



Listening Sessions with Tribal Representatives, Comunities, State Agencies, and Transmission Planners



PNNL is operated by Battelle for the U.S. Department of Energy

INCLUSIVE TRANSMISSION PLANNING



Components and goals of the Inclusive Transmission Planning (ITP) Project

This project is sponsored by the Department of Energy's Grid Deployment Office.

Project Goals:

- Support Transmission Planners (RTO, ISO, Utility, PMAs) understand equity concepts and incorporate equity objectives in planning processes.
- Increase public awareness and education of transmission planning for participation.

This project will inform equitable transmission planning practices through:

Listening Sessions	Educational Research Materials	Techr
 Directly engaging communities, Tribes, states, and transmission planners to understand opportunities and participation barriers in the transmission planning process. 	 Developing research and accessible materials for improving public participation and awareness in transmission planning. 	 Providing t building t help trans identify o equity in process.



nical Assistance

direct capacity echnical support to smission planners pportunities to place the planning





- PNNL hosted 8 listening sessions between September and November 2024 with four sectors of participants summarized in the table below.
- These slides include PNNL presentations delivered during the listening sessions. Breakout group and discussion questions are not included.

Sector	Date	Audience
Tribal Representatives	Thursday, September 26 Wednesday, November 6	Tribal utilities, Tribal energy organ Indigenous governments, Tribal er organizations, and affiliates
Communities	Wednesday, October 2 Tuesday, October 15	Community members, participants transmission planning, community non-governmental organizations
State Agencies	Tuesday, October 8 Tuesday, November 5	State and territory leaders, adviso interested and involved in transmis affiliated through NASEO, NARUC
Transmission Planners	Tuesday, October 1 Wednesday, October 16	Transmission planners, leaders, an representatives from RTOs, ISOs,

izations, Tribal and nterprises, Tribal

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Overview of Transmission Planning



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Transmission planning occurs in layers

- **1. Local transmission projects** involve projects solely within a utility's service territory.
 - Each utility conducts its local system reliability studies, often to meet NERC reliability standards and other criteria. Usually only requires state approval.
- **2. Regional transmission projects** are typically identified in regional planning processes or by merchant project developers and span more than one utility service territory or state.
 - In non-RTO/ISO regions, the regional transmission planning organization incorporates local plans and conducts regional planning reliability studies.
 - In RTO/ISO regions, the RTO/ISO integrates local plans developed by transmission owners into regional planning, with varying levels of oversight.
- **3.** Interregional transmission projects are typically identified first in regional transmission plans and then interregional coordination forums, or by merchant project developers who are not tied jurisdictionally to a local area.



Transmission projects can be developed to fill different needs

Proposed regional or interregional transmission projects can serve different needs, including the following:

- **1. Reliability**: address system reliability issues.
- **2.** Economics: increase the efficiency of the existing transmission system by addressing issues such as congestion or resource integration.
- **3.** Public Policy: meet legal or regulatory requirements at the federal, state, or local level.
- **4.** Capacity: merchant lines sell capacity to utilities and interconnectors.
- 5. Multi-Driver or Multi-Value: transmission projects that address more than one need.





There's a varied transmission planning landscape across the country

- In the U.S., there are different utility ownership and regulatory structures that impact interregional transmission development.
- FERC establishes the rules and procedures for transmission planning requirements that regional transmission planning organizations use to conduct regional and interregional planning.
- NERC establishes a transmission plan's reliability standards.
- States also play an important role in transmission planning and development, but that role varies based on project type and the broader transmission planning context.
- There are five general classes of transmission owners that each have different regulatory structures (Power Marketing Administration, Investor-Owned Utilities, Cooperative G&Ts, Public Utilities, and Merchant).







Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs)

- Functionally similar and terms are often used interchangeably.
- Cover about two-thirds of US electricity consumers.
- Operate a regional transmission system.
- Operate regional competitive wholesale electricity market, including dispatching generation resources according to their cost and system needs.
- Conduct transmission planning designated by FERC Order Nos. 888, 890, and 1000 (excluding ERCOT). Tribal Lands
- Do not own infrastructure.



https://maps.nrel.gov/tribal-energy-atlas/data-viewer/

NOTE: ISO/RTOs do not operate in either Alaska or Hawaii (see next slide)





Vertically Integrated Markets

- Operate in regions not covered by RTOs and ISOs.
- Vertically integrated utilities (VIU) can own and manage all levels of the electricity supply chain within their territories, from generation to transmission and distribution.
 - Power Marketing Administrations (PMAs) are responsible for marketing (mostly) hydropower for Federally-owned assets, primarily selling power to preference customers. Except SEPA, PMAs own most transmission within their territory.
- Cover about one-third of US electricity consumers spread across three general regions, each containing multiple VIUs, often tied to PMAs.
- Regulated by state utility commissions and subject to FERC regulation.





FERC has a series of transmission planning requirements

- Federal Power Act (16 U.S.C. §§ 791 et seq.) FERC is responsible for regulating interstate transmission and wholesale electricity rates in interstate commerce, including rates, terms, and conditions of transmission facility services.
- FERC Order 888 (1996) implemented open access to transmission facilities and established minimum transmission planning requirements.
- FERC Order 890 (2007) requires coordinated regional transmission planning around nine key planning principles.
- **FERC Order 1000** (2011) requires regional collaboration, cost allocation principles, consideration of grid economics, and public policy objectives.
 - Regions must coordinate and determine if interregional transmission projects could more efficiently or cost-effectively meet regional transmission needs
 - Regions must develop common cost allocation methods that meet FERC's interregional cost allocation principles.
- FERC Order 2023 (2023) reforms procedures to accelerate interconnection of new generation.
 - There is currently a petition to amend this for Tribal Energy Development Organizations (<u>RM24-9-000</u>).
- FERC Order 1920 (2024) increases requirements for regional coordination and long-term planning scenarios.





FERC Order No. 1000 Regions



Source: adapted from Clean Energy Buyers Institute Grid Strategies Report



Opportunities exist to increase meaningful engagement in the planning process

- Most direct public input into transmission planning happens during the siting phase of a specific transmission project well after local, regional, or interregional planning processes have been completed.
- Robust, meaningful public engagement can prevent litigation during siting and permitting and streamline review processes
- In vertically integrated states outside of an RTO/ISO, transmission projects are often included in Integrated Resource Planning dockets.
 - State PUCs and parties can review, and vet proposed projects at some level, and transmission projects are within the line of sight of the state decision-makers.
- As projects move into the FERC Order 1000 regional processes, state officials and others do not have the same level of visibility or ability to participate.





Relevant Acronyms and Abbreviations

FERC: Federal Energy Regulatory Commission	SERTP: Southeastern Regional Transmission Planning
NERC: North American Electric Reliability Corporation	FRCC: Florida Reliability Coordinating Council
RTO: Regional Transmission Organization	SCRTP: South Carolina Regional Transmission Planning
ISO: Independent System Operator	MISO: Midcontinent Independent System Operator
VIU: Vertically Integrated Utility	SPP: Southwest Power Pool
ERCOT: Electric Reliability Council of Texas	NYISO: New York Independent System Operator
PMA: Power Marketing Administration	ISONE: Independent System Operator New England
BPA : Bonneville Power Administration	PJM: Pennsylvania-New Jersey-Maryland
WAPA: Western Area Power Administration	CAISO: California Independent System Operator
SWPA: Southwestern Power Administration	PUC: Public Utility Commission
SEPA: Southeastern Power Administration	Cooperative G&T: Generation & Transmission Cooperative





Overview of Equity and Justice for Transmission Planning



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Why consider equity in transmission planning?

"The electrical power grid is not, in and of itself, either just or unjust...Yet, a careful examination of grid operations reveals a system with inequities¹..."

- Opportunities exist to increase meaningful engagement in the planning process.
- Emerging objectives and priorities for the electric grid are creating new expectations for transmission plans:
 - Improve grid resilience to extreme events
 - Reduce greenhouse gas emissions
 - Modernize grid infrastructure
 - Integrate distributed energy resources
 - Address Federal and State policies for energy equity
- Some communities have historically been disproportionately affected by and unrepresented in electric grid decision-making processes.
- Adherence to emerging objectives will address inequities in the energy system and ensure impacts are fairly distributed among customers and communities.

¹Sovacool, B. K., Carley, S., & Kiesling, L. (2024). Energy justice beyond the wire: Exploring the multidimensional inequities of the electrical power grid in the United States. Energy Research & Social Science, 111, 103474. https://doi.org/10.1016/j.erss.2024.103474





Energy Equity Builds on Energy Justice

Pillars of Energy Justice

Energy justice combines social justice and energy systems concepts to create a human-centered understanding of energy issues.



Restorative Justice

Focuses on repairing harm and relationships with those impacted by the burdens of energy projects



Pillars of Energy Justice in the context of the Electric Transmission System

Energy Equity is the **principle and practice** of ensuring that fairness is central to the transmission planning process by considering:

Recognition Justice

Understanding individuals and communities experiencing inequities perpetuated by legacy siting decisions and burdens caused by the planning, operation, and maintenance of the transmission system

Procedural Justice

Inclusivity, representativeness, and transparency in planning processes; availability of intervenor funding, training/educational materials, & mechanisms to support participation of affected groups

Distributive Justice

Sociodemographic variations in siting decision impacts, proximity to infrastructure, energy reliability (e.g., frequency/duration of load shedding), and customer ability to pay

Restorative Justice

Corrective action solutions, such as consideration of transmission alternatives (DERs, DSM, etc.); longterm, integrated planning efforts; evaluation of transmission project benefits for affected groups (e.g., job creation); co-ownership by host communities; compensation for infrastructure impacts



Equity and Justice Impacts of Transmission Planning

Energy Inequities

Legacy of Disinvestment Communities systematically disinvested in can struggle to get access to modern, reliable energy infrastructure.

Aging Infrastructure Inadequate infrastructure increases the likelihood of power outages and poor power quality.

Economic Impacts of Infrastructure Siting

Placement of transmission and generation infrastructure has affected groups differently.

Barriers to Public Participation Highly complex subject matter and lack of clear processes have historically limited public participation.

How Transmission Planning Can Influence

Identify opportunities to build or reconfigure transmission to address disinvestment

Reliability objectives and some models can consider community-scale impacts where energy injustice and inequities often occur

Robust, meaningful public engagement can prevent litigation during siting and permitting and streamline review processes

Use restoration strategies or deployment of distributed generation to prevent inequitable load shedding





Energy Equity Self-Assessment for States: https://www.pnnl.gov/projects/energy-equity- states

State Technical Assistance Program: https://emp.lbl.gov/projects/state-TA-program

Tribal Nation Transmission Program with Technical Assistance : https://www.energy.gov/gdo/tribal-nation-transmission-program

Principles for Equitable Transmission Planning paper: https://www.pnnl.gov/main/publications/external/technical reports/PNNL-35256.pdf

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Resources under Development

Resource Name

Short Description

Funding Public Participation in Transmission Planning Processes

Enhancing Community Engagement in the Transmission Planning Processes

Identifying Inequities in Transmission Planning: Tools, Resources, and Approaches

Explores the benefits and barriers of public participation, and mechanisms to fund it Explores the barriers to, impacts of, and resources for actively involving community voices in the planning process Defines tools and resources to help identify transmission planning inequities

Resources will be available at: https://www.pnnl.gov/projects/inclusive-transmission-planningproject/research-and-resources







Additional project information can be found at: https://www.pnnl.gov/projects/inclusive-transmission-planning-project

For questions and/or follow-up comments, email itp@pnnl.gov





Thank You

PNNL-SA-203804

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