



WESTERN STATES TRANSMISSION INITIATIVE PRIMER:

Transmission Planning and Cost Allocation in the West



GRIDWORKS

What is the Western States Transmission Initiative?

Collaboration between Gridworks and CREPC

Focus on transmission planning and cost allocation

- Is the current approach to transmission planning and cost allocation sufficient in the West?
- What changes might be helpful?
- What is the appropriate role for state regulators and energy officials?

Interviews with state officials, utilities, NGOs, tribes, and others throughout the West

Three background webinars

- July 20: *Transmission planning*
- July 27: *Is more transmission necessary for the West? What are the barriers to development?*
- August 16: *Transmission cost allocation*

Transmission planning and cost allocation recommendations to be developed with Working Group of CREPC members

Discussion of recommendations with all of CREPC at fall meeting in Seattle

Western Interconnect

The Western Interconnect spans

- 14 U.S. states
- 2 Canadian provinces
- Northern Baja California (Mexico)

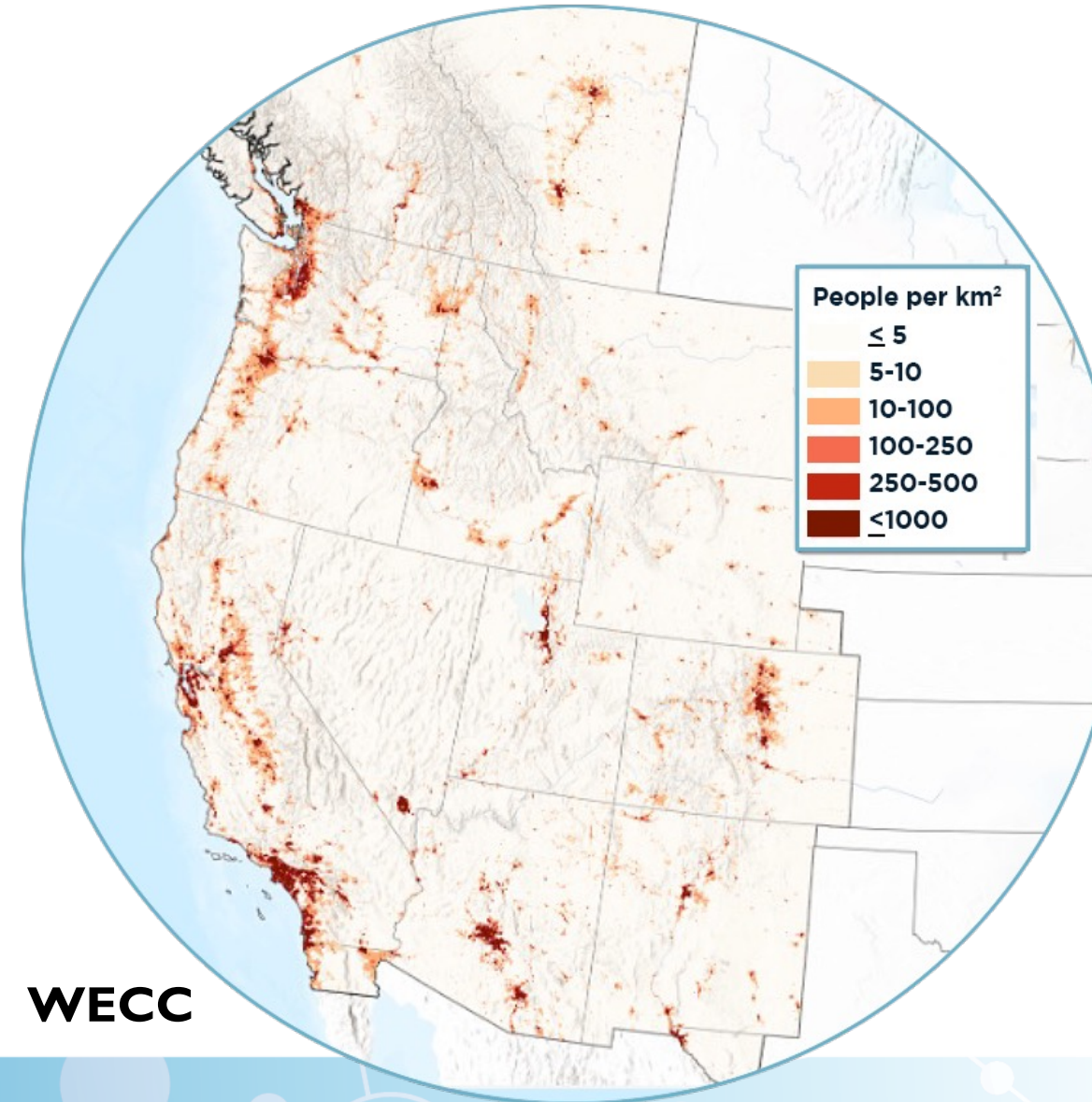
Serves a population of over 80 million people

47 transmission operators

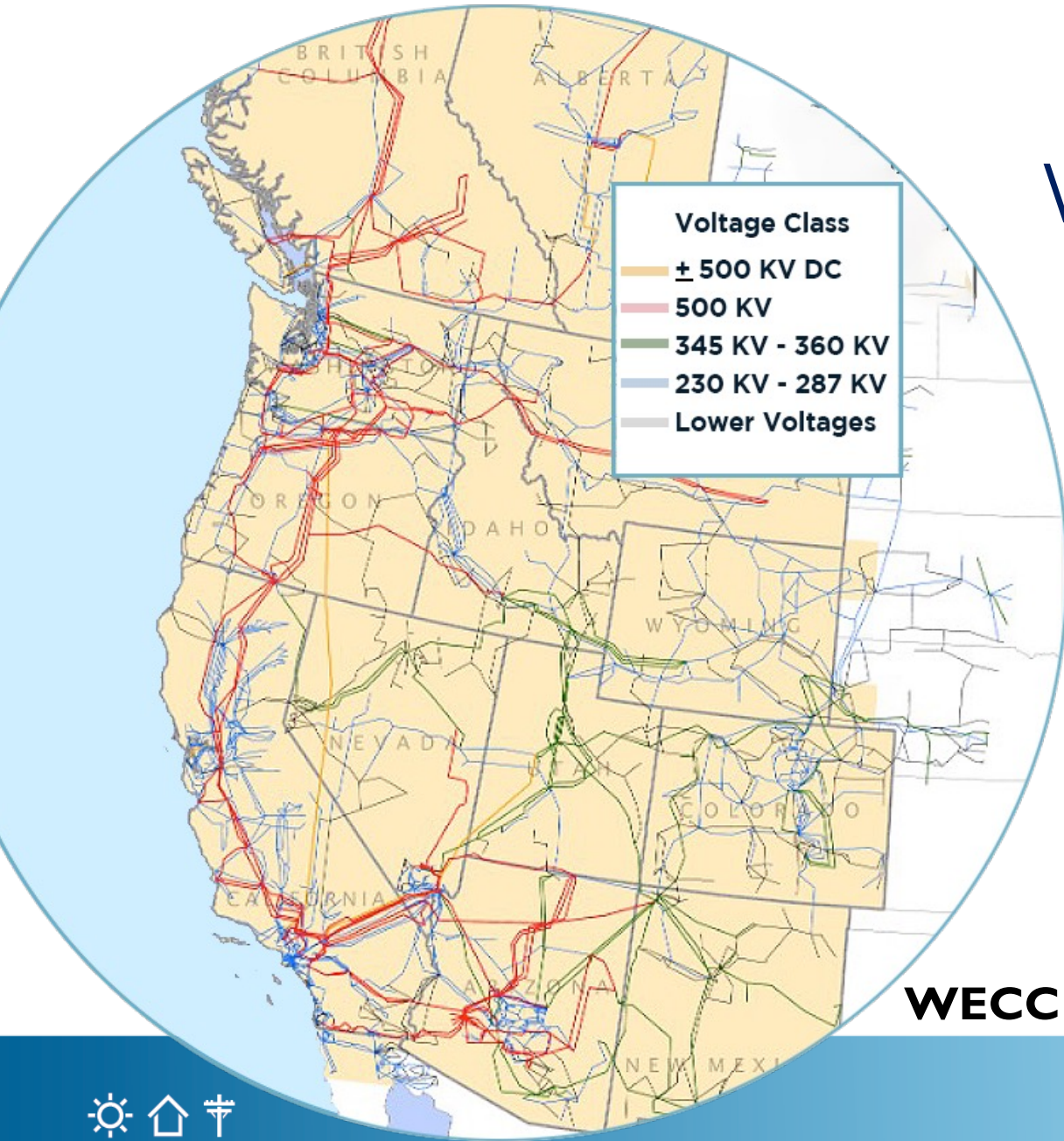
34 balancing authorities

Greater distances to load than other parts of the country

Limited ties with Eastern Interconnect and ERCOT



Western Transmission Grid



The Western Interconnect stretches 1.8 million square miles of land

136,000 miles of transmission:

- Long, high-voltage lines connect remote generation resources with population centers
- Interties between the Northwest, California, and the Southwest enable substantial exports and imports responding to diverse conditions within the Interconnect

Transmission Benefits

Enhanced grid reliability and resilience

- Transmission helps alleviate impacts of extreme weather on demand and grid operations
- Imports reduce loss of load probability
- Better prepared to address ongoing load and supply changes

Capture advantages of regional diversity

- Different seasonal peaks
- Weather/fuel availability at different times
- Time zones impact both demand and supply

Reduced congestion/power costs

Economic development for power exporters and importers

Replaces older, less efficient lines



Barriers to Transmission Development

Transmission planning

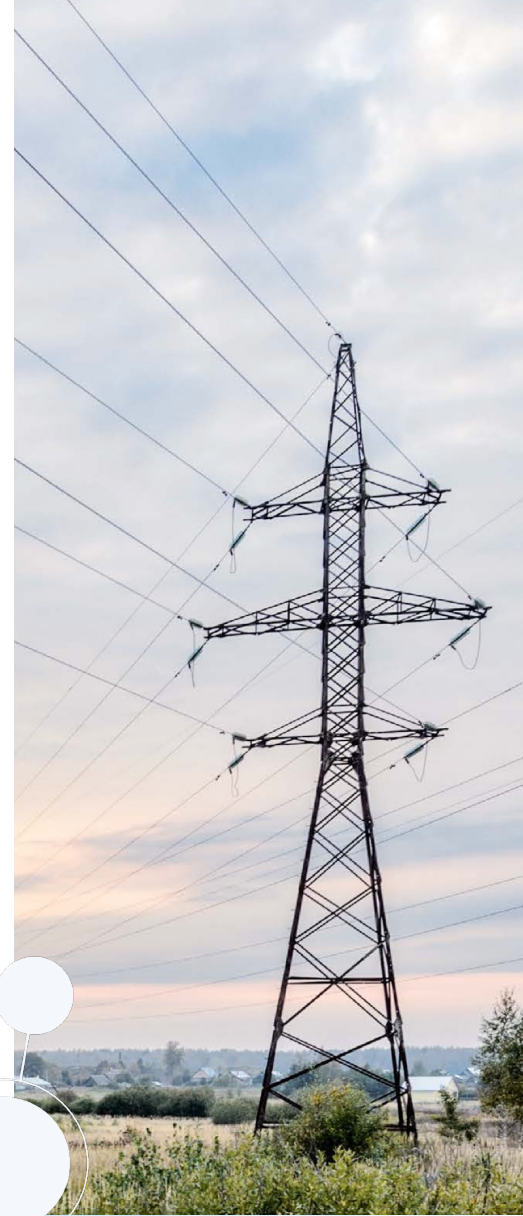
- Current approaches to planning not sufficiently anticipatory
- Difficult to engage in West-wide planning in absence of an RTO

Cost allocation

- New transmission requires substantial investments
- Some utilities don't have the resources to finance major projects
- It can be difficult to calculate certain benefits and beneficiaries

Siting

- The siting process can be extremely lengthy
- Significant amount of federal land in the West
- States may not have incentives to approve transmission that primarily benefits other states



State/FERC Transmission Regulation

States

- Regulate distribution service
- Most states have transmission siting authority
- Oversight over cost recovery by vertically integrated utilities
- RETA (New Mexico) and CETA (Colorado) play active roles in promoting transmission development

FERC

- Seven factor test (including voltage of line, whether power flows out, and proximity to distribution customers) to determine transmission vs. distribution
- Regulates rates for transmission service by jurisdictional utilities
- Cannot allocate transmission costs to non-jurisdictional entities
- Requires jurisdictional utilities to operate transmission lines in non-discriminatory manner (Open Access)
- Order No. 1000 requires regional transmission planning and cost allocation for jurisdictional utilities and non-jurisdictional utilities that voluntarily agree to pay
- Limited “backstop” transmission siting authority

FERC Order No. 1000

Requires jurisdictional utilities to engage in regional transmission planning

Three “planning regions” in the Western U.S.

- California ISO
- Northern Grid
- WestConnect

If the regional planning process results in a transmission project,

- The costs must be allocated pursuant to the planning region’s FERC-approved cost allocation methodology
- The project must be competitively bid unless there is a State Right of First Refusal for incumbent utility

Neighboring regions must engage in interregional transmission planning, but no interregional project has ever resulted from this process



Transmission terminology:

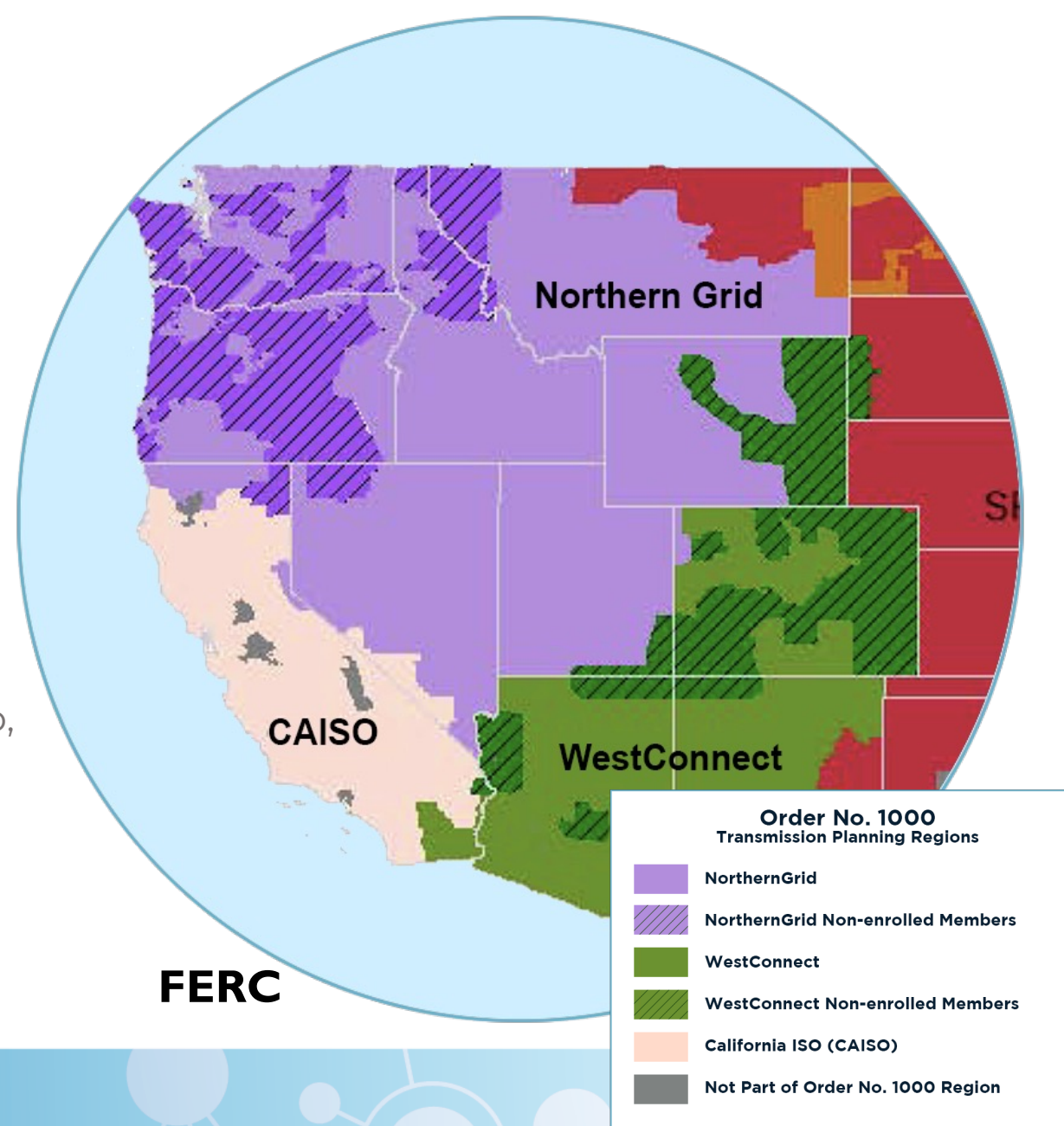
- “Regional” refers to these 3 planning regions and transmission built within the regional footprint
- “Interregional” refers to projects built across more than one planning region or across interconnects

Western Transmission Planning Regions

CAISO – Plans for and manages the flow of electricity for about 80 percent of California and a small part of Nevada

NorthernGrid – Facilitates regional transmission planning across the Pacific Northwest and Intermountain West. Members include Bonneville Power Administration, investor-owned utilities, and consumer-owned utilities located in California, Idaho, Montana, Oregon, Utah, Washington and Wyoming

WestConnect – Conducts regional transmission planning for Southwestern and Interior West states, including Arizona, California, Colorado, New Mexico, South Dakota, Wyoming, and Utah



What is Transmission Planning?

Analyze future demand for power and power resources

- Economic growth
- New sources of demand (e.g., data centers)
- Electrification

Identify objectives

- Maintain reliability
- Economic benefits, such as facilitating access to cheaper power
- Achieve public policy goals, such as reduction in GHG emissions

Model options based on various scenarios

Consider options based-on:

- Impact on reliability metrics
- Costs and benefits



How is Transmission Planned in the West?

Order No. 1000 regional planning (CAISO, WestConnect, NorthernGrid)

- Outside of California, no projects have come from regional planning
- Primarily a bottoms-up approach that does not address West-wide needs

Federal government

- BPA (75% of high voltage transmission in the Northwest)
- WAPA (10% of the transmission grid in the Western Interconnect)

Utility projects

- Planning consistent with integrated resource plans

Two or more utilities jointly planning projects

- Does not occur frequently for large projects

Merchant transmission

- Independent companies take on the risk to develop, build, and sell the transmission capacity for their projects

BPA Footprint



WAPA Footprint



Some Major New Western Transmission Projects are Being Developed...

Energy Gateway South (Wyoming/Colorado/Utah)

- PacifiCorp
- Under construction

Ten West Link (Arizona and California)

- Merchant project by infrastructure developer
- Under construction

Gateway West (Wyoming and Utah)

- PacifiCorp
- Under construction

BPA recent announcement of expedited transmission projects in Northwest

Sun Zia (New Mexico and Arizona)

- Merchant project developed by Pattern Energy
- Recently received BLM approval

Boardman to Hemingway (Idaho and Oregon)

- PacifiCorp and Idaho Power
- Approved by Oregon -- awaiting approval from Idaho PUC

Transwest Express (Wyoming-Nevada)

- Merchant
- Broke ground in June

...But Significant Challenges to Multistate Transmission Development Remain

- Limited number of utilities capable of funding major projects alone
- Reluctance to share in costs
- Public power and federal utilities must volunteer to pay
- The Northwest is heavily reliant on BPA to build transmission
- Transmission planning is not sufficiently forward-looking
- Lack of meaningful interregional transmission planning
- Lengthy time period to develop and permit major projects



Why Does the West Need More Transmission Capacity?

Reliability threats

- Accelerated generation retirements
- Increased reliance on intermittent resources
- Extreme weather

Expectations for substantially higher electricity demand

- Electrification
- Data centers

Accessing renewable resources to satisfy clean energy targets

DOE [National Transmission Needs Study](#) draft suggests substantial new transmission capacity needed in West to meet state public policy goals

WECC [State of the Interconnection Report](#)

- “WECC studies show a growing risk associated with transmission availability, particularly regarding growing resource adequacy risks.”

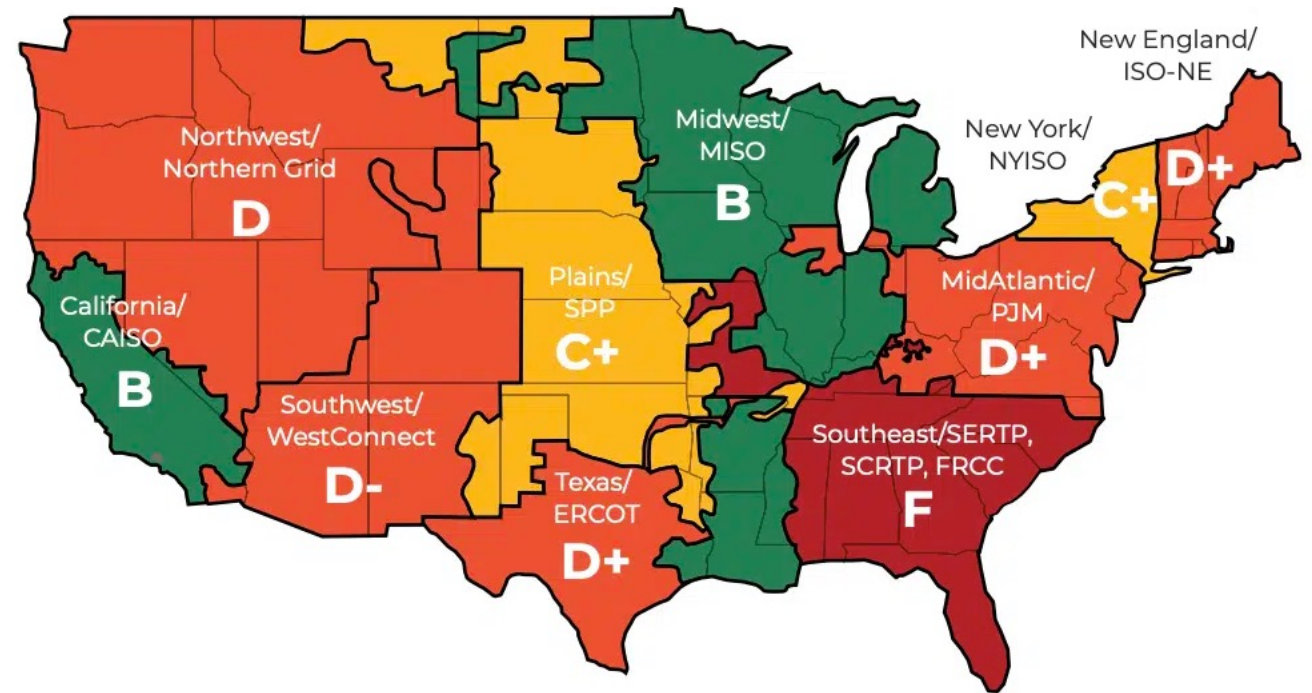
CAISO [20-Year Transmission Outlook](#)

- Calls for significant new additions of high voltage AC and HVDC lines



Regional Transmission Planning Efforts, Ranked

Americans For a Clean Energy Grid [recently ranked transmission planning efforts](#) nation wide:



FERC Proposed Transmission Planning Reforms

FERC's [2022 Transmission NOPR](#) would require

- long-term (20+ years) regional transmission planning
- reassessments every 3 years
- Consideration of a variety of factors, such as:
 - State laws and regulatory requirements
 - Utility integrated resource plans
 - Generator interconnection requests
 - Technological developments
- Development and consideration of at least 4 different long-term planning scenarios

Unclear when the proposal will be finalized

Transmission needs require action before FERC proposal becomes final

FERC continues to work on an interregional transmission proposal



FERC Consideration of Grid Enhancing Technologies in Planning

FERC's transmission planning NOPR requires planners to consider enhancing existing capacity

Squeezing more out of the existing system reduces the need for new transmission lines

Transmission power transfer capability limited by line ratings to protect equipment, including from outages and fires

Ratings limits can be modified depending on weather

- FERC now requires transmission providers to adjust ratings depending on ambient temperature
- FERC considering requiring the use of dynamic line ratings, which adjust ratings depending on weather conditions at points along the way

Advanced power flow technologies increase transmission capacity and efficiency without building new lines



Transmission Cost Allocation

FERC allocates costs associated with Order No. 1000 regionally planned transmission

FERC cost allocation must be “roughly commensurate” with benefits

Non-jurisdictional utilities can't be forced to pay anything

Identifying transmission benefits and beneficiaries can be controversial

2 successful regional approaches

- MISO MVP and LRTP programs: Negotiation among states as to what each will pay for a **portfolio** of projects that, as a whole, benefits all states (even if some projects only benefit particular states)
- SPP Highway-Byway:
 - High voltage project costs are socialized across region
 - Medium voltage costs are split such that one-third are allocated across SPP and two-thirds are allocated to utilities where project is located
 - Low voltage costs are paid entirely by local utility



FERC Proposed Cost Allocation Reforms

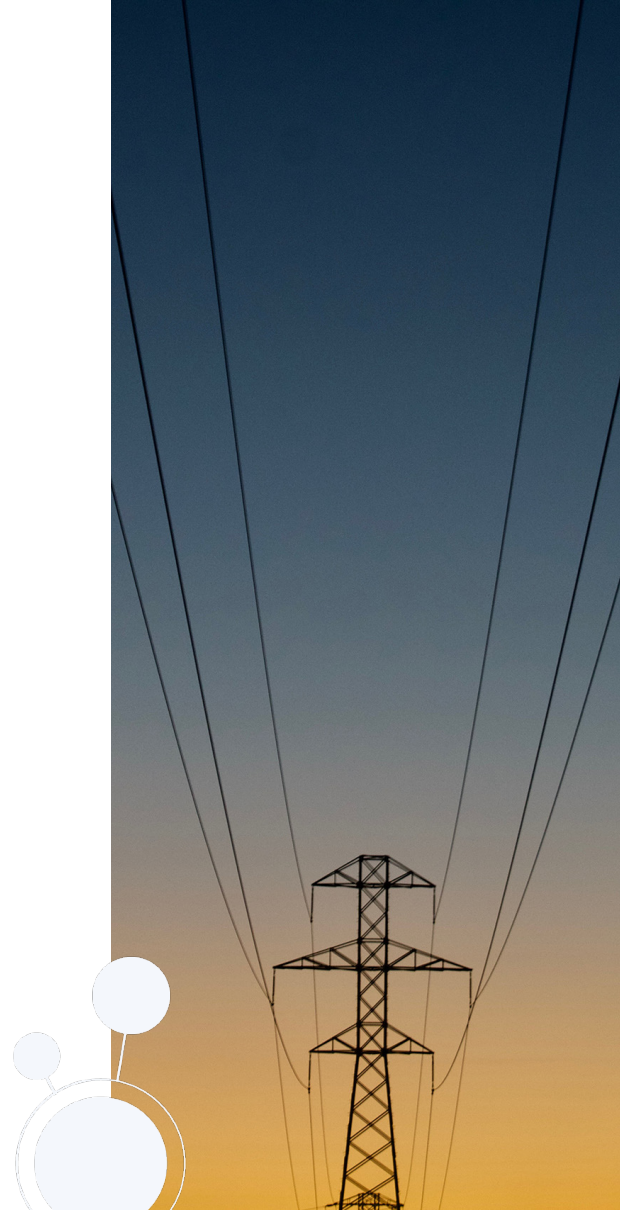
Included in 2022 Transmission NOPR

Transmission planning regions would revise cost allocation approach:

- *Ex Post* State Agreement approach – one or more states may voluntarily agree to a cost allocation method after a project is planned
- *Ex Ante* approach – agreement on a method to allocate costs for all future transmission planned regionally
- Or a combination of the two

States would be given the first chance to agree on the approach taken

If states do not agree, FERC will likely decide



This primer was created by Gridworks for the benefit of CREPC as part of the Western States Transmission Initiative.

More information on WSTI can be found online:

www.gridworks.org

