



Transmission Expansion Studies

Energy Systems Integration
Group (ESIG)

March 26, 2024




Pacific Northwest
NATIONAL LABORATORY


NREL
NATIONAL RENEWABLE ENERGY LABORATORY

U.S. DEPARTMENT OF
ENERGY

National Transmission Planning Study



| Topic | Presenters | Approx. Duration (min) |
|--|--|------------------------|
| Background | Juliet Homer , Chief Systems Engineer, PNNL | 5 |
| Context, Resource Adequacy and HOT Paths | David Palchak , Manager and Research Engineer, NREL | 20 |
| Economic Analysis: Benefit-cost of Portfolios and Regional Insights | Amy Rose , Energy Analyst, NREL | 20 |
| Zonal-to-nodal: National Transmission Plans and Production Cost Modeling | Jarrad Wright , Senior Researcher, NREL | 20 |
| System Security: AC Power Flow | Nader Samaan , Chief Engineer and Team Lead, PNNL | 20 |
| Q&A | All | 20 |

Objectives of the Study



Identify **interregional and national strategies** to accelerate cost-effective **decarbonization** while maintaining system reliability



Inform regional and interregional transmission planning processes, particularly by **engaging stakeholders** in dialogue



Results help **prioritize future DOE funding** for transmission infrastructure support



Study Guided by Technical Review Committee

Technical Review Committee (TRC): This committee constructively scrutinized and reviewed the overall project and, where needed, provided a forum for integrating input from all three subcommittees.

- **Government Subcommittee** – provides feedback on reflecting federal and state policy and regulatory issues in the analysis.
- **Modeling Subcommittee** – provides technical feedback on assumptions, modeling, and data.
- **Land Use and Environmental Exclusions Subcommittee** – provides feedback on generalized issues related to constraints on locating new transmission and generation.

NTP Study companion reports

1. Interregional Renewable Energy Zones - Now available

- Identifies potential interregional renewable energy zones (IREZ), including collection points and transmission lines to bring the lowest cost renewable resources to load centers.

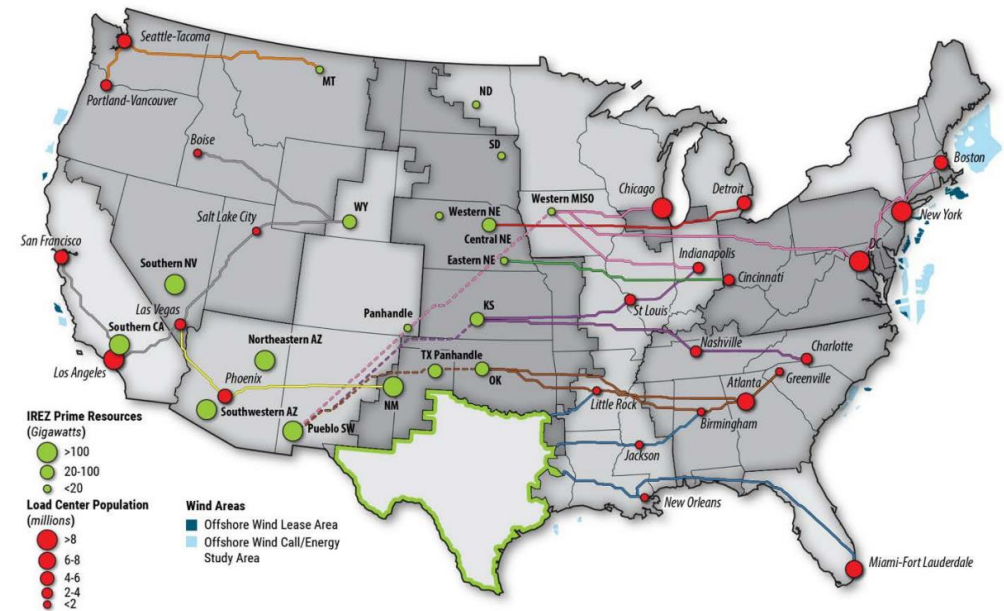
2. Regulatory Pathways to Interregional Transmission: A Landscape Assessment – Expected June 2024

- Summarizes the current transmission planning and development landscape in the U.S., assesses regulatory obstacles to interregional transmission, surveys potential solutions to such challenges, and shares examples from other countries.

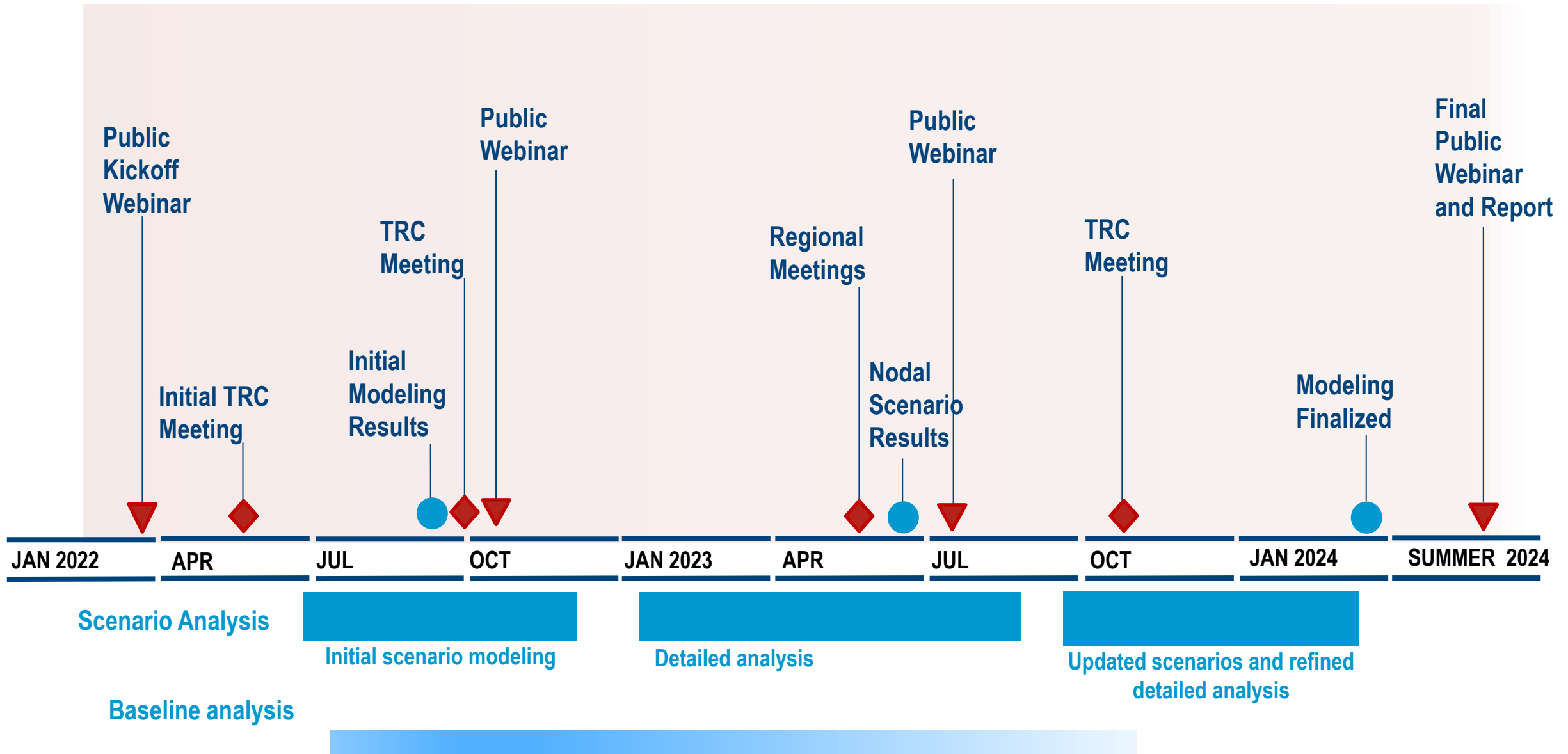
3. Barriers and Opportunities to Increase the System Value of Interregional Transmission – Expected June 2024

- Explores options for increasing the efficiency and utilization of existing interregional transmission assets

4. Western Interconnection Baseline Study



NTP Study Schedule



TRC = Technical Review Committee