NorthernGrid

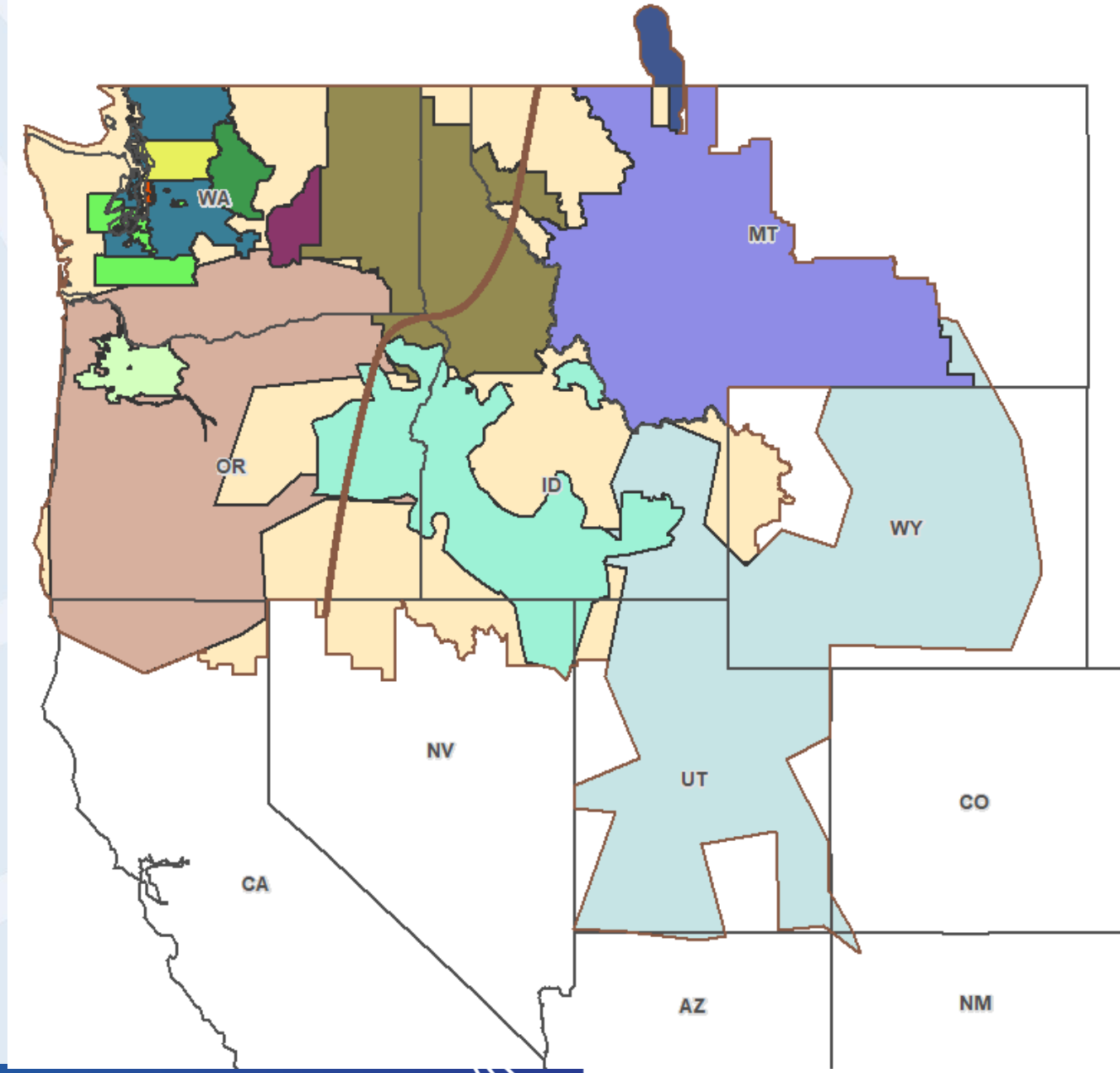
Interregional Coordination Meeting

March 30, 2021

Topics

- Introduction to NorthernGrid
- Submitted Data
- Study Scope
- Power Flow Cases
- WECC Anchor Data Set Actions

Association of Members



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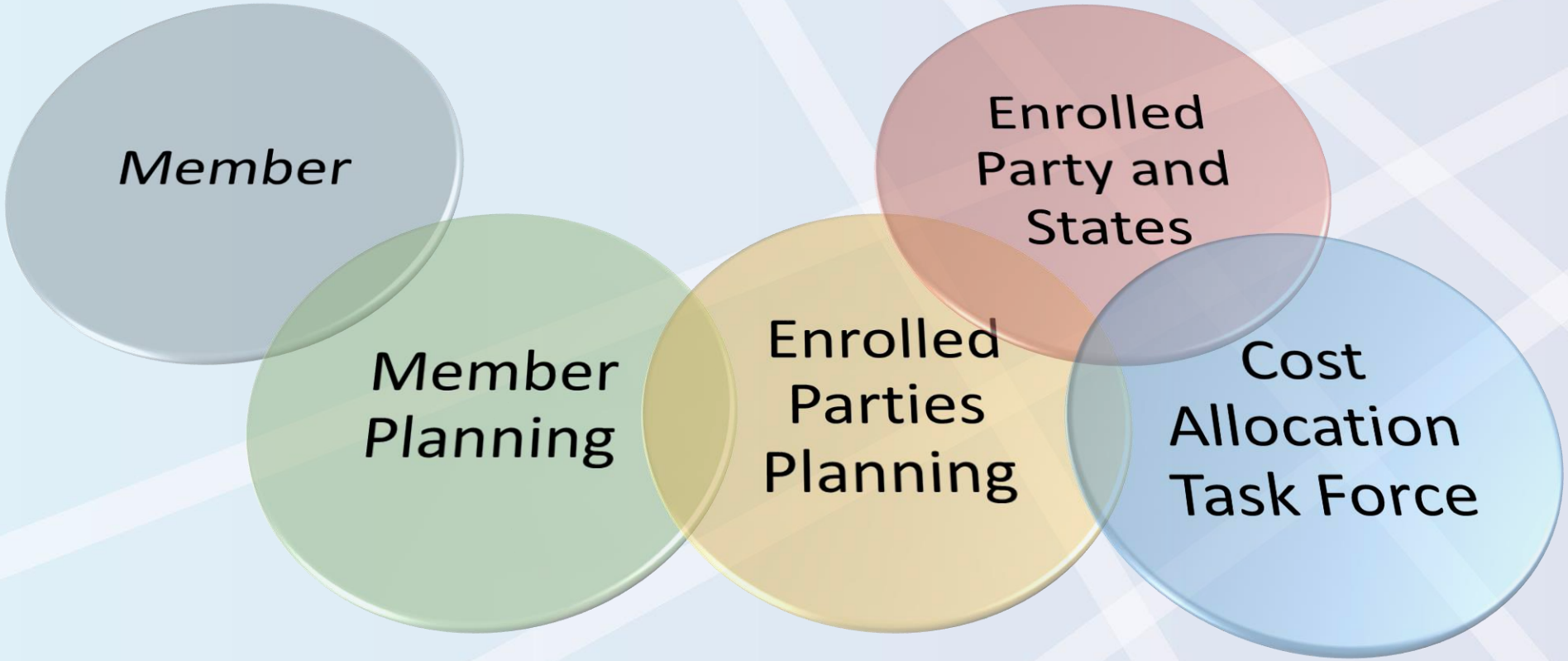
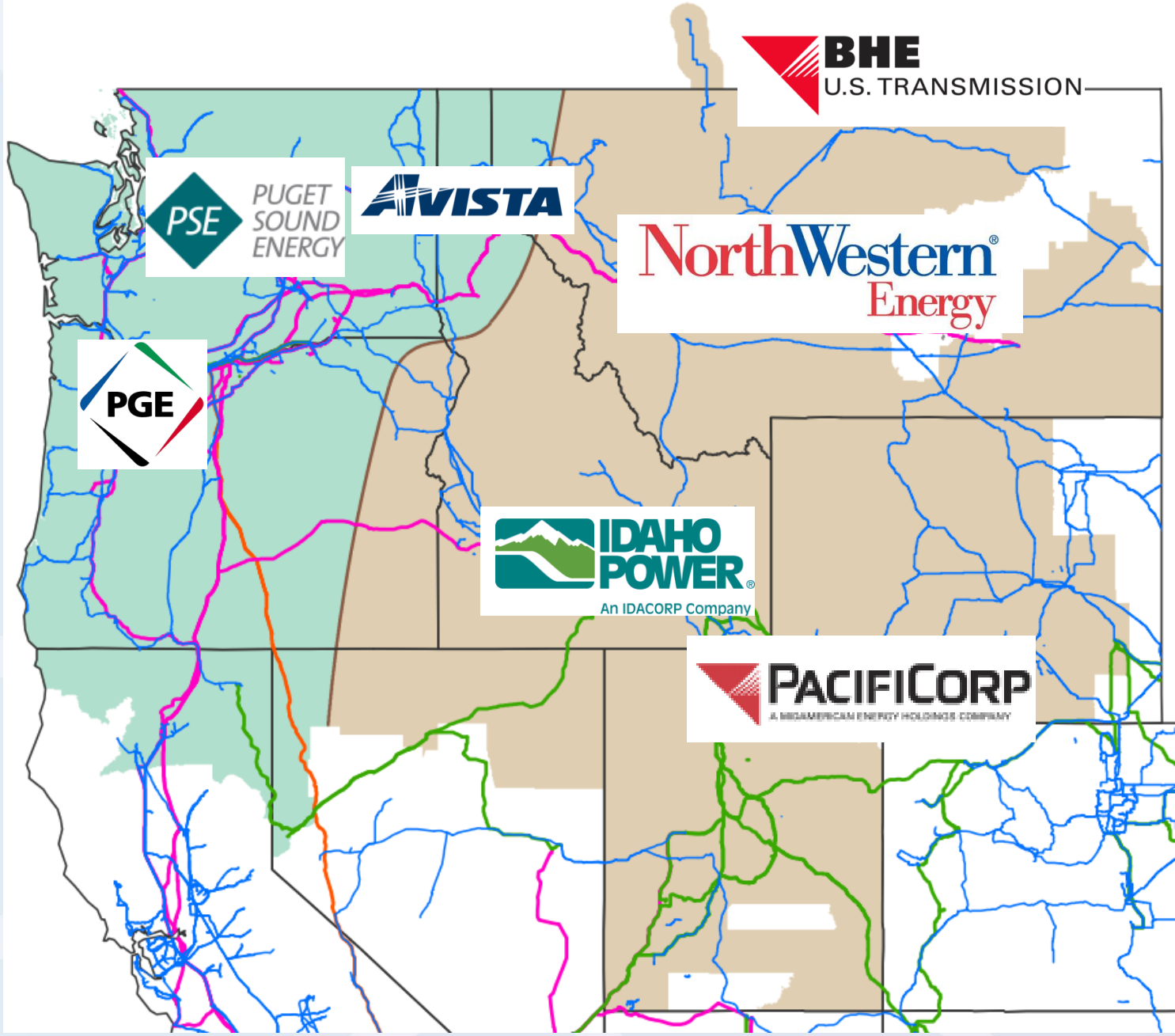
Committees


Member
Member Planning
Enrolled Party and States
Enrolled Parties Planning
Cost Allocation Task Force

Enrolled Parties

- Members who file a Regional Transmission Planning Tariff with FERC



Regional Transmission Process

- Work together to create a Regional Plan that “exceeds” a simple rollup of all the Local Area Plans

Study Scope

- **Gather Data**
- **Develop Study Plan**
- **Economic Study requests submittal**
- **Cost Allocation submittal**
- **Interregional coordination**

Analysis

- **Perform Analysis**
- **Updated data in Q5**
- **Economic Study submittal/analysis**
- **Cost Allocation analysis**
- **Interregional coordination**

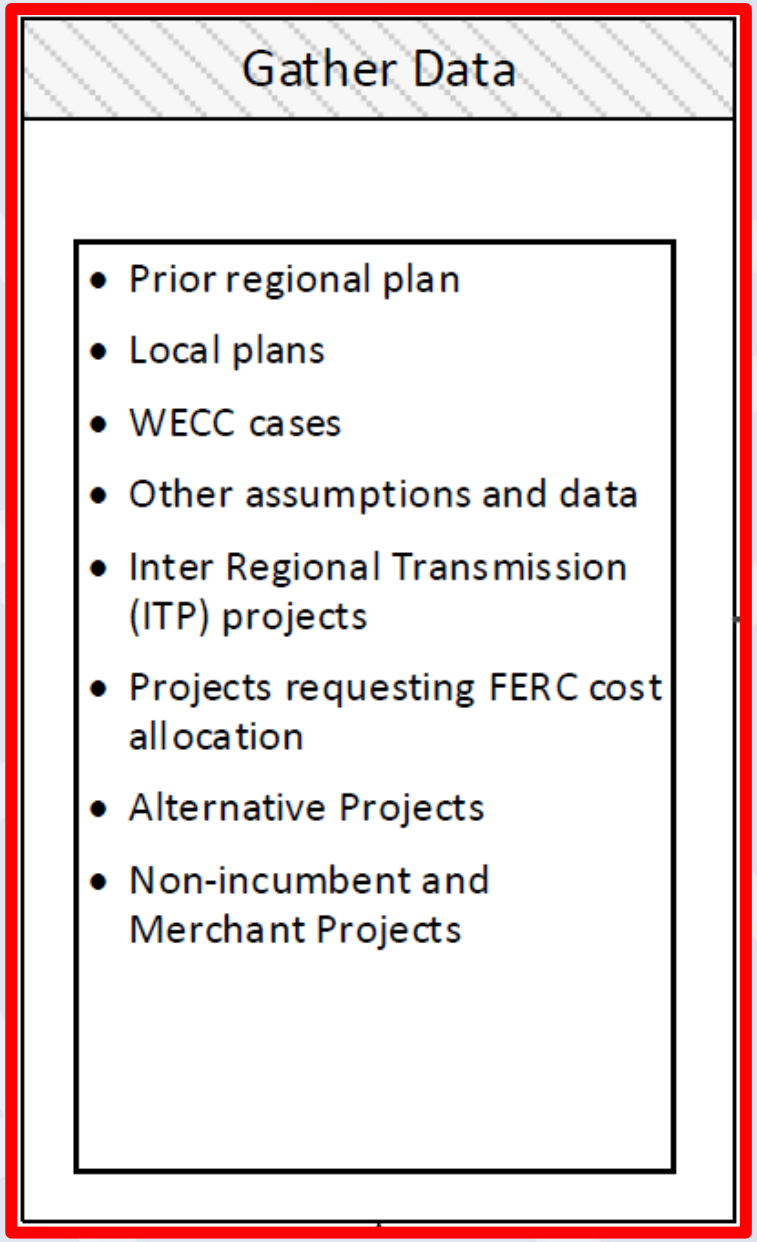
Report

- **Finalize Report**
- **Finalize Cost Allocation**

A Regional Transmission Plan is not a Construction Plan

Data Submission Process

- NorthernGrid Utility Data
  - Local Plans
  - Load Forecast
  - Resource Forecasts
  - Public Policy Requirements
- Non-Incumbent and Merchant Project Data
  - Associated Resources



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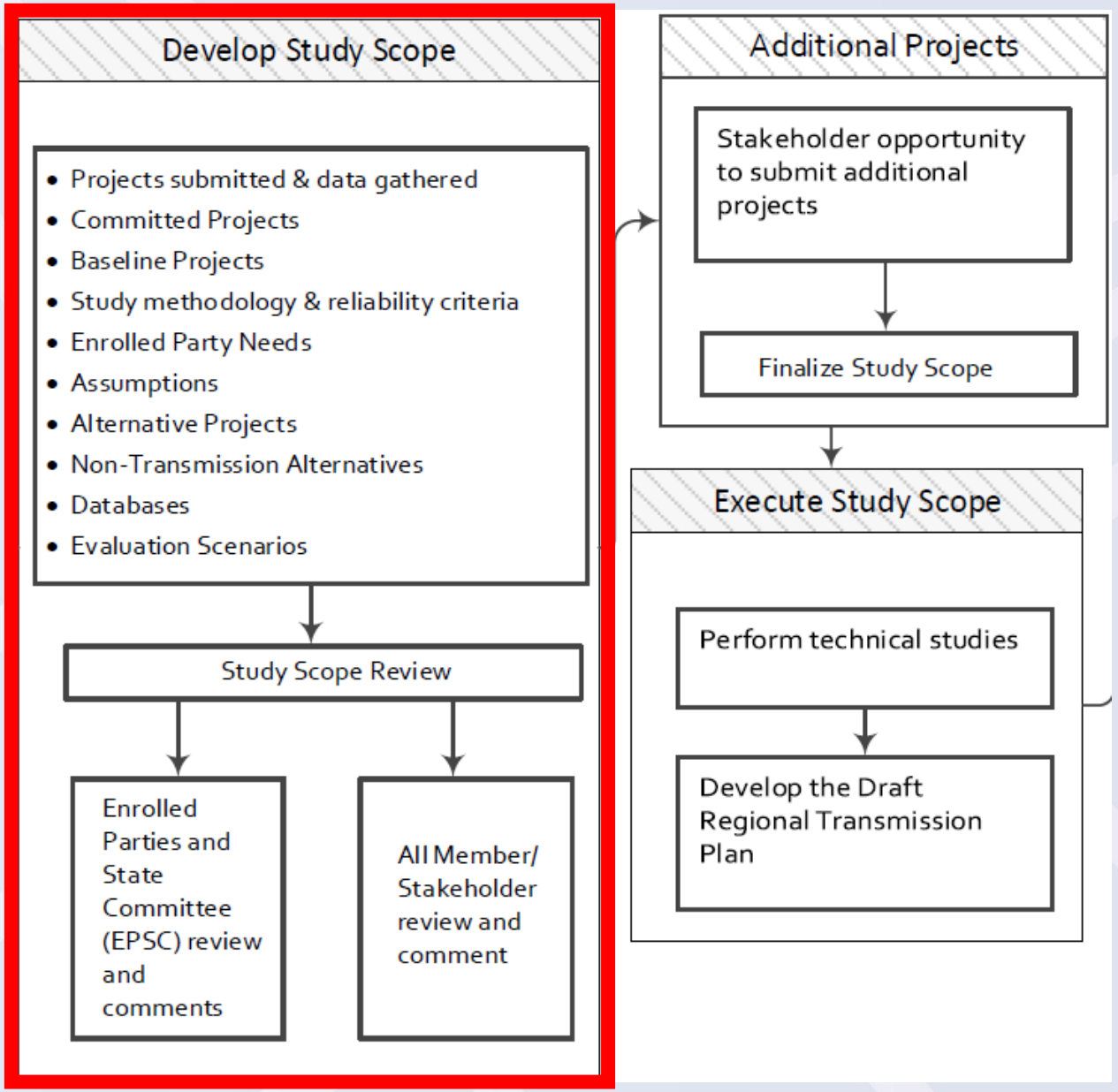
Develop Study Scope



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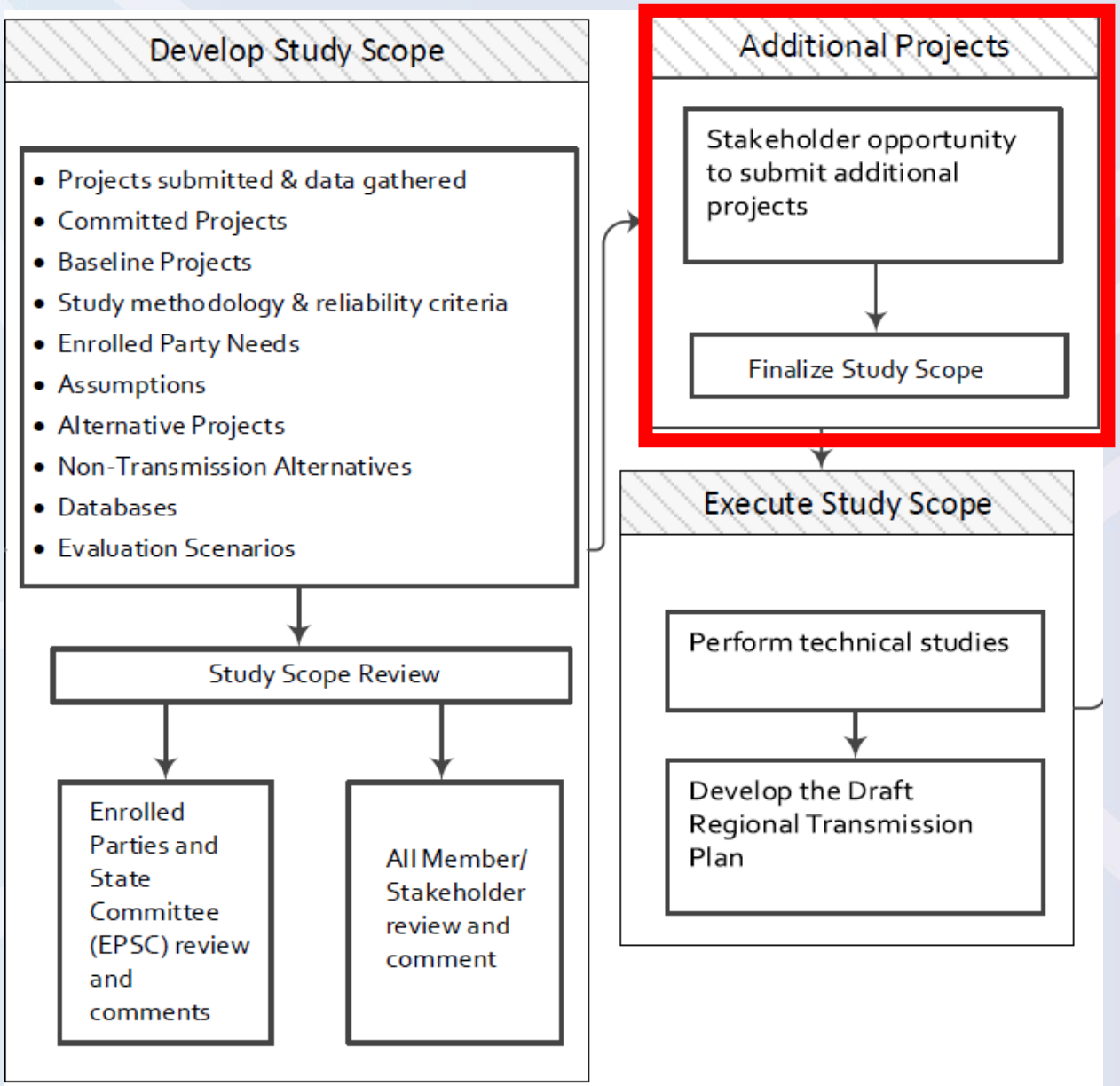
FERC Filing Lessons Learned



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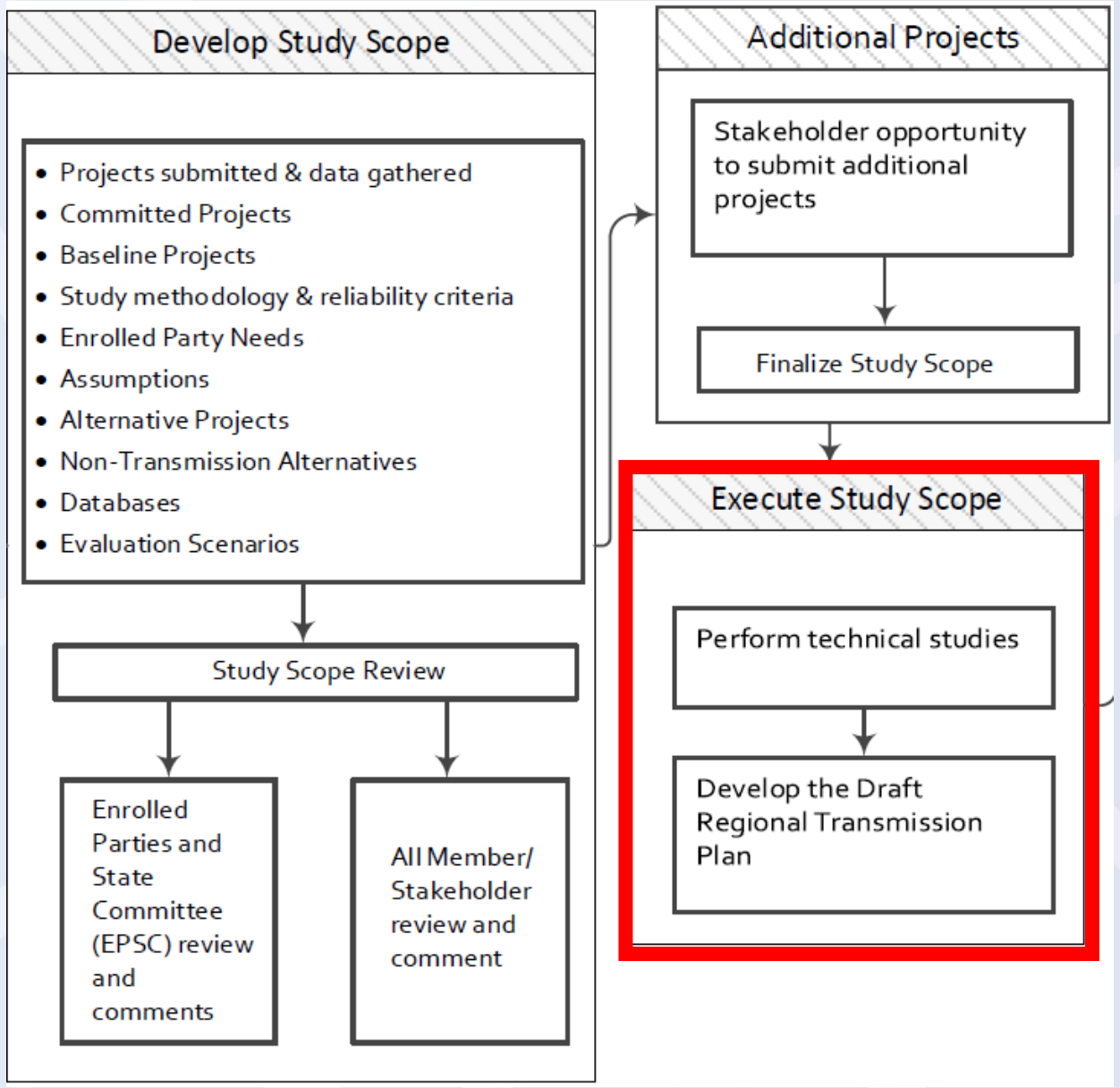
Execute the Study Scope



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NorthernGrid Schedule of Deliverables

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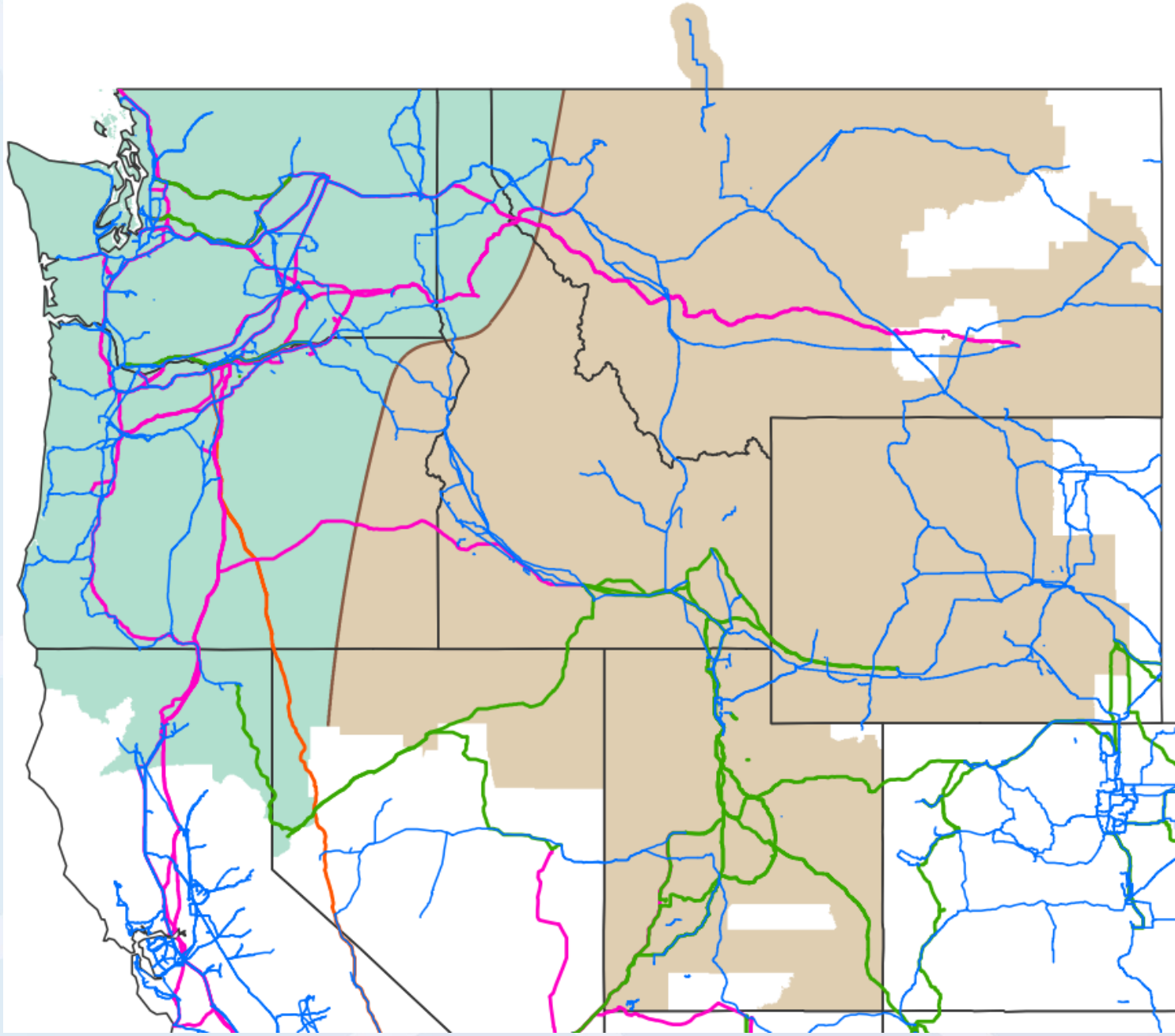
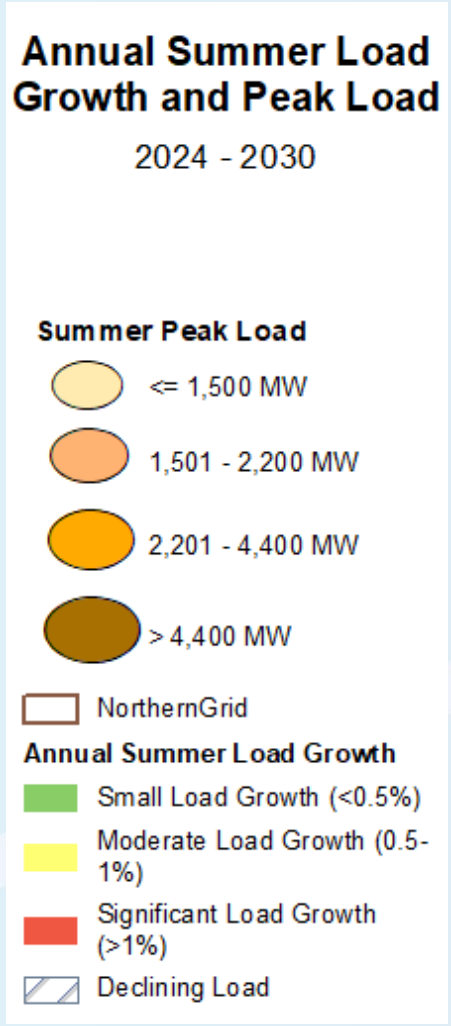
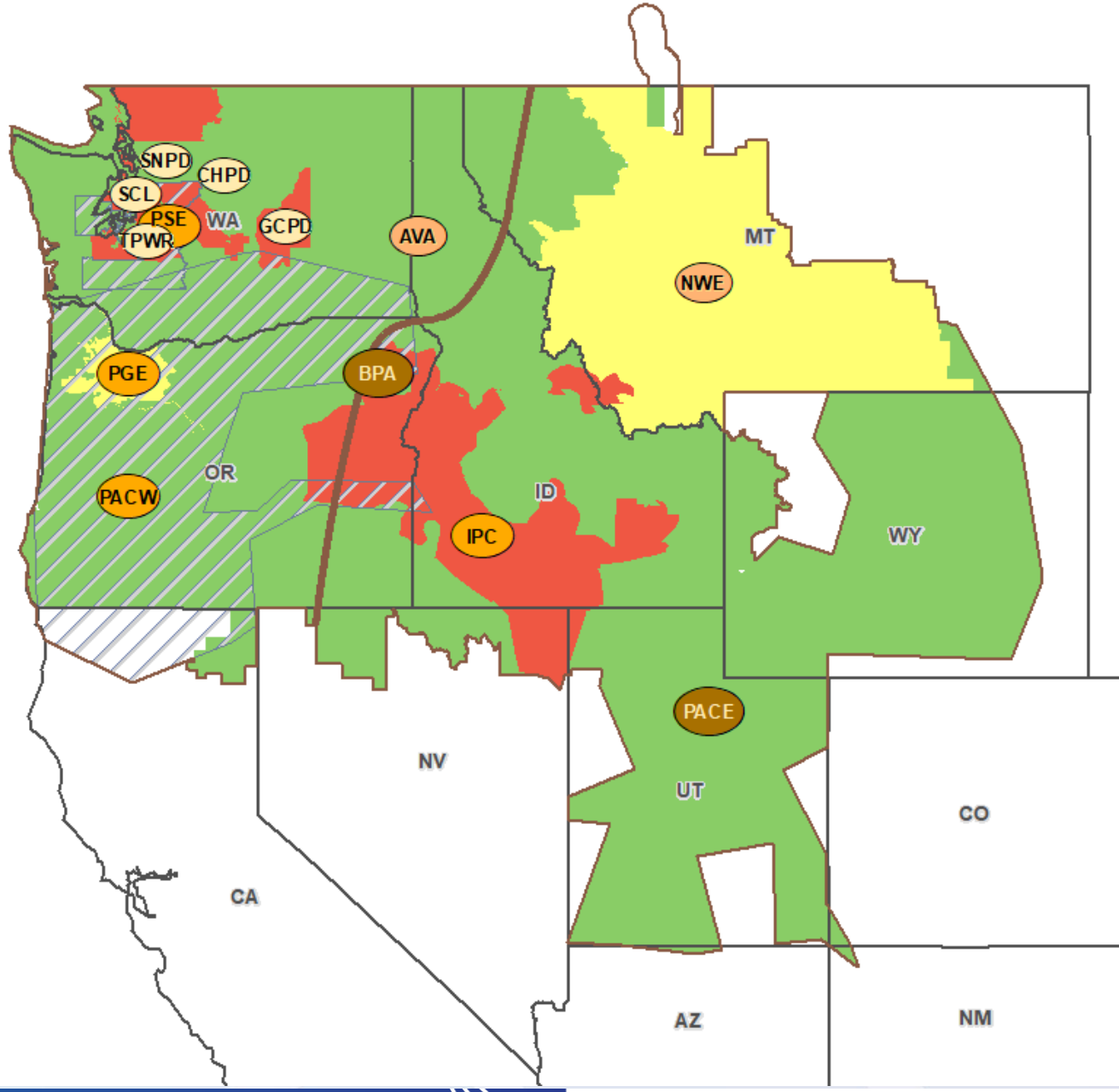
NorthernGrid Subregions

- Pacific Northwest
- Intermountain



Summer Load





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Winter Load

Annual Winter Load Growth and Peak Load

2024 - 2030

Winter Peak Load

- <= 2,000 MW
- 2,001 - 4,000 MW
- 4,001 - 7,400 MW
- > 7,400 MW

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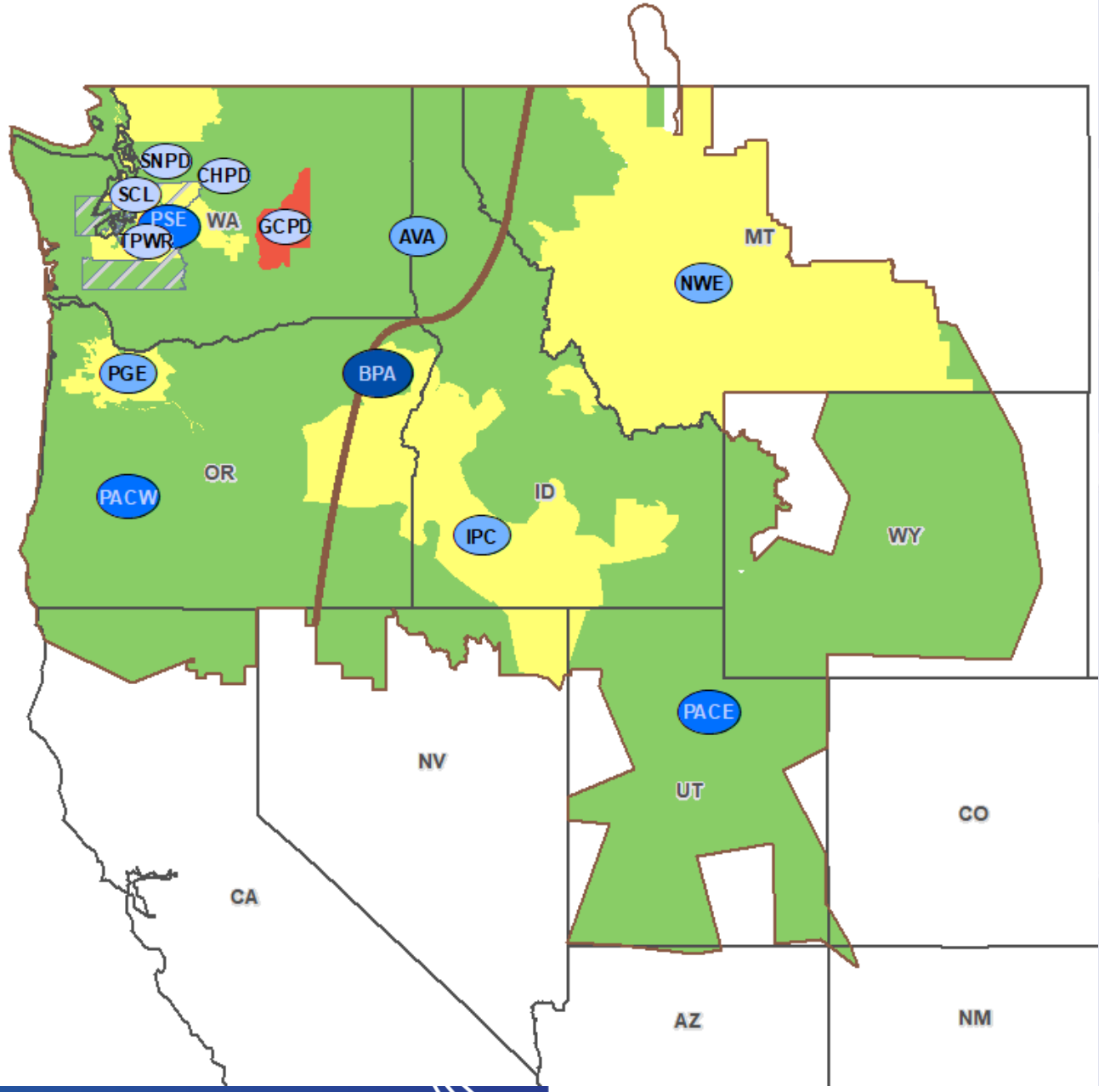
Annual Winter Load Growth

- 0.0% - 0.5%
- 0.6% - 1.0%
- 1.1% - 1.8%
- Declining Load



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Resource Retirements

Coal

Natural Gas

Wind

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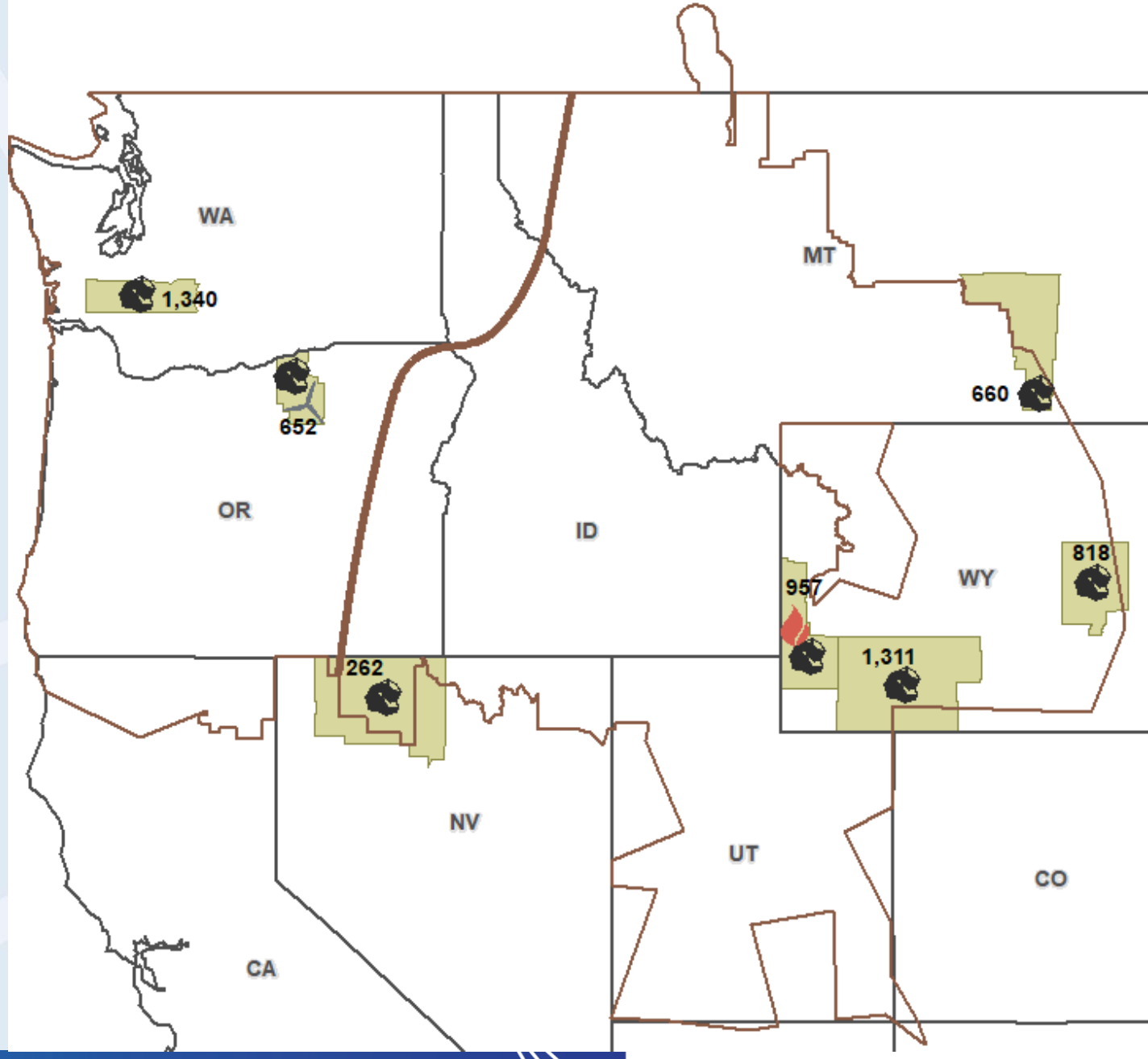
County with Resource Retirement

Numbers indicate total MW of retirement in the county



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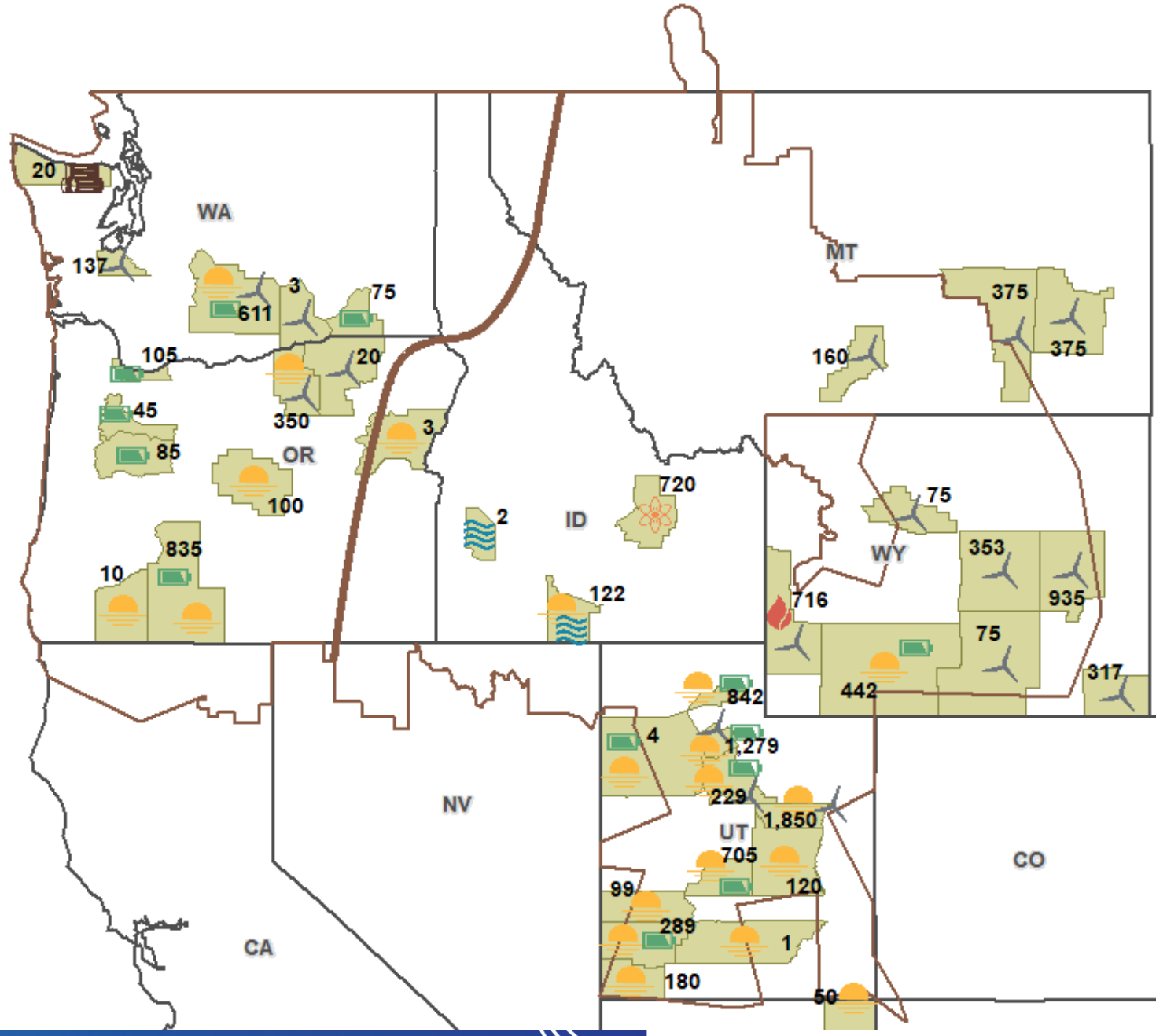
Resource Additions

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

Numbers indicate total MW of addition in the county



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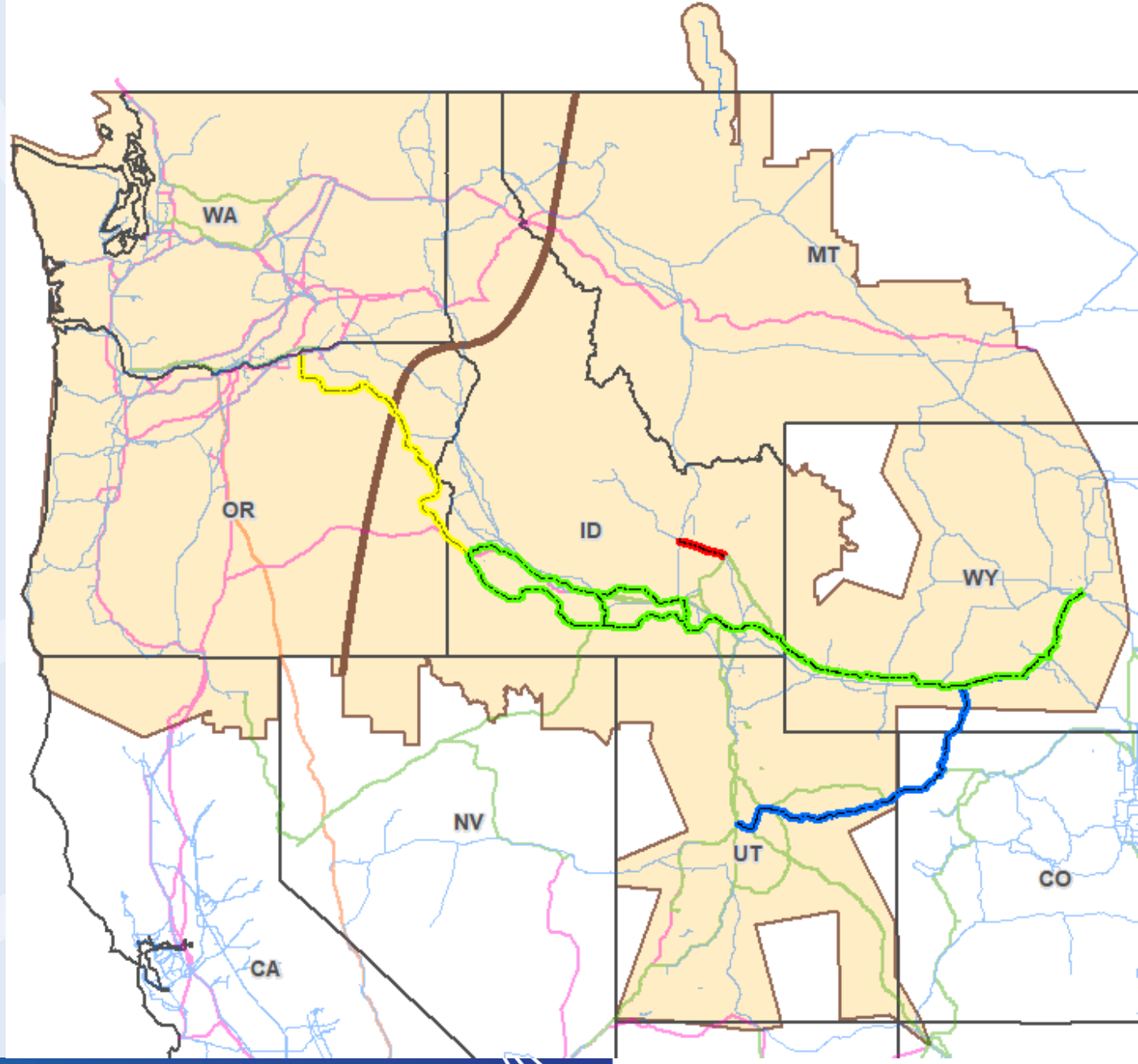
Regional Transmission Additions



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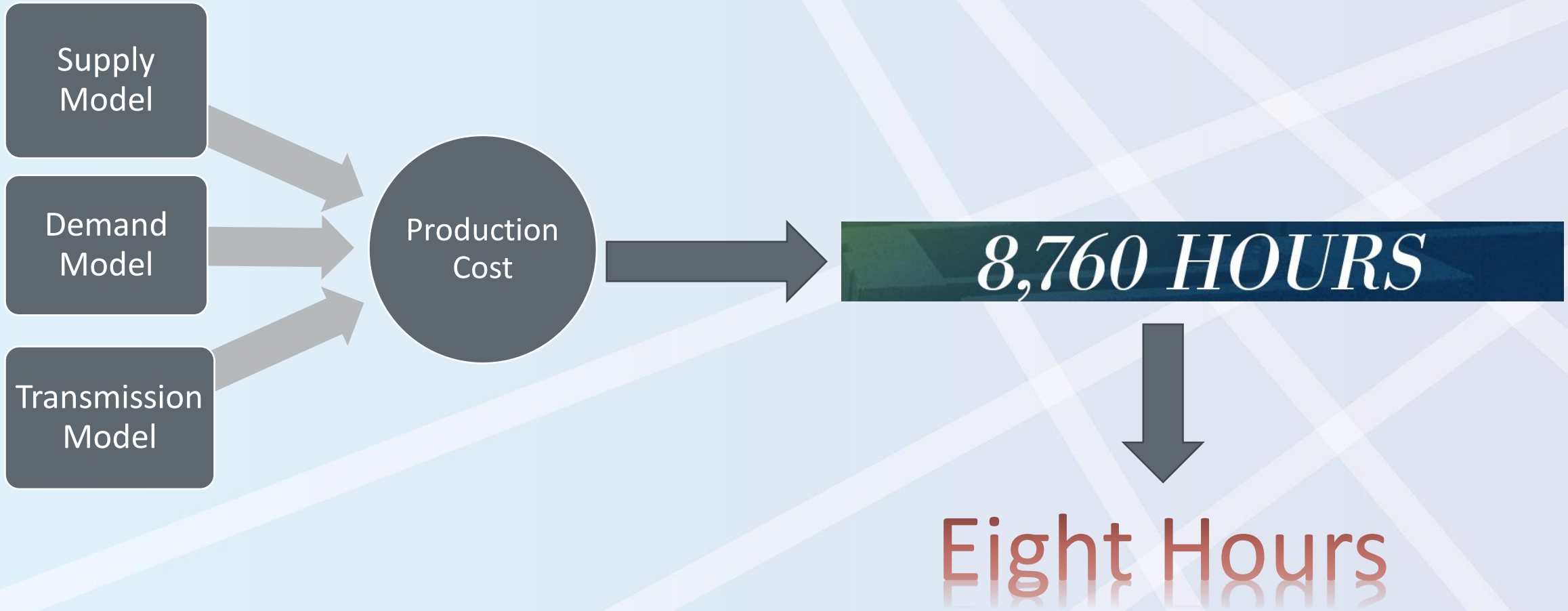
Power Flow Case Development



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Unpacking the Power Flow Base Cases

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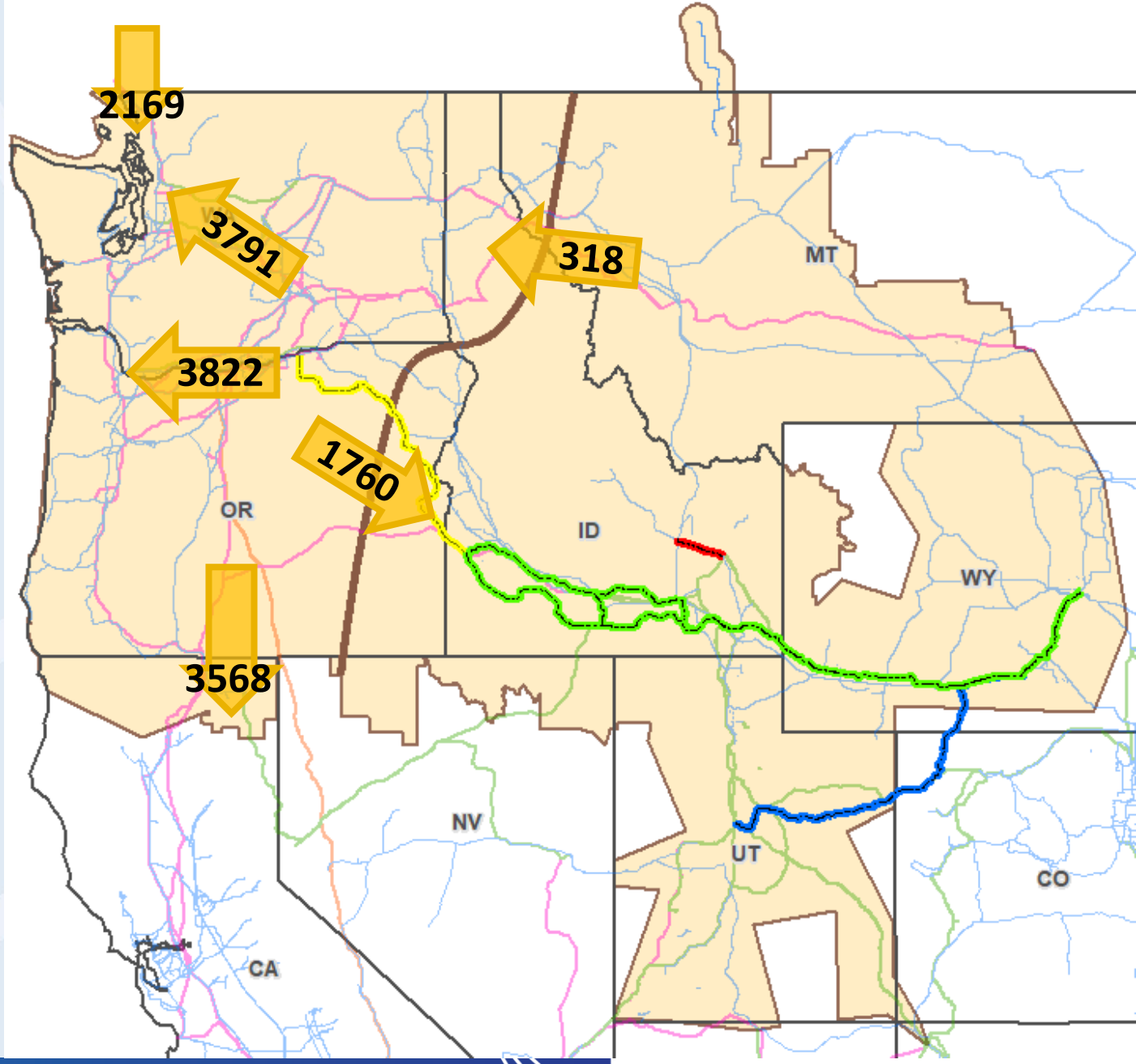
1) Heavy Summer Load
July 30th
Hour ending 16:00



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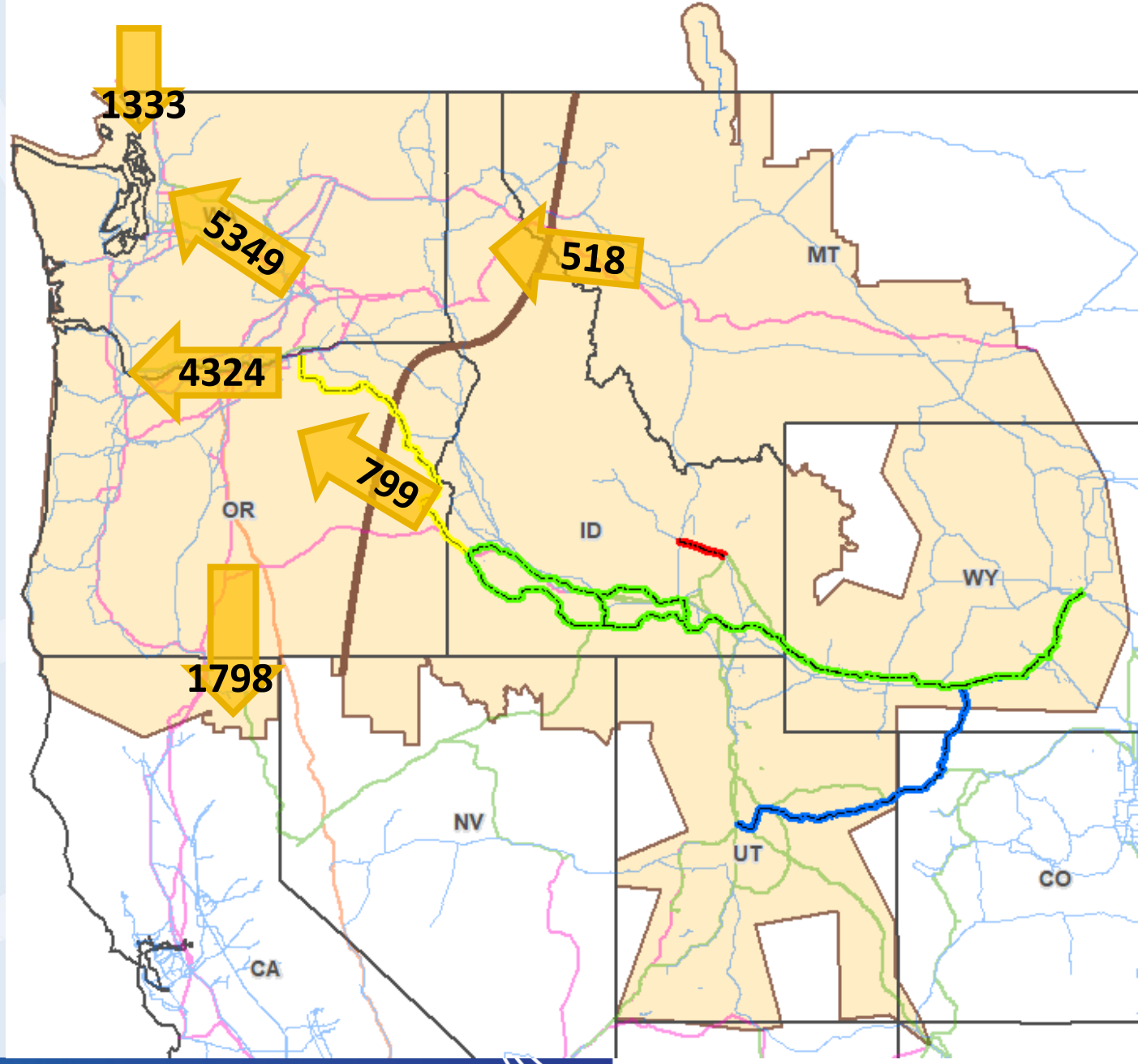
2) Heavy Winter Load December 19th Hour ending 12:00



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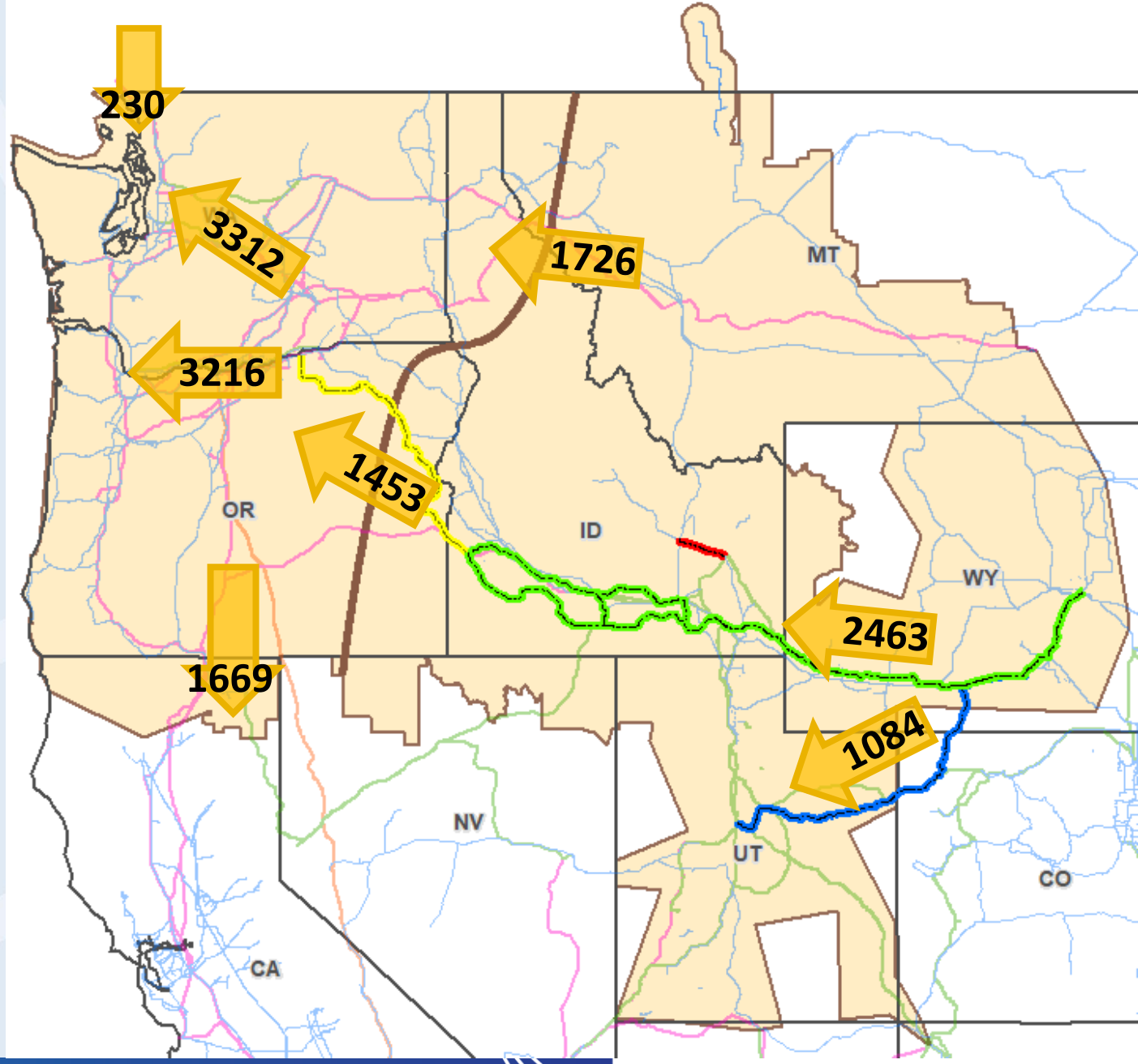
3) High Wyoming Wind Generation Output February 1st Hour ending 1:00



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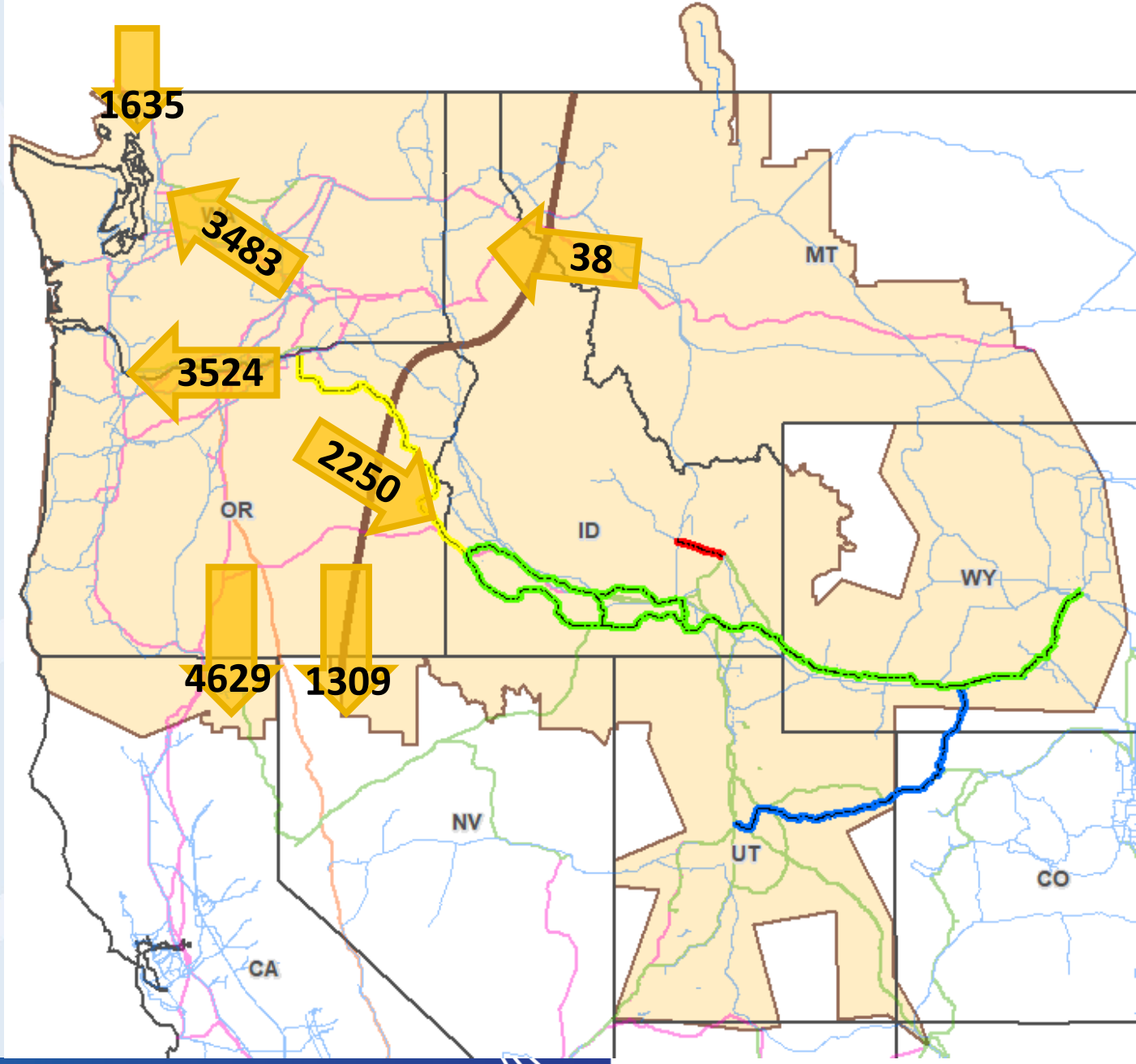
4) High Northwest to Idaho Transfer July 20th Hour ending 17:00



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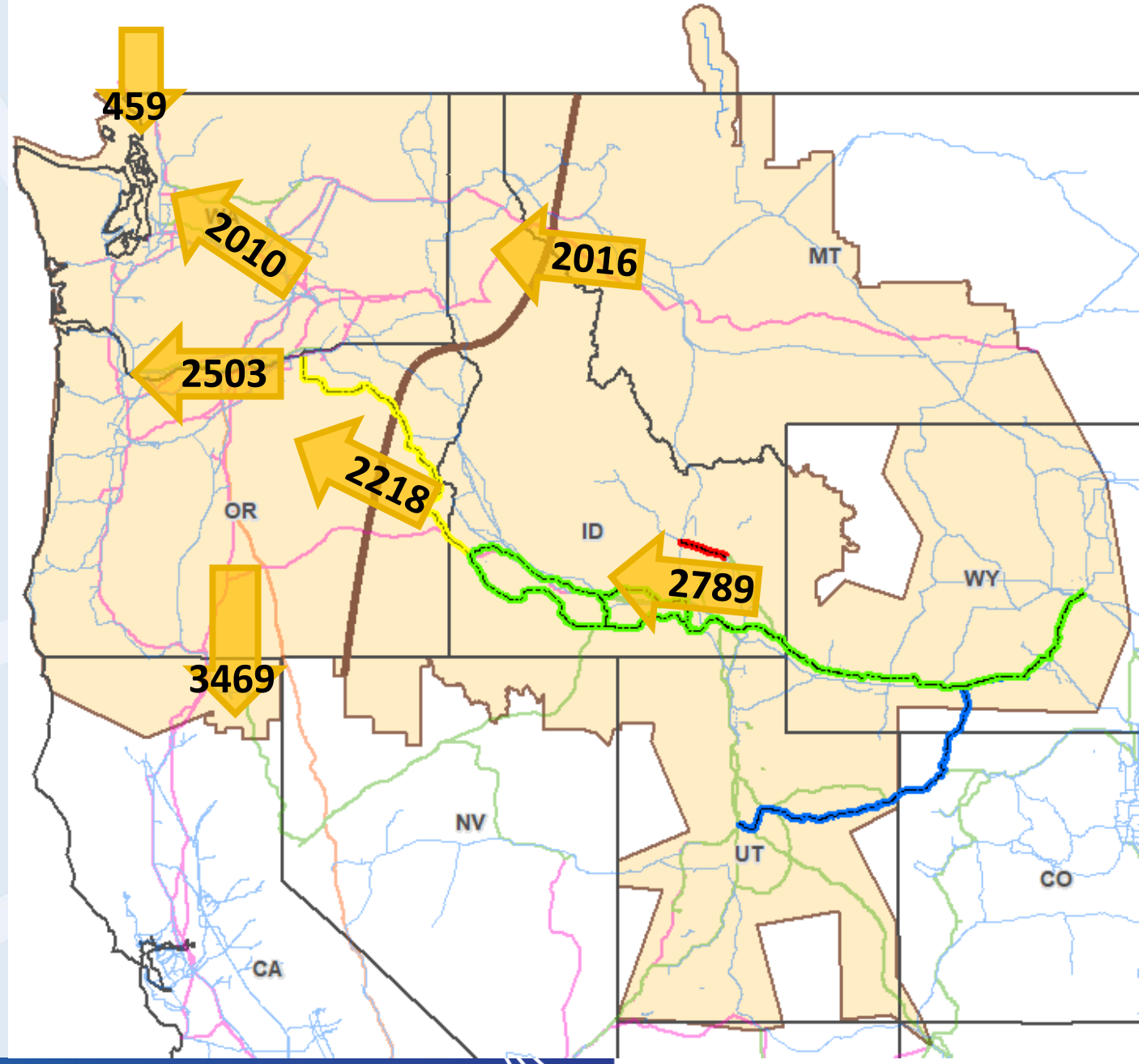
5) High Transfer Across Idaho September 29th Hour ending 1:00



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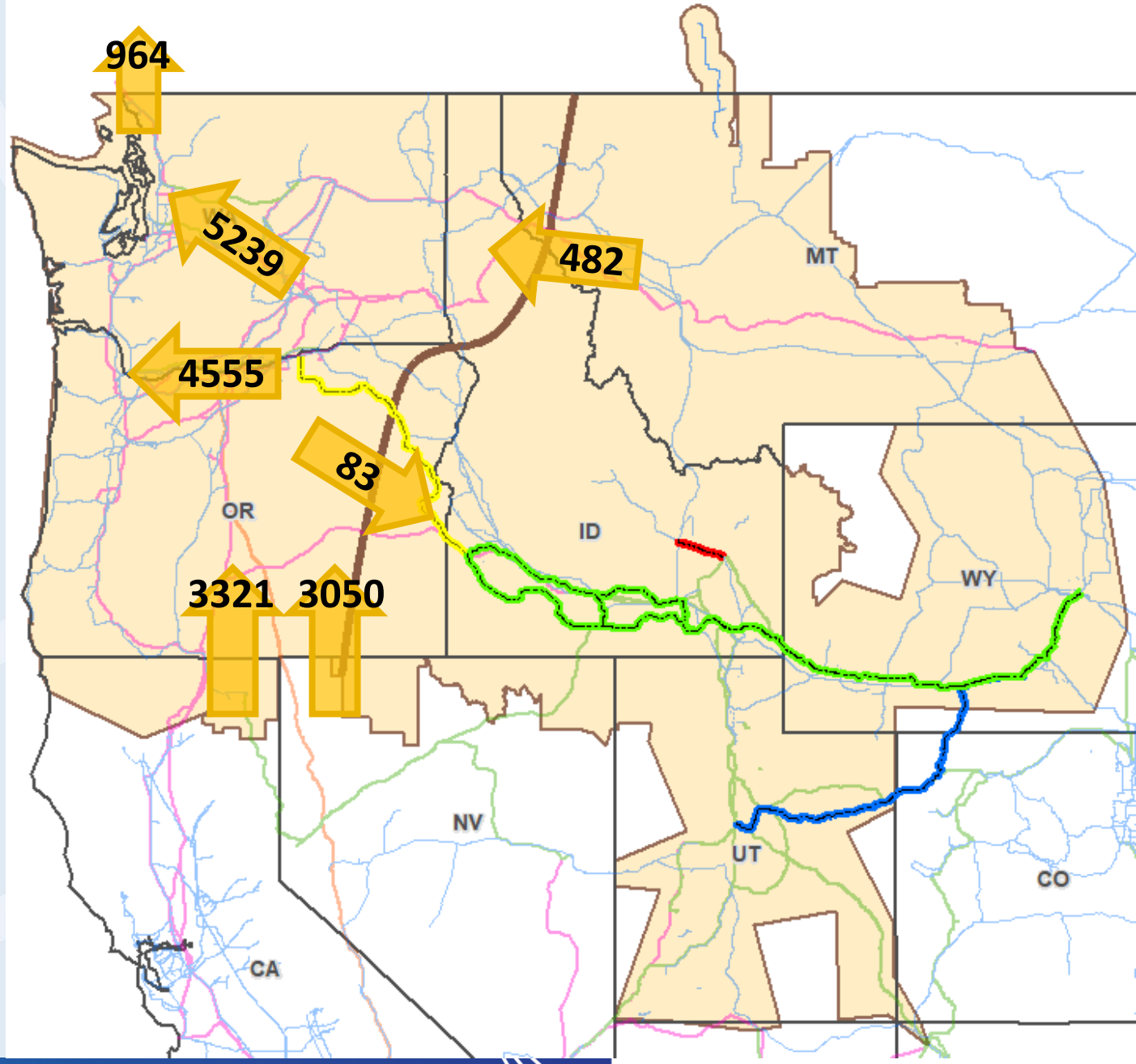
6) High California to Northwest Transfer March 10th Hour ending 15:00



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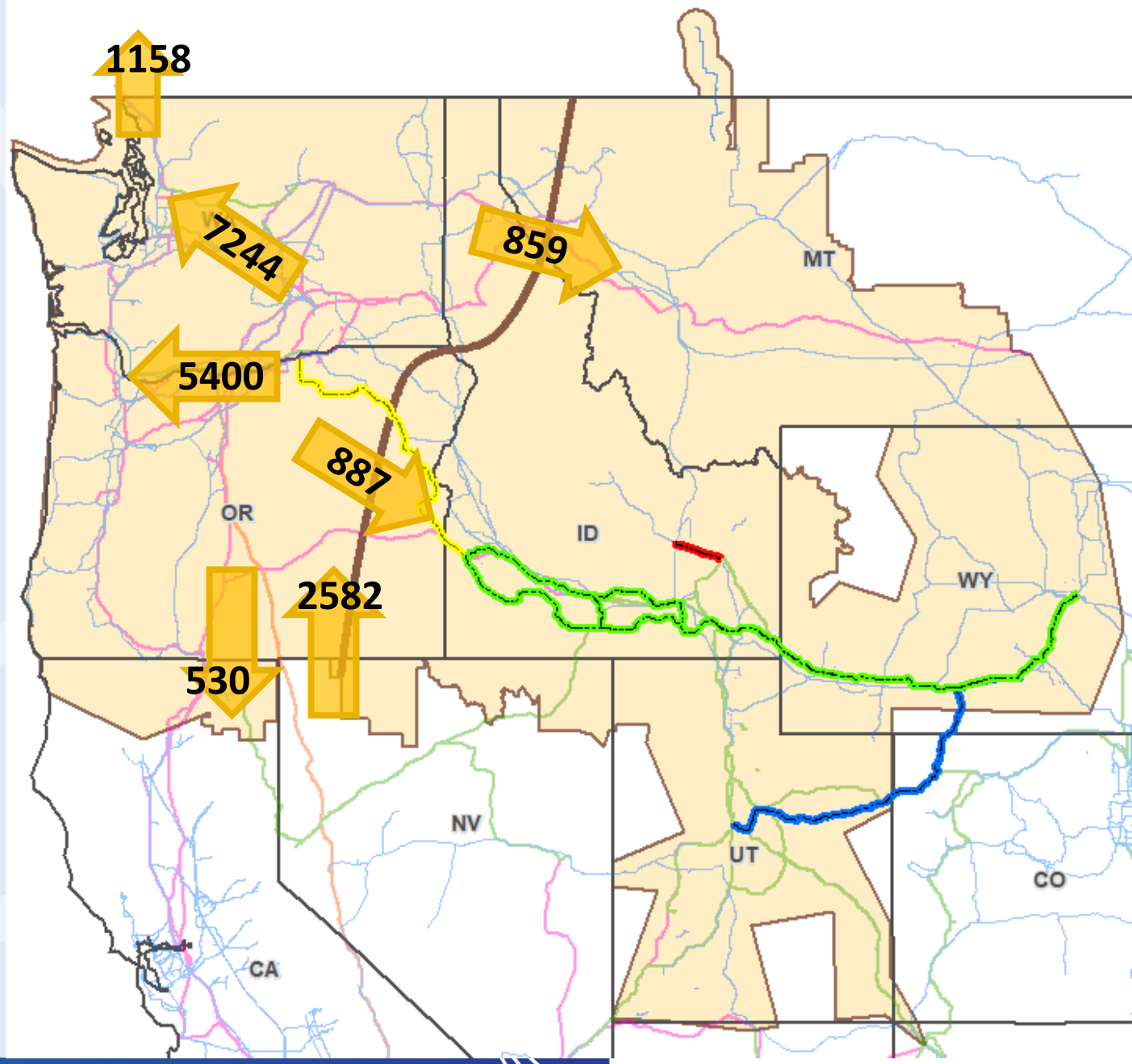
7) High West of Cascades Transfer April 3rd Hour ending 11:00



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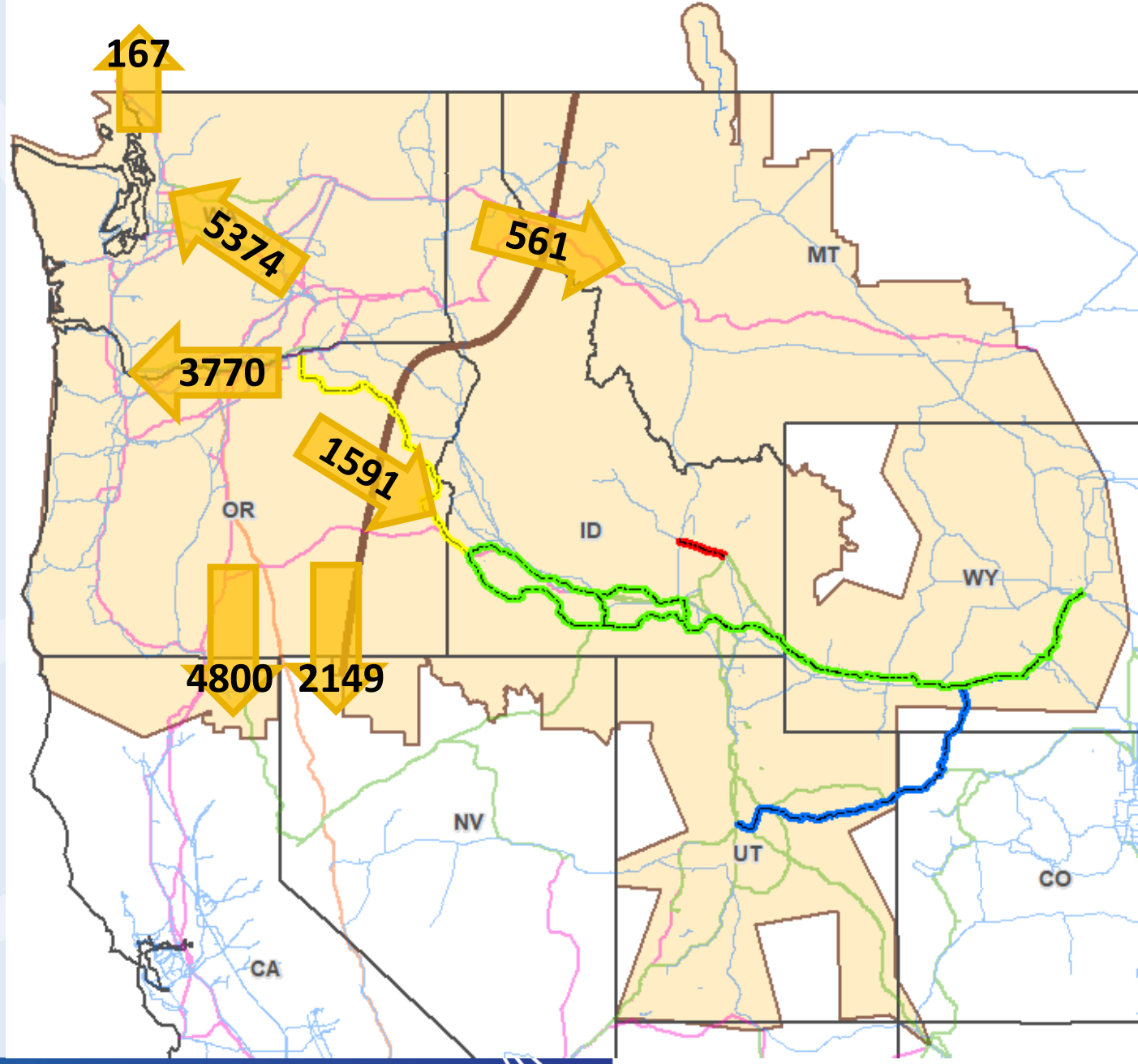
8) High Northwest Hydro
June 4th
Hour ending 18:00



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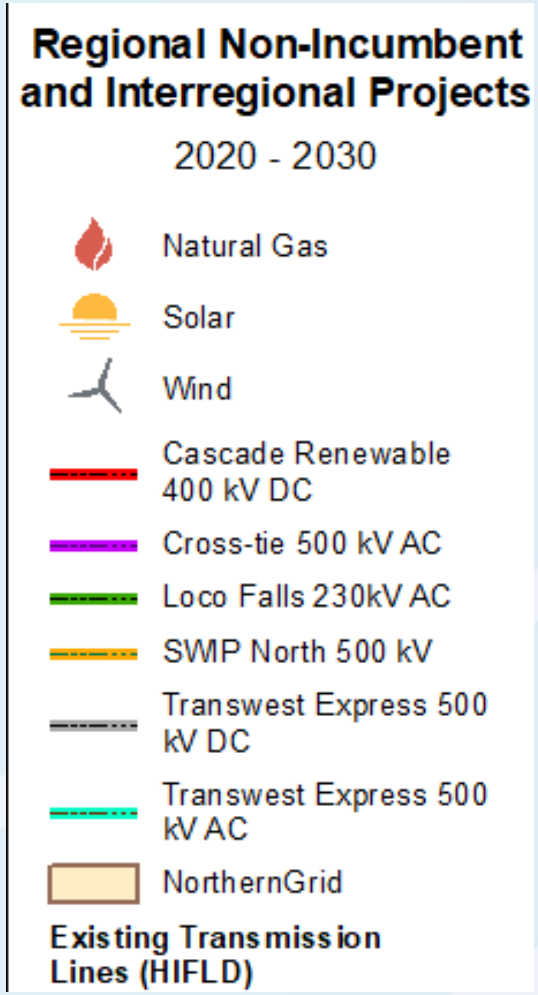
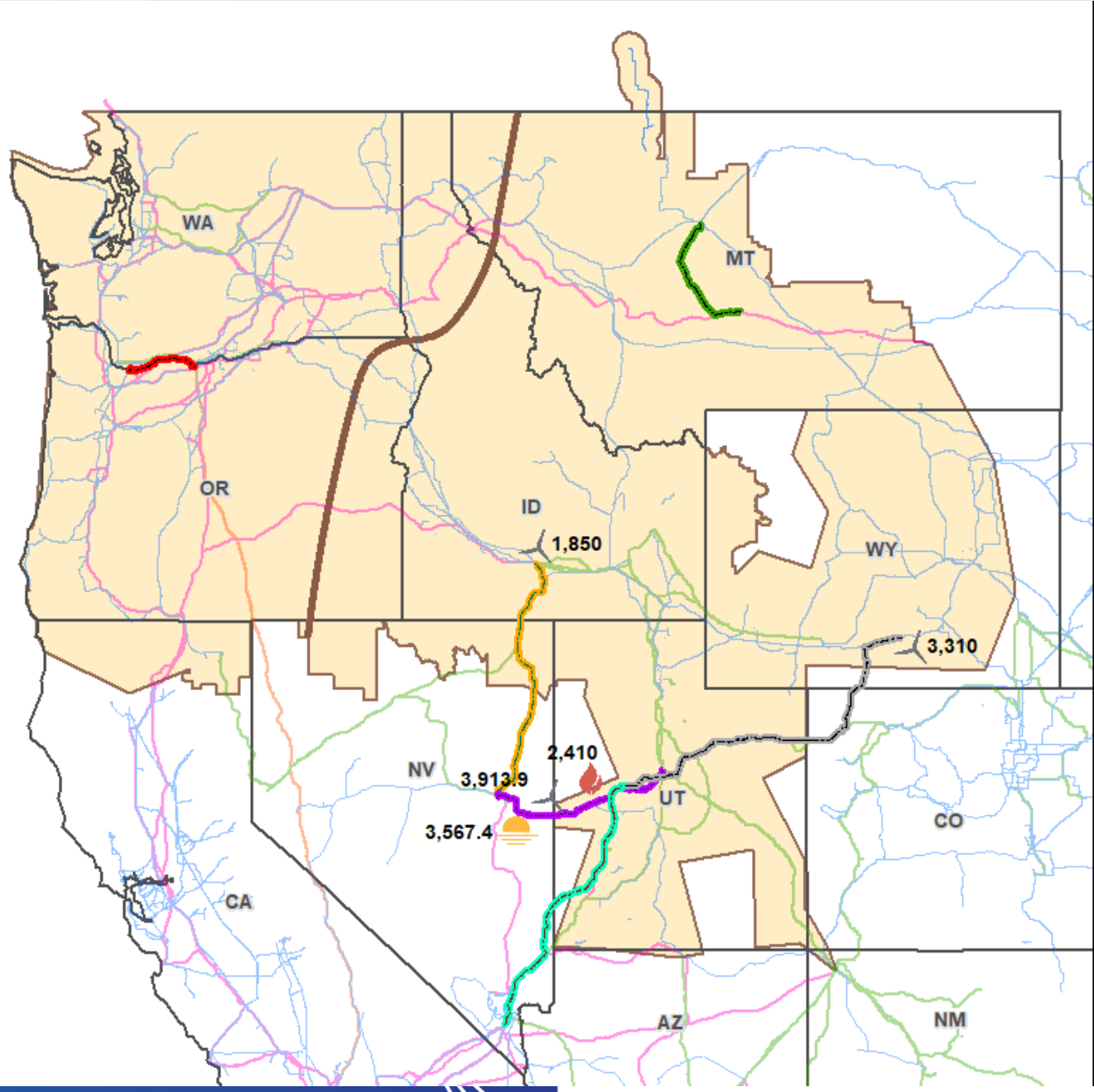
Interregional Projects





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Regional Combinations

Modeled Projects	B2H [H]	Gateway West (Pop - Ced- Hem) [E]	Gateway West (Pop - Bor - Mid - Hem) [E]	Gateway West (Mid - Ced)	Gateway West (Ant - Pop) [D.3]	Antelope	Gateway South [F]	SWIP-N	Cross-Tie	TransWest Express DC	TransWest Express DC/AC	Loco Falls Greenline	Cascade Renewable Transmission	Case Stressed Conditions
BLMP**	X	X	X	X	X	X	X							A B C D E F G H
RC17		X			X	X	X	X						C D E
RC18	X	X			X	X		X						C D E
RC19	X					X	X	X						C D E
RC20	X	X				X	X	X						C D E
RC21	X				X	X	X	X						C D E
RC22						X			X					A B C D E F
RC23		X			X	X	X		X					C D E
RC24	X	X			X	X			X					C D E
RC25	X					X	X		X					C D E
RC26	X	X				X	X		X					C D E
RC27	X				X	X	X		X					C D E
RC28						X				G				A B C D E F
RC29	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	G			TBD	A B C D E F

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2032 Anchor Data Set

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Anchor Data Set Actions

- NorthernGrid Submitted 24 PCM to Power Flow Modeling Issues
- WECC Appointed Bhavana Katyal, 2032 ADS Project Manager
- Issues List Located at
  - https://www.wecc.org/RAC/Pages/Default.aspx#

DISCUSSION ITEMS

Type	Title	Modified
	Addressing Round-Trip Export Hour Issues ...	2021-03-25

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Sample Issues List Items

Many groups involved

PCM to PF Data Quality Issues								
Item	Status Date	Status	Submitted By	Issue	Discussion	Data Issue; Software Solution	Resolution	Responsibility
14			TR	Do not exceed Pmin or Pmax limits of generators	ZZ - as discussed above, there appear to be multiple instances of potential limits between PCM internal and the target powerflow. The most limiting limit should be respected	Data issue – need to coordinate to have consistent Pmin and Pmax * Software solution – check for consistency; use GridView Data sanity check.		PCDS SRS Hitachi-ABB
19			TR	Generator capacitities greater than transformer or branch rating	Add L&R resources to PF, making sure that the transformer limits are not exceeded for the location. Rules of thumb (all need to be checked with basic power flow) •Do not exceed capacity of POI •0 to 34.5 kV: 5 MW •34.5 to 69 kV: 25 MW •115 kV: 25 to 50 MW •230 kV: 50 to 125 MW •500 kV: 250 to 1250 MW	Data issue in placing L&R generators that were not able to be aligned with the PF.		PCDS WECC staff

Some Recommended Solutions

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Thank you!

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