DOE's Grid Deployment Office:
Taking Advantage of Federal Opportunities

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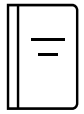
U.S. DEPARTMENT OF ENERGY

Building a Better Grid

Engagement & collaboration

- Tribal Nations
- Federal agencies
- States
- ISO/RTOs
- EROs
- Stakeholders



Transmission Planning

- Transmission Needs Study
- National Transmission Planning Study
- Atlantic Offshore Wind Transmission Study

Financing tools ($20+B)

- Transmission Facilitation Program ($2.5B)
- Smart Grid Investment Grant Program ($3B)
- Grid resilience grants for states, Tribes, and utilities ($10+B)
- Loan guarantee programs
  - WAPA Transmission Infrastructure Program ($3+B)
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Transmission Permitting

- Improve federal permitting regimes with federal agency partners
- Public private partnerships
- Designation of national interest electric corridors

Transmission-related R&D

- Next generation electricity delivery technologies
- Supporting activities

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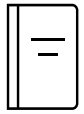

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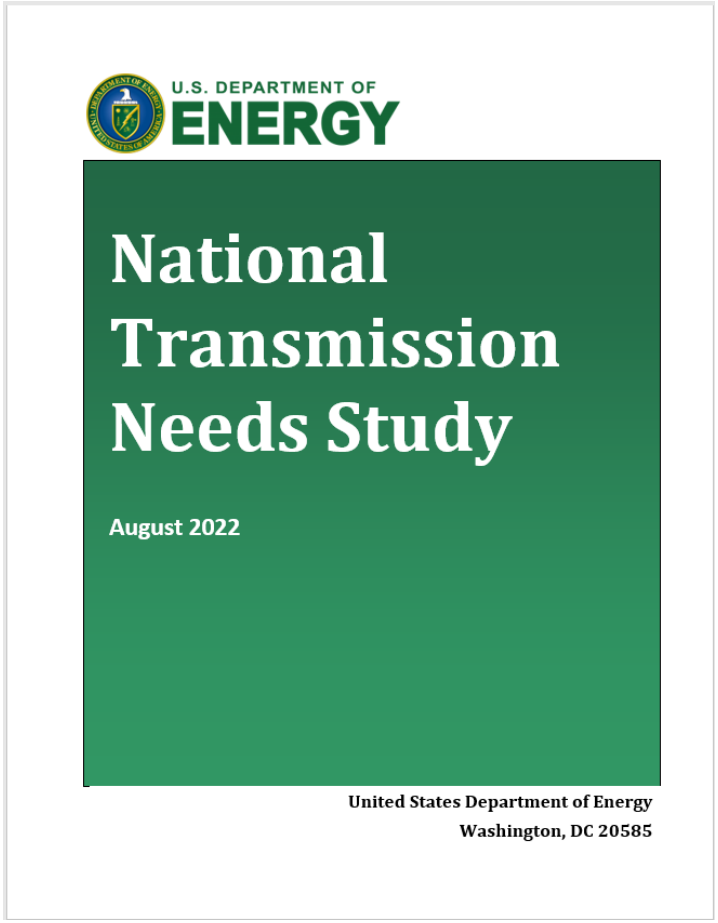
Transmission Needs Study

Objective: Review current and anticipated future needs of the grid

"Needs" include:

- Reliability and resilience
- Congestion
- Transfer capacity limits
- New generation delivery



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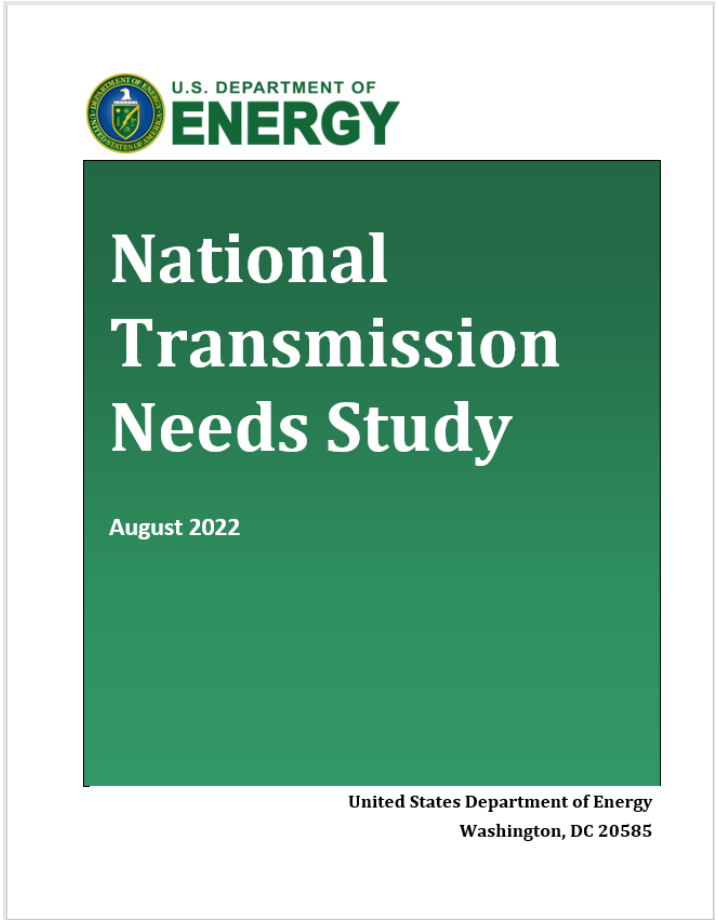
- Historic wholesale electricity prices
- Review of nearly 40 industry, academic, lab reports
- Results of capacity expansion models



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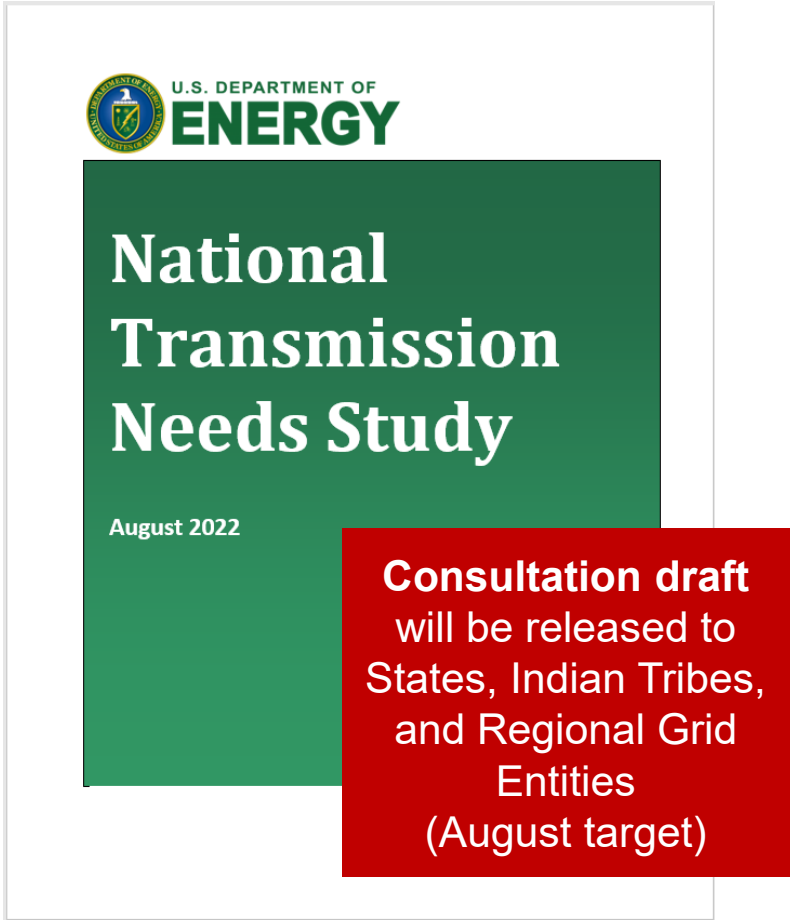
*** Study responds to several DOE authorities, including FPA § 216 enabling designation of National Interest Electric Transmission Corridors (NIETCs)



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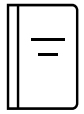

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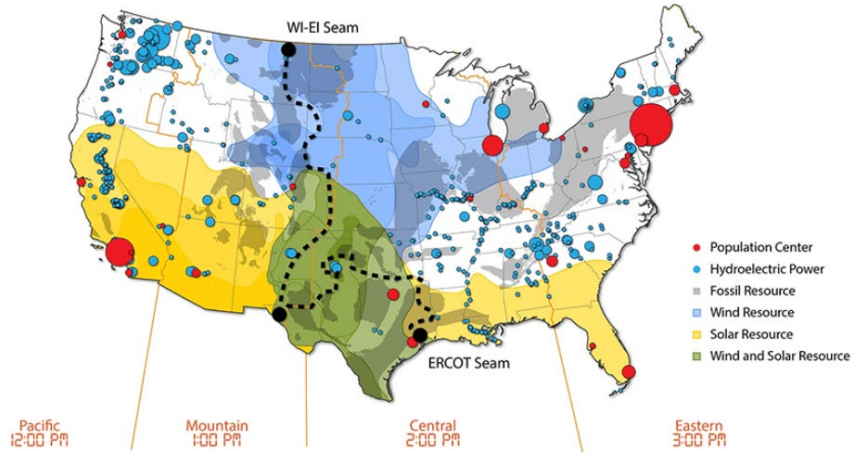
Project team

This study is being conducted by a joint **National Renewable Energy Laboratory (NREL)** and **Pacific Northwest National Laboratory (PNNL)** project team

This study builds on past projects and expertise at NREL and PNNL with the support and direction of DOE's Office of Electricity



Office of Electricity

North American Energy Resilience Model

Grid Deployment Office

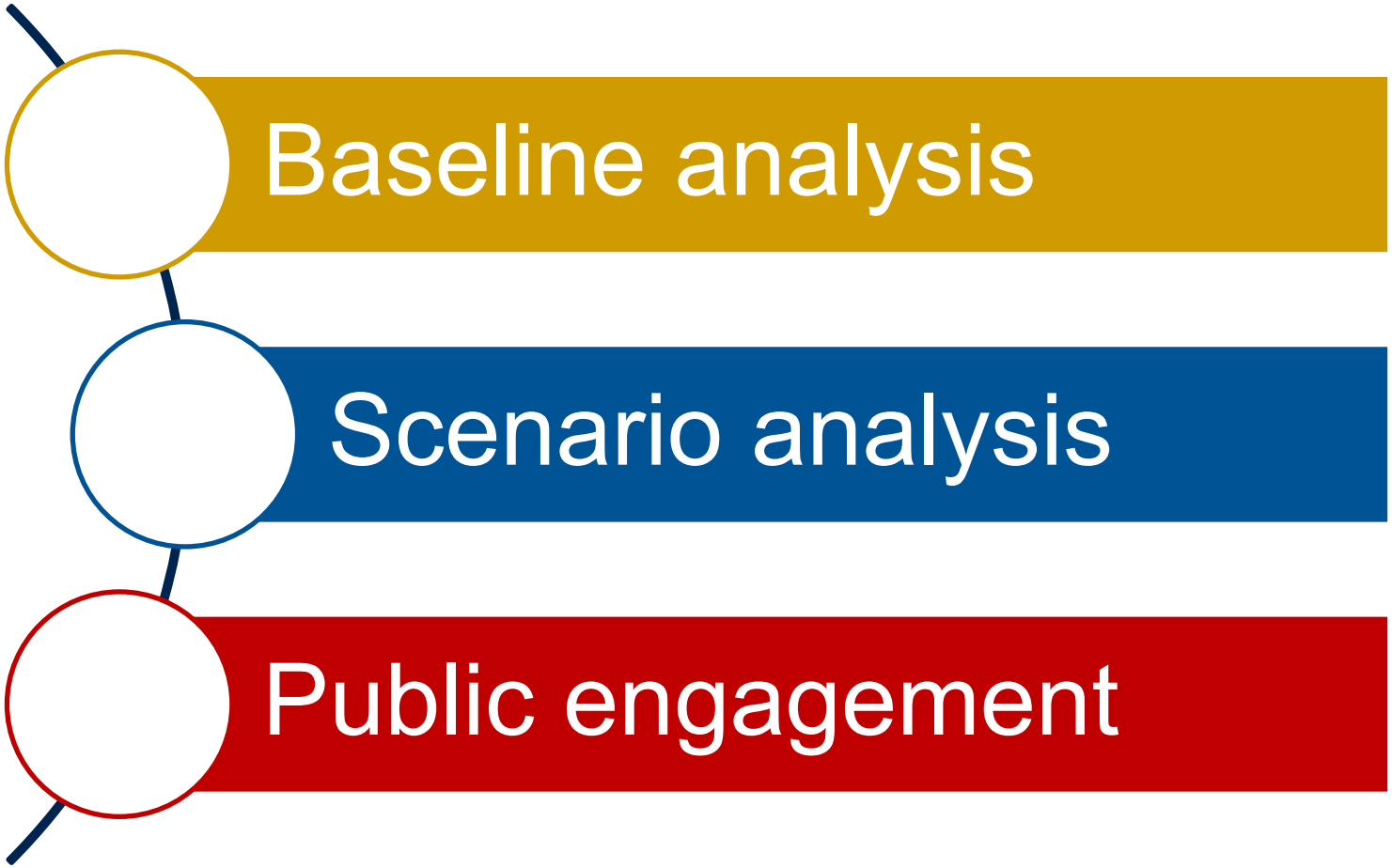
Objectives of the study

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

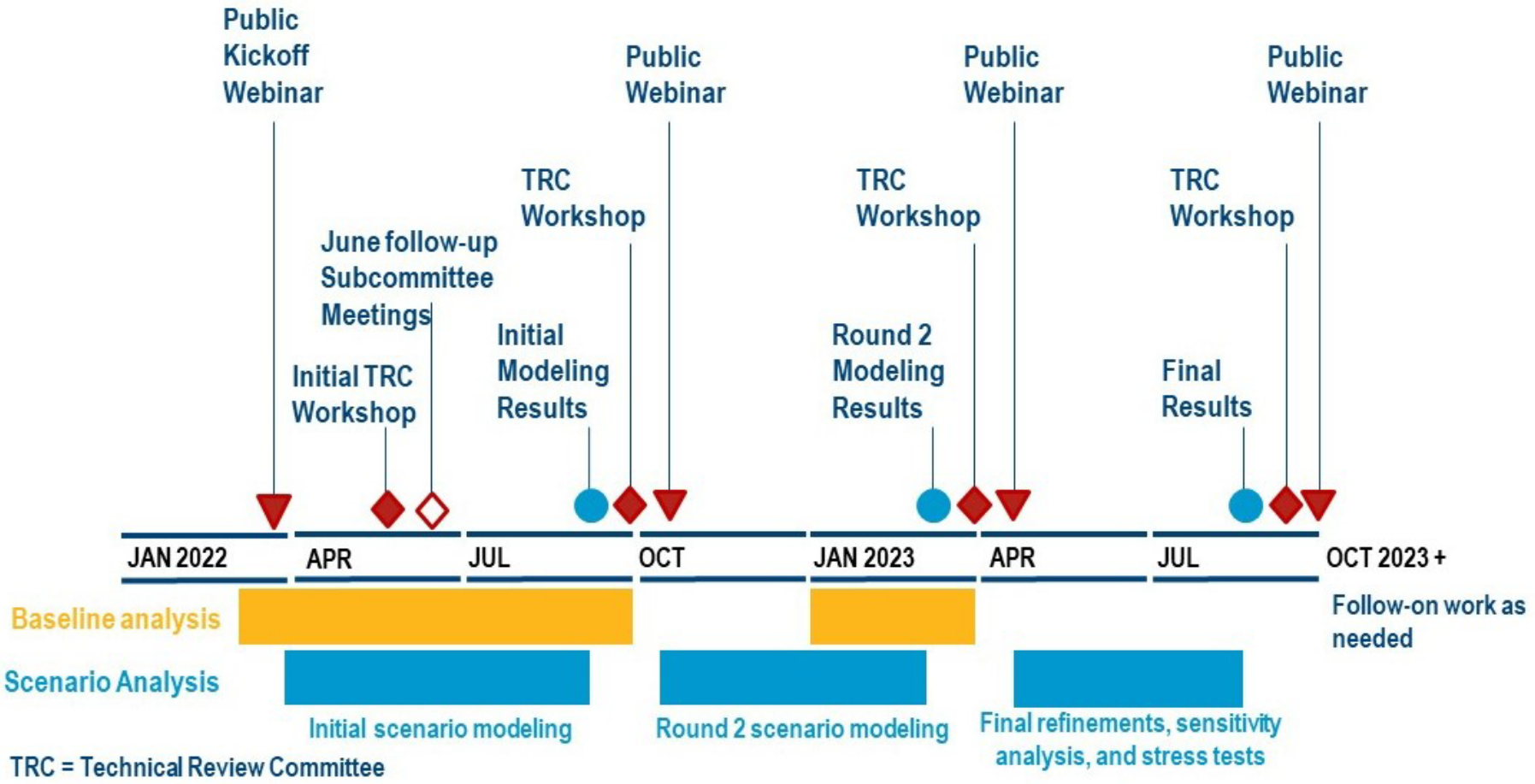
2. Inform regional and interregional transmission planning processes, particularly by **engaging stakeholders** in dialogue

3. Identify **viable and efficient** transmission options that will provide broad-scale benefits to electric customers

National Transmission Planning Study Scope



Public Engagement: Timeline



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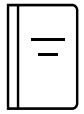

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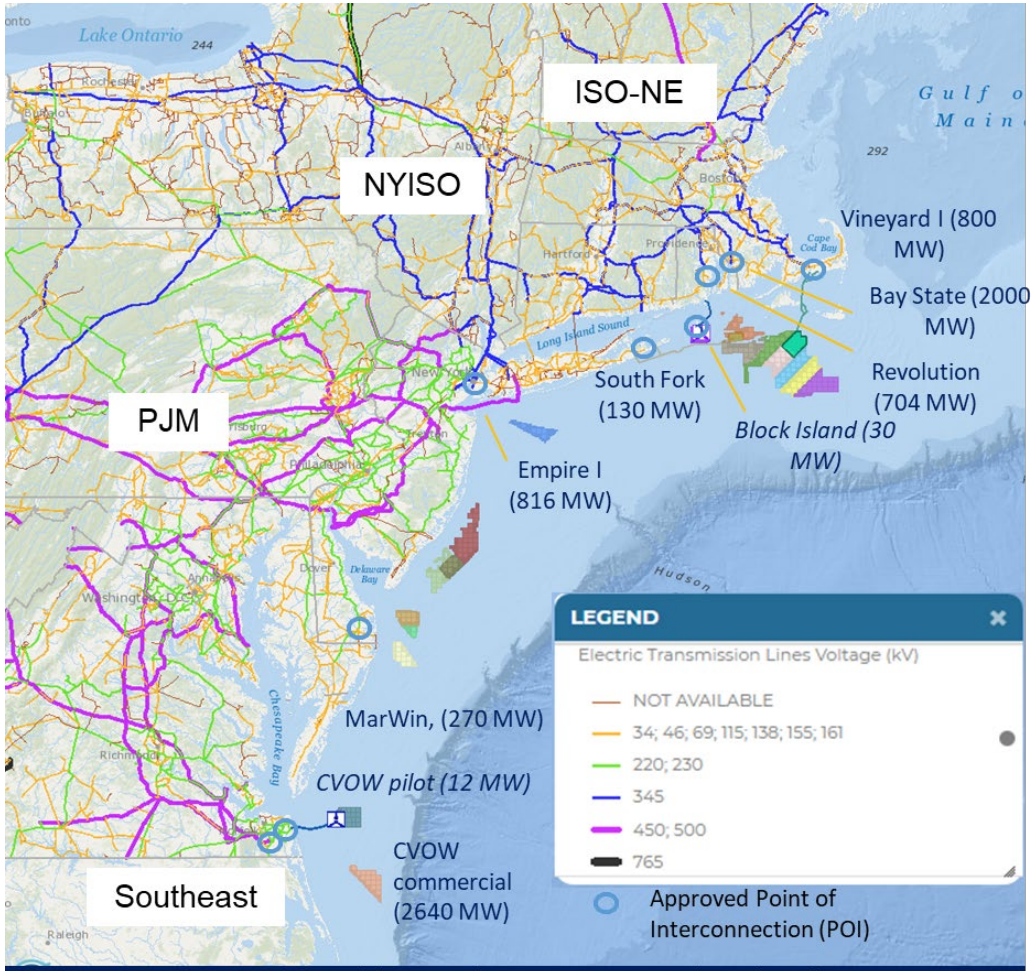
Offshore Wind Deployment: Goals, Challenges, Status

Federal goal (3/21): 30 GW of new offshore wind by 2030 and 110 GW by 2050

Supports the Administration's national goal of carbon-free electricity mix by 2035

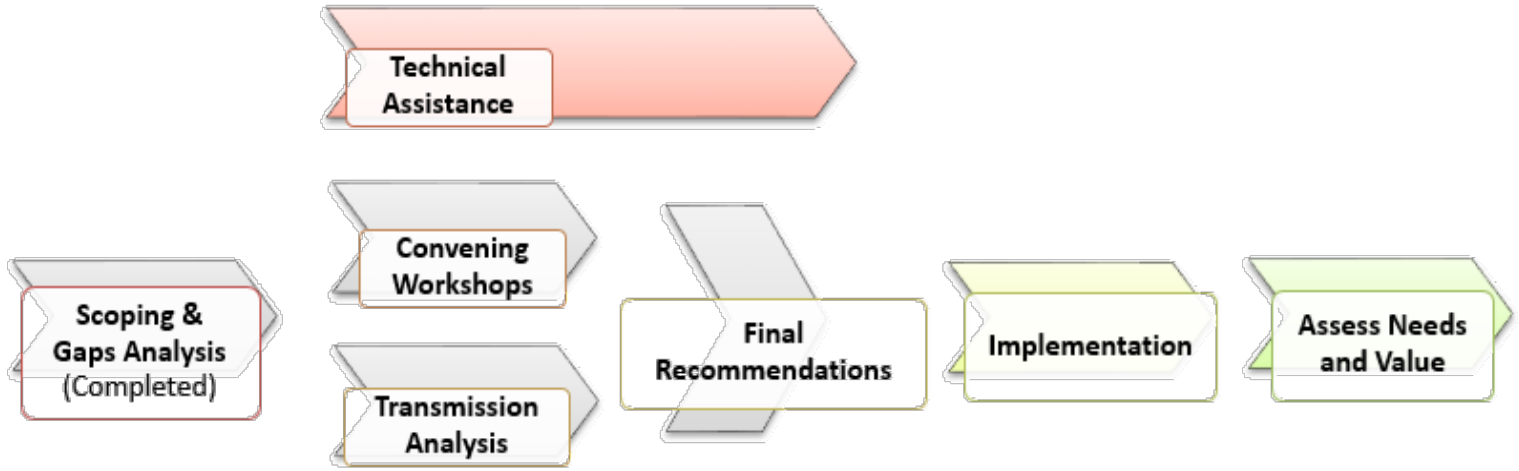
High Level Regional Challenges

- Current interconnection queue greatly exceeds existing transmission capacity
- Limited POIs for landfall
- Transmission topologies vary between regions and policies vary by state
- Higher capacity transmission often does not reach the coast
- New transmission build-out on land is challenging
- Changing policy can slow down development in the near term



Source: Composite Image created from Northeast Ocean Data Explorer (2021); ISO-NE, NYISO, PJM interconnections queues (2021); and Smith et al. (2021) study.

Technical Assistance & Future Efforts



TECHNICAL ASSISTANCE:

Provide analysis support for stakeholder research and data needs.

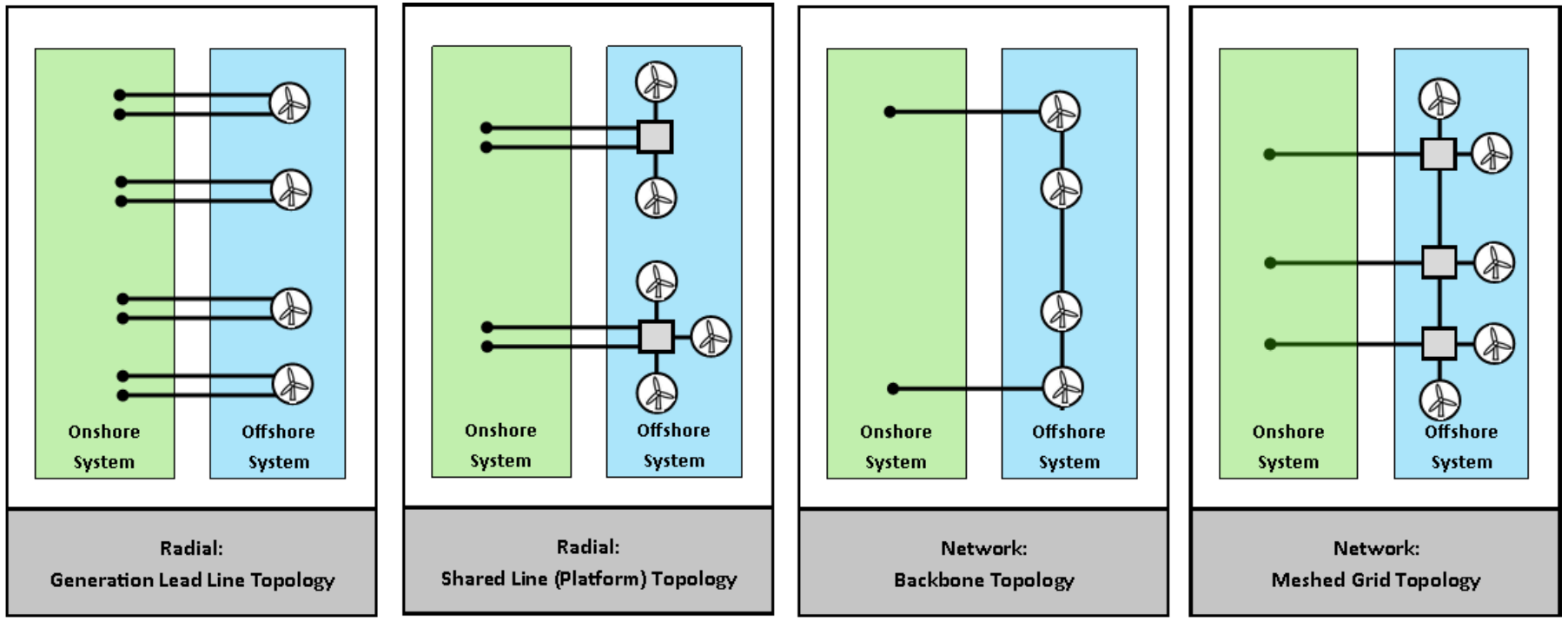
IMPLEMENTATION:

Execute the recommended action plan for the OSW Transmission on the Atlantic Coast.

ASSESS NEED AND VALUE:

Determine whether the process should be repeated for other regions of the US (West Coast, Gulf of Mexico, Great Lakes, Gulf of Maine) and determine appropriate timeline.

Offshore Topology Candidates



- Two basic archetypes of topology (radial and network), many possible permutations.
- Any proposed transmission topology involves trade-offs, including cost, reliability, expediency, expandability, and potential environmental and community impacts.
- Topologies that bridge multiple states or RTOs face added difficulty of reaching consensus among approving bodies, particularly with the assignment of costs between groups of ratepayers who may benefit differently.

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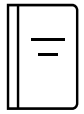

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Transmission Facilitation Program (40106)

TFP is funded through a $2.5B revolving fund to facilitate the construction of electric power transmission lines and related facilities

Legislation allows DOE to engage with eligible entities through:

- **Capacity Contracts** to buy up to 50% of planned eligible project commercial capacity for up to 40 years
- **Public Private Partnerships** where DOE participates in designing, owning, developing, maintaining or owning an eligible project
- **Loans** to carry out eligible projects

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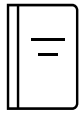

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Grant Funding Highlights

Delivering Reliable, Clean, and Affordable Power to More Americans

Program Name	Funding Amount	Next Milestones
Grid Resilience Grants (40101): Preventing Outages and Enhancing the Resilience of the Electric Grid / Hazard Hardening	$5 billion	• NOI/RFI for state, territory and tribal formula grant program; released in mid-April • NOI/RFI for utilities and industry competitive program expected to be released in Summer 2022
Grid Resilience Demos (40103): Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency	$5 billion	• NOI/RFI expected to be released in Summer 2022
Smart Grid Grants (40107): Deployment of Technologies to Enhance Grid Flexibility	$3 billion	• NOI/RFI expected to be released in Summer 2022