Northwest **Power** and **Conservation** Council

April 5, 2022

MEMORANDUM

TO: **Council Members and Staff**

FROM: **Brian DeKiep: Montana Office, Senior Energy Analyst**

SUBJECT: **Update from NorthernGrid Transmission Planning Group**

BACKGROUND:

Presenter: Dave Angel and Chelsea Loomis from Western Power Pool and NorthernGrid

Summary: Mr. Angel and Ms. Loomis will give an update on recent NorthernGrid activities including the 2021 transmission plan. Mr. Angel previously gave the Council an update in July of 2021. Ms Loomis is the Manager of the Member Planning Committee at NorthernGrid.

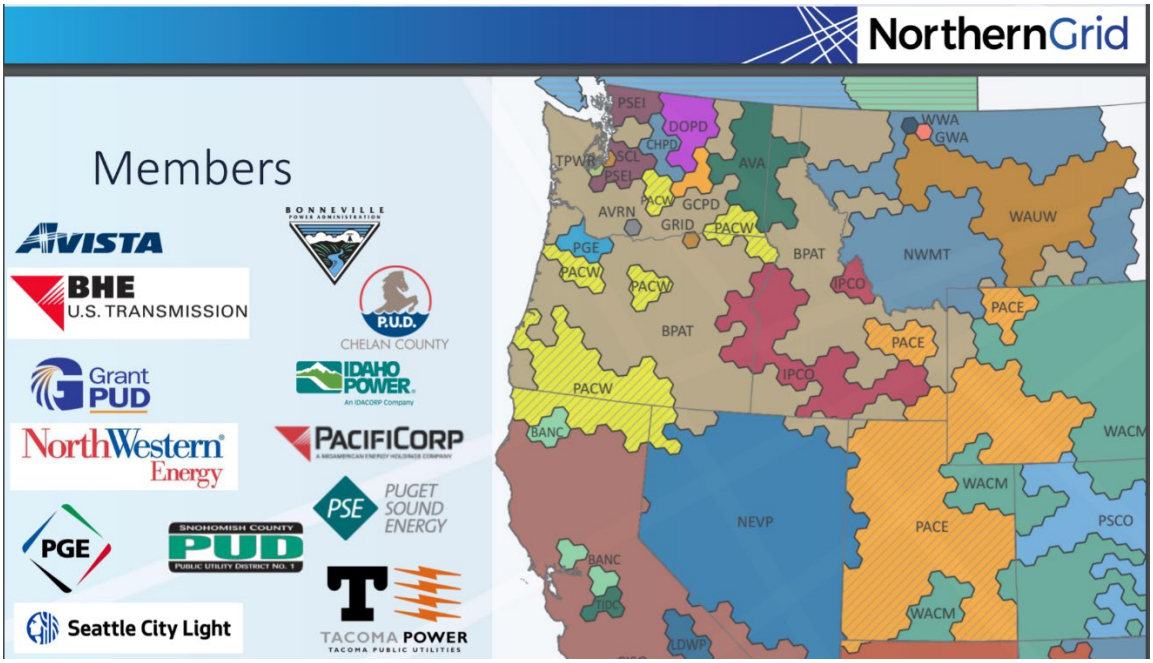
Jurisdictional and non-jurisdictional entities have formed a single transmission planning association – NorthernGrid: that facilitates regional transmission planning across the Pacific Northwest and Intermountain West. The association members executed a Planning Agreement that will provide the region with:

- One common set of data and assumptions
- More opportunities to identify regional transmission projects
- A single stakeholder forum
- Elimination of duplicative administrative processes

The members intend for NorthernGrid to facilitate compliance with FERC requirements (including Order Nos. 890 and 1000) for those utilities that are required (or elect) to comply with such requirements, including cost allocation, when applicable. After Federal

Energy Regulatory Commission approval, NorthernGrid replaced Columbia Grid and Northern Tier Transmission Group which previously facilitated FERC compliance. The NorthernGrid members include Bonneville Power Administration, investor-owned utilities, and consumer-owned utilities located in California, Idaho, Montana, Oregon, Utah, Washington, and Wyoming.

NorthernGrid launched January 1, 2020.



https://www.northerngrid.net/private-media/documents/2020.06.06.NG_Introduction.pdf

The NorthernGrid 2020-2021 Regional Transmission Plan:

The NorthernGrid 2020-2021 Regional Transmission Plan was developed per the Study Scope that outlines the NorthernGrid 2020-2021 regional planning process, as required under Federal Energy Regulatory Commission (FERC) Orders No. 890 and 1000, in accordance with each Enrolled Party's Open Access Transmission Tariff (OATT) Attachment K – Regional Planning Process and NorthernGrid Planning Agreement, and the results are presented in this report.

The objective of the planning process is to identify the projects that either cost-effectively or efficiently meet the needs of the NorthernGrid members in a 10-year future. The process started with a data submittal of needs from each of the Members. For a 10-year future, each Member submitted their forecasted load, expected resource additions or retirements, public policy requirements, and expected transmission topology. All this information was then assimilated into the 2030 WECC Anchor Data Set (ADS). From that base case, a production cost model (PCM) analysis was performed to identify the stress conditions of interest for the NorthernGrid footprint. The stress conditions were selected to represent typical or expected operating conditions for

the NorthernGrid footprint. Weather conditions have a large impact on system load. More megawatts are consumed on a hot summer day than on a cool autumn day due to things like industrial cooling loads.

Similarly, more megawatts are consumed on a cold winter day than on a warm spring day due to keeping homes and businesses warm. Both summer and winter loading conditions were selected to capture these seasonal loading conditions. There is enough proposed wind generation in Wyoming to have a potential impact on the reliability of the NorthernGrid footprint; because of this, an hour representing high output from Wyoming wind resources was selected.

Needs were also identified across southern Idaho, so a high Idaho to Northwest Path (west to east) case and Borah West (east to west) case were developed. Altogether, eight stress conditions for the NorthernGrid footprint were identified. The results of the contingency analyses from those eight respective base cases formed the foundation for the selection of projects in the Regional Transmission Plan.

Contingencies were submitted by the Members and focused on 230 kV and above electrical facilities. In general, the outage of facilities 100 kV and below do not significantly impact the reliability of the NorthernGrid transmission system. The NorthernGrid footprint along with adjacent neighboring regions were monitored. The base cases contained all planned regional member projects. To identify the set of projects for the Regional Transmission Plan, portions of the planned regional projects were removed from the base cases to ascertain if a subset of the proposed regional projects would meet the needs of the transmission system more cost-effectively or efficiently than the entire set.

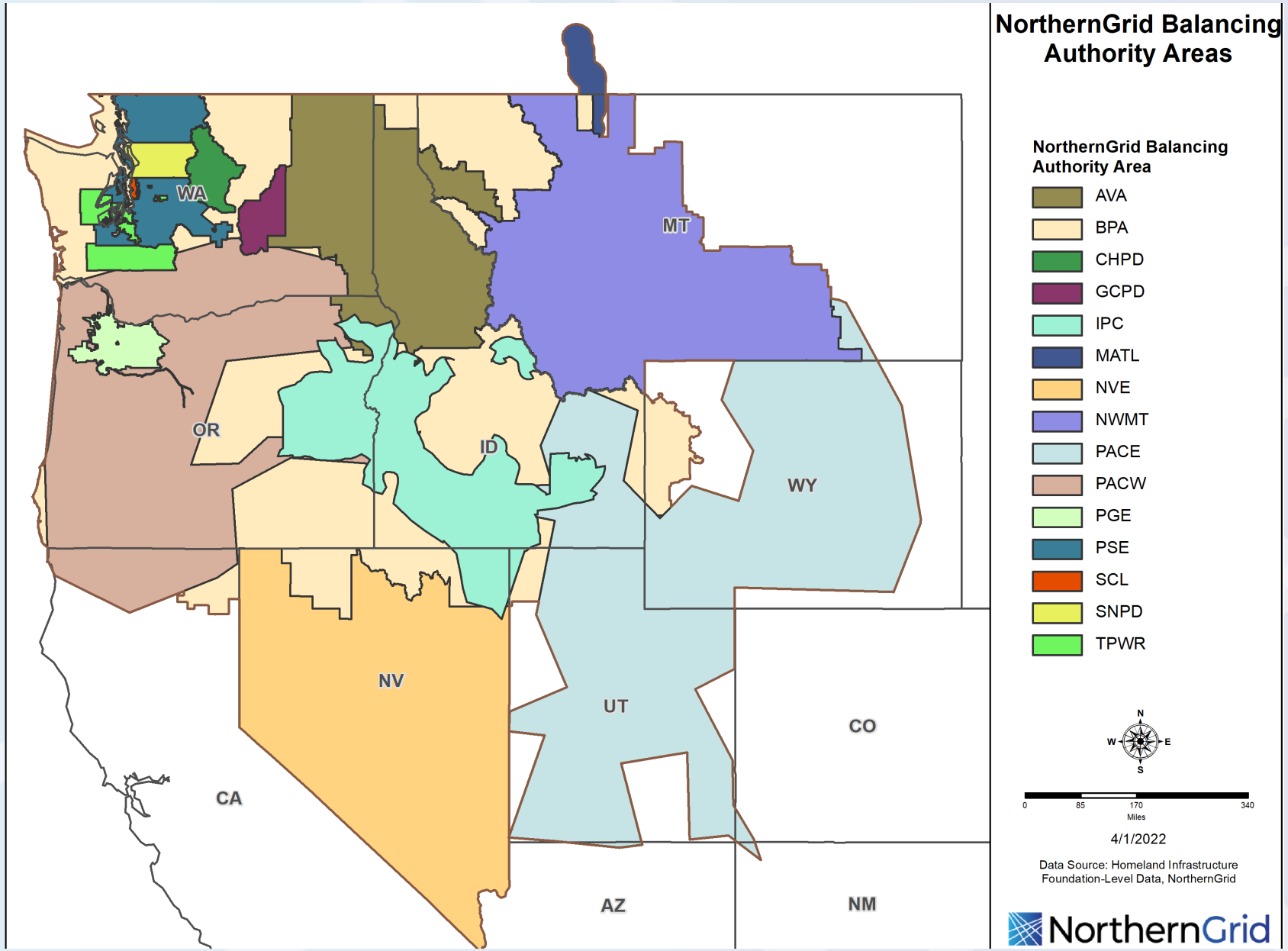
Consideration was also given to the interregional and non-incumbent regional projects that were submitted. The interregional projects and non-incumbent regional projects were first analyzed to determine if, without the addition of the proposed regional projects, they would meet the needs of the NorthernGrid footprint reliably. Further scrutiny was given to the interregional and nonincumbent regional projects to analyze their interplay with select regional projects if the interregional or non-incumbent regional project alone resulted in reliability violations. Three developers, TransCanyon LLC, Great Basin Transmission, LLC, and PowerBridge met the criteria to be classified as Qualified Developers for this planning cycle. Ultimately, cost allocation analysis was not required as none of the interregional or non-incumbent regional projects were selected into the Regional Transmission Plan.

https://www.northerngrid.net/private-media/documents/2020-2021_Regional_Transmission_Plan.pdf

An Introduction to the NorthernGrid

Table of Contents

NorthernGrid

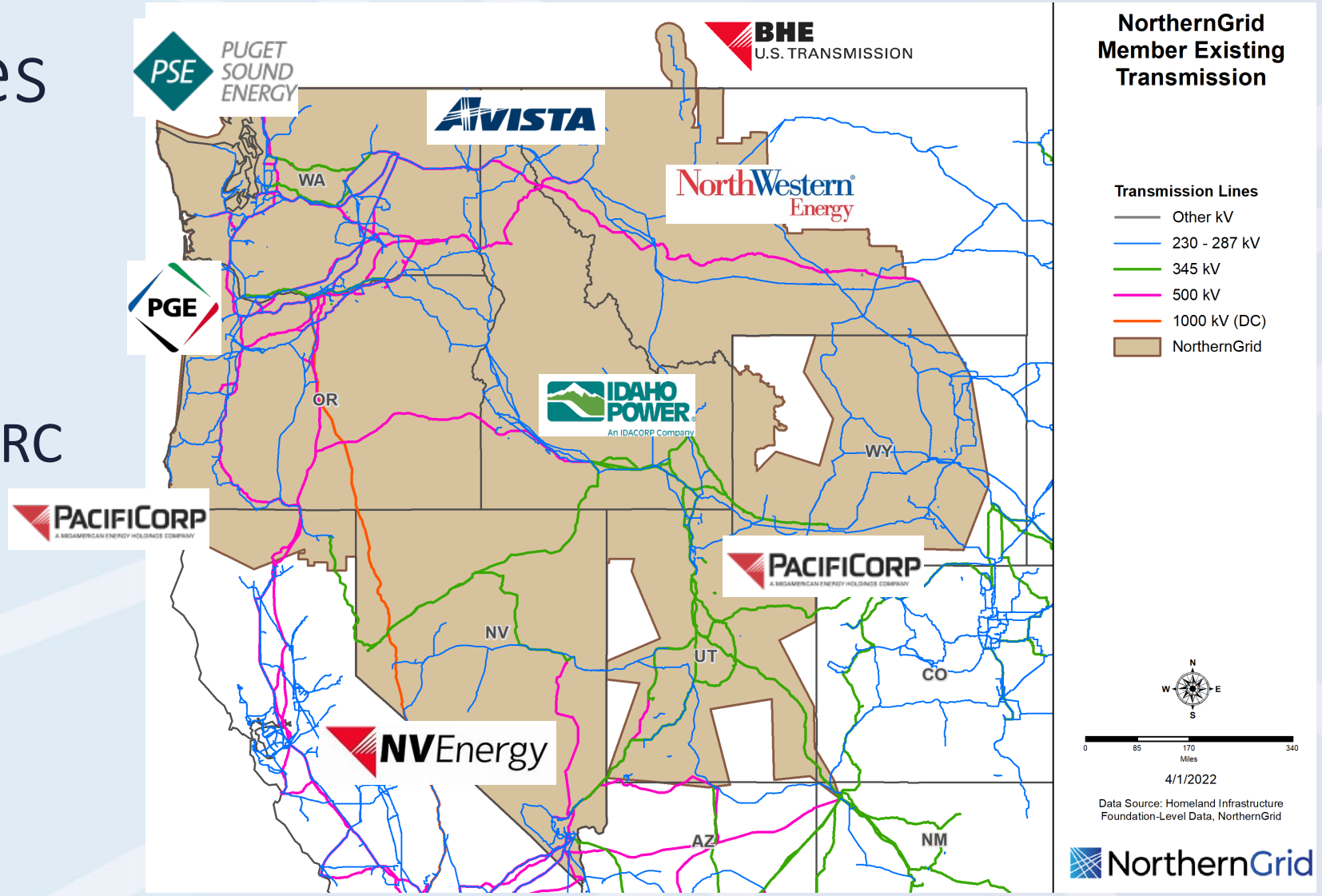

NorthernGrid Balancing Authority Areas
NorthernGrid Balancing Authority Area
AVA
BPA
CHPD
GCPD
IPC
MATL
NVE
NWMT
PACE
PACW
PGE
PSE
SCL
SNPD
TPWR
WA
OR
CA
NV
ID
MT
WY
UT
AZ
CO
NM
N
W
E
S
0
85
170
340
Miles
4/1/2022
Data Source: Homeland Infrastructure Foundation-Level Data, NorthernGrid
NorthernGrid

Purpose

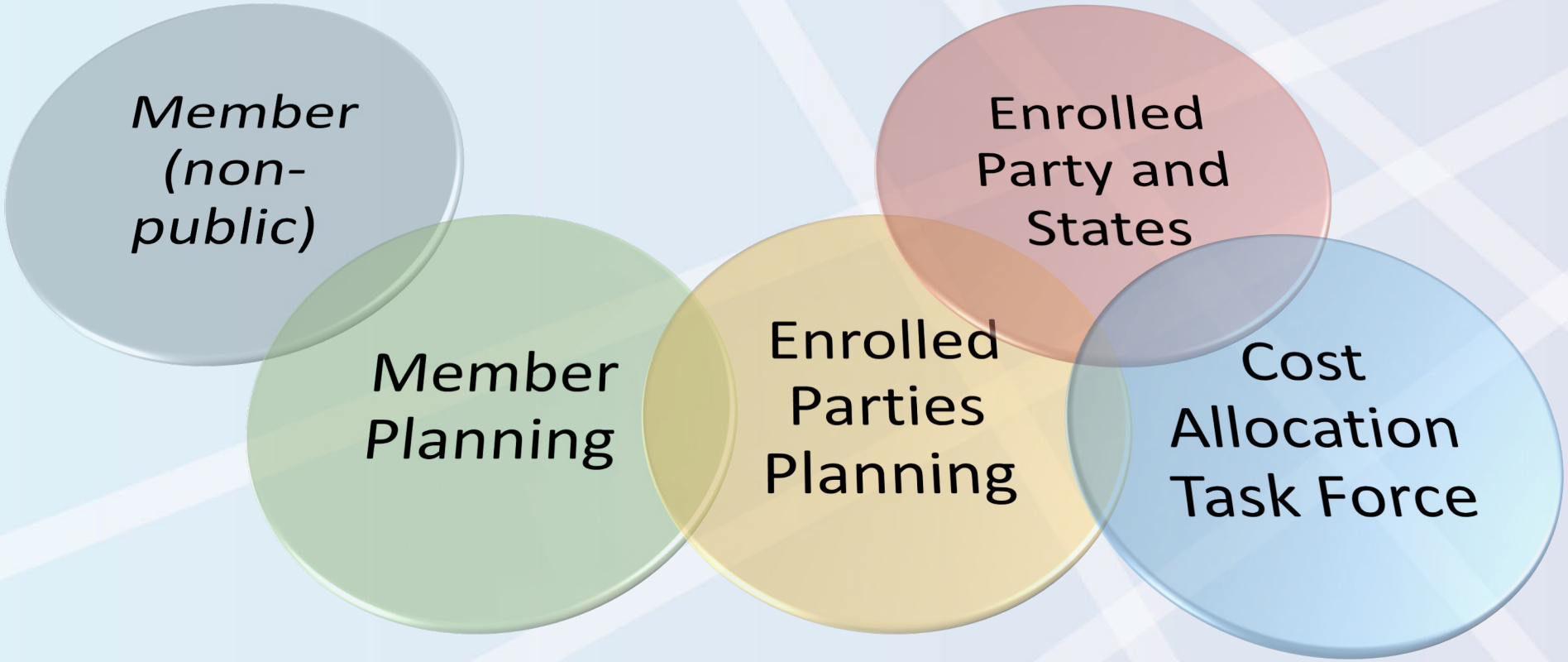
- Collaborative Pacific Northwest and Intermountain region planning
- Common data & assumptions
- Single stakeholder forum
- Facilitates FERC transmission planning compliance
  - including economic studies and cost allocation

Enrolled Parties

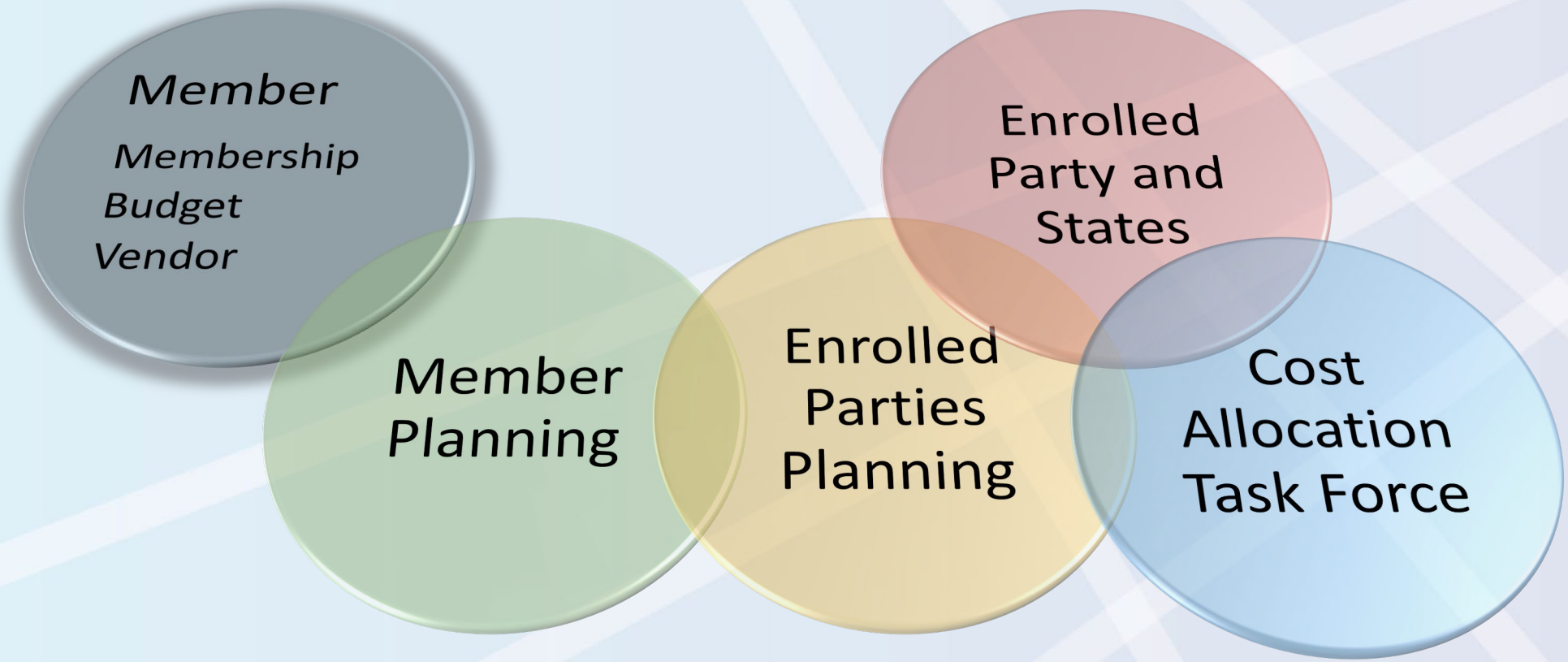
- Members who file a Regional Transmission Planning Tariff with FERC



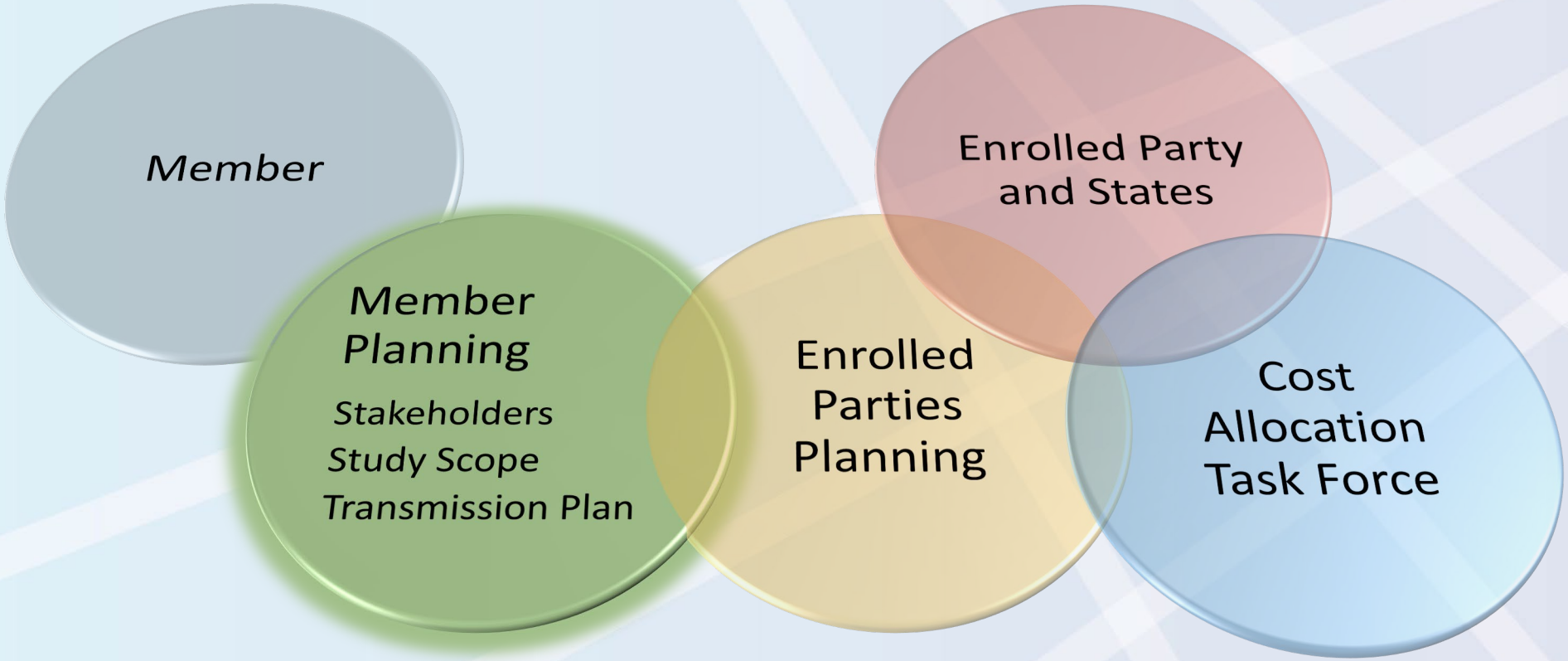
Committees


Member (non-public)
Member Planning
Enrolled Party and States
Enrolled Parties Planning
Cost Allocation Task Force

Member Committee Functions

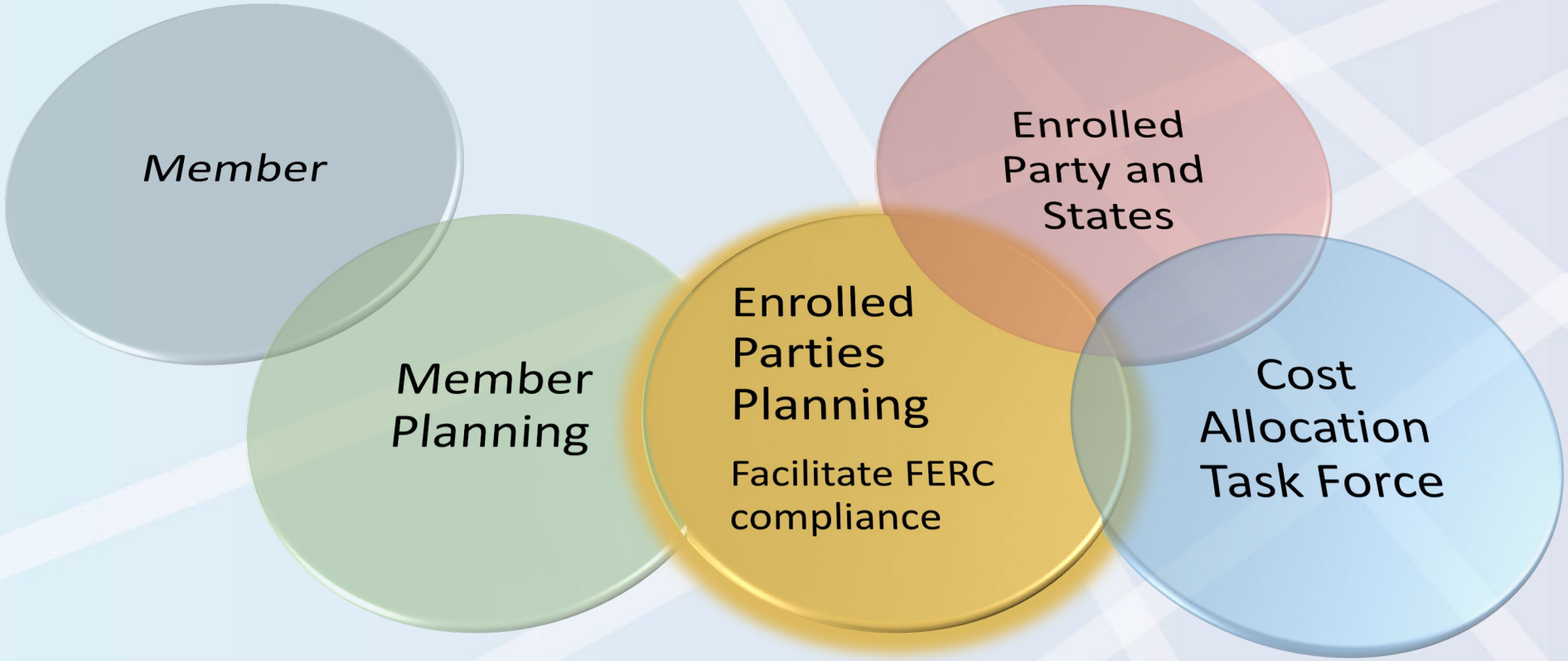


Member Planning Committee Functions



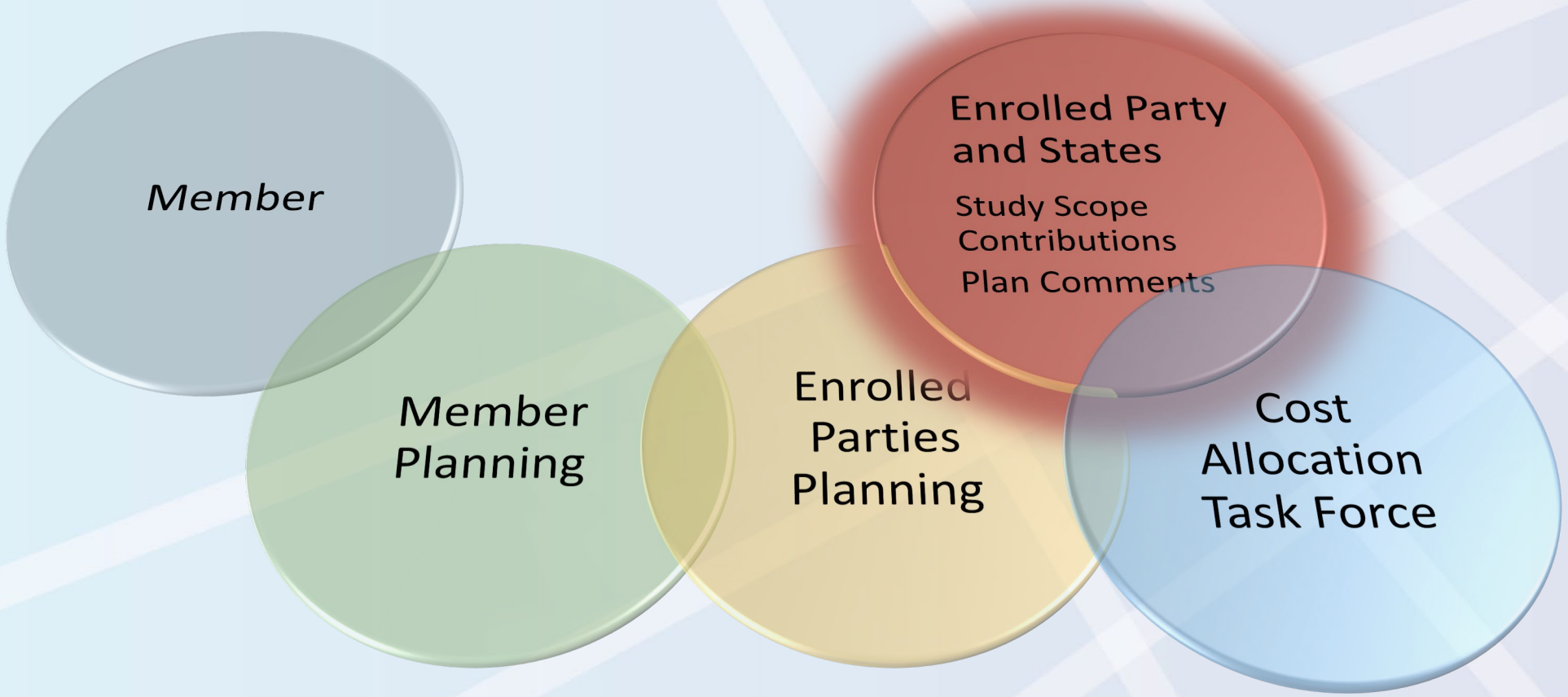
NorthernGrid

Enrolled Parties Planning Committee Functions



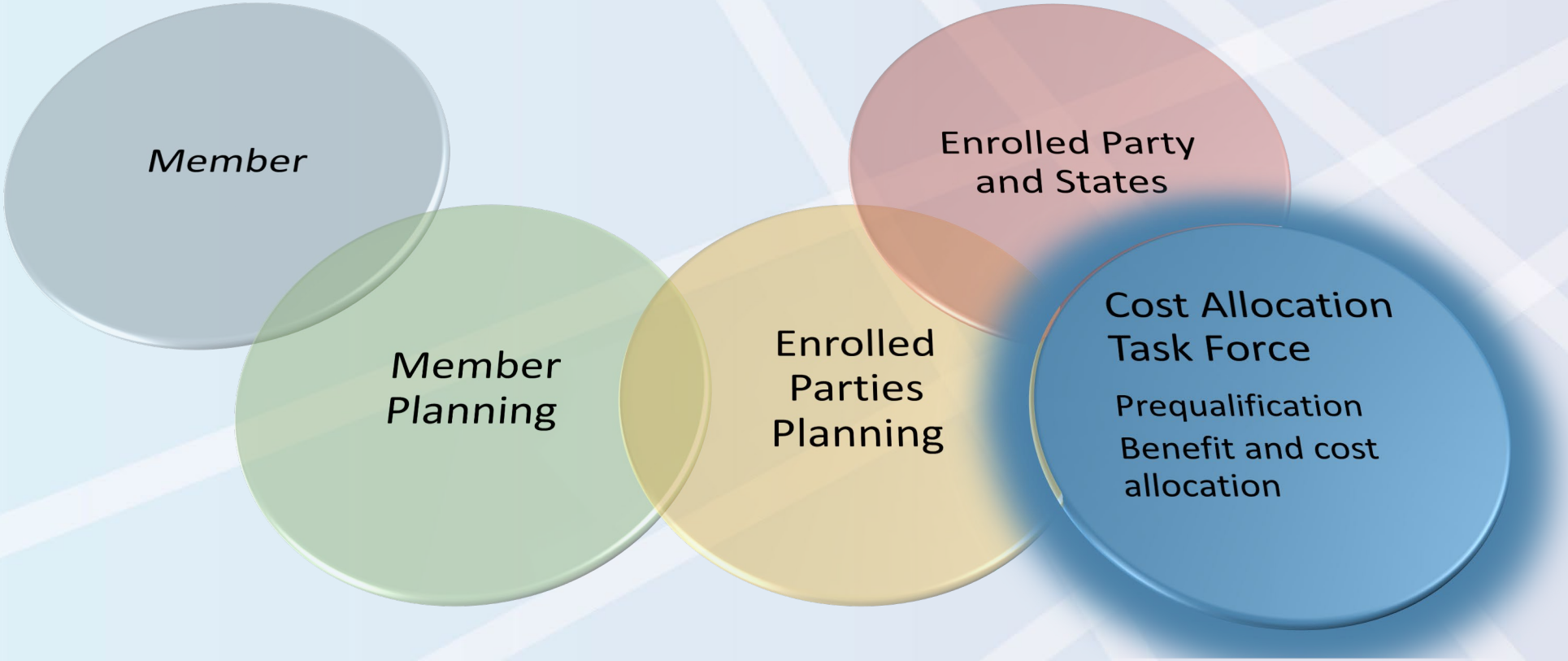
NorthernGrid

Enrolled Parties & States Committee Functions

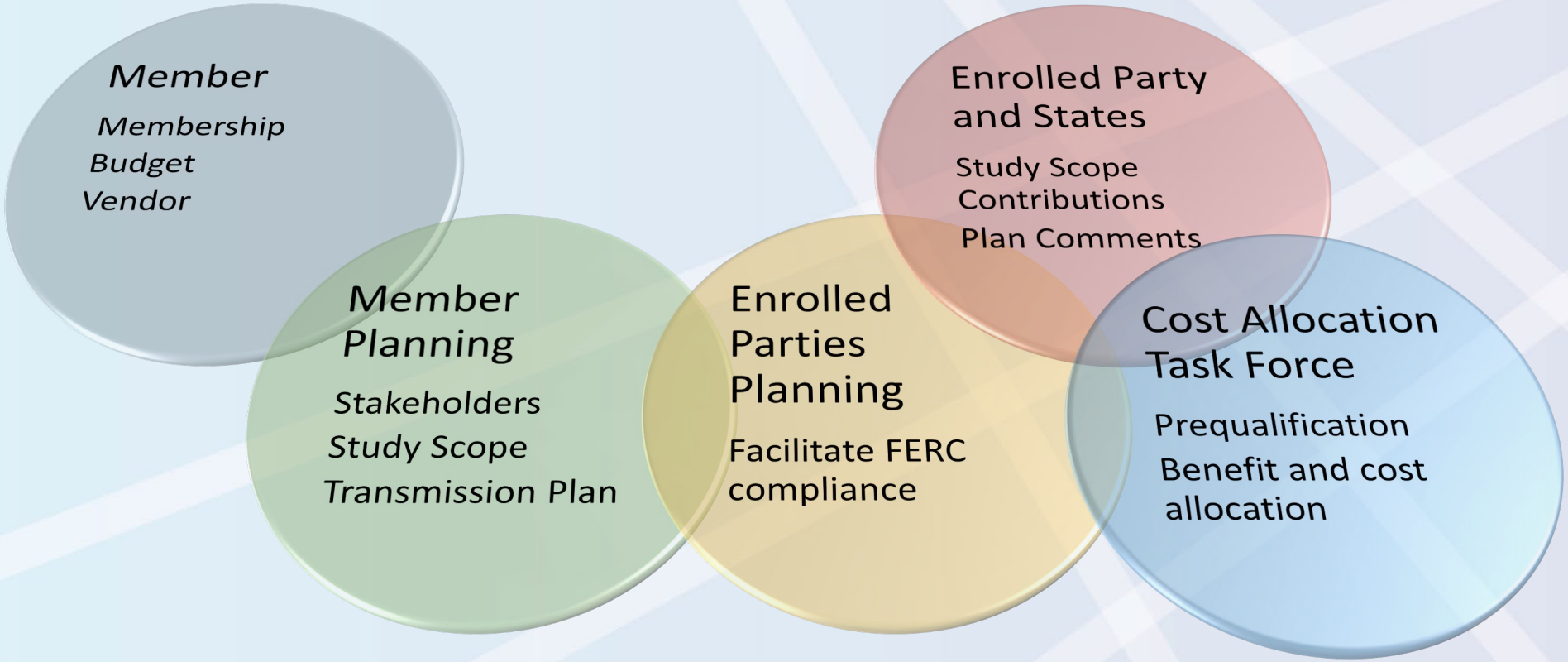


NorthernGrid

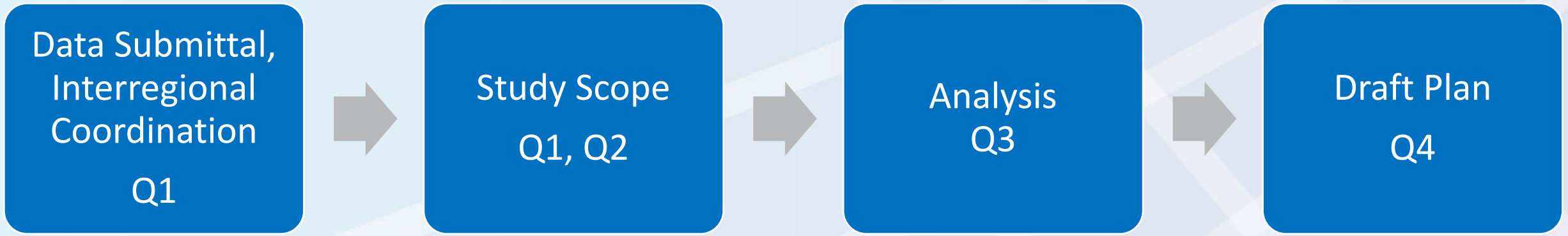
Cost Allocation Task Force Functions



Committee Questions

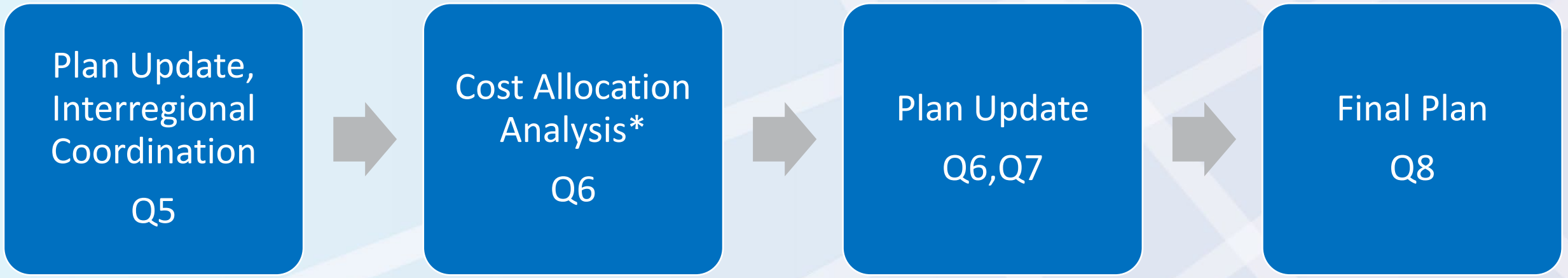


Regional Plan Development – First Year



NorthernGrid

Regional Plan Development – Second Year



*** If a qualified developer requested project cost allocation is selected into draft plan meeting Enrolled-Party needs**

NorthernGrid

2020-2021 Planning Cycle

2030 Resource Retirements

Coal

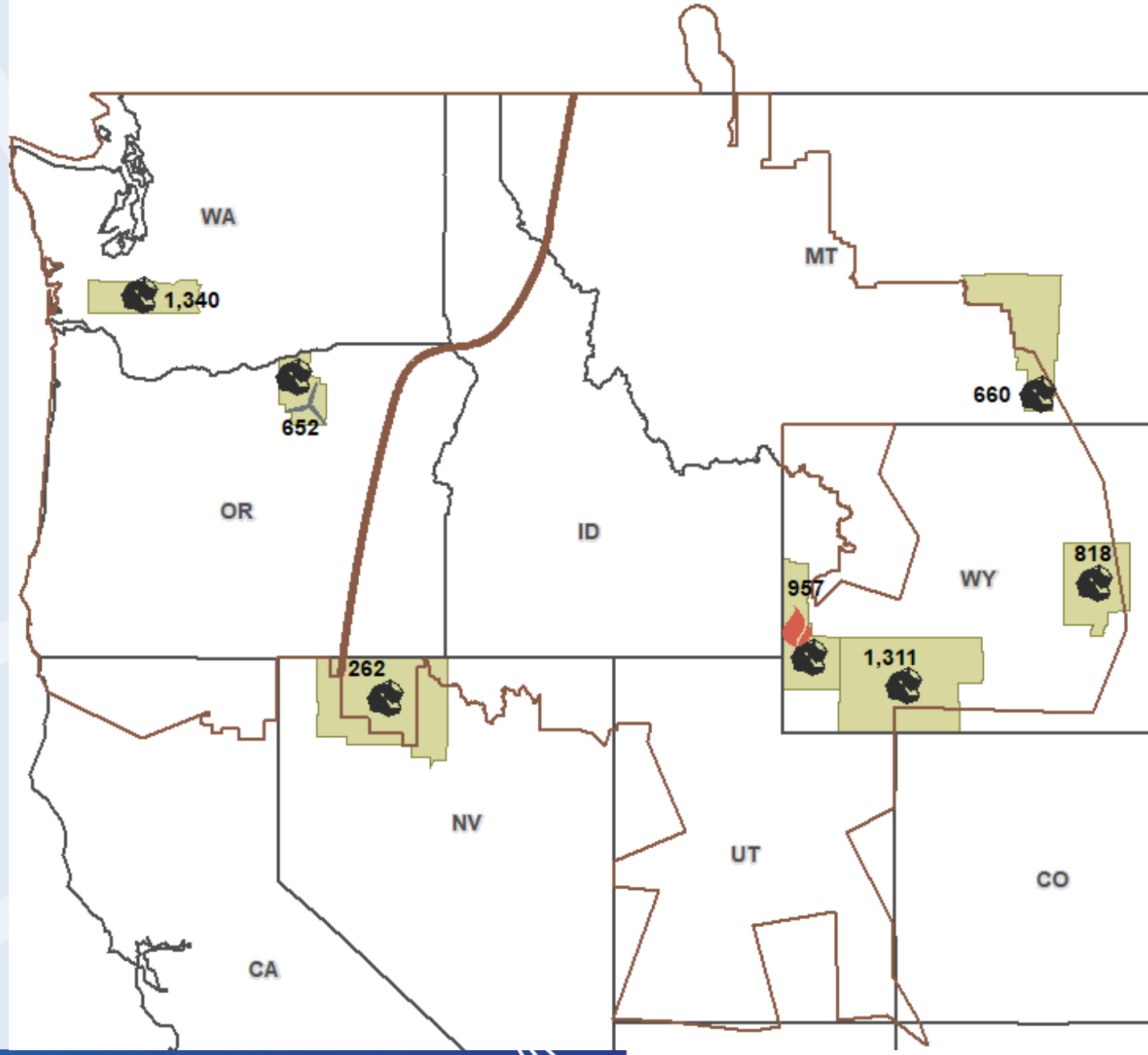
Natural Gas

Wind

NorthernGrid

County with Resource Retirement

Numbers indicate total MW of retirement in the county

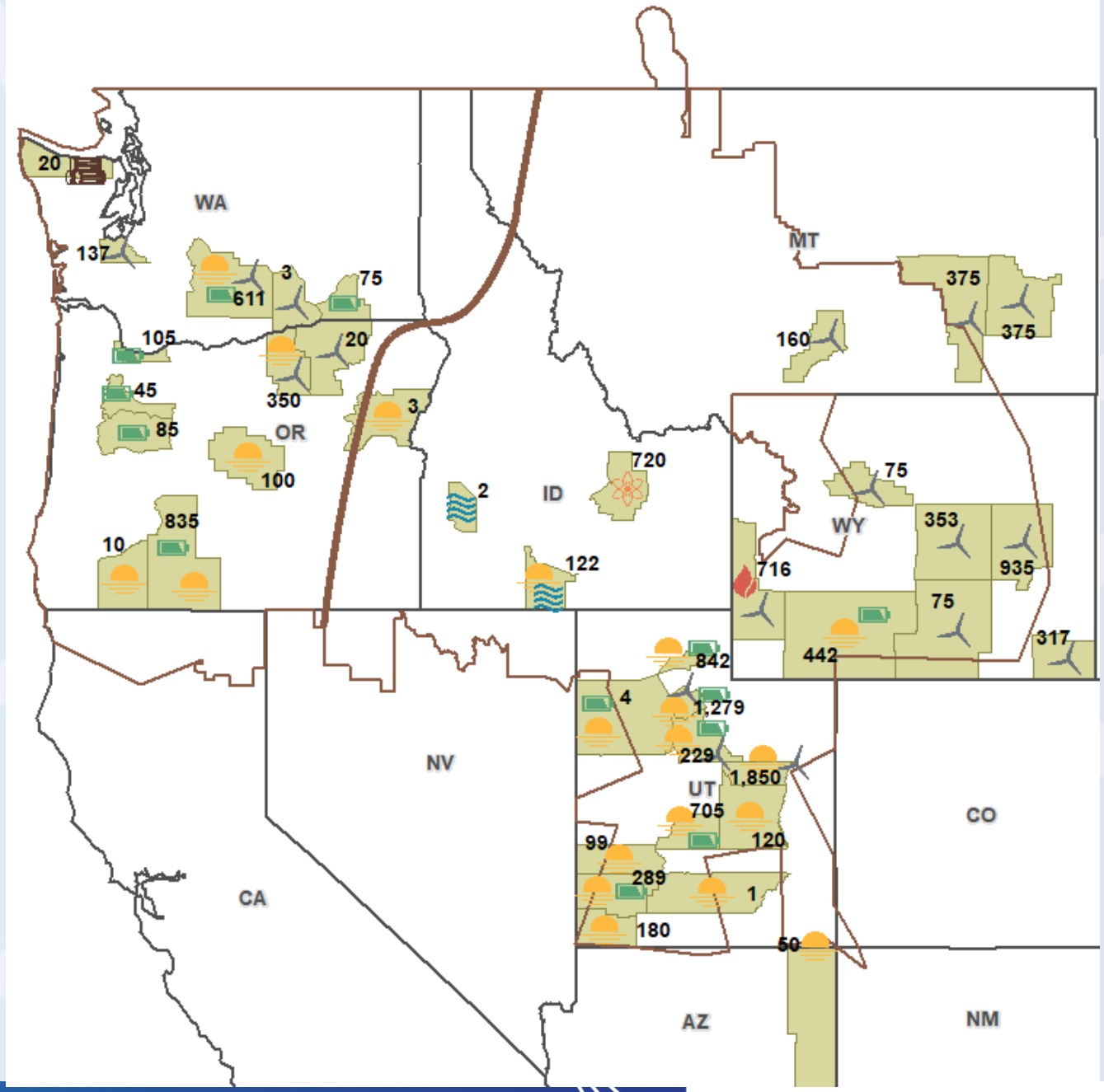


NorthernGrid

2030 Resource Additions

Hydro
Geothermal
Natural Gas
Nuclear
Solar
Storage
Wind
Wood Waste
NorthernGrid
County with Resource Addition

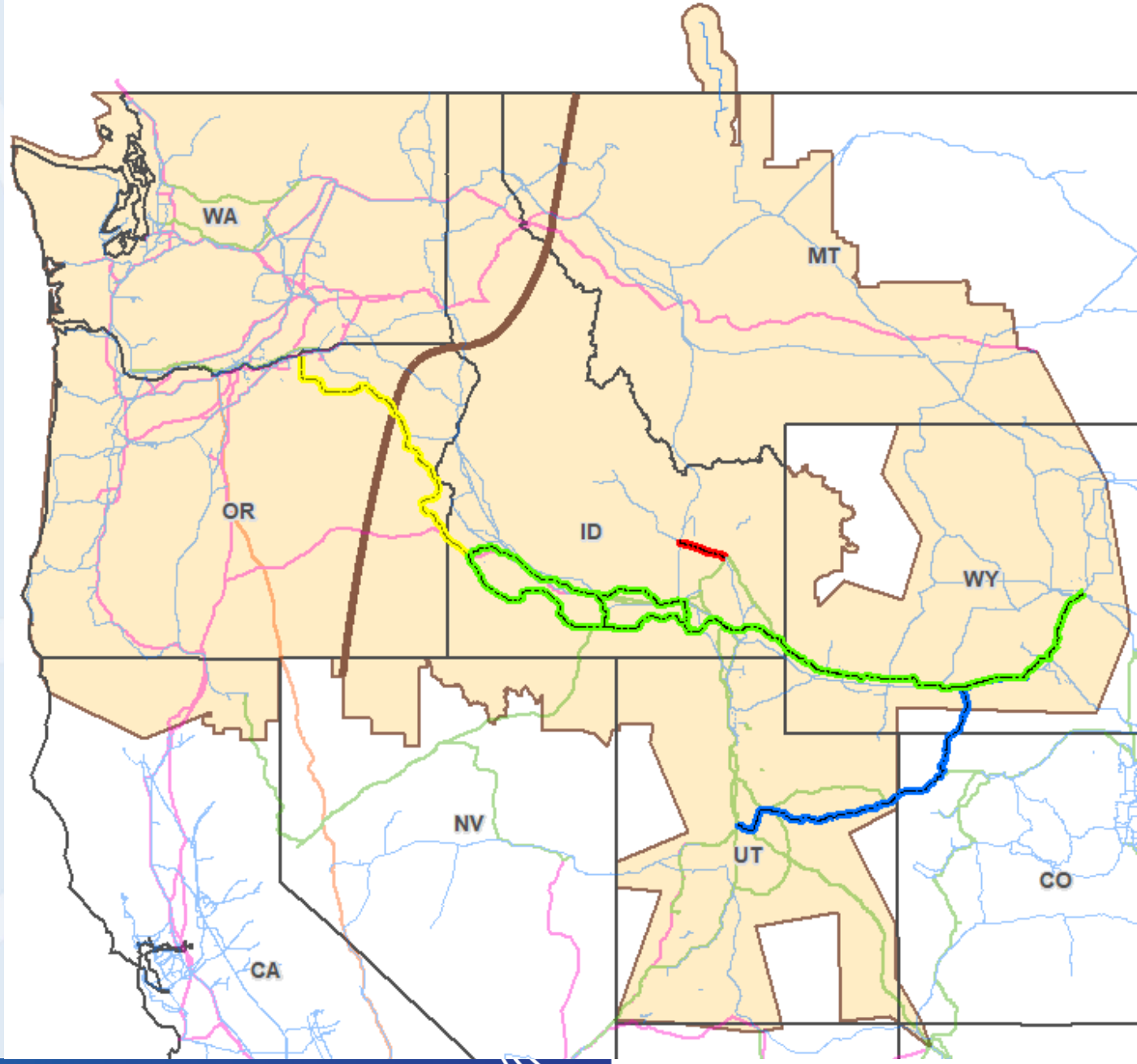
Numbers indicate total MW of addition in the county



NorthernGrid

2030 Member Transmission Projects

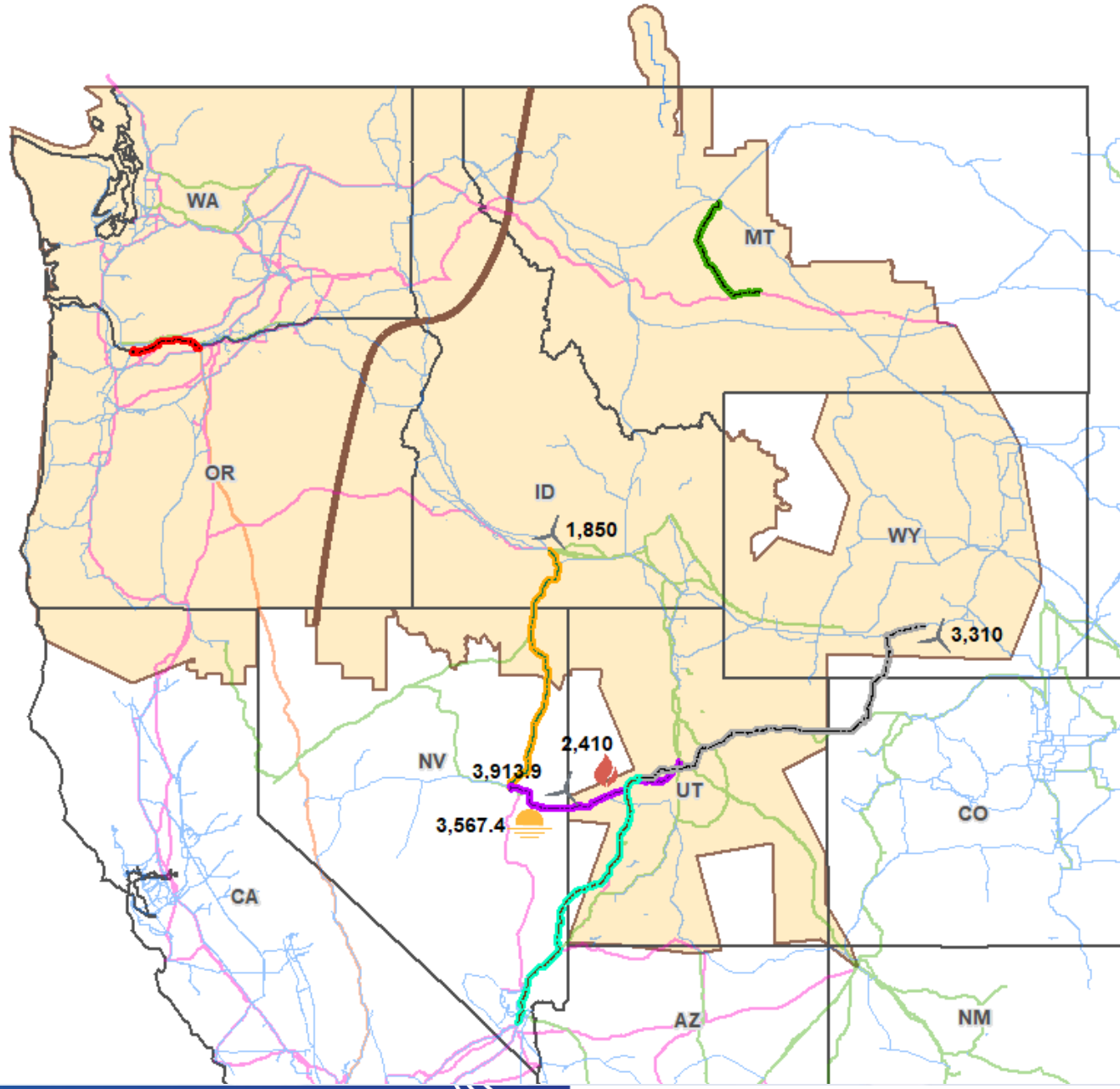
- Antelope 345 kV AC*
- Boardman to Hemingway 500 kV AC
- Gateway South 500 kV AC
- Gateway West 500 kV AC



NorthernGrid

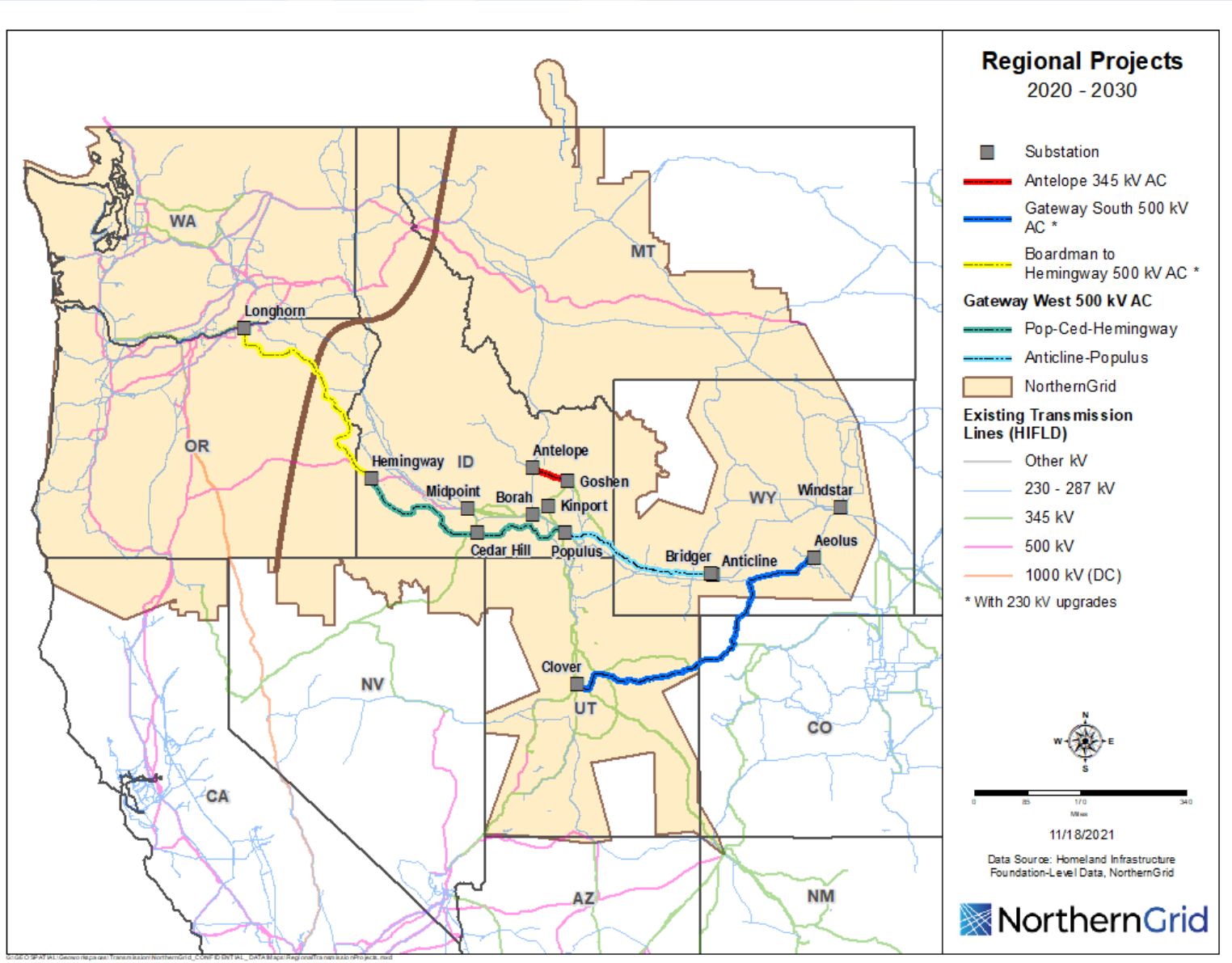
2030 Regional and Interregional Projects

- Natural Gas
- Solar
- Wind
- Cascade Renewable 400 kV DC
- Cross-tie 500 kV AC
- Loco Falls 230kV AC
- SWIP North 500 kV
- Transwest Express 500 kV DC
- Transwest Express 500 kV AC



NorthernGrid

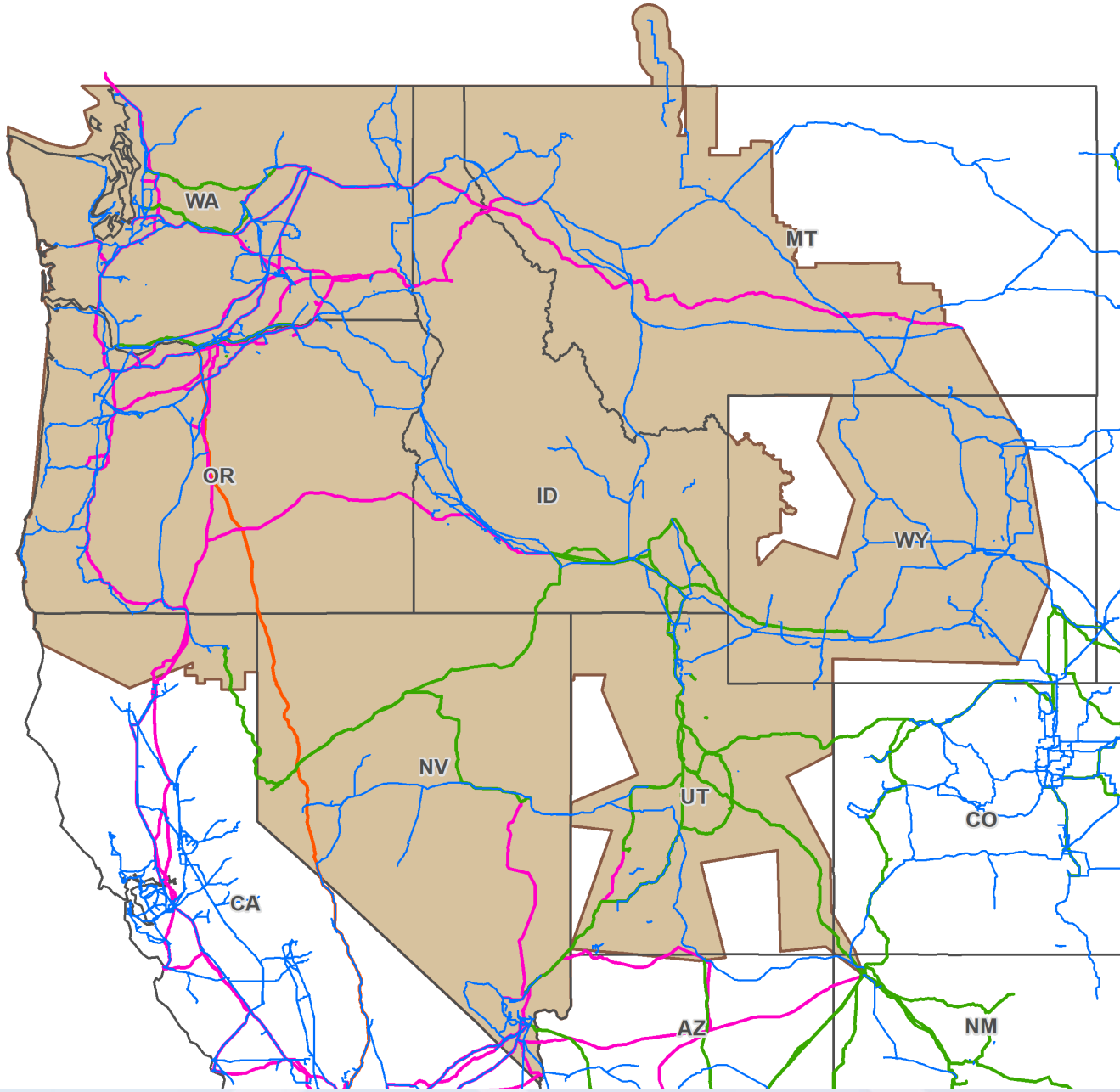
2020-2021 Regional Transmission Plan



2022-2023 Planning Cycle

Peak Demand

Area	Season	2030	2032	Change
7 state	Winter	44,225	38,845	-12%
7 state	Summer	43,859	39,836	-9%
8 state	Winter	2032	41,283	n/a
8 state	Summer	2032	44,821	n/a



NorthernGrid

2032 Resource Retirements

Coal

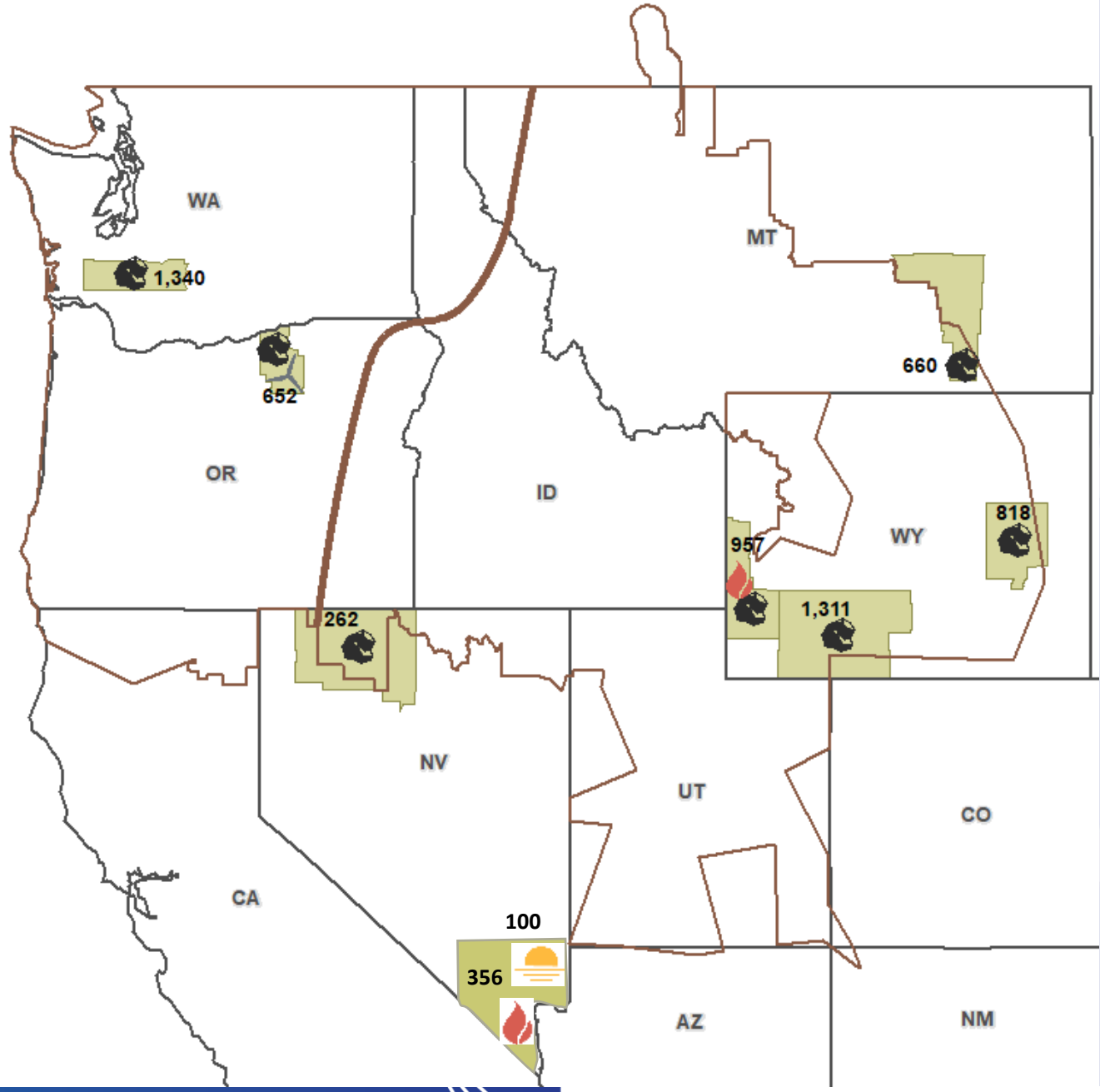
Natural Gas

Wind

NorthernGrid

County with Resource Retirement

Numbers indicate total MW of retirement in the county

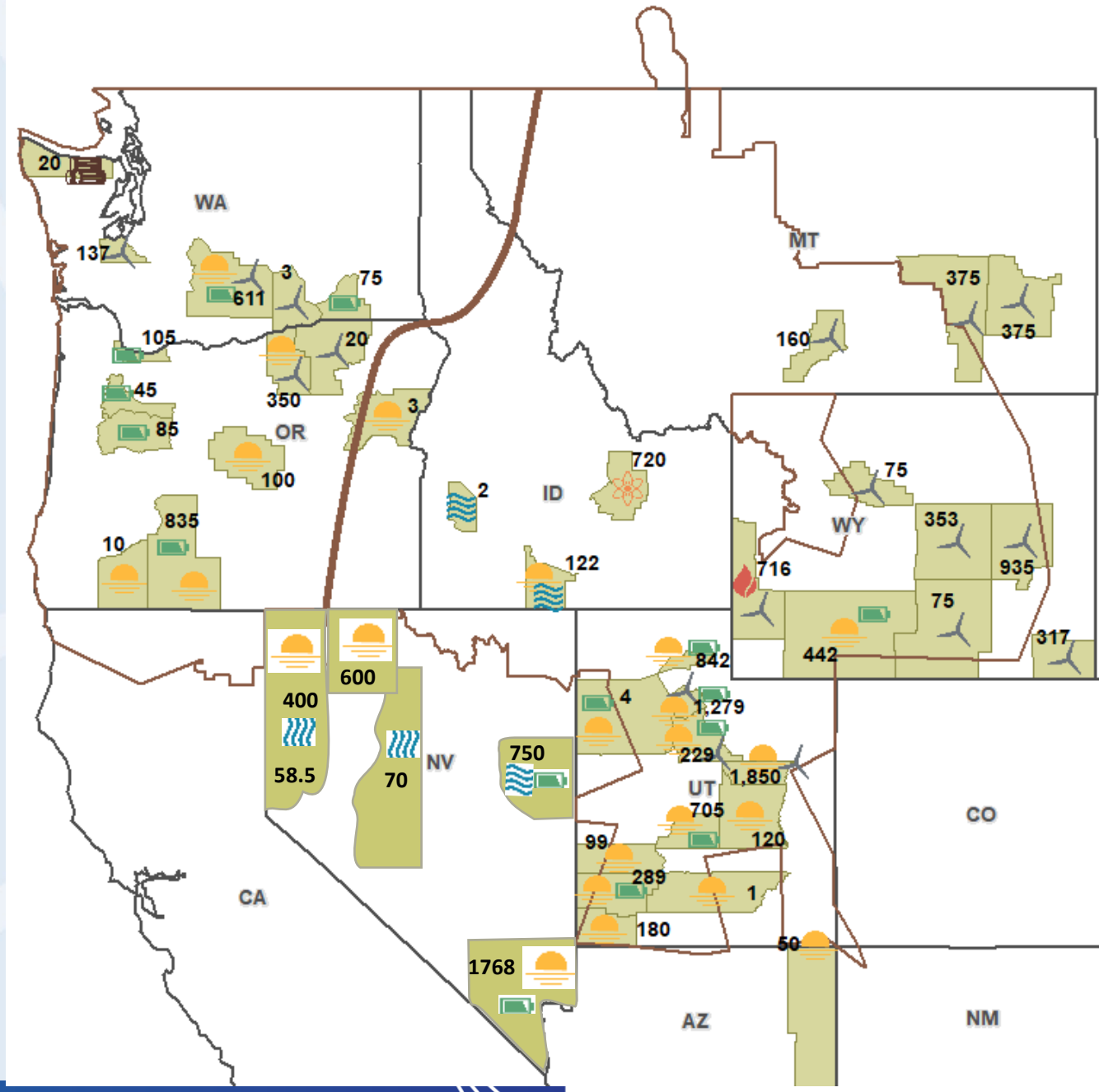


NorthernGrid

2032 Resource Additions

- Hydro
- Geothermal
- Natural Gas
- Nuclear
- Solar
- Storage
- Wind
- Wood Waste
- NorthernGrid
- County with Resource Addition

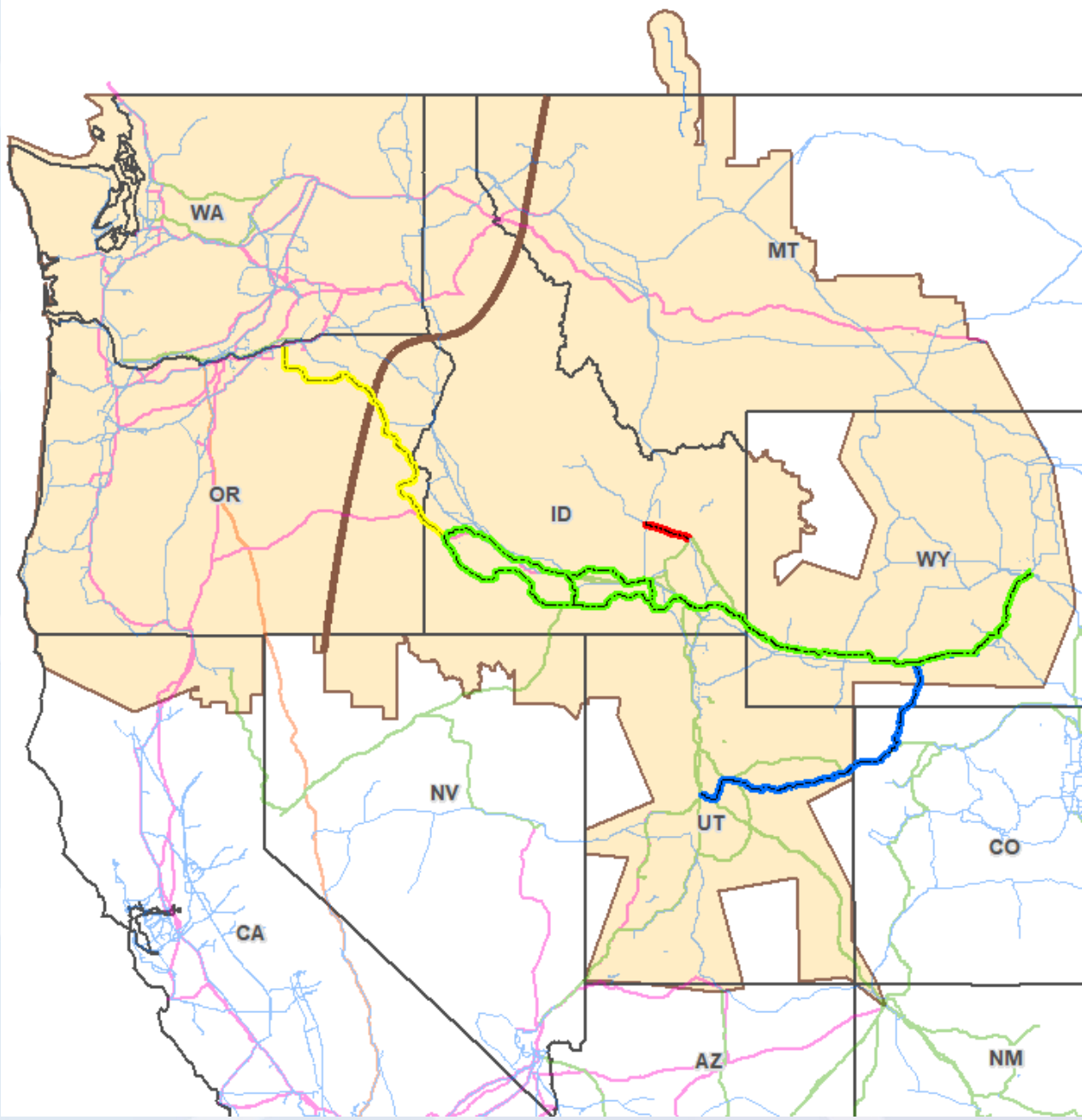
Numbers indicate total MW of addition in the county



NorthernGrid

2032 Member Transmission Projects

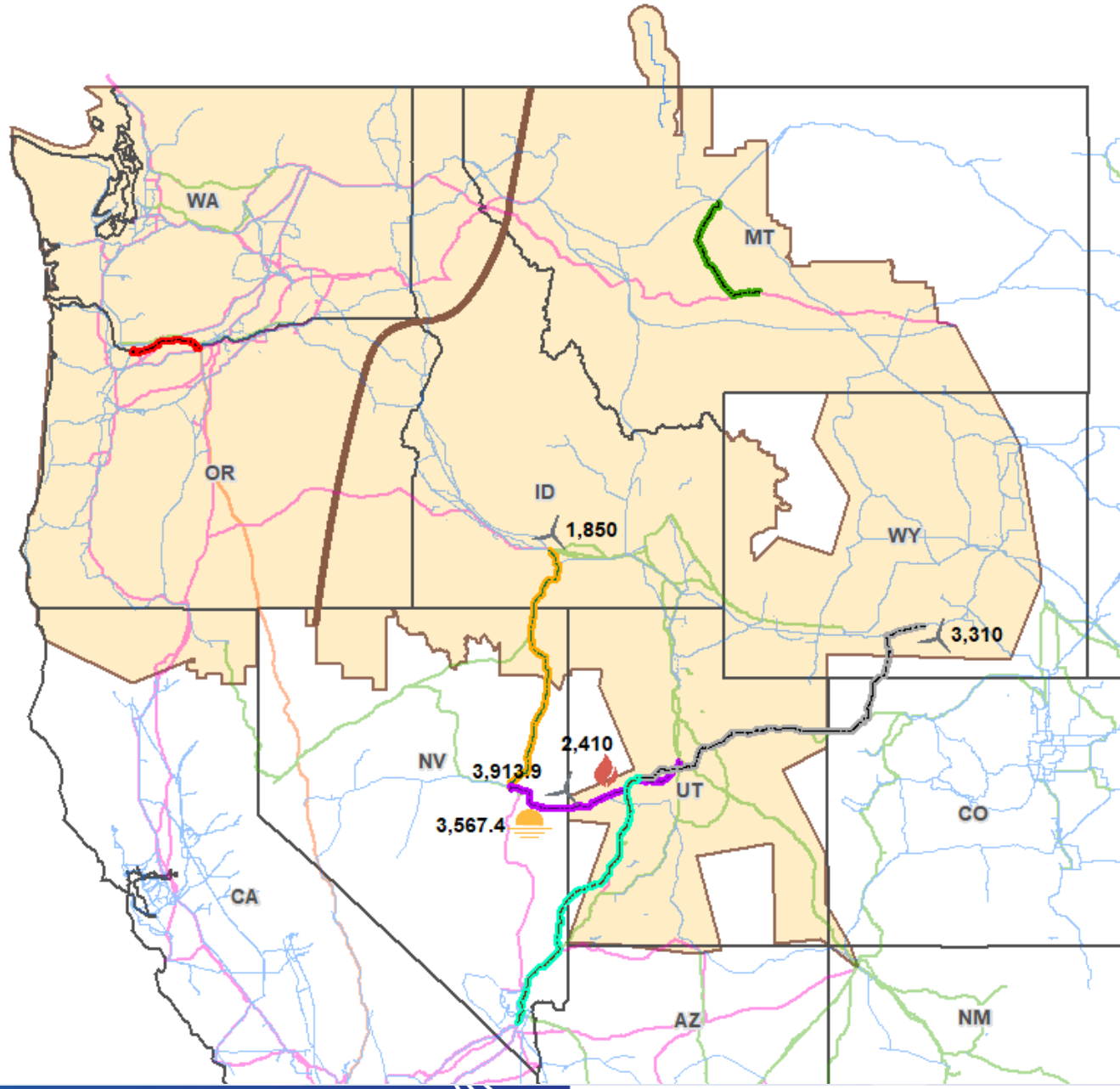
- Antelope 345 kV AC*
- Boardman to Hemingway 500 kV AC
- Gateway South 500 kV AC
- Gateway West 500 kV AC



NorthernGrid

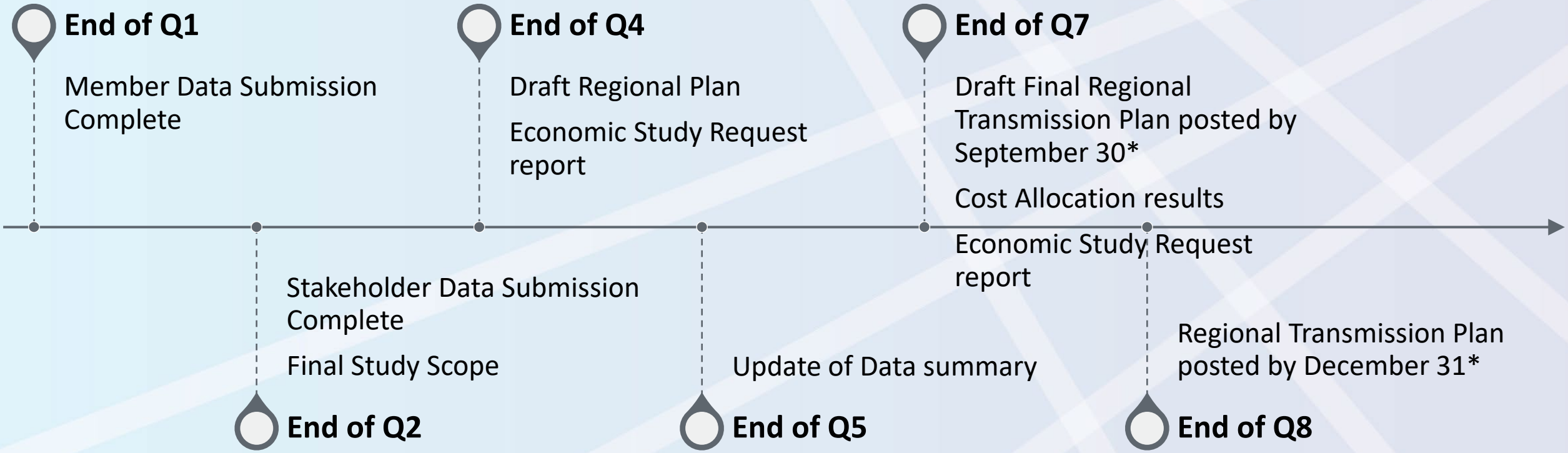
2032 Regional and Interregional Projects

- Natural Gas
- Solar
- Wind
- Cascade Renewable 400 kV DC
- Cross-tie 500 kV AC
- Loco Falls 230kV AC
- SWIP North 500 kV
- Transwest Express 500 kV DC
- Transwest Express 500 kV AC



NorthernGrid

NorthernGrid Schedule of Deliverables



*Indicates FERC requirement, all others typically agreed upon by members

NorthernGrid

Stakeholder Involvement

Participate in open meetings

Comment on the following through Formal Comment Windows

- Study Scope
- Draft Regional Transmission Plan
- Draft Final Regional Transmission Plan
- Regional Transmission Plan

Informal Study Scope Development Team

NorthernGrid

Contact and Reference Documents

Web Site www.northerngrid.net

Contact NWPP_NorthernGrid_Staff@westernpowerpool.org

Reference Documents

- Charters https://www.northerngrid.net/resources/?name=charter
- Agreements https://www.northerngrid.net/resources/?name=&tags=2
- Planning process diagram https://www.northerngrid.net/resources/?name=&tags=3

NorthernGrid