspectives, the "least worst") path forward. This governmental process concentrates and mobilizes opposition by highlighting the costs that are common across all alternatives. It also disadvantages the developer by pitting them against thousands of community members, a substantial number of whom will be ill-disposed towards the project. The alternative process, used by oil pipeline developers, is to approach landowners individually from the outset to begin negotiating easements. For the developer, the benefit of this process is that it creates a group of landowners who will receive clear, concrete benefits (payments) from the project and thus would prefer that it move forward.

Community members also expressed intense distaste for the developer's profit motive. Community members told us repeatedly that this project "is not about clean energy. It's about profit." Many viewed the project as a speculative venture or a land grab by an opportunistic company seeking to take advantage of government incentives. People also worried that the developer would renege on its contracts with landowners, expressed skepticism about the credibility of purchase agreements or the lack thereof, and questioned the revenue that the company claimed it would generate for the counties it crossed. More than anything, community

members worried about the precedent of allowing a private company to use the power of eminent domain to obtain easements from reluctant landowners.

Several individuals drew a clear distinction between Clean Line and Invenenergy's profit motive and the implied lack of such a profit motive for conventional utilities. In expressing his distaste for a "private, for-profit company" gaining approval to build the line, one interview respondent said, "It would be like if McDonald's decided that your front yard would be a nice place to set up." Noting that the region's major utility Ameren is also a for-profit, investor-owned company, we asked this individual for clarification on the distinction between Invenenergy and traditional utilities. He referenced electricity price regulation and the same disconnect from the RTO planning process that others had also raised:

The utilities are governed by the commerce commissions who set the rates, and the RTOs know the base loads of what they need. [GBX] is a speculative venture by Michael Polsky at Invenenergy who's willing to gamble and hope that they'll build it and [electricity buyers] will come. The problem is you've gotta have a regional planning commission. ... The RTOs have already gotten a lot of this stuff worked out.

This individual is correct that Invenenergy would negotiate prices directly with purchasers. However, since purchasers know the price that they could receive from conventionally regulated electricity suppliers, the market should ensure that the price they receive from GBX is equal to or lower than the price they would otherwise pay. A critical difference between Clean Line's GBX and a utility-owned line is that GBX is a merchant-owned project. As a result, it is treated in the market as if it were a generator selling to the grid, rather than as a transmitter of electricity. That distinction evidently translates into a difference in attitude toward the developer. The upshot here is that, even in a part of the country where people tend to be skeptical of government regulation, individuals viewed the familiar, regulated, even if profit-driven, utilities more favorably than the start-up ventures proposing the Grain Belt Express project.

Themes

This case raises several themes, which generate actionable insights for policy makers and practitioners engaged in transmission infrastructure siting.

- **Regulatory institutions are stacked against new players.** MPSC ruled against Clean Line because it operated outside MISO's regional planning process and, later, because it had not obtained the assent of each county government along the route. The ICC initially denied Clean Line a permit to operate as a utility because it did not already operate as a utility. In both states, legislative (in Illinois) and judicial (in Missouri) involvement redirected the regulatory commissions' treatment of the new entity.
- **Public and regulators' understandings of public interest and public need enable parochialism.** The regulatory commissions and public defined public necessity and public need in a hyperlocal way that reinforces the bias against grid expansion that would cross existing institutional boundaries.
- **This case highlights a fundamental mismatch between the scale of costs and benefits for long-haul transmission infrastructure.** Many community members were unpersuaded by arguments that GBX would improve grid reliability even in other parts of their state. When we asked specifically about Invenenergy's expansion of the amount of energy proposed for distribution within Missouri, community members were unmoved. They tended also to be skeptical of the workforce and financial benefits that the developer claimed would be generated by the project. Overall, local benefits appeared both uncertain and diffused. Meanwhile, local residents had very clear worries about the negative impacts of the transmission line on their farmland

and on the aesthetic qualities of their community. Uncertainty about (distributed) benefits, juxtaposed against strong aversion to clear costs, creates a political contest that privileges community opposition.

- **The traditional model of community engagement, centered around mass meetings and evaluation of alternatives, failed to satisfy either the developer or the community.** Our interview respondents felt that Clean Line had operated inappropriately in speaking with community leaders and elected officials prior to landowners. They found the company's engagement process to be impersonal, ineffective, and disrespectful. Meanwhile, Clean Line felt that the process stacked the deck in favor of project opponents. Both Clean Line and dissatisfied community members expressed a preference for engaging directly with landowners from the outset.
- **Community members are aware of alternative process models and technologies, and they anchor their judgments to their knowledge of these alternatives.** In both rounds of interviews, respondents negatively contrasted their experience with the transmission line developer with their experience with pipeline developers, who they regarded as more respectful, compassionate, and willing to negotiate solutions that worked for landowners. In our second round of interviews, the SOO Green Line was available as a demonstration of the technological and economic viability of building transmission lines underground.
- **Public opinion favors incumbent entities and processes.** In this case, community members drew a sharp distinction between familiar entities and incumbent institutions and new entrants into the electric system. Even though investor-owned utilities are

also profit-driven entities, community members were troubled by the idea that a startup company could be allowed to run a transmission line for profit. Even in the relatively government-wary parts of Missouri and Illinois where we conducted our interviews, individuals expressed a great deal of trust in the protection provided by regulatory commissions and the planning functions provided by RTOs. This counterintuitive finding highlights that new players must overcome a trust deficit which may grow with a rise in new entrants seeking to capitalize on federal loan and tax credit opportunities.

Case 3: Gateway West

Background

PacifiCorp proposed the \$6 billion Energy Gateway Transmission Expansion project in 2007 with the goal of building 2,000 miles of transmission lines throughout the American West—the largest regional transmission project in roughly 20 years.^{lxxviii} The Energy Gateway project consists of four smaller sub-projects: Gateway Central, Gateway South, Gateway West, and West of Hemmingway. The overarching goal of Energy Gateway was to connect the eastern and western service regions under the administration of PacifiCorp, allowing the utility to draw upon its network of geographically variegated generation facilities in order to meet the increasing needs of its growing customer base.

Gateway West is a 1,000-mile segment of a three-part Gateway transmission project.^{lxxix} The project was originally proposed in 2007 and had its first segments placed in service in 2020. Gateway West is comprised of two main segments, Segment D and Segment E. Segment D spans from Windstar, Wyoming to Populus, Idaho, while Segment E connects Populus, Idaho, to Melba, Idaho, on the Oregon border. While parts of Segment D have been in service since 2020, Segment E has seen considerable setbacks and is projected to be placed in service no earlier than 2030.^{lxxx} The greatest barriers to the project's completion are environmental, as Segment E is planned to cross the Morley Nelson Snake River Birds of Prey National Conservation Area. President Trump's Fiscal Year 2017 Consolidations Appropriations Act largely cleared the way for Segment E, but neither PacifiCorp nor Idaho Power has released a more optimistic timeline than completion before 2030.^{lxxxi}

In both Wyoming and Idaho, electricity grids had been operating under maximum loads during peak periods for a number of years.^{lxxxii} The growing demand for wind energy in Oregon

also presented an obvious market opportunity if the utilities could deliver the wind generated electricity from the Rocky Mountains to the Pacific Northwest. Idaho Power and PacifiCorp's subsidiary Rocky Mountain Power established a joint venture to develop an extensive system of new long-distance transmission lines connecting the Rocky Mountain region to the Great Basin and Pacific Northwest. This would allow the utilities to develop a substantial wind resource in the eastern Rocky Mountains and to draw upon the additional capacity of Wyoming's existing coal-fired generators to enhance the reliability of the grid for their customers as far west as Oregon.^{lxxxiii}

Planning, Permitting, and Stakeholder Engagement

The Gateway West project was proposed in 2007, launching the permitting and siting process. Both Idaho Power and PacifiCorp conducted the standard comment period available during the Bureau of Land Management's (BLM) assessment for the Environmental Impact Statement. This early phase of the permitting process went well. Stakeholder engagement around land use and environmental permits began in earnest in 2009. The two companies distributed over 40,000 newsletters and other informational materials to landowners in the affected communities. It is unclear what effect the distribution of these materials had, if any. The companies also conducted numerous meetings with stakeholder groups, community leaders, elected officials, landowners, and public hearings. The first meetings with landowners began as early as December 2008.

The planned route of Gateway West minimizes the amount of private land used. As a result, relatively few private landowners are affected directly by the Gateway West line, and

objections from landowners were minimal, especially compared with other projects. The concerns and objections that private landowners did raise were addressed early in the process.

Avoiding private land means that Gateway West runs mostly through public land. The decision to avoid private land greatly simplified and reduced to siting issues that arise when dealing with a large number of private landowners. But the route of Gateway West triggered a number of public land use issues, especially conservation of habitat for threatened species.

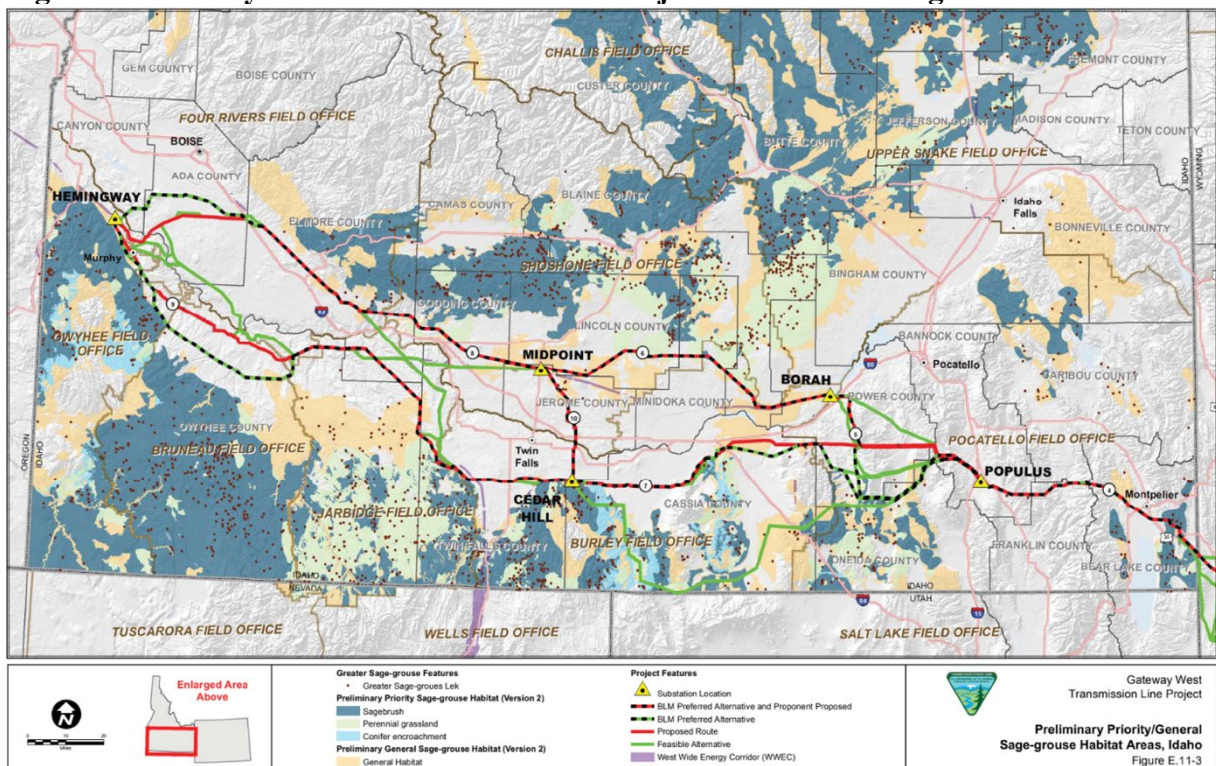
While landowners were largely appeased by the design of the project, environmental groups were not. Segment E of Gateway West runs through the Morley Nelson Snake River Birds of Prey National Conservation Area, which is home to the sage grouse. The conservation status of the sage grouse “near threatened,” owing to its steady population decline.^{lxxxiv} Environmental groups objected in the permitting process to the configuration of Segment E and the plan to run the Gateway West line through the Snake River Birds of Prey National Conservation Area.

When the BLM published its Final Environmental Impact Statement for the Project in 2013, it deferred a decision on the parts of Segment E that crossed through the Conservation Area.^{lxxxv} In 2014, PacifiCorp and Idaho Power jointly submitted an alternative route for the BLM to consider in addition to the previously submitted route. The alternative routes for Segment E avoided key habitats for the sage grouse and other species but did not avoid the protected habitat of raptors.^{lxxxvi} The BLM’s deferral of the decision to authorize Segment E and the new proposed siting from the companies effectively restarted the permitting process. Both companies held additional meetings with interest groups and other stakeholders to assess the environmental implications of the transmission line, delaying the project for several more years.

In 2017, Idaho Rep. Mike Simpson negotiated with then-President Donald Trump to include provisions to authorize the route in the Consolidated Appropriations Act.^{lxxxvii} Following congressional approval of the revised Gateway route, the BLM approved of the new routes for Segment E in March 2018. Environmentalist groups in Idaho promptly sued, objecting to the encroachment onto raptor conservation land.^{lxxxviii} The location of the line in this habitat and the resulting lawsuits are the central reason for the delay in the construction of Segment E. As of now it is not expected to come online until after 2030.

In the case of Segment D, the Wyoming Public Service Commission approved segment D2 in 2018 with little objection. Segment D1 is under construction and has received the necessary permits from the county and state authorities.^{lxxxix} PacifiCorp projects segment D1 to be placed in service by 2024. Segment D2 has been active since 2020.

Figure 5: Gateway West Transmission Line Project and General Sage Grouse Habitat Area



Three Perspectives

Our interviews were conducted with a wide range of stakeholders involved in the controversy over Gateway West, especially Segment E. Three different levels of engagement with the decision making produced three different perspectives on the project. The Grassroots Perspective is the view of people involved in local communities and organizations. The Middle Level Perspective is the view of local leaders and mid-level decision makers on projects. The Upper Level Perspective is the view from the executive level decision makers, such as corporate executives and state and federal government leaders.

Grassroots Perspective

The grassroots perspective in the Gateway West case includes labor and immigration organizers and activists is environmental and environmental justice organizations. People in these groups care deeply about energy projects and the future of their communities. However, they were fairly disconnected or remote from the controversy over Gateway West. No one that we interviewed in local environmental, justice, or labor groups in Wyoming and Idaho knew what Gateway West was.

That finding deserves emphasis. Information is essential for public engagement. Poorer communities, Latino groups, farmworkers, and others in rural areas that will be affected by the Gateway West line were not engaged in the deliberation about the project. Relatively little attention was paid to how this project will affect these communities. One labor organizer in Idaho conveyed this message when saying:

I feel like a lot of the focus hasn't been on marginalized communities as it should have been, as it should be, or at least should just be more of an element in it. ... A lot of organizations are white-led organizations that [are focused on helping everyone. So I'm

hoping that we can end up having a kind of scope of supporting those communities that would really truly benefit from it.

Grassroots activists that we interviewed consistently demanded greater attention to their issues. This is especially important as they don't believe they receive adequate support in the maintenance of their infrastructure, including electricity service. One Latino organizer from Wyoming expressed frustration over a host of issues, including the dilapidated state of his community's school and the problems with electricity transmission in the area and the long wait time to get energy providers fixing transmission issues. This same activist suggested an alternative strategy that companies could pursue: "If you go to a community, and you listen to their needs, you build relationships with them, you build trusting relationships, show that you care." In most cases, grassroots organizers are looking to have a seat at the table from which they can address their issues.

Middle-level perspective

The middle ground perspective includes people who are official local leaders, advocates, or middlemen in projects. These include economic developers, environmentalists, and tribal leaders. There was varying knowledge among the group. Each person we interviewed in this group understood the project to at least a basic level and had an interpretation of the public engagement efforts of Gateway West.

Everyone stressed the importance of increased community engagement efforts for everyone in locales, not just elite actors. One CED head said they believe "that the marketing and communicating community engagement is targeted toward elected officials and developers." This path does not reach everyone on the ground. Additionally, statewide environmentalists are working to better communication between the public and energy builders. One representative of

an Idaho environmental group remarked that the state government is “not really listening” and that “they don’t care.” Tribal leaders felt similarly to developers and the federal government, however, their demands for engagement have begun to garner attention. A representative from another group worried about the conspiracy theories on the ground:

[A project] gets viewed not from an objective perspective of what's happening or why or things like that, but it gets tainted as ‘Oh, this is a top-down federal Biden administration agenda to benefit Californians who have Teslas and make their energy decisions ... and why should we be a colony for California?!’

Environmentalists in Idaho and Wyoming look to balance conspiracy theories with genuine community engagement where residents' opinions are valued.

Upper-level perspective

Those most knowledgeable about Gateway West included energy and property lawyers, PacifiCorp executives and representatives, and public officials (which include BLM and PUC agents). These people were deeply involved in and knowledgeable about the Gateway West project. Still, their views on the effectiveness of PacifiCorp’s public engagement strategy was mixed.

PacifiCorp executives felt they did well with community engagement, especially in terms of reaching those at the local level. They conducted town halls, worked with the state governments, and engaged with property owners to minimize the need for the use of eminent domain. Only 5 percent of their settlement discussions ended in eminent domain. They also believed that because of their efforts, they were fully justified in moving forward with the project as it was.

PacificCorp had indeed checked all of the boxes when it came to public engagement. In our discussions with state officials about the firm’s engagement efforts with a state official, they said

that the state requires corporations to allow for ample opportunities for public comment and that PacifiCorp had met their obligations. However, the same state official expressed some sympathy with those questioning the project, asking, “Do you want that size of a power line running through your backyard?” He also pointed out that “Some people may say Wyoming will never benefit [from Gateway West].”

Last and possibly most important, was the voice of the federal government. Throughout the western United States, the federal government is by far the largest landowner; in some states it owns the majority of the land. The United States government owns 46.7% and 61.9% of land in Wyoming and Idaho, respectively.^{xc} Building a power line through the Mountain West is almost a guarantee of crossing federal land.

Talking to a former federal official helped clarify some of the noise around the project. This official believes that Gateway West was a successful energy project, especially in its ability to navigate a path through conservation areas without major disruption to habitats. Additionally, the project successfully fended off pushback from organizations against the routing of transmission lines through existing right-of-way in conservation areas. He also said that PacifiCorp was transparent with him and the public about their plans, something that is not always the case in energy projects. However, despite these positives, he believed that PacifiCorp and developers in general need to approach permitting and siting differently: More culturally competent community engagement efforts are necessary.

Themes

Economic Worry

Many communities throughout Wyoming and Idaho wanted to ensure fairness regarding the benefits of the project for their local communities. On one front, rural and predominantly

white communities feared the project's intended purpose. Specifically, many doubted whether the project actually benefited those in Wyoming or Idaho, and many felt they were simply being used to transport the region's energy production to the more liberal Pacific coastal states. One public official asked,

You know, it's over time, was it worth the billions of dollars of investment to do that? I don't know yet. It might be worth more to the states whose policies are more geared towards green energy than it would be to us. But then again, we generate a lot of that energy and we make, you know, revenue off of that.

To navigate these complex discussions and decision making, it is essential to take account of the apprehensions held by the rural communities in Wyoming and Idaho. People from rural areas that we spoke with held sophisticated views of the projects and their effects on their immediate area and on the region's economy. It would be easy but incorrect to dismiss concerns as climate misinformation. In our interviews, it was not. Long-distance transmission lines pose serious threats to property and the local area. The objections people expressed reflected a deep unease but also an understanding of the economic value of the projects.

Wyoming in particular has a large coal sector. People in the state worry that the energy transition will diminish that industry and the income, jobs, and tax-base that the coal industry generates. This worry about the economics of grid buildout contrasts with the profit project investors could retain from a successful grid buildout. The same public agent also said,

Shareholders are probably supportive of [the project], because that's how they, you know, that's where they get their rate of return by capital investment transmission lines, are capital investments to these utilities. So yeah, sure, all the shareholders are, you know, supportive of it.

Development of transmission lines in the western United States may also cross tribal lands and indigenous communities. This was not a significant issue in the Gateway West case, but it was a very important consideration in the Sun-Zia Project in Arizona.

We interviewed tribal leaders in Idaho and Wyoming about their concerns with infrastructure projects such as long-distance transmission lines. Foremost in these interviews was a deeply felt distrust of the federal government, state governments, and developers—owing to centuries of land theft and natural resource extraction. One Indigenous leader explained, “[We] have long fought for our right to food sovereignty. This fight has largely been characterized by the severe depletion of salmon in the region, a resource which for [us], this is a way of life.” It is against a background of distrust and suspicion that newly proposed projects will be judged by Indigenous communities.

Indigenous communities expect to be treated poorly, to face proposed developments that are very harmful to the land, and to receive little social benefit from taking these facilities on. The same Indigenous leader, when asked about possible power line developments, described the highly unreliable electricity service and astronomical electricity prices that his tribe faces. A powerline running through their land would simply be another case of a development that took advantage of them but offered no benefit. Instead of further compounding the vulnerability of Indigenous communities by subjecting them to exceptionally high consumer prices compared to their non-indigenous counterparts, this leader suggests that power companies share the cost burden.

Preserving and reshaping of culture in project areas

The largest concerns raised in our interviews about the Gateway West project were aesthetic. Transmission lines and windmill towers change features of the landscape in ways that change how people see their place and their culture. Unsightly developments in a region can

become symbols of power and objects to rebel against. One community economic developer raised this issue when discussing people's aversion to transmission line projects:

So you want to look across the valley and see the mountains and you don't want to see these windmills? That there are actually billboards out in American Falls, Idaho, that say you're entering the red-light district? Because they hate the windmills so bad out there.

The battle over aesthetics taps into an event greater struggle over land rights and self-determination. In discussing a misconception developers had regarding the "emptiness" of the West, one public official stated, "It may not look like it, but everyone has dibs on the land." Overlooking this fact, companies fumble in public engagement processes, believing they are running power lines through empty land. Many developers have experience with complex, integrated, higher-density populations where rights of way and zoning are already quite visible. Landowners and other community members in Idaho and Wyoming are not necessarily amenable to large entities prescribing how their land will be used without their consent. Some projects eschew this notion, leading to widespread opposition. Others (such as Gateway West) work out agreements with the majority of landowners. However, even in projects such as Gateway West, the path forward can be rocky.

In an expansive landscape it is easy to overlook the complexities of navigating a public engagement process. In fact, the physical distances in the rural West can make it very hard to bring people together in a central location. The landscape also shapes the culture as a place where individuals are very much tied to their land. For many ranchers and farmers, it is their livelihood. And, the federal government in Washington, D.C., and even the state capitols (in Boise and Cheyenne) are in remote places, very far away. Against that cultural background, the assertion of eminent domain and federal interventions in land use can become fuel intense conflict. PacifiCorp routed Gateway West through federal land precisely to avoid the conflicts

over private lands and the possibility that they would need to ask the state to assert eminent domain.

Additionally, the concerns of large landowners do not always match those of the rest of the public. An Idaho labor organizer perceived ranchers and farmers as having a larger voice in state government than lower-class non-property owners and laborers. Often, public engagement only extends to landowners affected by the projects, conservation figures, and sometimes indigenous tribal leaders. Moreover, government-defined boundaries of tribal land often do not correspond with traditional understandings of land claims. This issue gets especially tricky when dealing with sacred sites such as burial grounds.

Multiple stakeholders, from social justice activists to federal agents, who were interviewed highlighted the need for a culturally competent public engagement process that cut across different subgroups that could be affected by the project. Actively working to understand a group's customs and concerns will be key for ensuring a more equitable and efficient grid buildout.

Conclusion

In terms of public engagement, Gateway West fared quite well for a grid buildout project. A number of community leaders—from CED heads to tribal chairmen—knew about the project. Additionally, there appeared to be some effort on the part of PUCs and BLM agents to work with local communities in understanding grid buildout. That said, there are still shortcomings in the project. The first lies in the extent of engagement. While landowners were consulted about the project, those who did not own land and could be affected by the transmission lines were not.

This proves to be a larger issue when considering the ever-growing Latino population in Idaho and Wyoming. This group makes up a large number of the state's farm workers.^{xci}

Labor and immigrant rights leaders who also had a vested interest in electrification and environmental issues were not aware of this project. And while tribal leaders had heard about the project, their knowledge was not sufficient given their calls for CBAs and beneficence. Lastly, the rumblings of energy injustice remained strong among Wyoming residents who worked in fossil fuels. While a good bit of the project's negativity is rooted in conspiracy theories and general misinformation around the energy transition, there is still room for consensus building between energy providers and skeptical community members. Instead of solely parsing out settlements to landowners, companies should guarantee benefits to whole communities for allowing them to use their land. This course may appear expensive in the short run; however, it ensures an easier process in the buildout and quells community fears of company motives as more energy infrastructure is built out in the future.

Case 4: Texas CREZ

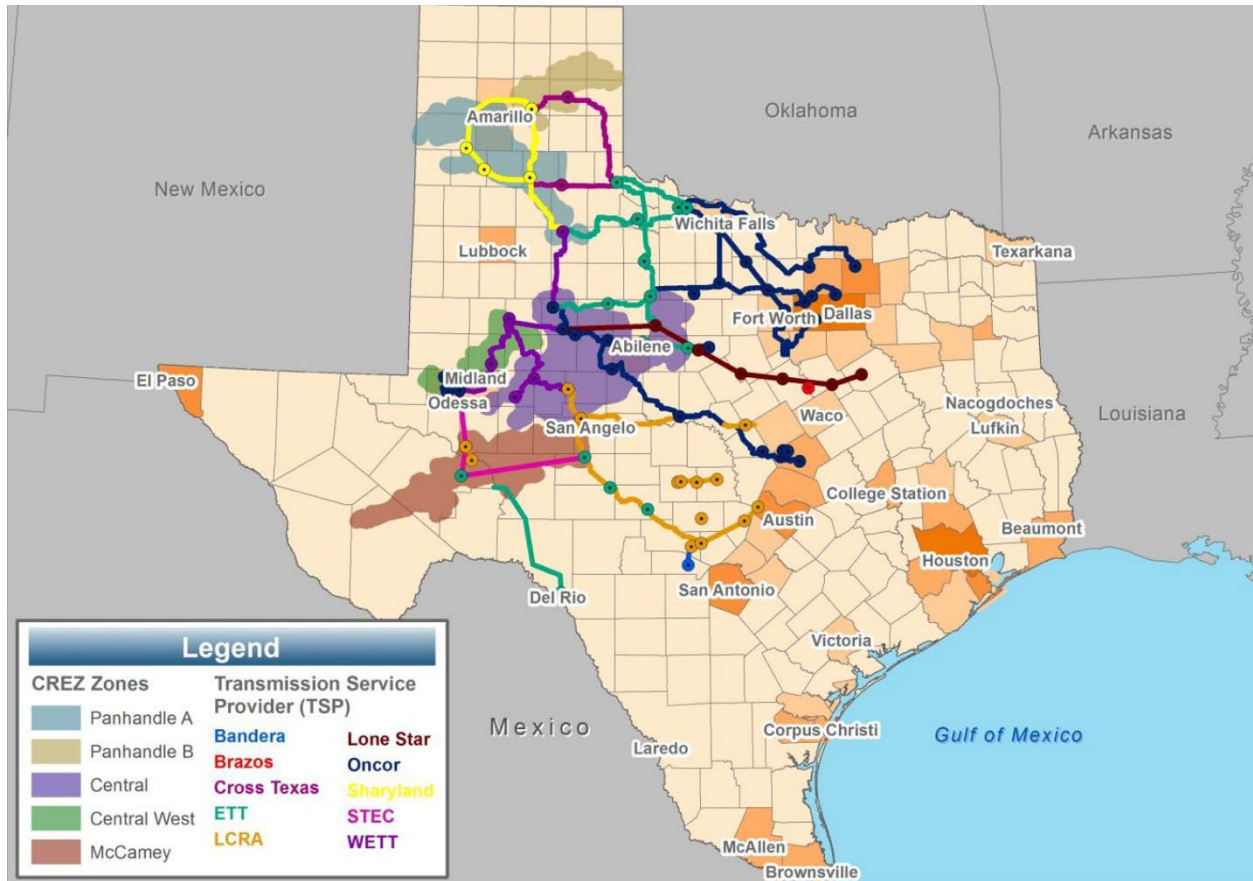
The 1990s were a time of institutional innovation in the electric grid. The U.S. created new electricity markets that pooled many states into Regional Transmission Organizations. The nation also experimented with other institutions to allow the country to improve the robustness and efficiency of energy markets. One such idea was the Competitive Renewable Electricity Zone (CREZ).

CREZ was both a market innovation and a process innovation. Creating a CREZ would change a state or region's electricity marketplace by improving the connection of renewable energy resources to the grid. In many instances this would involve developing new transmission

lines. A CREZ would also create a new planning process that would bring in many more stake holders than the traditional utility-driven planning process common throughout the U.S. Of the various attempts to create renewable electricity zones, only the effort in Texas came to fruition.^{xcii}

The Texas CREZ was not one transmission line but a multiline system that connected wind resources in western Texas to the population centers from Dallas to San Antonio. It also spans SPP and ERCOT, making it a true inter-RTO project. The CREZ zones and main transmission lines are shown in Figure 6. The experience of the Texas CREZ suggests that there may be value in considering proposed transmission lines not one at a time but in bundles. That has the advantage of allowing the PUC to pick lines that are the “least bad” lines from the perspective of communities and environmental groups and that keep rates low. Bundling lines may also reveal that energy infrastructure development is done in a way that spreads the costs, rather than concentrating them in certain areas or communities.

Figure 6: Competitive Renewable Energy Zones (CREZ)



Background

In 1995, the Texas state Legislature passed a suite of laws that established a wholesale energy market in which producers could sell their electricity directly to utility companies and also required utilities to consider citizen input when formulating their integrated resource plans. In adopting these mandates, the Public Utility Commission of Texas (PUCT) decided that citizen input would be collected through a deliberative polling process.^{xciii} Between 1996 and 1998, eight Texas electrical utility companies polled their customers to gauge which resources they would prefer their electricity to be generated from moving forward. The results demonstrated that the respondents maintained a substantial preference for electricity generated from renewable resources.

Partially in response to these findings, the Texas Legislature passed Senate Bill 7 with the goal of achieving two policy priorities. First, it deregulated the retail electricity market by compelling providers to untangle their production, distribution, and retail services from one another. Second, it instituted a Renewable Portfolio Standard which mandated that the state generate 2,880 megawatts in additional capacity from renewable resources by 2009. In support of this goal, the PUCT implemented a renewable energy credit program that was to be overseen and administered by ERCOT. The policy was vastly more successful than initially expected, with the state reaching 880 megawatts of added capacity by 2001. By 2005, Texas had surpassed the 2,000 megawatts benchmark put forth in SB 7, but serious problems with respect to grid capacity began to emerge. In some extreme cases, electrons generated from wind turbines were wasted due to the incapacity of the grid to carry the growing loads. In response to both the success of renewable energy generation efforts and inadequate grid capacity, the state again turned to legislation by passing Senate Bill 20, which increased the renewable energy generation goals to 5,880 megawatts by 2015 and 10,000 megawatts by 2025. Moreover, SB 20 required the PUCT to both designate certain regions within the state as focal points for the development of wind energy to support these goals, and to establish corridors that would allow high-voltage transmission lines to connect these Competitive Renewable Energy Zones (CREZs) with the grid.

Texas' Competitive Renewable Energy Zone (CREZ) was highly successful in developing the connection of wind energy resources to the ERCOT grid. CREZ facilitated building 3,600 miles of high voltage transmission to support wind power development in the west and panhandle of the state from 2005 and 2014. The project began with a bill from the state Legislature, Senate Bill 20, that tried to address the issues of allocating costs and benefits of

transmission, navigating stakeholders, and incentivizing energy development with the promise of additional transmission.^{xciv} At the time of SB-20, Texas had substantial potential for wind energy generation that it failed to harness given the constraint of transmission in those regions.

Through a deliberative polling process and the strategic planning with investors, Texas CREZ created a stable investment environment and minimized conflict with stakeholders to rapidly site and build high voltage transmission in five zones.^{xcv} CREZ cost ERCOT roughly \$6.9 billion, and all transmission lines were fully in service by 2014. Compared to other transmission efforts, the CREZ project stands out for the speed of its execution and use of a deliberative polling process for stakeholder engagement in the earliest stages of planning. From 2006 to 2019, the CREZ transmission lines accounted for 23% of all new high voltage transmission lines placed in service in the United States. Since CREZ lines began service, wind development in Texas has increased by 12,000 MW.^{xcvi}

The Texas CREZ process facilitated a substantial build-out of the state's electricity grid. That process allowed Texas to develop fully its wind potential. It also had spillover effects as the same transmission line infrastructure now also serves the development of solar power in western Texas.

Process

The renewable electricity zone (REZ) concept attempts to address a key problem with transmission development for renewable energy. Transmission system planning through RTOs, utilities, and other institutions is often ill-suited for renewable energy development. Wind and solar are far from load centers and, thus, often not within the jurisdiction of the state that must approve the construction of some part of the transmission line. There are often no power lines

near the places where wind and solar development are most appropriate. The time to development of transmission makes it hard to develop and invest in wind and solar generation. The permitting, siting, and construction of the transmission line can take 10 years, but the construction of the wind and solar generating project may only take 1 to 3 years.

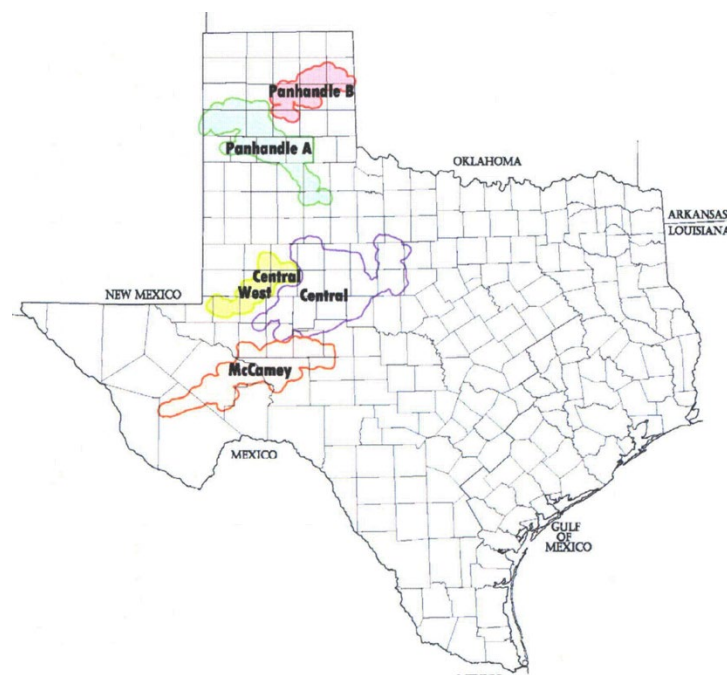
The REZ process has several key parts. First, it identifies a geographic area for development. In the case of the Texas CREZ, it is the region encompassing the central Texas cities from Dallas to San Antonio on the east to the Texas Panhandle to the north and out to Midland and West Texas to the west. Second, it sets up working groups of stakeholders. One set of working groups focuses on the zone and the challenges of energy development in the zone. One set of working groups focuses on generation and transmission. These working groups are the heart of the planning process, and they involve a wide set of stakeholders. They screen possible sites and hold meetings to determine the general location of infrastructure. Third, there is the vetting process for proposed lines. Companies are required to submit 20 to 30 alternative routes and configurations of power lines to be presented and critiqued at public meetings. These meetings are held in local schools, community centers, and town halls. In this stage, companies and working state and local governments hold public meetings to discuss different routes and configurations of transmission lines.^{xcviii} Finally, the plans, public commentary, and other materials are included in the PUC permitting process.

Stakeholder Engagement

The heart of the CREZ process is its use of deliberative polling and extensive public and stakeholder consultation in the earliest stages of the process to make decisions on siting. After SB-20 passed in 2005, ERCOT and the Public Utility Commission of Texas (PUCT) began a

deliberative polling process with stakeholders. These meetings contained around 50 local stakeholders at a time who provided input and were also given information about what CREZ might mean for their county. Additional consultation was fielded from experts in energy siting, investors, and other potentially involved parties as ERCOT assessed where these zones might be established. After this multiyear consultation process, the PUCT designated five CREZ and asked ERCOT to create several potential transmission scenarios for each. In 2008, ERCOT submitted four transmission scenarios, that had a projected range of increased wind capacity of 5,150 MW to 17,956 MW. The PUCT approved Scenario 2, a plan that would increase CREZ wind capacity by 11,553 MW.^{xviii}

Figure 7: Competitive Renewable Energy Zones



The CREZ process meant that ERCOT and the PUCT had no preferred site for these lines, nor had they promised certain areas to investors. Both ERCOT and the PUCT were flexible and responsive to stakeholder input, minimizing conflict, while also being able to provide

investors with the assurance of SB-20, promising large-scale transmission projects in Texas. There's a potential lesson here in the pre-investment, or at least pre-expenditure part of this stakeholder engagement as a strategy for future projects. If investors are brought in for one siting plan, and then it's taken to stakeholders, the cost of adjusting the siting of that transmission is likely high as investors could pull out. Starting with this consultation before spending money on permitting petitions, legal counsel, and courting investors allowed ERCOT to actually engage with the feedback they received instead of reactively protect themselves from it.

The framing of CREZ projects is also worth noting. The state of Texas made this a competition, both between investors and counties. This evaluation and competitiveness might have made the project seem more desirable to certain stakeholders and rebrand these kinds of infrastructure projects as something that infuses local economies with jobs and other activity. In short, making transmission competitive might make the benefits more salient.

Legal History

The strategy of deliberative polling had been used before in Texas. In 1995, the state legislature passed a law that required the utility wholesale power market in Texas to conduct integrated resource planning with citizen input. The Public Utility Commission (PUCT) mandated that this citizen input would take the form of deliberative polling.^{xcix} Between 1996 and 1998, eight Texas electrical utilities conducted extensive deliberative polling with their customer bases to gauge preferences on future electricity source buildout. The results showed significant support for renewable energy and resulted in immediate renewable energy buildout as well as the inclusion of a renewable energy portfolio standard in the state's energy restructuring

law, signed by Gov. George W. Bush in 1999.^c In the three years after the 1999 law, these utilities built over 1,000 MW of renewable energy generation capacity.^{ci}

When SB-20 was introduced in 2005, it was very much riding the wave generated by these earlier deliberative polling efforts. While renewable energy generation was on the rise, utilities were increasingly concerned by transmission constraints. In some cases of wind energy farms, limited transmission capacity blocked the energy generated. The initial burst of investment and energy buildout from the 1996-1999 efforts of the Texas Legislature faltered as investors were scared off by the barrier of transmission. SB-20 itself established the Competitive Renewable Energy Zones, calling for a deliberative polling process, and mandated that costs would be shared equally by ratepayers. The window for stakeholder input was expanded not only by the PUCT but also ERCOT, who held a parallel consultation process with stakeholders via hearings, docket submissions, and polling.

The legal trouble faced by other projects is notably minimal in CREZ. That did not mean the project was flawless, but instead that they were able to respond to stakeholder opposition in a constructive way. During the consultation process, certain siting proposals were abandoned or adjusted in response to stakeholder opposition. For instance, the PUCT had ERCOT suspend one transmission line in 2009 due to high opposition and low value add in terms of transmission capacity.^{cii} The most contentious fights with siting decisions were between Kerr and Mason counties, which both wanted the new transmission line to be sited on the other's land. While both counties threatened lawsuits and opposed transmission, the PUCT overcame this opposition by siting the transmission line in Kerr County near existing infrastructural sites that had already obtained right of way permitting (an interstate highway and an old transmission line). Kerr County sued unsuccessfully, and the transmission line was completed shortly thereafter. Beyond

this resistance, the CREZ project saw little formal legal opposition and completed the projects rapidly as a result.

Three Perspectives

The social structure of the Texas CREZ was built out through assessing the hierarchy of knowledge about the case, a model which basically accounts for stakeholder's distance from deliberation around Texas CREZ. The first group is the grassroots perspective. This includes social justice organizations, environmental justice organizations, and labor organizations. These groups are active in egalitarian social movements, often at the local level. Those who work in the organizations often are not full-time political organizers, and even if they are employed with the group, they spend much of their time on the ground, working with people in marginalized communities and situations. These groups often work with nonprofits and local governments to fill gaps left in the social infrastructure that often go unaddressed by the Texas government.

The next group provides a somewhat engaged perspective from groups that include statewide environmental organizations and Landowners. These groups are in greater conversation with state-level actors and landowners in West and Central Texas where CREZ lines were run through and constitute a group that was in negotiation with energy providers during the process. Environmental organizations in the state work between allies in the state government, national groups, and local groups, serving as liaisons. They are often centralized in the state's major cities. They play a role in energy politics, specifically in the transition to renewables. Therefore, the leaders of these organizations often have insight into CREZ.

Lastly, the top of the hierarchy includes those with the most knowledge of the CREZ process. These include lawyers (especially in the property and energy fields), state public

officials, providers, and consultants. This group helped lay the foundation for CREZ, including its initial model of deliberation.

Grassroots Perspective

Grassroots organizations focus on localized fights against injustice. They often work in marginalized communities—those who are poorer and of color. While some of these groups are specialized, many have to fight against a variety of problems that afflict their community. As one respondent described, “We don’t have grocery stores, we don’t have Black business ownership. We don’t have a neighborhood school or a hospital or doctors, any of those types of things.”

This quote emphasizes the disproportionate struggle that some communities endure to access necessities and underscores the multifaceted issues that grassroots organizations are tasked with tackling to bring about positive social change at the local level. Social and environmental justice groups also help provide the necessary infrastructure for marginalized groups. Examples of this are most notable with an Austin-based labor nonprofit and a Dallas-based environmental justice organization. Through the depths of the Texas Winter storm, the Workers Defense Fund mobilized resources for Austin’s residents when the state government failed to take action.

Even grassroots activists who work with more state and national environmental nonprofits see rifts between their missions for their communities and those on the ground. One respondent with experience organizing at the local level highlighted the vast differences between statewide and local dynamics, elaborating on the idea that state-level strategies often include broad objectives, failing to address the nuanced challenges faced by individual communities comprehensively. The consequential disconnect between statewide overarching goals and

localized solutions, the respondent noted, can often be attributed to a lack of community participation in decision-making processes. The interviewee explained that such a lack of inclusion can result in decisions that are not representative of the voices within the community.

This situation points to a disconnect not just between larger state decision makers and people on the ground, but also between people on the ground and the statewide environmental nonprofits. Furthermore, the leaders of these groups, especially those in the environmental justice sector, clamor for an energy transition. That said, they also want to ensure that transition. Despite these grassroots organizations' interest in renewable energy and their provision of social infrastructure, they are often shut out of deliberation in state government. The fight for a “seat at the table” is a key aspect of how these groups interact with institutions of higher power in the state. Among these organizations, there were constant calls for the lessening of energy prices and environmental justice. Activists, however, felt that there was little engagement from energy providers and public officials.

While these groups often had not heard of the Texas CREZ process, it is important to understand their perspective, as it gives insight into the depth of community engagement in the state and highlights the groups often overlooked in the process of grid buildout and energy transition.

Middle-level perspective

Statewide environmental organizations such as the Texas Environmental Defense Fund (EDF), Environment Texas, and the Lone Star Chapter of the Sierra Club attempt to work between the grassroots and state elites. They lobby at the state house, work with local governments (especially in the state’s larger cities) and try to form relationships with business

interests when applicable. These groups also work with communities around air monitoring and around legal rights to environmental quality. Many in these groups have optimism for the state's fight against climate change. As one respondent said, "The future is bright if 'darker angels' don't win." This optimism is not unfounded, as Texas is currently a national leader in renewables.^{ciii}

These environmental groups see a path through nongovernment institutions, such as Texas's business community. One observer put it this way: "One of the weird parts about Texas is like, by and large, the business community understands that we are experiencing climate change—that we do need, and we are in, an energy transition. And so, in that sense, they're sort of ahead of political leadership."

The push for energy development can easily marginalize community concerns. Believing that the need for energy infrastructure is imperative, some state environmentalists believe there should be less concern for property rights than exhibited with other infrastructure projects. The culture of ranching in the state is giving way to energy development. Specifically, the approach in the state has been to view a landowner's primary objective as one of preserving property values. According to this perspective, to resolve any dispute, one simply needs to pay the landowner the value of the land. Landowners and developers should be able to work together or a settlement agreement that works with most of the parties.^{civ}

This mindset is at odds with other values that are difficult to measure or price, such as aesthetics or local culture. While the economic value of a ranching business and land, for example, can be calculated, its importance in the cultural lore of the state cannot be as well monetized. Nor can it be determined in any deal struck between a developer and an individual

landowner. This is part of the reason why settlement processes and negotiations with landowners take such a long time.

Upper-level perspective

The higher-level actors in the project stood by the CREZ plan as a democratic, free-market form of energy buildout. One adviser spoke about how the sheer number of routes that needed to be filed (up to 20 or 30) gave way to a large number of possible alternatives that could make “everyone happy.” This process was lauded as being unique and innovative. This broadening of routes also was said to “encourage settlement” for landowners. Overall, business and government leaders we spoke with thought CREZ was successful on a broad level. Transmission lines appeared justified and well-supported. Additionally, through the process of evaluating transmission lines in Texas, the utility commission appeared to do a successful job of allowing transmission to move forward at a reasonable rate.,

There were some concerns. One adviser to a CREZ project lamented how the selection of specific routes of line were controversial because of easements and concerns about community and environmental impacts. Additionally, there were differences in how well some groups did in working with the public than others. Ultimately, support for CREZ came down to economics. As one of the state’s key decision makers surmised, support for this process boiled down to the fact that CREZ was good for business. The push for wind development through the Texas CREZ was not justified as a climate policy. In fact, that would have likely increased opposition to these projects. Most of the people we interviewed, including those involved in wind energy developments, are strong proponents of fossil fuels. Some even denied climate change in our interviews. As one respondent exclaimed, “It defies facts and reality!” The pursuit of wind

development in Texas occurred because it was a way to increase the state's energy industry and it was done in a way that aligned with the state's values.

Major Themes

Disconnect between statewide institutions and community-based organizations

Texas CREZ is heralded as a deliberative project that weighted community input more heavily than most energy projects. The initial decision to develop a gigawatt of wind energy infrastructure was indeed done through a democratic process that involved a broad swath of Texans.

The decisions about specific lines, however, involved a much more narrowly defined set of stakeholders. The state only required that planners contact residents within a fairly narrow areas when advertising meetings about proposed power lines. This had two effects. First, it meant that a narrower range of stakeholders participated than might have been ideal. Public engagement is a two-way street. People have to participate, but the state and developers also need to reach out to the community in order for people to know about proposed developments. Second, it meant that people outside of the residents that the state contacted would be slower to react if they had the opportunity to raise concerns at all. The Texas process set a six-month window for public comment on projects. That is a fairly short public comment window, and towns and ranchers outside of the area required to be contacted would effectively have an even shorter window for response because they learned about the project second- or third-hand. Both the public outreach strategy and the time window for public comments meant that the process heavily prioritized, and largely restricted citizen engagement to, landowners who may have

transmission lines placed on or near their property. Nearby communities, those protecting ecosystems, and others were given low priority as stakeholders or not engaged at all.

One expert consultant on the siting process of CREZ explained that despite the unique siting process in place in Texas, wherein companies generally have to file 20 to 30 alternative routes, controversy still arose over CREZ due to easements, line contradictions with community values, and impacts to environmental aesthetics. The expert explained that while some concerns were alleviated, like choosing a longer transmission line to avoid habitable structures in a popular green belt in the Dallas-Fort Worth region, not all issues could be addressed.

One respondent made the challenges of community engagement especially vivid, stating, “We need better processes in Texas for communities to engage. Like, [Texas’] Public Utility Commission is really very difficult for communities to weigh in. There’s not a lot of thoughtful effort put in by the agency to make sure it happens. And, as you might imagine, anyone from, say, a low-income community is not going to have the time.” A more inclusive and accessible engagement process could ensure that the concerns and ideas brought forth during any future energy project reflect the diversity of the community most affected by the proposal.

Even with the more open CREZ process, there was still a sense that the key design decisions had already been made by the time PUCT meetings were held. One community activist commented on the iniquity of the public engagement process, commenting that, “At the time of the decision process, a public meeting is held. The decisions have already been made, and the public hearing is merely [to] check a box.” The lack of engagement was most evident in the relatively small number of activists and even business leaders who knew about the CREZ process.

The Texas CREZ offers a framework for community engagement at a state level. It is still a work in progress. If stakeholders who genuinely care about the state's energy future do not know about a cornerstone project in its system, that is a cause for concern in assessing the state's preparedness for community engagement in future energy buildout. A failure to communicate crucial initiatives to those invested in the local communities inhibits the potential for grassroots involvement and impedes the synergy required to address complex energy issues comprehensively. Addressing this oversight requires an evaluation of the deliberative polling process used and the establishment of a concerted effort to integrate local perspectives into the policymaking process, ensuring that community-based organizations play an active role in shaping the state's future energy landscape. Neglecting to integrate such perspectives inflicts the risk of overlooking valuable insights and local considerations, hindering the resilience and overall success of statewide energy initiatives.

Trust and Distrust in State Institutions

The Texas CREZ process was designed as a process through which the PUCT and developers could learn about public objectives and concerns. It was also a process for improving trust in the institutions that govern and deliver electricity in the state. A process of engagement in which people can make meaningful suggestions to change proposed developments builds trust.

We also encountered communities that felt they were not consulted or informed or that the process was inadequate. We heard from landowners who believed that the very short timeline for registering objections to proposed projects did not allow for them to learn what the project would actually do to their land. We heard from community activists that a long history of marginalization has made them skeptical of government and apathetic toward the political

process. One Black community activist said: “We don't have trust for any kind of government entity. And if we align ourselves with any kind of government, they believe that they're using us to infiltrate them somehow.”

This worry is warranted, as marginalized communities have been historically either left out of infrastructure upgrades, been at the frontline of toxic infrastructure, or been victims to displacement. The fear exhibited echoes in grid buildout, as one environmental justice activist stated that he didn't want transmission lines to rip through communities “like freeways did.” Additionally, there is a disconnect between people on the periphery of the state and those in decision-making spaces such as Houston, Austin, and Dallas:

We have a lot of people in the Permian Basin, who are born and raised in the Permian Basin, who claimed to be very, very concerned about the effects of the industry on the community. And of course, you have those people who are sitting in Houston, in their corporate offices, who just trying to make as much money as possible, you know, the, there's a upward trend and a downward trend in the oil industry.

The pervasive distrust in the Texas state government and energy providers creates a barrier to meaningful connections between elites and everyday Texans. Further, the preexisting fissures between state institutions and historically marginalized communities intensify feelings of distrust, particularly as land-owning Texans in rural areas are subjected to the utilization of their land for energy extraction to benefit more affluent urban centers without consultation. Such sentiments hinder effective community engagement efforts and cast a shadow over attempts to build out renewable energy infrastructure, making such initiatives seem duplicitous in the public eye. Addressing these underlying issues of distrust and cultivating an environment characterized by transparent communication is imperative for fostering genuine collaboration and forging a more inclusive and resilient energy future.

Conclusion

The Texas CREZ provides an intriguing model for how to improve permitting and siting through broader public engagement. It started with the use of deliberative polling to select what sort of energy Texas should develop and where and how it might do that. Texas has since led the nation in wind development and in the development of grid infrastructure to support renewable energy development.

No model in practice is ever as perfect as the ideal. The Texas CREZ process sought to engage people broadly in decision making about the state's electric grid. It used a deliberative poll to set goals. It took proposed lines to local communities and held public meetings at which people could offer changes to lines and choose which would be the best line for the area. Those forums directly informed the PUCT decision-making process.

Even still, there were several important limitations on the process. First, the deliberative poll was only done at the beginning of the process, in the 1990s. It was not integrated into the ongoing planning process in the state of Texas.

Second, engagement was limited in consequential ways. The state required that the developers announce public meetings to residents in the immediate area of proposed developments. This meant that broader interests and stakeholders, such as the views of energy workers or environmental groups, were often not included or marginal to the deliberations. Not surprisingly, many key stakeholders in Texas with a stake in renewable energy development do not know about the program.

Third, the CREZ process was employed only for designated projects. It was not fully embraced by the state for all energy or all electricity projects. The state did adjust its processes for approval for other energy projects based on the CREZ experience, such as embracing the

short-time frame for public commentary. That partial use of CREZ makes it difficult to assess what the total impact of the process has been on the Texas energy infrastructure. That said, it is obvious—given the amount of energy developed in the CREZ zones and that much of the growth in Texas’ wind industry has occurred in the CREZ areas—that the CREZ process put the state of Texas in a position to become the nation’s largest user of wind energy.

Community Engagement as a Solution

Although imperfect, the CREZ process created a much wider degree of community education than is normally the case. It was also a more transparent process, as developers were required to present detailed maps and descriptions alternative configurations of powerlines to residents. Moreover, it provided opportunities for people to make comments on proposed transmission lines that could actually lead to the improvement in those lines. This was not a simple binary choice that people were presented. Rather, the CREZ process allowed people the chance to learn in detail about projects and to suggest improvements. The seriousness with which the PUCT took public comment was further empowering to those who participated.

Community education and meaningful public engagement are essential to building trust. Typically, there is a disconnect between elite institutions and decision makers and the communities affected by their actions and decisions. Education and engagement are key to bridging this gulf. One community advocate echoed this idea when describing a government-led project being proposed in his area:

[The hindrance] was just a lack of education. We worked on the project for about 18 months, we had eight different community meetings where we brought city professionals in to specifically talk about their property to give them to answer any questions that they had to reassure them.

The disconnect between the community and the developer is especially true for energy transition projects. For there to be buy-in for any large-scale project, people within a designated community need to understand what the project is, the project's relation to their daily lives, and its importance for the rest of the state. While there are public meetings, community members, especially those in marginalized communities, described these as often uninformative. Additionally, these meetings are often facilitated from a top-down approach.

Absent from our interviewees descriptions of public meetings and education in Texas, as well as in our other cases of Maine, Missouri, and Wyoming, is the involvement of the mid-level. It is widely acknowledged that civil society organizations are essential for communication between people and decision makers. One approach, then, that states and developers can take is to mobilize the mid-level organizations to improve public engagement and education about grid projects. Doing so will make public engagement more meaningful, and it will make it possible to conduct public engagement on a much larger scale than the highly localized meetings, as one could include civil society groups and leaders from different parts of a region. Providers and PUCs could work with these people to provide programming around renewable energy production, climate change, electricity costs, and the future of the Texas grid. If the experience with other domains is indicative, engaging the public through these “grass tops” leaders and organization will significantly improve public discourse and public engagement.

Pay Attention to Material Conditions

Cost and siting are central concerns of local groups and landowners. These are material conditions of a project. While many people embrace renewable energy and infrastructure for ideological or policy reasons, the material concerns often create reluctance. Like other forms of

development, renewable energy projects and transmission lines raise people's concerns that energy prices may go up. One community environmental leader was cautiously optimistic about renewables: "I'm hopeful, and I'm certainly pro-renewable, but I don't I don't want to give final judgment on whether or not it's the future until I see what happens on the ground to low-income consumers."

Despite these concerns, there are broad avenues to advance grid buildout and the energy transition. They lie in large entities understanding local economic bases and customs. Providers and the state need to understand why people have an either positive or negative association with renewable energy. From there, they can move forward in working with the community towards solutions that benefit both parties and either hold constant or strengthen the material conditions of the host community.

The Texas CREZ process offered a way to broaden the scope of public engagement in ways that facilitated a boom in wind energy development in the state. Texas is certainly a surprising state to be at the forefront of renewable energy development, considering the importance of its oil and gas industries. Yet even in western Texas, home to some of the nation's largest natural gas and oil reserves, there was the recognition of the economic potential and environmental benefit to a renewable build out. The CREZ process helped lay the path for this by accelerating the development of transmission capacity in the state to connect the western Texas wind development to urban areas in central Texas. The CREZ model, then, provides a promising structure for reforming the permitting and siting processes. The opportunity for other states and countries is to learn from this model and to improve on it in developing new institutions to create new energy infrastructure.

CONCLUSION

The United States and other nations face the daunting task of increasing their electricity transmission grids to keep pace with rapidly rising demand and to reduce greenhouse gas emissions throughout the economy. Making fullest use of our wind and solar resources will require doubling transmission line capacity in the United States over the coming decades. That aspiration has been powerfully expressed in studies by the National Renewable Energy Lab, by the Department of Energy, by Princeton University's Net Zero Project, and other important voices engaged in contemporary debates about energy and climate policy in the United States.

The question is not only one of scale but of place and time. Long-distance transmission lines are essential for the development of wind, solar, and hydroelectric power generation. The United States has enormous renewable energy resources, but the places in the nation where those resources have the highest potential are not located near urban and industrial centers. Constructing the requisite transmission lines to support a substantial build-out of U.S. wind and solar resources faces considerable obstacles, including a fragmented regulatory environment and a contentious siting process. These obstacles serve important public purposes such as guaranteeing compliance with environmental laws and respect for communities needs and values. But navigating these processes takes time.

A simple goal of the United States could be to reduce the time to complete the permitting and siting process by at least 30%. Reducing that time frame by one-third—from 10-15 years to 7-10 years—would substantially change the economic calculations of states and firms wanting to build transmission lines to support renewable power. That could be as big of a game changer as the investments of the Inflation Reduction Act and would cost far less.

This study has examined three long-distance transmission line projects—the NECEC line through Maine, the Grain Belt Express line connecting Nebraska to Indiana, and the Gateway West project extending from Wyoming to Oregon. All would deliver significant amounts of renewable energy to high-demand areas. All started many years ago. None are complete. In fact, in all three cases it took nearly a decade or more to secure the permits and approvals required to develop the transmission lines. That amount of lead time for permitting and siting is simply too long given the economics of long-distance transmission development and the need to curb U.S. carbon emissions.

This study has examined where each of these projects got stuck. All pursued different development strategies. All got stuck in different ways. One of them (Grain Belt Express) outlived the company that created it. One of them (NECEC) created such a strong backlash that there was a nearly successful effort to turn the state’s utility (Central Maine Power) into a publicly owned firm. One of them landed in a morass of lawsuits involving protection of endangered species and, ultimately, had to be reconfigured to avoid destroying a vulnerable wildlife habitat.

In contrast, the state of Texas—a state known for oil and gas industry more than its environmentalism—has developed an extensive network of long-distance transmission lines to foster the development of its wind and solar resources. As a result, it now leads the nation in wind development. Texas did so through a highly democratic process that used tools of participatory and deliberative democracy to set goals and improve its siting process. That process was not flawless, but it did help to integrate renewable energy into a fossil-fuel dominated grid and it did so in the span of about 10 years. Texas built more transmission capacity in a shorter time and with more public input than did any of the other regions we examined.

The central lesson of these case studies is that long-distance transmission development is centrally about politics. We do not mean Democrat versus Republican or left versus right. Projects get stuck in deep blue states and in deep red states. Texas has been more successful in transmission development than liberal states like Illinois, moderate states like Maine, and conservative states like Wyoming. What we mean by politics is the not-so-simple act of decision making. What institutions can federal and state governments set up to make decisions that take into account community and environmental needs, the interests of new developers and incumbent firms, and the broader economic and environmental needs of our society?

The institutions we have today were developed to address specific problems. PUCs are excellent at maintaining reliable electricity provision and keeping rates low. The EPA and BLM are excellent at protecting endangered species or enforcing emissions standards. As these cases demonstrate, however, there are specific problems with the energy system and existing institutions that need to be addressed. We briefly summarize them:

1. The electricity grid has enormous spillover effects on economies and ecosystems. Broader economic and environmental are often not incorporated into design of powerlines or the permitting process. PUCs focus on the immediate interests in their states, especially rate payers, and have no capacity or authority to evaluate the broader benefits of a project.

2. Communities and civic leaders are profoundly affected by infrastructure decisions. Projects disrupt landscapes and displace communities, farms, and other places people live.

3. Existing procedures for permitting and siting are not adequate to deal fully with people's concerns. Public meetings are often poorly attended because they were held in distant places or because people are not fully aware of what is proposed. Rarely are efforts made to reach out to broad sets of communities, especially early in the process.

4. The existing siting and permitting processes spawn distrust. People often expressed their frustrations with energy companies and state government agencies. They felt they were not dealt with openly and fairly and that there was a general lack of transparency about proposed developments and their designs. There was rarely a trusted source of information about the projects.

5. Spillover effects from projects—lack of engagement, lack of trust, and lack of information—make for a vicious political cycle. Firms and governments try to follow the rules and check all the boxes, but, in every one of these cases, that did not produce full engagement. Lack of robust engagement engendered distrust and opposition, which led to adversarial approaches to settle disputes. The problems started at the very beginning of the process because transmission projects are rarely designed with public input into the goals of the project and the constraints on the design of the project. Public engagement typically happens later in the process, when the designs are mostly determined and there is little opportunity for constructive public input.

The NECEC, Grain Belt Express, and Gateway West projects became deeply mired in political controversies about the proposed developments. By contrast, the Texas CREZ process avoided many of the most severe political obstacles. It did not solve these problems, but it did set up a more robust process through which developers could learn about problems and make adjustments to routes and designs. It further allowed the PUCT to choose among multiple projects, rather than a simple yes or no, and it allowed the PUCT to rely on public considerations inform which proposal worked best. In this sense the CREZ process improved the ability of the developers and the state to learn from the public engagement process and to adjust routes and designs in response to public comment. The traditional approach to design, permitting, and siting

followed in NECEC, Grain Belt Express, and Gateway West affords few if any opportunities to affect the design, let alone to choose which of two dozen proposals works best.

The lesson of the Texas CREZ story is not that this specific way of making decisions will solve our problems. Rather it is the surprising and counterintuitive result that public engagement and infrastructure development can work hand in hand instead of at odds with one another. Texas increased public engagement and input and, at the same time, was able to accelerate transmission development for wind power. The rules and procedures of the Texas CREZ were particular to that state. Other states, regions, or countries that adopt such models will have to develop institutions that fit their context and culture. The broader lesson is the same. Public engagement should be viewed not as a box to check or a campaign to be run. Rather it is an opportunity to learn and improve. Early public engagement that continues throughout the design, permitting, siting and construction of a project can make for more efficient and higher quality infrastructure development.

ⁱ This framing is also presented in the companion study *Crossed Wires*.

ⁱⁱ The case studies draw upon dozens of interviews with firms, community leaders, landowners, nonprofits, environmental groups, legal experts, elected officials, state agencies, and regional transmission organizations conducted primarily over Zoom between May and November of 2023.

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