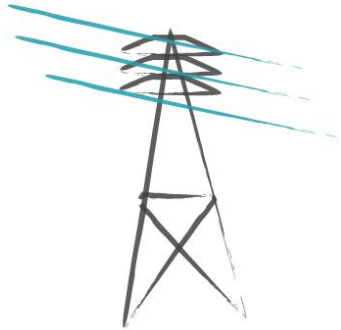


DOCKETED

Docket Number:	15-RETI-02
Project Title:	Renewable Energy Transmission Initiative 2.0
TN #:	208294
Document Title:	WECC Reliability Planning Presentation
Description:	WECC Reliability Planning
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Organization:	DATC - Zephyr Power
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WECC

WECC Reliability Planning

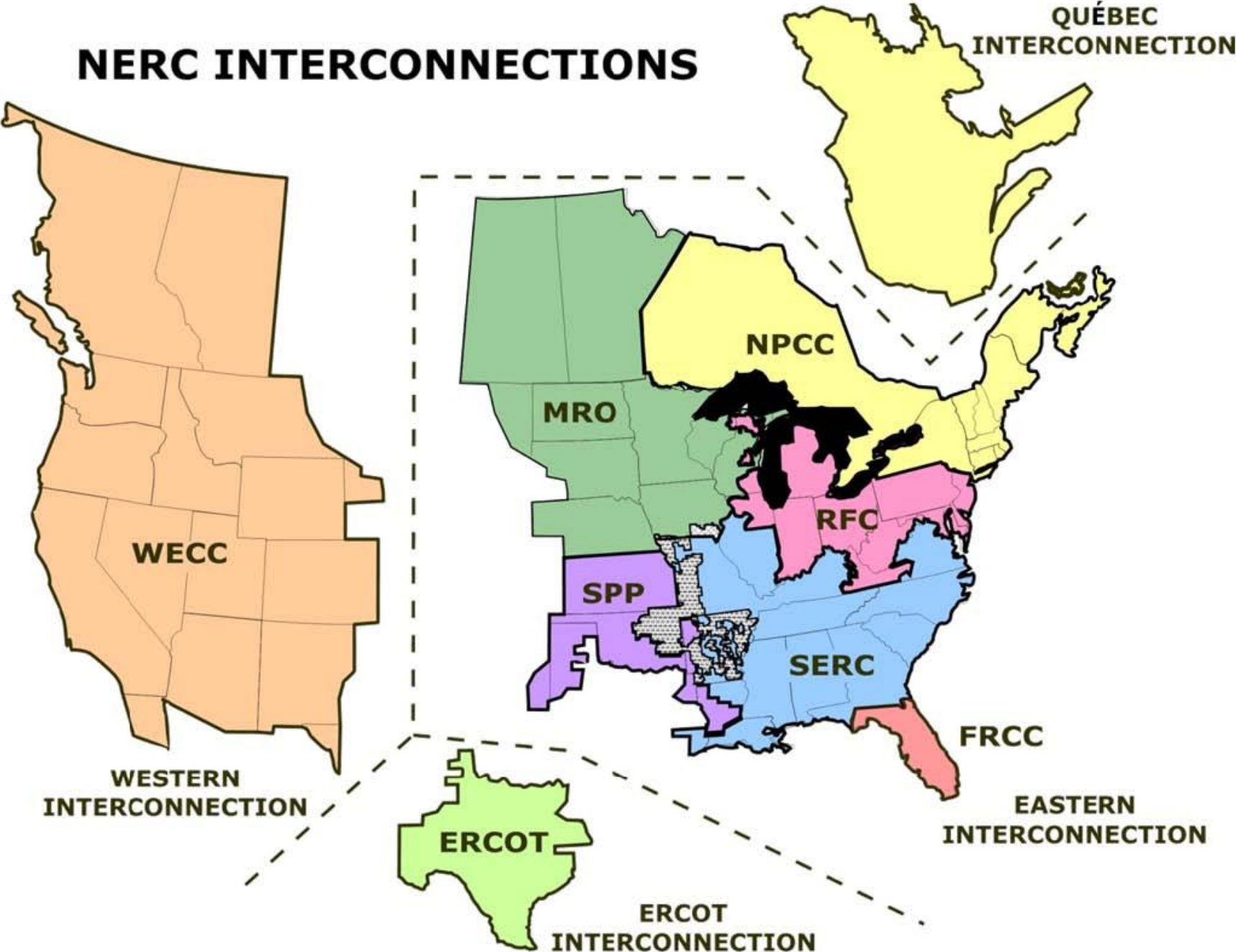
Byron Woertz

Manager—System Adequacy Planning

Overview

- TEPPC Planning Process
- Sample Report on Study Case
- 2016 Study Request Process at WECC

NERC INTERCONNECTIONS



Reliability Analysis at WECC

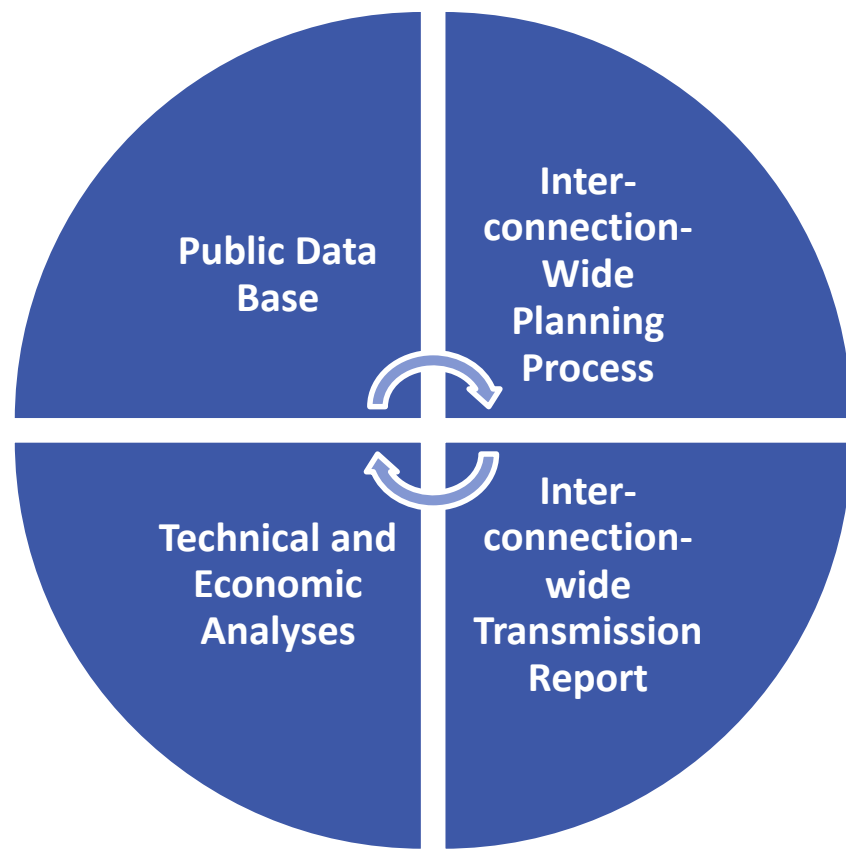
Transmission Expansion Planning Policy Committee (TEPPC)

- Lead reliability assessment for the Western Interconnection
- Develop annual study program
- Complete analytical studies

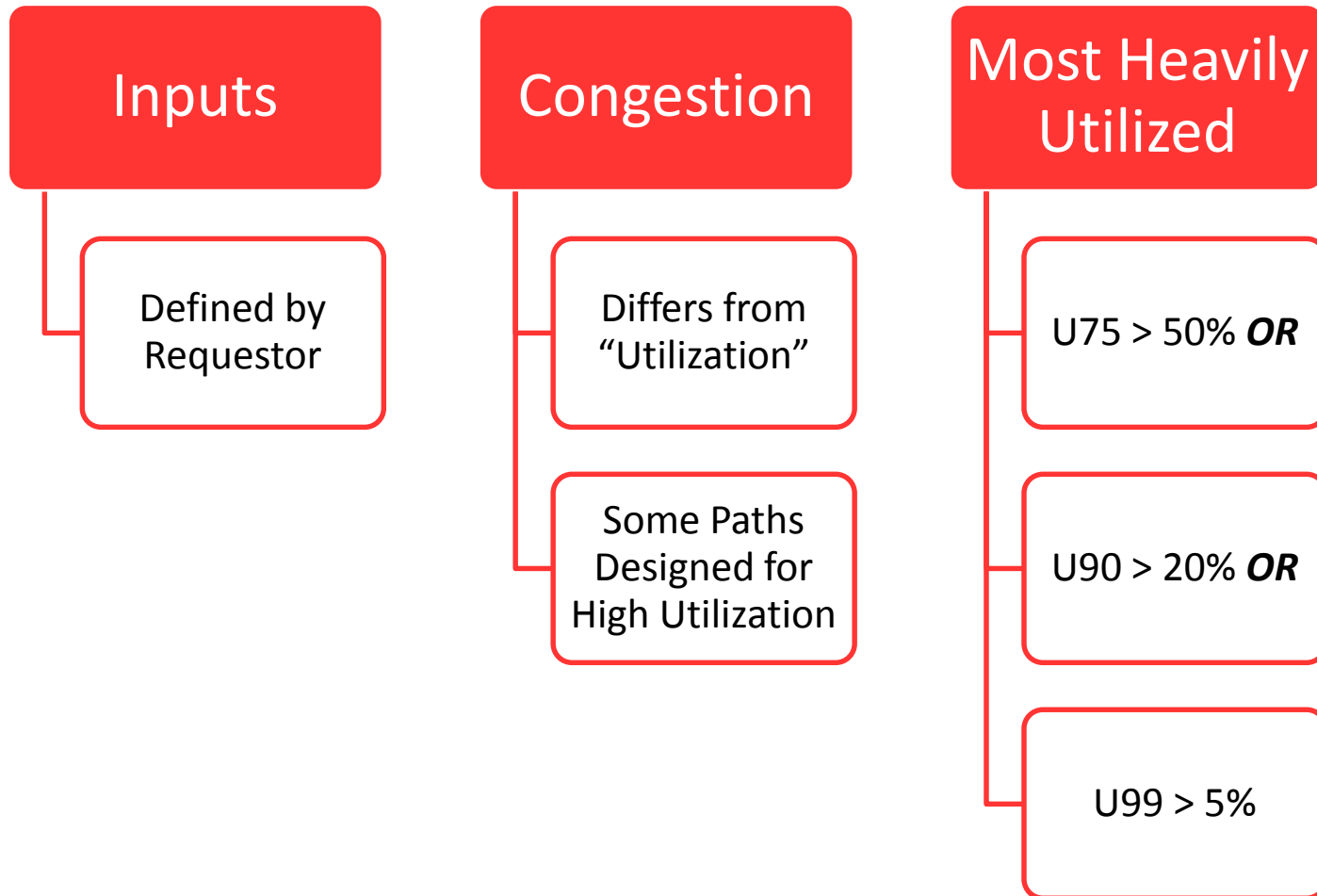
Subcommittees and Work Groups

- Technical analysis
- Study Program Development
- Modeling
- Data
- Future Scenarios
- Environmental Data

Primary Products



10-Year Study Results



PC-22: High Renewable Energy

Key Questions:

1. *How will transmission flows and congestion be affected in the West if renewable energy penetration in the Western Interconnection is around 50%?*
2. *What system changes might be needed to accommodate this level of renewable implementation?*

Constraints:

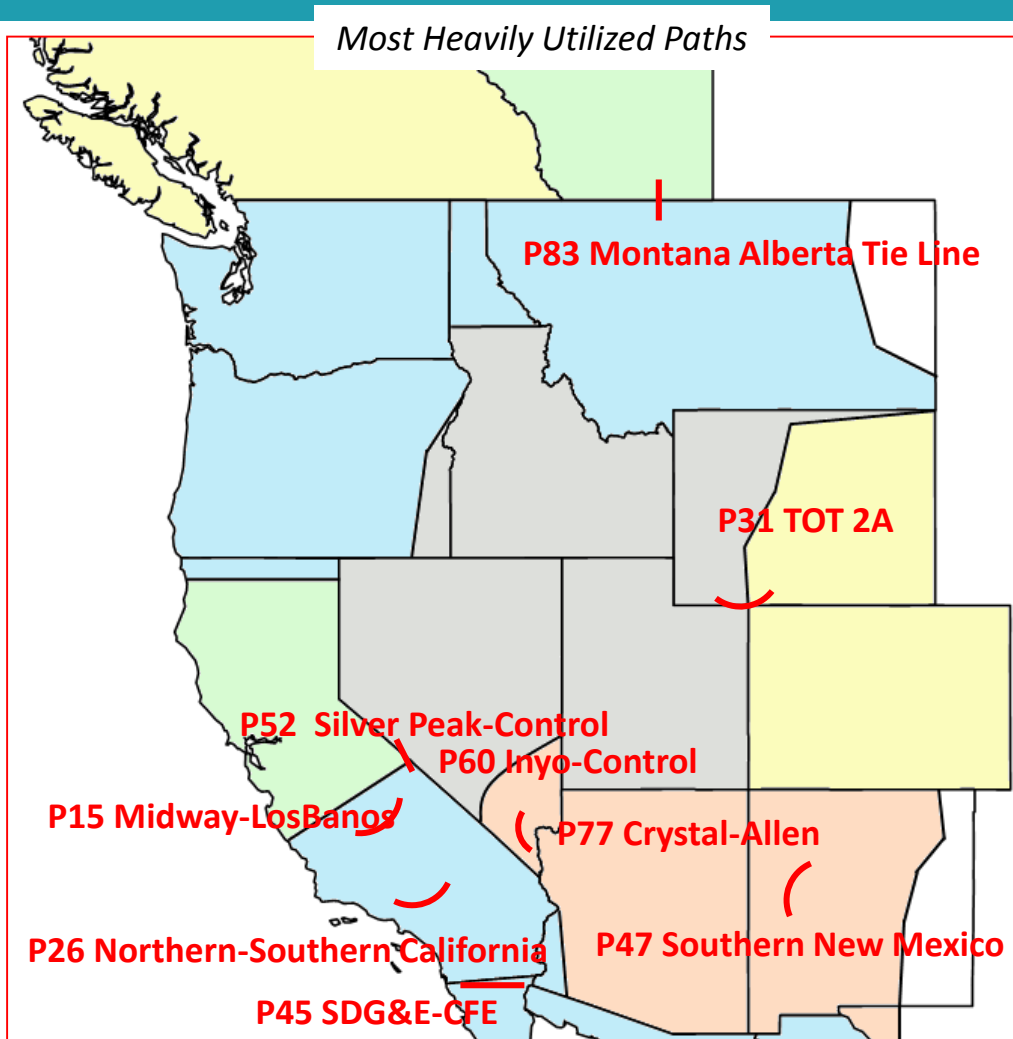
- Five regions in the WI that share characteristics appropriate for a resource planning study.
- Study did not modify operating constraints, nomograms or flexibility reserve adders relative to the Common Case
- Study did not check resource adequacy peak planning reserve margins or test system stability

PC-22 Generation Changes

Source	2024 Gen, TWh	PC-22 Gen, TWh	Increase (Decrease)
Energy Storage	3.6	3.2	(0.4)
Steam - Coal	227.8	181.6	(46.2)
Combined Cycle	279.0	220.1	(58.9)
Combustion Turbine	51.8	42.2	(9.6)
Geothermal	31.9	30.7	(1.2)
Solar	38.3	98.9	60.7
Wind	74.2	140.8	66.6
Dump Energy	0.4	32.7	32.3

Source	2024 Gen, TWh	PC-22	Increase (Decrease)
Production Cost (1,000s)	22.8	18.8	(4.0)
CO ₂ (MMTon)	363	294	(69)

PC-22 Heavily Utilized Paths



Path	75%	90%	99%
P83 Montana Alberta Tie Line	48%	37%	31%
P52 Silver Peak-Control 55 kV	33%	23%	0%
P77 Crystal-Allen	57%	22%	4%
P45 SDG&E-CFE	20%	17%	15%
P60 Inyo-Control 115 kV Tie	37%	17%	9%
P15 Midway-Los Banos	23%	15%	10%
P47 Southern New Mexico (NM1)	22%	12%	8%
P26 Northern-Southern California	20%	10%	6%
P31 TOT 2A	15%	10%	7%
P01 Alberta-British Columbia	12%	8%	6%

PC-22 Findings

Generation

Significant
Reductions in
Combined Cycle and
Combustion Turbine

Reduction in
Geothermal Energy

Transmission

Significant
Transmission
Congestion
Throughout the WI

Congestion Caused
High Dump Energy
Otherwise Available
as Least Cost
Resource

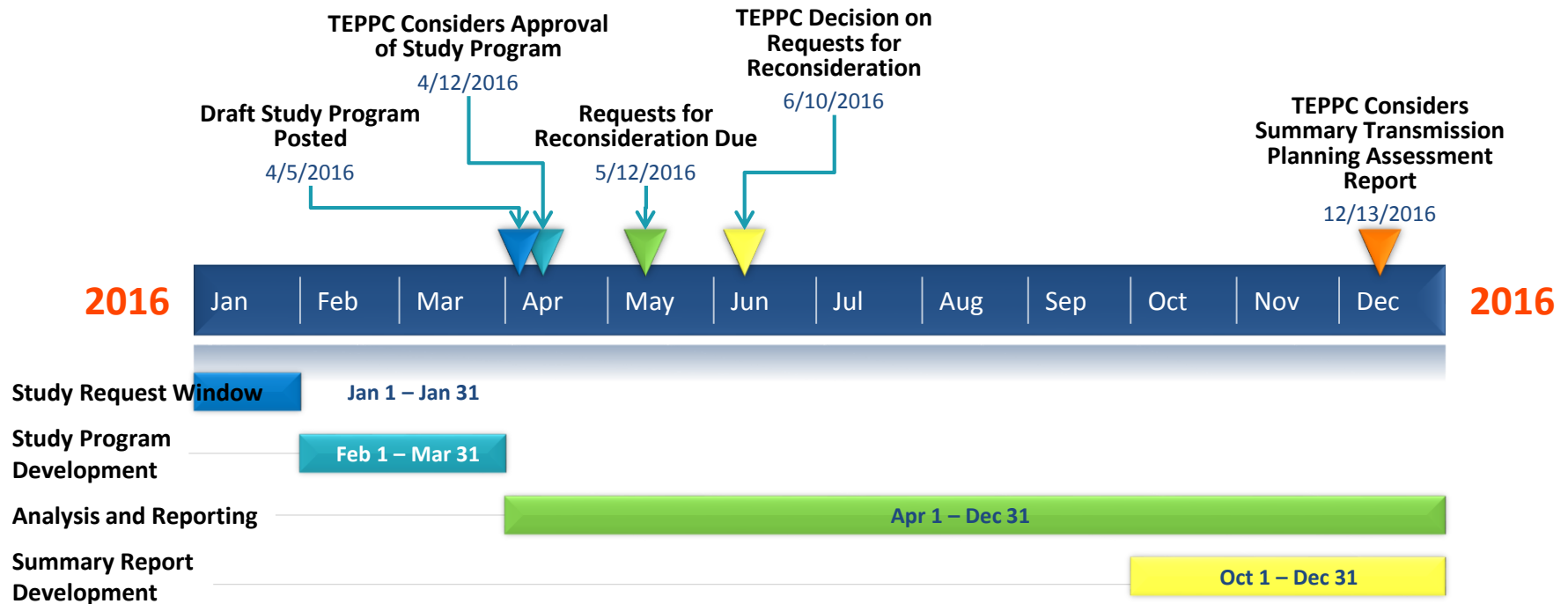
Other Findings

No Unserved Load

Decreased Production
Cost

Decrease in CO₂

2016 Study Request Process



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