Smart Electric Power Alliance

Coordinating for Transmission Development

Delivering a Carbon-Free Energy Future

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Executive Summary

The United States will not be able to reach its carbon reduction goals without building new long-distance interstate, intraregional and interregional[1] transmission across utility service territories to connect remote renewable energy resources to customers and take advantage of the diversity of resources and customer usage between regions. Numerous recent studies conclude that transmission is essential not only to enable a carbon free electricity system, but also to better manage the cost of the transition.[2]

Coordination, collaboration and partnerships among transmission companies can improve the efficiency of the transmission development process, including permitting, regulatory approval and timely construction, to meet future energy needs and clean energy goals. Collaboration can also enable greater innovation in proposed projects, thereby reducing costs, environmental impacts and timelines.

Building long-distance transmission that crosses multiple regions, states, communities, jurisdictions, and/or utility service territories is complex, making it challenging to move forward. Drawing from past examples of successful transmission development (see Table 1) and discussions with transmission utilities and developers; regulators and consumer advocates; Independent System Operators (ISOs) and Regional Transmission Organizations (RTOs); environmental organizations; and renewable energy developers, this paper focuses on how collaboration, coordination and partnerships can enhance support for and *development* of long-distance interstate, intraregional and interregional transmission that crosses multiple jurisdictions.

The context for transmission development has changed over the past decade, with growing consensus among policymakers and increasing customer preferences for clean energy to address climate change. There is also greater focus on resilience and equity, in addition to reliability needs. At the same time, diversity is increasing across regions and electricity system footprints. While the federal government and a growing number of states have clean energy requirements, some states have more economic opportunities to develop renewable resources while other states have concerns about the economic development impacts and job consequences of closing existing fossil plants. As a result, policies vary from state to state, contributing to the complexity of the context for transmission development.

Common themes to guide coordination and future success of transmission development emerged from discussions with utilities, transmission developers, regulators, consumer advocates, ISO/RTOs and renewable energy developers.

- **Aligning Policy and Local, Regional, and Interregional Needs, Impacts and Benefits**—Alignment is necessary for long-distance interstate, intraregional and interregional transmission projects to succeed. Political or legislative mandates and ensuring that local communities benefit from a project can help to build this needed alignment.
- **Identifying Portfolios and Broad Benefits**—Policymakers are considering portfolios of transmission projects and the multiple benefits transmission can provide—reliability, economic, and public policy goals, which include clean energy, resilience and equity—as they review both individual projects, as well as an array of projects.
- **Transparency is Essential (to Demonstrate Benefits)**—Transparency regarding the identification of need that transmission or an alternative can meet and the individual project selection process is essential for securing project support and approval.
  - Policymakers and regulators rely on approaches and tools, such as competitive processes, to help compare the benefits and costs of a proposed transmission solution with alternatives, including distributed energy resources (DER), other non-wires solutions, or other

1 Interregional transmission connects one region of the country (such as an RTO/ISO) to another, while intraregional transmission connects areas within the same region.

2 National Academies of Sciences, Engineering, and Medicine. (2021). *The Future of Electric Power in the United States.* The National Academies Press. https://doi.org/10.17226/25968; Princeton University, Larson, E., Greig, C., Jenkins, J., Mayfield, E., Pascale, A., Zhang, C., Drossman, J., Williams, R., Pacala, S., Socolow, R., Baik, E. J., Birdsey, R., Duke, R., Jones, R., Haley, B., Leslie, E., Paustian, K., & Swan, A. (2020, December). *Net-Zero America: Potential Pathways, Infrastructure, and Impacts, interim report*. https://netzeroamerica.princeton.edu/img/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf; Vibrant Clean Energy, Clack, C. T. M., Choukulkar, A., Cote, B., & McKee, S. A. (2021, October). *A Plan for Economy-Wide Decarbonization of the United States*. https://www.vibrantcleanenergy.com/wp-content/uploads/2021/10/US-Econ-Decarb_CCSA.pdf.

transmission projects.[3] Care should be taken, however, to ensure that competition does not undermine collaboration and coordination of transmission development that can surface projects with multiple benefits for a broad array of constituents.

  - Community engagement is also essential to convey the urgency of the need for transmission. Coordination, collaboration and partnerships for transmission development can facilitate information sharing and community understanding by bringing more and different voices into the discussion. Community engagement is also important to help address environmental justice and equity in new transmission development.

- **Partnerships and Structures that Can Reduce Costs**—Given the billions of dollars of transmission investment that will be needed to achieve mandated carbon reduction goals, coordination, collaboration and partnership structures that can reduce transmission project costs can help to facilitate its development.

Transmission is essential to connect abundant remote clean energy resources to load and to interconnect regions to leverage resource and load diversity. However, building the transmission needed to achieve a carbon-free future, enhance resilience and help meet equity goals will be extremely challenging.

The **findings and recommendations** that follow highlight the value of future coordination, collaboration and partnerships to support and enable the *development* of long-distance, interstate, intraregional and interregional transmission development that benefits customers.

- **Support and Execute on Policy Alignment**—To enhance development success, transmission utilities and developers can use coordination, collaboration, and partnerships to support alignment on the need for and benefits of long-distance, intraregional and interregional transmission that crosses multiple jurisdictions.
- **Identify Transmission Portfolios that Provide Value Across and Between Regions**—Identifying portfolios of transmission projects at the planning stage can be helpful in the development of intraregional and interregional transmission. Coordination, collaboration and partnerships can support a portfolio approach, identifying benefits for affected locations; offering economies of scale where a few larger transmission lines work synergistically; and providing opportunities for multiple utilities and developers to participate in needed investment. The portfolio approach can be further enhanced by considering all categories of benefits - reliability, economic, public policy, and resilience.
- **Participate in Processes to Build Confidence in Transmission Solutions**—Transmission utilities and developers should participate actively in the regulatory and policy processes to identify transmission as the solution, taking advantage of the opportunity to collaborate on transmission projects and demonstrate their merits.
- **Leverage Policy, Portfolios and Processes for Partnerships**—Transmission utilities and developers can use coordination, collaboration and partnerships to demonstrate need, the value of transmission as the solution, and bring together complementary skills to share resources and expertise to the benefit of customers.

Addressing the challenge of building and upgrading transmission is critical to achieve the nation's climate, economic and societal goals. Previous efforts to facilitate coordination of transmission development offer examples of how transmission partnerships and collaboration can enable a transition to a more cost-effective carbon-free electricity system that provides greater value for customers.

The transition must be expeditious. Delayed action limits transmission and other solution options and raises costs. The significant investment needed in transmission faces many challenges. Coordination, collaboration and partnerships among transmission utilities and developers can facilitate projects that bring multiple benefits to all stakeholders.

Transmission planning, cost allocation and siting are other important elements that can determine project success. They are the subject of discussions and action at the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Energy (DOE). Coordination, collaboration and partnerships can also help to address these elements.

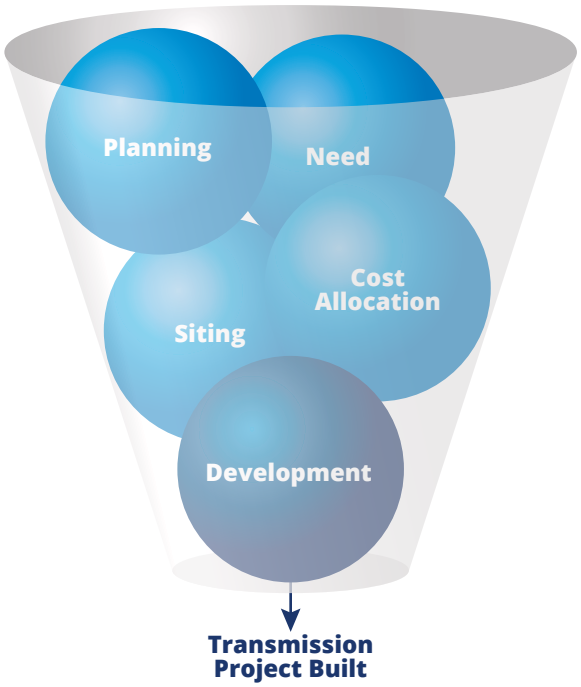
3 *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources*. (2020, August). National Energy Screening Project (NESP). https://www.nationalenergyscreeningproject.org/nspm-gated-download/; Smart Electric Power Alliance. (2020, June). *Developing a Comprehensive Benefit-Cost Analysis Framework: the Rhode Island Experience*. SEPA. https://sepapower.org/resource/developing-a-comprehensive-benefit-cost-analysis-framework-the-rhode-island-experience/.

Introduction

Investment in transmission is necessary to achieve a carbon-free energy future. The United States will not be able to reach its carbon reduction goals, in a cost-effective manner, without building new interstate, intraregional and interregional transmission across utility service territories to connect remote renewable energy resources to customers. Transmission will be needed to meet not only policymakers' stated or mandated carbon reduction goals, but also increasing customer expectations and demand for carbon-free electricity to meet their own sustainability goals. As the type and location of electric generation change across the country, new transmission will be essential to interconnect regions with diverse and complementary resources and demand centers. Upgrades to existing transmission and new technology to leverage current facilities and rights-of-way (ROW) will also be needed to improve resilience, reliability and capacity for renewable resources integration. Numerous recent studies conclude that transmission is essential not only to enable a carbon free electricity system, but also to better manage the cost of the transition.[4]

Coordination, collaboration and partnerships among transmission companies can improve the efficiency of the transmission development process, including permitting, regulatory approval and timely construction, to meet future energy needs and clean energy goals. Collaboration can also enable greater innovation in proposed projects, thereby reducing costs, environmental impacts and timelines. Transmission is usually planned and championed by individual utilities or ISO/RTOs to address a need, often for reliability (which may include operational performance, material condition and resilience). However, the drivers of long-distance transmission that crosses multiple regions, states, communities, jurisdictions, and/or utility service territories are often complex. These complexities include whether the transmission is being considered for economic efficiency (to reduce energy costs), public policy purposes, such as meeting clean energy goals or requirements, and/or resilience (avoiding and/or recovering quickly from outages), rather than reliability.[5] As a result, development is often not well coordinated within and between regions, making it challenging to move forward. The fact that large-scale renewable resources are often location-constrained—i.e., built where resources are available, which, in many instances, is far from load—adds to this complexity and underscores the need for regional transmission development.

Figure 1. Elements of Transmission



Source: SEPA, 2022

This paper focuses on how coordination, collaboration and partnerships can enhance support for and development of long-distance intraregional and interregional[6] transmission

4 National Academies of Sciences, Engineering, and Medicine. (2021). *The Future of Electric Power in the United States.* The National Academies Press. https://doi.org/10.17226/25968; Princeton University, Larson, E., Greig, C., Jenkins, J., Mayfield, E., Pascale, A., Zhang, C., Drossman, J., Williams, R., Pacala, S., Socolow, R., Baik, E. J., Birdsey, R., Duke, R., Jones, R., Haley, B., Leslie, E., Paustian, K., & Swan, A. (2020, December). *Net-Zero America: Potential Pathways, Infrastructure, and Impacts, interim report.* https://netzeroamerica.princeton.edu/img/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf; Vibrant Clean Energy, Clack, C. T. M., Choukulkar, A., Cote, B., & McKee, S. A. (2021, October). *A Plan for Economy-Wide Decarbonization of the United States.* https://www.vibrantcleanenergy.com/wp-content/uploads/2021/10/US-Econ-Decarb_CCSA.pdf

5 Differences in modeling and assumptions between regions can add to these complexities, an issue to be addressed in transmission planning, which is beyond the scope of this paper.

6 Interregional transmission connects one region of the country (such as an RTO/ISO jurisdiction) to another, while intraregional transmission connects areas within the same region.

development that crosses multiple jurisdictions. Drawing from past examples of successful transmission development, the paper identifies factors, opportunities and challenges that affect coordination, collaboration and potential partnerships among different utilities and other transmission owners / developers as they consider long-distance projects that support electricity system decarbonization. Transmission planning, cost allocation and siting are other important elements that can determine project success. However, this paper does not address these elements *per se*, but rather looks at how coordination, collaboration and partnerships for transmission project development can help to address them.

Context

The importance of transmission infrastructure is receiving attention in a number of forums. In June 2021, the Federal Energy Regulatory Commission (FERC) announced the formation of a Joint Federal-State Task Force on Electric Transmission.[7] In July 2021, FERC opened a proceeding on "Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection."[8] Several RTOs and ISOs have initiated planning efforts,[9] including a joint effort between the Midwest Independent System Operator (MISO) and the Southwest Power Pool (SPP).[10] Transmission is also targeted for investment in the Infrastructure Investment and Jobs Act (IIJA).[11] Additionally, the Department of Energy issued a notice of inquiry, "Building a Better Grid," to explore how its activities can advance the IIJA and the federal Administration's climate goals.

The Smart Electric Power Alliance (SEPA) undertook this project to complement these initiatives and further facilitate the construction of needed transmission for a carbon-free energy future. The paper highlights examples and best practices for developers and regulators, policymakers and stakeholders to support coordination, partnerships and collaboration in transmission development.

Approach

SEPA began by looking at previously successful coordination, collaboration and partnership approaches that led to the identification and, in most cases, construction of new transmission. We then convened a group of utilities and other transmission developers to identify and discuss what they saw as key elements that could enable coordination and collaboration on future transmission development. We sought input from regulators and consumer advocates; ISO/RTOs; environmental organizations; and renewable energy developers. From these conversations, we have identified common themes regarding challenges and opportunities. We also offer findings and recommendations to better enable coordination of future transmission development required to decarbonize the electricity system and reduce the cost of moving to a carbon-free energy future.

7 *Joint Federal-State Task Force on Electric Transmission.* (n.d.). Federal Energy Regulatory Commission (FERC). Retrieved March 15, 2022, from https://www.ferc.gov/TFSOET

8 *Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection*. (2021, July 27). U.S. Federal Register. Retrieved March 15, 2022, from https://www.federalregister.gov/documents/2021/07/27/2021-15512/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation-and

9 *Long Range Transmission Planning—Reliability Imperative.* (n.d.). MISO. Retrieved March 15, 2022, from https://www.misoenergy.org/planning/transmission-planning/long-range-transmission-planning/; *Longer-Term Transmission Studies.* (n.d.). ISO New England. Retrieved March 15, 2022, from https://www.iso-ne.com/system-planning/transmission-planning/longer-term-transmission-studies/

10 *MISO-SPP Joint Targeted Interconnection Queue Study*. (2022, March). MISO & SPP. Retrieved March 15, 2022, from https://www.misoenergy.org/stakeholder-engagement/committees/miso-spp-joint-targeted-interconnection-queue-study/

11 The White House. (2021, August 2). *Updated Fact Sheet: Bipartisan Infrastructure Investment and Jobs Act.* https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/02/updated-fact-sheet-bipartisan-infrastructure-investment-and-jobs-act/

Examples of Previous Collaborations

Previous collaborations have led to successful development of transmission. Examples, with brief descriptions of their key features, as well as some pros and cons, are summarized in Table 1. Appendix A has more detailed descriptions.

Table 1. Examples of Transmission Coordination, Collaboration and Partnerships

Example/Type	Description	Key Features	Pros	Cons
MISO Multi-Value Projects (MVP)	A portfolio of 17 transmission projects (16 of which have been constructed) to address a combination of reliability, economic, and public policy goals including renewable portfolio standards (RPS).	(1) Alignment of governors and policies across several states; (2) consideration of multiple transmission benefits, including reliability, economics and public policy; and (3) identification of a portfolio of projects to deliver these benefits across the region.	A portfolio of projects can help ensure that all affected jurisdictions receive benefits.	Aligning policies/ objectives across multiple jurisdictions at the start of this process can be challenging.
Designated Transmission Zones	The Texas Competitive Renewable Energy Zones (CREZ), mandated by the state legislature, which required the Public Utility Commission of Texas (PUCT) to designate the zones and develop a plan to construct the transmission to deliver renewable energy to customers.	Economic development considerations for land-based wind helped to drive legislative alignment and clear policy direction.	Clear policy mandates can identify locations for transmission development.	Transmission investments were made first, creating some risk regarding development of renewable generation.
Offshore Wind-Related Transmission	In New Jersey's (NJ) State Agreement Approach (SAA), the NJ Board of Public Utilities and PJM Interconnection issued a Request for Proposals for onshore and offshore transmission projects to deliver offshore wind to NJ customers.	Developers can bid for (1) discrete elements, providing the opportunity for roles for incumbent utilities and merchant developers, as well as an opportunity to stitch together the pieces, or (2) all of the transmission.	Leveraging a competitive process while permitting / encouraging / supporting collaboration and partnerships among developers.	Due to the large variety of bidding structures permitted in the RFP, project selection and justification may be complicated.
Utility Collaborations	Grid North Partners (formerly CapX2020 is an example of a utility collaboration or joint initiative among 10 investor-owned, cooperative, and municipal utilities to upgrade and expand transmission in the Upper Midwest.	Projects thus far have been focused on improving reliability, affordability, and access to renewable energy.	Collaboration has enabled joint planning, financing, and management of the projects, as well as combined political influence.	Can be complicated to negotiate. May exclude some transmission entities with innovative ideas.

Table 1. Examples of Transmission Coordination, Collaboration and Partnerships

Example/Type	Description	Key Features	Pros	Cons
Utility Transmission-Only Organizations (e.g., VELCO, NY Transco)	Separate transmission-only utilities / organizations.	These organizations take on the responsibilities of developing, owning, and operating transmission, and can help to advance transmission projects that span multiple utility service territories.	Projects benefit from shared knowledge and experiences among the utilities served.	May exclude some transmission entities with innovative ideas.
Joint Ventures (e.g., Electric Transmission Texas (ETT), Hydro Quebec Phase II, New York Power Authority (NYPA)—LS Power Grid New York Corporation, NYPA-NY Transco, BHE US)	Transmission joint ventures are business collaborations between two or more transmission developers and may include incumbent utilities.	By bringing together a variety of experience and expertise, these business structures may better support larger projects built across multi-jurisdictional footprints and facilitate innovation.	Combines experience and expertise from different firms, and leverages alternative financial structures.	Can be complicated to negotiate business relationships.
Independent / Merchant Transmission	Transmission developed by an independent (non-utility) entity using private financing. Clean Line Energy was an example of an ambitious transmission project to connect abundant wind power in the panhandle of Oklahoma to customers in the southeast via the Tennessee Valley Authority.	Business structure may facilitate development of inter—and intra-regional transmission that spans and/or connects multiple utility service territories. Private development and investment may reduce costs to utility ratepayers.	Structure could enable concept of "interstate highway" or "toll expressway" to connect remote renewables to load; leveraging private investment to reduce costs to ratepayers. Independent developers can take different approaches that may garner support.	Lack of local utility partner / foundation may affect support. Need to obtain subscribers for duration of long-lived assets may be challenging. Large size and cost may hinder development. May be challenge if developed outside planning process.

Source: SEPA, 2022.

Looking to the Future—What's Changed?

The context for transmission development has changed over the past decade. Historically, there has been consensus on the need for transmission that supports grid reliability. However, other reasons for transmission development are now more common.

Growing Consensus on New Objectives

Most notably, consensus has grown regarding the imperative to advance clean energy to address climate change. There is also increasing focus on resilience and equity.

- *Public policy* at the local, state and national level is requiring action to reduce carbon emissions with a focus on the electricity system. This has led to mandated procurements of renewable and clean energy, sometimes remote from customer loads.
- *Customer preferences* for clean energy are also driving development with implications for transmission.
- Policymakers, utilities and system operators are focusing on the *resilience* of the electricity system—its

ability to prevent and recover quickly from outage events and how reliability can be enhanced by stronger interconnections between states and regions—as a result of the negative impacts on customers caused by extreme weather and other events precipitated by climate change.

- Policymakers are also focusing on how electricity service *equity* and affordability and the economics of electricity system investments, in addition to their reliability, can be enhanced for all customers, particularly those in disadvantaged or rural communities.

Increasing Divergence in Context and Priorities

At the same time, diversity is increasing across regions and electricity system footprints. MISO and PJM Interconnection (PJM) now encompass more states with differing policy priorities, leading to less consensus among members and key stakeholders. It is easier to agree on the need for a transmission project if reliability is at stake or when regions share policy goals, such as Renewable Portfolio Standards (RPS). However, while the federal government and increasing numbers of states have clean energy requirements/mandates, some states have more economic opportunities to develop renewable resources while other states have concerns about the economic development impacts and job consequences of closing existing fossil plants. States transited by projects may be concerned that they will not be able to capture some of the benefits of new transmission being built across them. As a result, policies vary from state to state, contributing to complexities in larger regions.

Common Themes for Future Coordination, Collaboration and Partnerships

The combination of increasing consensus on the need to address climate change and the growing diversity in regions, with respect to economic and jobs priorities and local clean energy resource options, means that past successes may not be easily replicable. However, common themes to guide coordination and future success of transmission development emerged from discussions with utilities, transmission developers, regulators, consumer advocates, ISO/RTOs and renewable energy developers. A number of these themes highlight areas where transmission development coordination, collaboration and partnerships could help to facilitate projects to connect renewables, interconnect regions and meet the varied needs of states.

> *"Transmission is needed, transparency is needed and community engagement is needed to achieve a carbon free energy future."*
>
> *—Environmental Organization Focus Group Participant*

Aligning Policy and Local, Regional, and Interregional Needs, Impacts and Benefits

By its nature, intraregional and interregional transmission projects span multiple communities and potentially multiple states. For projects to succeed, local, regional and interregional need and impacts must be considered and aligned. Political or legislative mandates, such as the Texas legislation that created **CREZ** or the Midwest governors' direction to their state public utilities commissions to work together in parallel with the MISO MVP approach, can help by aligning needs and benefits. "Need" can include reliability, resilience, economics, and public policy related to carbon reductions and equity—or all of the above. Ensuring that local or host communities benefit from a project—e.g., as a result of power delivered, the economic development impacts of construction, or ongoing tax revenues to host communities—is an essential precursor to siting and cost allocation (which relate to project development). Equally important is clearly communicating the objective or desired outcomes of a project, not only

for the larger system but also for the local community. Coordinating transmission development among or with the local or footprint utilities where the lines will be located could, in certain instances, help to build support.

Identifying Portfolios and Broad Benefits

In some regions, traditional transmission planning and development takes place on an individual project basis, often in conjunction with generation development and focused on achieving a single objective, such as reliability. This single project, single objective approach to identifying transmission projects does not work well as the electricity system looks to become more integrated to connect renewable resources and regions. It also struggles to recognize that all transmission (or each project), whatever its driver, can deliver a variety of benefits, addressing economic, policy and resilience goals, in addition to reliability. The Joint Federal-State Task Force on Electric Transmission[12] is discussing "de-siloing" transmission purposes to account for the broad benefits it can bring to customers. Recognizing the increasing complexity of system and customer needs and policy objectives, policymakers are considering portfolios of transmission projects that can provide multiple benefits—addressing reliability, economic, and public policy goals—sometimes in individual projects, but often across an array of projects. **MISO's MVP approach** is the prime example of the value of approaching transmission planning on a portfolio basis to help develop an efficient, cost-effective set of projects that benefit all affected communities, states and regions. Another approach to portfolios could be the New York Energy Highway initiative, which began in 2012 and led to several transmission projects.[13] Unlike MVP, these projects were developed over time and with varying developers.

Transparency is Essential (to Demonstrate Benefits)

Regulators, consumer advocates, and environmental organizations all emphasized that transparency regarding the identification of need and the project selection process is essential for securing transmission project support and approval. RTO/ISOs also recognized that transparency in their planning processes was important for policymaker acceptance and support of transmission.

Transparency in the process for demonstrating that a project offers the greatest value (i.e., it is cost-effective and provides short- and long-term benefits) is critical for validating transmission as the solution to both a system need and individual projects. Policymakers and regulators rely on approaches and tools that enable them to compare the benefits and costs of a proposed solution with alternatives, such as distributed energy resources (DER), other non-wires solutions, or other transmission projects.[14] A competitive mechanism is one such tool.

Policymakers and regulators also view broad and diverse support for a project as an indication that the project is a "no regrets" solution. Community engagement can help build this support and enhance transparency. Project collaboration or partnerships may also serve as an indicator of support especially when the partners are diverse rather than similar. Collaborating transmission utilities and developers prioritizing long-term relationships and bringing synergistic (rather than competing) capabilities to the table.

The Role of Competition

Competition can be incorporated into an open and transparent process, where diverse stakeholders identify needs and suggest solutions. It may offer value for large interregional projects or for new resources such as offshore wind by encouraging a diversity of project designs and innovative proposals. Care should be taken, however, to ensure that competition does not undermine coordination, collaboration and partnerships for transmission development that can surface projects

12 *Joint Federal-State Task Force on Electric Transmission.* (n.d.). Federal Energy Regulatory Commission (FERC). Retrieved March 15, 2022, from https://www.ferc.gov/TFSOET

13 Karlin, R. (2021, June). *Newest stretch of N.Y.'s massive 'Energy Highway' is opening.* Times Union. https://www.timesunion.com/business/article/Here-s-the-newest-stretch-of-NY-s-massive-Energy-16236568.php; Hinds, K. (2012, October). *Blueprint for New York's "Energy Highway" Unveiled*. New York Public Radio. https://www.wnyc.org/story/286044-blueprint-for-new-yorks-energy-highway-unveiled/

14 *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources.* (2020, August). National Energy Screening Project (NESP). https://www.nationalenergyscreeningproject.org/nspm-gated-download/; Smart Electric Power Alliance. (2020, June). *Developing a Comprehensive Benefit-Cost Analysis Framework: the Rhode Island Experience*. SEPA. https://sepapower.org/resource/developing-a-comprehensive-benefit-cost-analysis-framework-the-rhode-island-experience/

with multiple benefits for a broad array of constituents.[15] The relationships that local utilities have with their customers can also be important for shepherding regional transmission projects through local processes, highlighting the value of partnerships among and between transmission utilities and developers.

The **New Jersey State Agreement** approach—allowing bids for discrete elements of the project, as well as the whole—is an example of a competitive process that will encourage partnerships and collaboration, as well as new innovative solutions. At the project identification or selection stage, any competitive process should be structured to consider life-cycle costs and future expansion needs, not only initial price or costs. Competitive solicitations may be held at the state level, the ISO/RTO level, or perhaps at the utility level, where both utilities and developers may partner to achieve expertise in design and to demonstrate need and cost-effectiveness.

At the execution stage, competition for overall project development, or components such as engineering or construction, can be an important tool to manage project engineering and construction costs, balancing costs, capabilities and risks. It can operate alongside other cost containment mechanisms that balance risk/reward and provide for effective cost discipline, transparency and accountability for controllable costs.

The Role of Community Engagement

Community engagement is also essential in transmission development. Education and public awareness campaigns explaining the need for transmission investment to achieve carbon reduction goals affordably, as well as address reliability, resilience, economic and equity goals, help communities understand the urgency for transmission projects, in lieu of a non-wires solution. Partnerships and coordination of transmission development can help to facilitate information sharing and understanding by bringing more and different voices into the discussion. The need for community engagement and education is closely related to the need for transparency. Both serve to earn the general public's and local community's trust and support for infrastructure development that will affect them. Engaging stakeholders directly affected, both positively and negatively, by a project will help to address environmental justice and equity in new transmission development.

Community engagement requires two-way communication, involving stakeholders in identifying solutions that meet a variety of needs, including delivery of clean electricity and resilience, as well as local economic development and jobs. Outreach should begin early, at the forecasting and planning stage and continue through development. Collaborative planning and forecasting efforts at the behest of states can help consolidate political alignment and support for transmission from the local to the state to the regional level. Coordination of transmission development can identify and bring together all of the beneficiaries of a project, including renewable energy developers and energy customers, as well as the members of the communities affected by development.

Partnerships and Structures that Can Reduce Costs

The transmission investment needed to achieve mandated carbon reduction goals is significant. However, transmission can reduce the overall cost of the transition to a clean and carbon-free energy future by connecting less expensive remote renewable resources to customers. Transmission is also needed to connect regions with complementary resources and loads to fully take advantage of remote and distributed clean energy resources. Numerous reports project that without billions of dollars of transmission investment, the cost of carbon reduction will be higher.[16]

In addition to comparing the costs to achieve a carbon free future with and without additional transmission, regulators, consumer advocates, environmental organizations and ISO/RTOs all noted that coordination and partnership structures that can reduce transmission project costs for utility customers can help to facilitate its development. **Joint ventures** and **independent** or merchant transmission projects that bring innovative design, new technology and private investment to the development of transmission can share or reduce the costs, and thus the risks, of development. They may also reduce costs by bringing greater technical expertise to a project and

15 Several focus group members noted that FERC Order 1000 may have discouraged coordination among transmission utilities and developers that could have identified projects or combinations of projects that would have benefited customers. FERC is considering reforms to Order 1000 as part of its ANOPR proceeding. https://www.federalregister.gov/documents/2021/07/27/2021-15512/building-for-the-future-through-electric-regional-transmission-planning-and-cost-allocation-and

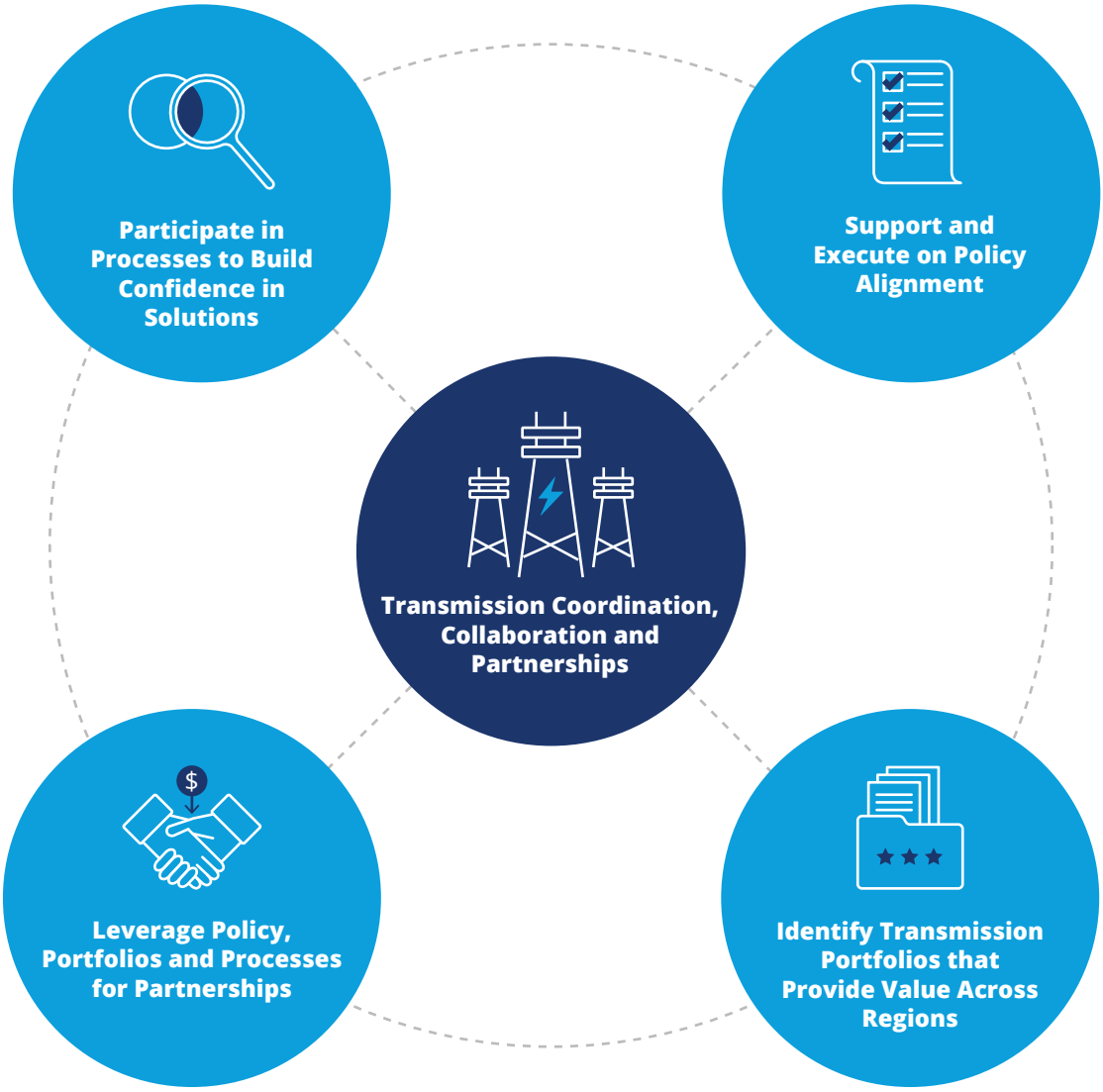
16 Clack, C. T. M., Choukulkar, A., Cote, B., & McKee, S. (2020, November 11). *Transmission Insights from "ZeroByFifty"* [Slides]. Vibrant Clean Energy. https://www.vibrantcleanenergy.com/wp-content/uploads/2020/11/ESIG_VCE_11112020.pdf; Brown, P. R., & Botterud, A. (2021). The Value of Inter-Regional Coordination and Transmission in Decarbonizing the US Electricity System. *Joule*, 5(1), 115–134. https://doi.org/10.1016/j.joule.2020.11.013

identifying responsibilities for different elements of a transmission project (or portfolio of projects) up front.

Findings and Recommendations

Building the transmission needed to achieve a carbon-free future cost-effectively will be extremely challenging. This paper outlines the opportunities for transmission utilities and developers to use coordination, collaboration and partnerships to facilitate the development of long-distance intraregional and interregional transmission that crosses multiple jurisdictions. This category of transmission is essential to connect abundant remote clean energy resources to load and to interconnect regions to leverage resource and load diversity. This transmission can also improve resilience, preventing outages and restoring service more quickly when they occur. Discussions with

Figure 2. Findings and Recommendations



Source: SEPA, 2022

utilities, transmission developers, regulators, consumer advocates, ISO/RTOs, environmental organizations and renewable developers, along with a review of previous approaches, suggest the following recommendations to encourage future coordination, collaboration and partnerships.

Support and Execute on Policy Alignment

To enhance development success, transmission utilities and developers can use coordination, collaboration, and partnerships to support alignment on the need for and benefits of long-distance, intraregional and interregional transmission that crosses multiple jurisdictions. The **MISO MVP** approach is an example where alignment among state governors was supported and reinforced by collaboration among utilities and transmission developers that demonstrated the need for and value of a portfolio of transmission projects, and led to their development. Political alignment can be further buttressed by the increasing alignment among customers seeking carbon-free energy supplies to meet their own carbon reduction and sustainability commitments.

Where policy and political alignment has already been achieved, as it was in Texas with **CREZ**, utilities and developers can take advantage of it by partnering to develop larger projects. The **New Jersey State Agreement Approach** supports transmission development, using a solicitation structure to encourage partnerships among bidders with different expertise and experience, leading to a stronger project, and greater regulatory support, than one developed by a single entity.

Identify Transmission Portfolios that Provide Value Across and Between Regions

Identifying portfolios of transmission projects at the planning stage can be helpful in the development of intraregional and interregional transmission that crosses multiple regions, states, communities and service territories by providing opportunities for all affected locations to benefit and multiple utilities and transmission developers to participate in the needed investment. The portfolio approach can be further enhanced by considering all categories of benefits (e.g., reliability, economic, public policy, resilience) associated with each project or coordinated projects. A portfolio approach that considers all benefits offers an opportunity for transmission development coordination and partnerships. In addition, portfolios can offer economies of scale where a few larger transmission lines work synergistically, reducing costs and impacts and shortening development timelines.

The **MISO MVP** approach included both investment opportunities for a number of transmission utilities and consideration of multiple benefits, and led to collaboration among the variety of utilities identifying and then developing the resulting transmission projects. MISO's Long- Range Transmission Planning process and the MISO-SPP Joint Targeted Interconnection Queue study[17] are similarly taking a portfolio approach and considering benefits collectively, rather than in individual "silos," and may offer similar development opportunities. The Federal-State Joint Task Force on Electric Transmission is also discussing the merits of a portfolio approach, de-siloing categories of benefits, and explicitly considering resilience.

17 *Long Range Transmission Planning—Reliability Imperative*. (n.d.). MISO. Retrieved March 15, 2022, from https://www.misoenergy.org/planning/transmission-planning/long-range-transmission-planning/; *MISO-SPP Joint Targeted Interconnection Queue Study*. (2022, March). MISO & SPP. Retrieved March 15, 2022, from https://www.misoenergy.org/stakeholder-engagement/committees/miso-spp-joint-targeted-interconnection-queue-study/

Participate in Processes to Build Confidence In Transmission Solutions

Regulators, consumer advocates, environmental organizations and other stakeholders indicated that transparency in identifying transmission as a solution to a system need and individual project selection is essential for regulatory and public acceptance and support for transmission development. They highlighted the value of processes that include competitive solicitations as a tool to achieve transparency regarding the benefits of a project, as well as a means to elicit innovation and demonstrate the cost-effectiveness of a solution. The structure of the **New Jersey State Agreement Approach** is an example of a process that provides transparency into project selection and greater confidence in the transmission solution. Transmission utilities and developers should participate actively in the regulatory and policy processes to identify transmission as the solution, take advantage of the opportunity to collaborate on transmission projects, and demonstrate their merits.

Focus group members also emphasized the importance of early customer and community engagement to educate stakeholders about the urgency of transmission investment to achieve carbon reductions and resilience, in addition to ensuring reliability and providing economic benefits by reducing energy costs. Transmission utilities and developers can coordinate to deliver this message to increase support for transmission development and indicate that it is a "no regrets" solution.

Leverage Policy, Portfolios and Processes for Partnerships

Transmission utilities and developers can take advantage of policy and customer alignment on the need for transmission to coordinate, collaborate and partner on its development. They can use collaboration and partnerships to demonstrate to regulators, as well as community and other stakeholders, the value of portfolios of projects and individual projects within portfolios. Transmission utilities and developers can pursue a variety of business models, such as **Joint Ventures, Utility Collaborations, Transmission Companies** and **Independent/Merchant Transmission**, that bring together partners with complementary skills to share resources and expertise to develop cost-effective transmission projects.

Conclusion

Addressing the challenge of building and upgrading transmission is critical to achieve the nation's climate, economic and societal goals. Previous efforts offer examples of how transmission coordination, collaboration and partnerships can enable transmission *development* and a transition to a carbon-fee electricity system that provides greater value and is less expensive for customers. This paper outlines these approaches as a guide for future development.

This transition must also be expeditious. Delayed action limits solution options and raises costs. The significant investment needed in transmission faces many challenges. Coordination, collaboration and partnerships among transmission utilities and developers can facilitate projects that bring multiple benefits to all stakeholders.

Transmission planning, cost allocation and siting are other important elements that can determine project success. They are the subject of discussions and action at FERC and the U.S. Department of Energy (DOE). Coordination, collaboration and partnerships can also help to address these elements.

Appendix A. Examples of Previous Coordination, Collaboration, and Partnerships

A Portfolio Approach—MISO MVP

Three important elements came together in the Midcontinent Independent System Operator (MISO) Multi-Value Projects (MVP) process: (1) alignment of governors and policies across several states; (2) consideration of multiple transmission benefits across the categories of reliability, economics and public policy; and (3) identification of a portfolio of projects to deliver these benefits across the region. As a result, in MISO, a portfolio of transmission projects was successfully developed to address defined reliability, economic, and policy goals, including RPS. By identifying a portfolio of projects, a more optimal and lower cost solution can be found to meet the needs of an entire region. To date, 16 of the MISO's 17 MVP projects have been completed.[18]

Designated Transmission Zones—CREZ

Similarly, policy and politics aligned in Texas state legislation to create Competitive Renewable Energy Zones (CREZ) to facilitate wind development, driven in part by economic development considerations. The Public Utility Regulatory Act of 2005 (PURA Section 39.904(g)) required that the Public Utility Commission of Texas designate competitive renewable energy zones and develop a plan to construct the transmission capacity needed to deliver renewable energy in these zones to electricity customers.[19] Through this process a total of 3,500 miles of transmission lines were upgraded and/or built in Texas.[20]

Offshore Wind-Related Transmission

Connecting offshore wind presents a new opportunity for transmission development in the United States. As the offshore wind industry continues to grow, coastal states are recognizing the need for coordinated transmission development both offshore and onshore. New Jersey's SAA provides a recent example of a state-led offshore wind transmission solicitation. Together, the NJ Board of Public Utilities and PJM Interconnection issued a RFPs that asked transmission developers to propose both onshore and offshore transmission projects that would economically, efficiently, and reliably deliver offshore wind to New Jersey customers.[21] Developers can bid for discrete elements, providing the opportunity for roles for incumbent utilities and merchant developers, and an entity to stitch

18 For more information on the MISO MVP process, see Boyd, D., & Garvey, E. (2021, November). *A Transmission Success Story: The MISO MVP Transmission Portfolio*. AESL Consulting. https://www.aeslconsulting.com/wp-content/uploads/2021/11/MISO-MVP-History.pdf; MISO. (n.d.). *Multi-Value Projects (MVPs)*; MISO. (2012, January). *Multi Value Project Portfolio Results and Analysis*. MISO. https://cdn.misoenergy.org/2011%20MVP%20Portfolio%20Analysis%20Full%20Report117059.pdf

19 Public Utility Regulatory Act. (2017). *Title II, Texas Utilities Code*. https://www.puc.texas.gov/agency/rulesnlaws/statutes/Pura17.pdf; *Texas Administrative Code*. (n.d.). Rule §25.174 Competitive Renewable Energy Zones. https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=2&ch=25&rl=174; *Commission Staff's Petition for Designation of Competitive Renewable-Energy Zones* (Docket No. 33672). (2008). Public Utility Commission of Texas. http://www.ettexas.com/Content/documents/PUCTFinalOrderonCREZPlan100708.pdf

20 *Transmission & CREZ Fact Sheet*. (2018). PoweringTexas. https://poweringtexas.com/wp-content/uploads/2018/12/Transmission-and-CREZ-Fact-Sheet.pdf

21 State of New Jersey Board of Public Utilities. (2022, January 27). *New Jersey Advances Offshore Wind Transmission Proposal at Federal Energy Regulatory Commission* [Press release]. https://nj.gov/bpu/bpu/newsroom/2022/approved/20220127.html#:~:text=The%20Agreement%2C%20known%20as%20the,offshore%20wind%20energy%20by%202035

together the pieces. Another option is to bid for all of the transmission. If accepted by the Federal Energy Regulatory Commission and advanced by the state, an agreement to implement one or more of the received transmission proposals will move forward.[22]

Utility Collaborations

To meet the needs of more than one constituency, utilities have collaborated to develop transmission lines that cross multiple utility service territories. In 2004, Grid North Partners (formerly known as CapX2020) formed a joint initiative to upgrade and expand transmission in the Upper Midwest. To date, the 10 investor-owned, cooperative, and municipal utilities that make up Grid North Partners have built 800 miles of high-voltage transmission lines focused on improving reliability, affordability, and access to renewable energy.[23] By collaborating, the utility partners were able to jointly plan, finance, and manage large-scale projects while also combining their political influence.[24] They are continuing to work together on a transmission outlook for 2050.[25]

Separate Utility Transmission-Only Organizations

In some jurisdictions, separate transmission-only organizations have been formed. These organizations take on the responsibilities of developing, owning, and operating transmission, and can help to advance transmission projects that span multiple utility service territories. The Vermont Electric Power Company (VELCO) is a longstanding example.[26] New York Transco is more recent.[27] Both these organizations have successfully built high-voltage transmission lines and have benefited from sharing knowledge and experiences among the utilities served.

Joint Ventures

Transmission joint ventures are business collaborations between two or more transmission developers that bring together complementary experience, which may better support larger projects built across multi-jurisdictional footprints, and facilitate innovation. By combining experience and expertise from different firms, and leveraging alternative financial structures, this approach has resulted in successful construction of transmission in areas such as Texas, New England, and New York, including Electric Transmission Texas[28], Hydro Quebec Phase II, New York Power Authority—LS Power Grid New York Corporation,[29] and BHE US.[30]

Independent Transmission

Independent or merchant transmission offers another approach to collaborating or partnering that can facilitate transmission development, especially where private investment can reduce costs. Clean Line Energy Partners is an example of such an effort. It was a vision to build an ambitious transmission project to connect abundant wind power in the panhandle of Oklahoma to customers in the southeast via the Tennessee Valley Authority. The project was privately financed and supported by the U.S. Department of Energy, but ran into opposition that

22 New Jersey Board of Public Utilities. (2021, September). *2021 Process State Agreement Approach Guidance Document*. https://www.nj.gov/bpu/pdf/ofrp/SAA%20Process%20Overview.pdf

23 *About Us*. (n.d.). Grid North Partners. Retrieved March 15, 2022, from https://gridnorthpartners.com/about/

24 Humphrey School of Public Affairs, University of Minnesota, Monti, M. C., Rose, S., Mullins, K. A., & Wilson, E. J. (2016, April). *Transmission Planning and CapX2020: Building Trust to Build Regional Transmission Systems*. CapX2020. https://gridnorthpartners.com/wp-content/uploads/2021/03/uofm-humphrey_capx2020_final_report.pdf

25 CapX2020. (2020, March). *CapX2050 Transmission Vision Report*. https://gridnorthpartners.com/wp-content/uploads/2021/02/CapX2050_TransmissionVisionReport_FINAL.pdf

26 *About Vermont Electric Power Company*. (n.d.). VELCO. Retrieved March 15, 2022, from https://www.velco.com/about

27 *About Us*. (n.d.-b). New York Transco. Retrieved March 15, 2022, from https://nytransco.com/about-us/

28 *About+*. (n.d.). Electric Transmission Texas (ETT). Retrieved March 15, 2022, from http://www.ettexas.com/

29 American Public Power Association, & Ciampoli, P. (2021, January 21). *N.Y. PSC approves transmission line being jointly developed by NYPA, LS Power Grid New York* [Press release]. https://www.publicpower.org/periodical/article/ny-psc-approves-transmission-line-being-jointly-developed-nypa-ls-power-grid-new-york

30 *About*. (n.d.). BHE U.S. Transmission. Retrieved March 15, 2022, from https://www.bhetransmission.com/

delayed and eventually ended the project development. Some also noted that the scale and cost of the project may have been a contributing factor, suggesting that smaller merchant projects could succeed, especially between jurisdictions. Although this privately funded approach was unsuccessful,[31] many transmission experts, and members of our focus groups, still point to it as an example for building transmission to connect distant or remote renewable generation to load centers. Portions of the Clean Line Energy Partners project have been sold to other developers who continue to develop sections of the original project.

31 Gold, R. (2019). *Superpower: One Man's Quest to Transform American Energy*. Simon & Schuster.; Gold, R. (2019, June 22). Building the Wind Turbines Was Easy. The Hard Part Was Plugging Them In. *The Wall Street Journal.* Retrieved March 15, 2022, from https://www.wsj.com/articles/building-the-wind-turbines-was-easy-the-hard-part-was-plugging-them-in-11561176010

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