WIRAB Monthly Meeting

February 3, 2022

WIRAB
Western Interconnection
Regional Advisory Body

Introductions

WIRAB

Western Interconnection Regional Advisory Body

Outline

- **WECC Activities**
  - WECC Update
  - WECC's Western Assessment of Resource Adequacy
    - WIRAB Staff Interpretation
- **Upcoming WIRAB Meetings**

WECC

WECC Update

February 3, 2022

Steve Goodwill

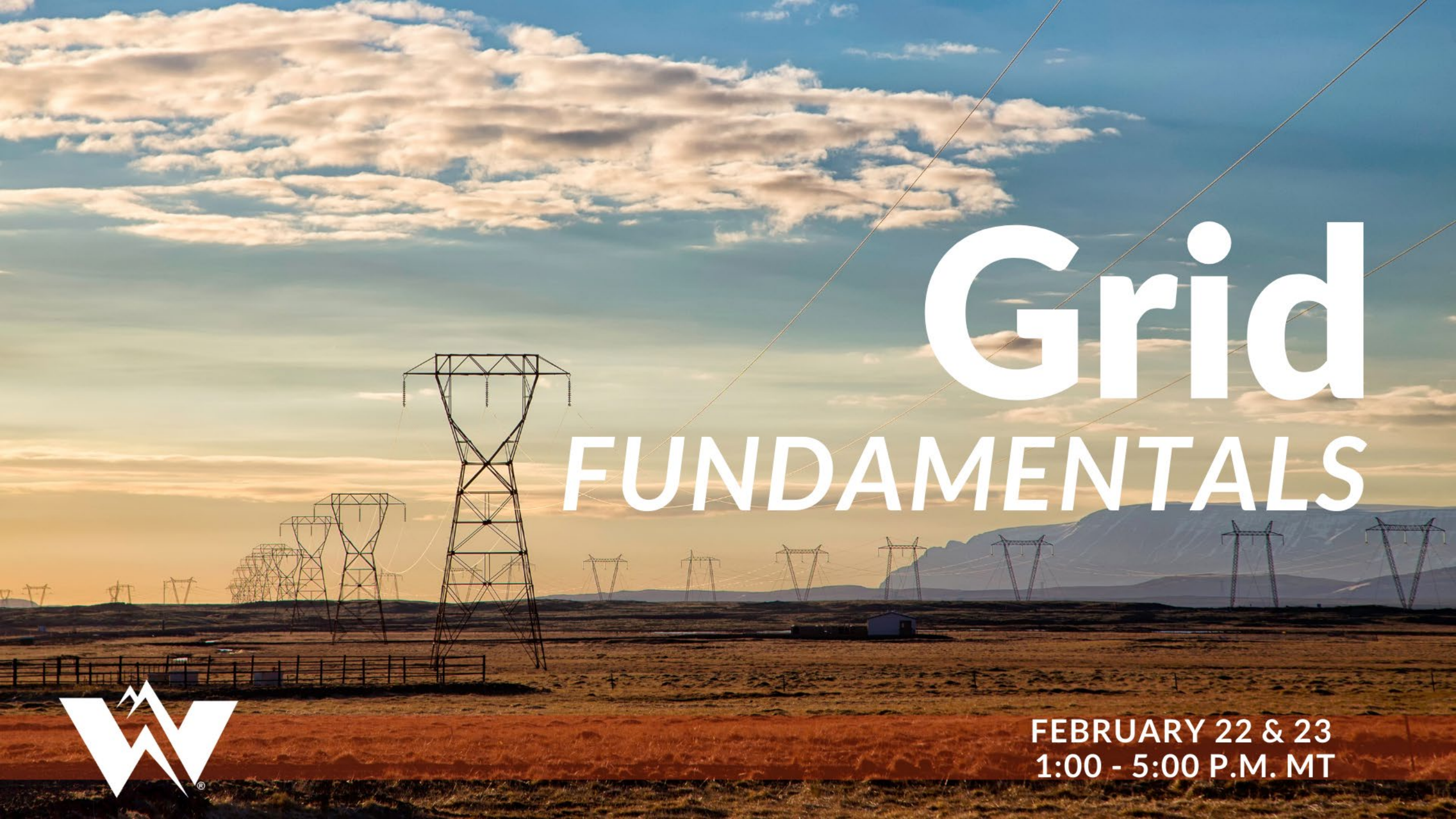
SVP Strategic Engagement, General Counsel, & Secretary

DISCUSS

The Western Interconnection's **Reliability Risks**

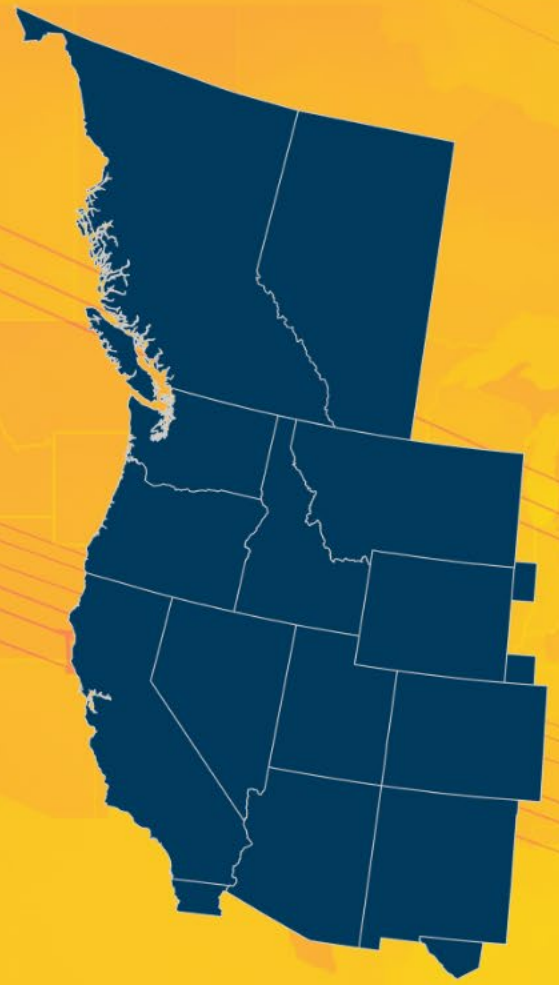
2022 | WECC

RISK PRIORITIES WORKSHOP


Grid
FUNDAMENTALS
FEBRUARY 22 & 23
1:00 - 5:00 P.M. MT

WECC Happenings

- New VP of External Affairs: Kris Raper
- Technical Committee Structure
  - The new JGC met for the first time on January 7 and will hold its next meeting on February 4
  - Membership for the new Reliability Risk Committee (RRC) is open – to become a member email support@wecc.org
    - The inaugural meeting of the RRC will be on February 15
- WECC 2023 budget process is underway



WESTERN ASSESSMENT

of Resource Adequacy

WECC

Western Assessment of Resource Adequacy

February 3, 2022

Matthew Elkins
Manager-Resource Adequacy & Performance Analysis

Victoria Ravenscroft
Sr. Policy & External Affairs Manager

Western Assessment of Resource Adequacy

- 2021 report released in December
  - Available on WECC.org
- Interconnection-wide analysis
  - Also reported by subregion
- Energy-based approach
- Probabilistic, hourly analysis
  - Evaluates the next ten years (2022-2031)
- Uses data submitted to WECC by Balancing Authorities

Recommendations

Planning Reserve Margins

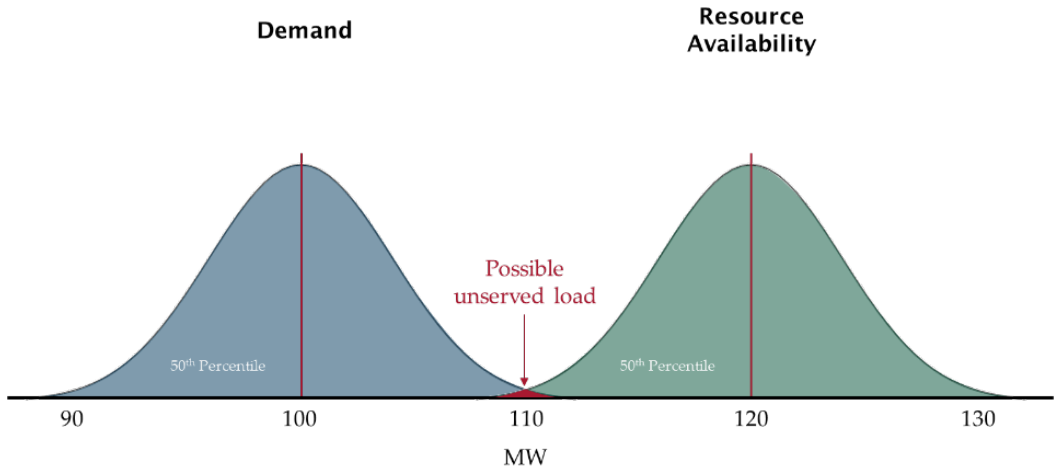
1. Calculate PRMs based on energy, not capacity
2. Evaluate the most strained time on the system, not necessarily the peak hour
3. Recalibrate PRMs when changes to demand or resources change variability on the system

Imports

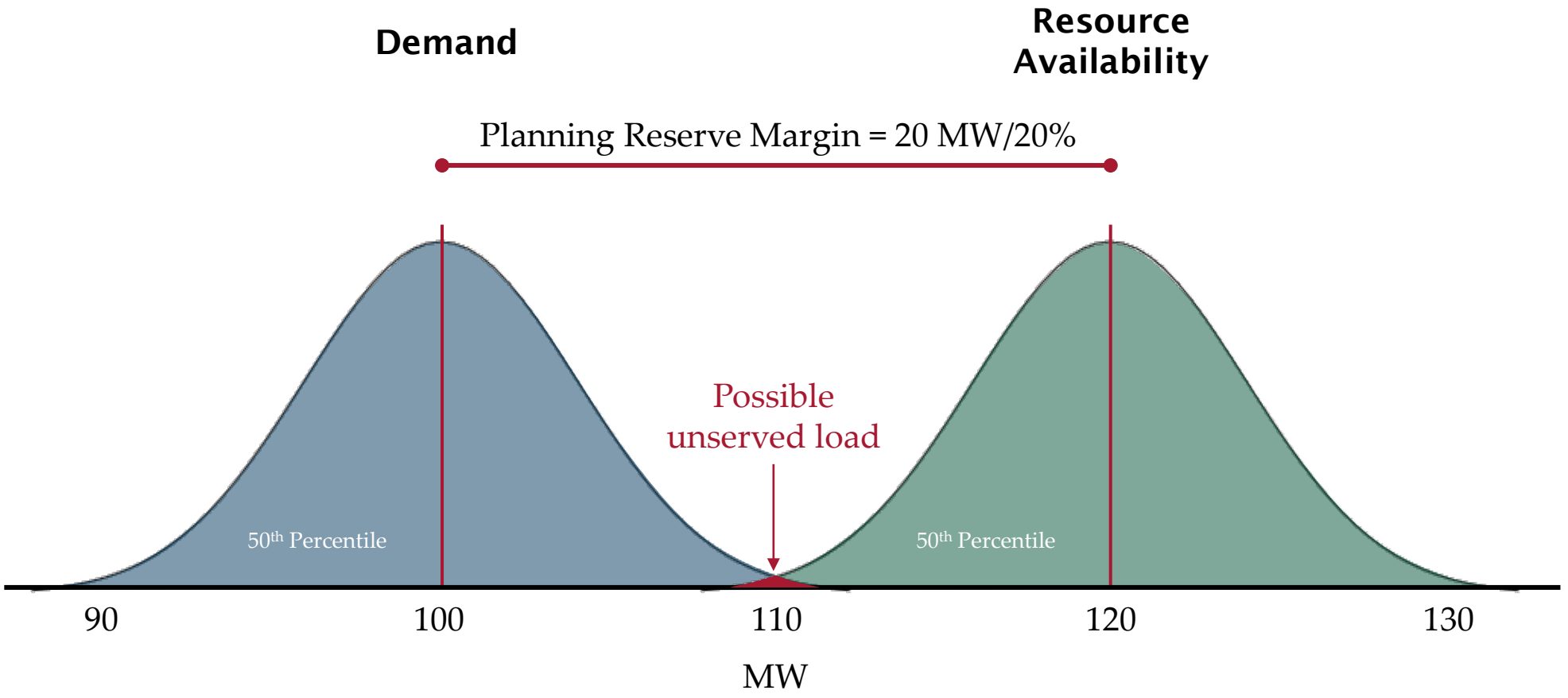
4. Entities and the industry need to change how they count on imports

1. Plan to Energy v. Capacity

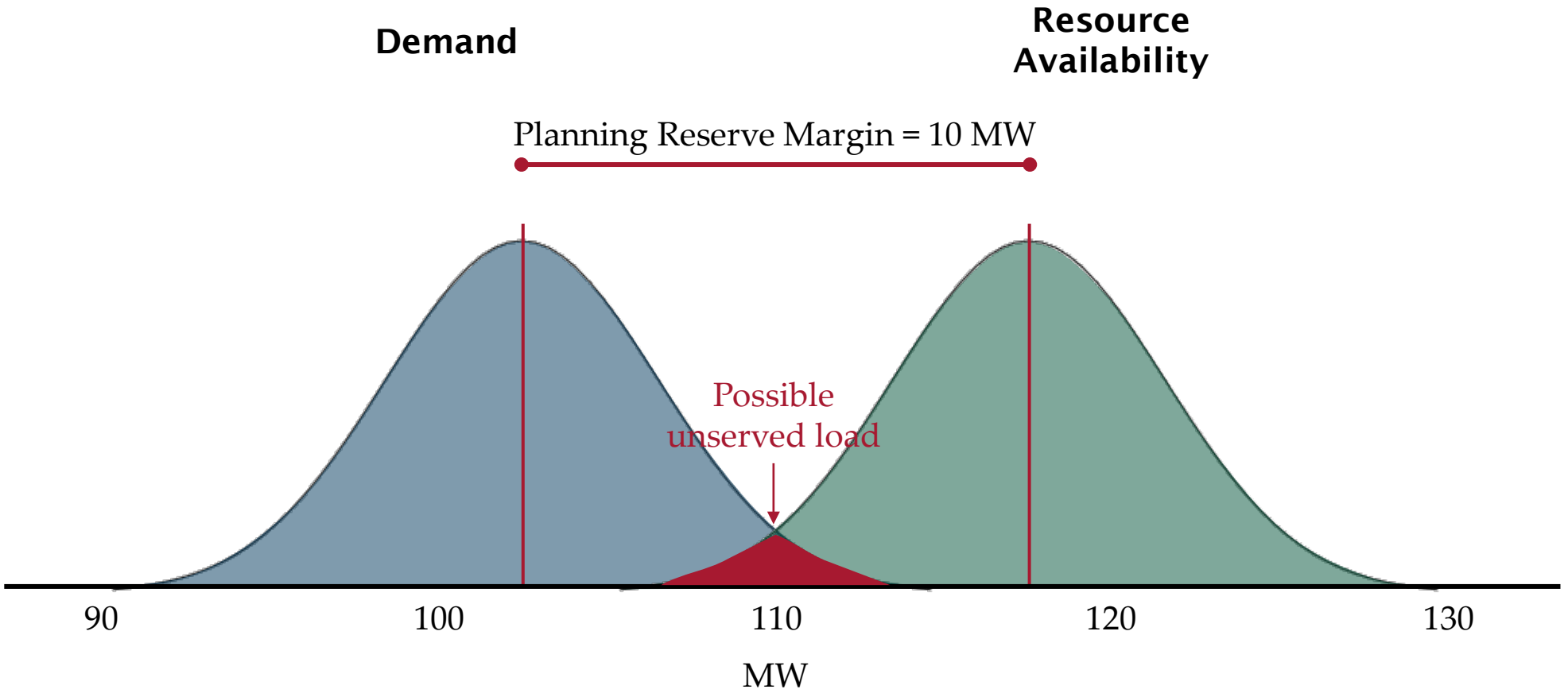
- Energy-based
  - Capacity-based approaches only estimate variability (% of capacity)
  - To fully account for variability, need to look at energy output
- Probabilistic
  - Probabilistic analysis allows us to evaluate a range of potential resource and demand scenarios
  - Helps to fully account for variability
- Hourly
  - Examining every hour ensures the analysis sees the times of greatest strain



1. Plan to Energy v. Capacity



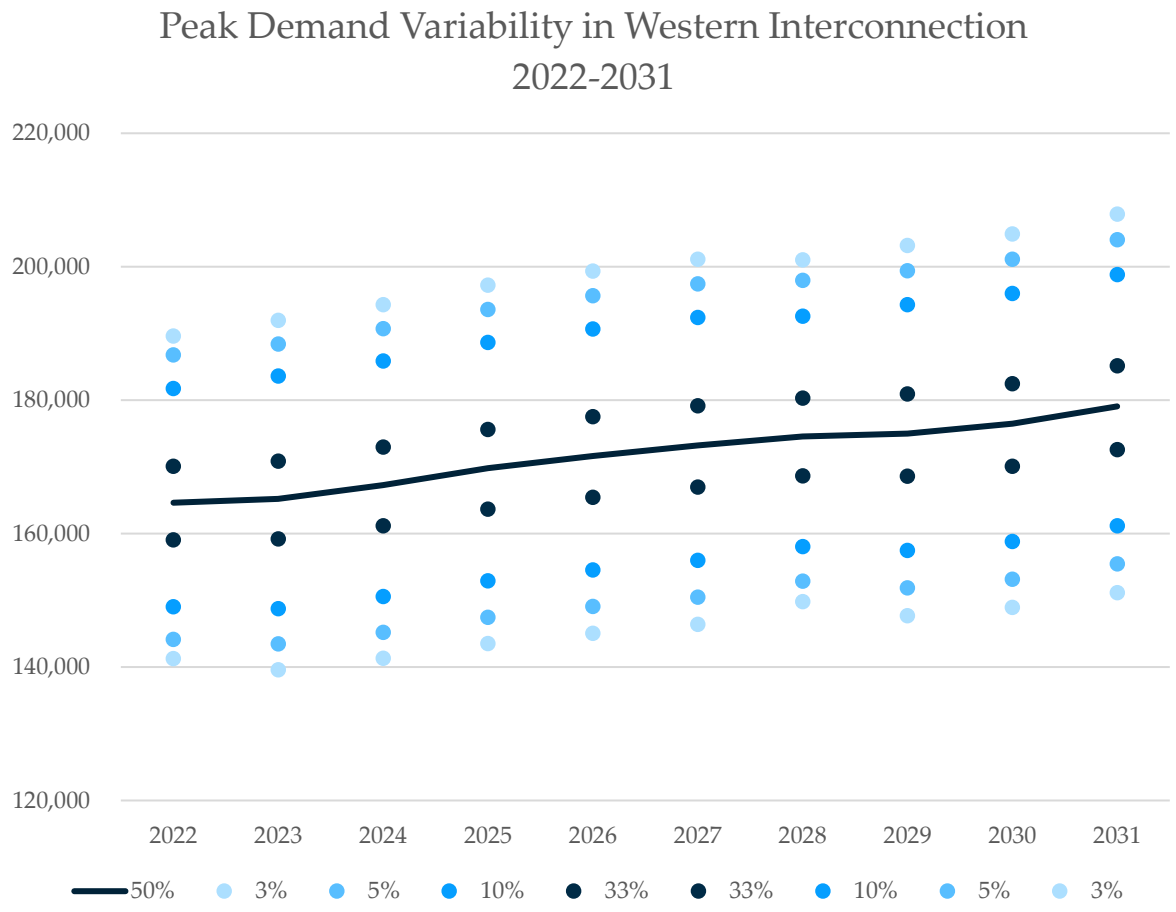
1. Plan to Energy v. Capacity



2. Evaluate Most Strained Time on the System

- Changes in system strain
  - Times when the system is most strained no longer align with the peak hour
  - Variability is driving strain on the system
  - Planning Reserve Margins (PRM) are not adequately accounting for variability

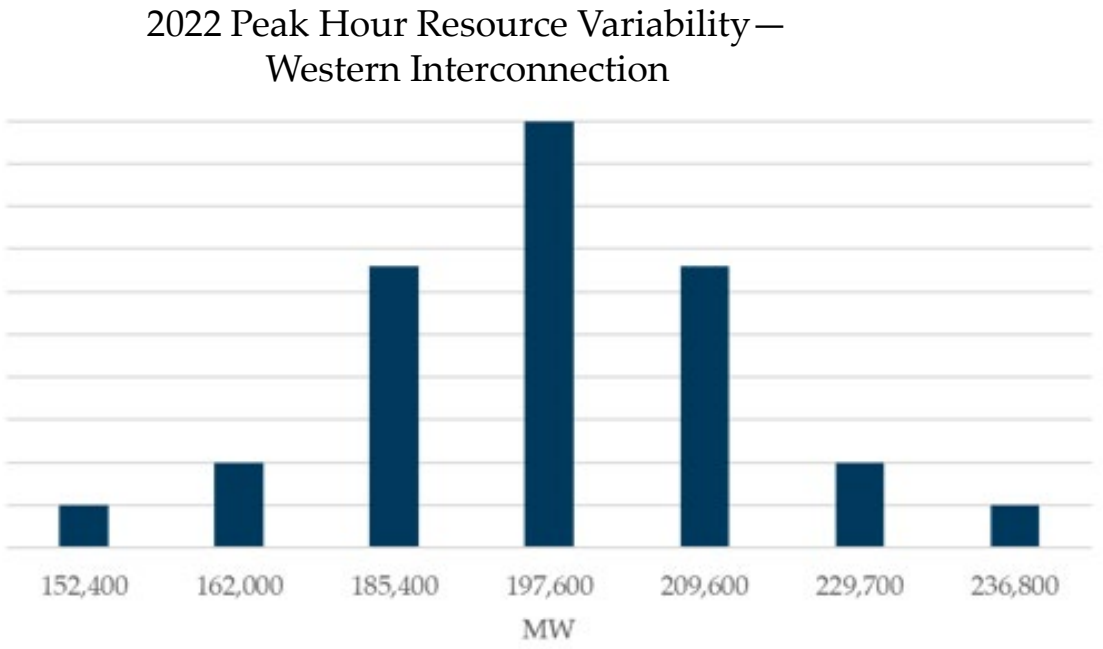
Increasing Variability: Demand



- Demand variability curves for the next 10 years
  - Expected peak of ~179 GW by 2031
  - 3% probability to be ~208 GW

Increasing Variability: Resources

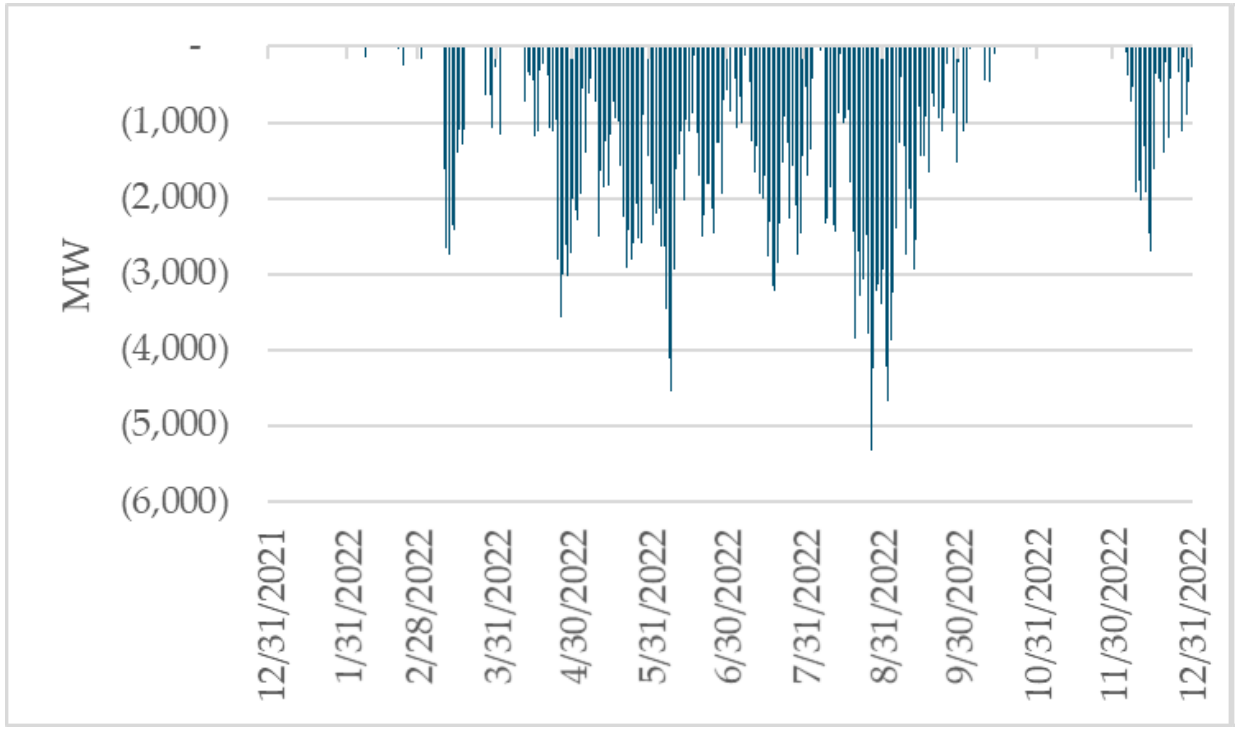
- Difference between expected and low availability
  - Baseload—12% loss
  - Hydro—40% loss
  - Solar—42% loss
  - Wind—94% loss



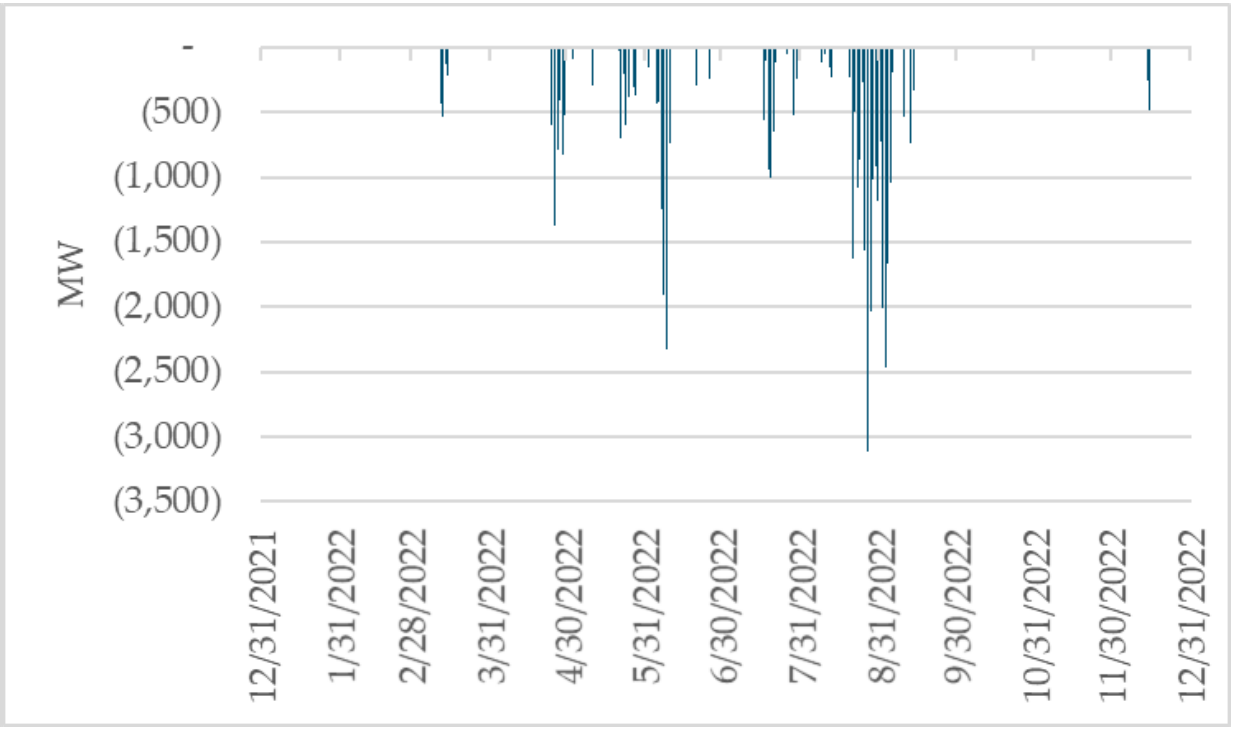
	1-in-20	1-in-10	1-in-3	1-in-2	1-in-3	1-in-10	1-in-20
Baseload	116,300	199,800	128,600	131,800	134,600	138,500	139,400
Hydro	24,400	27,800	35,300	40,600	44,600	50,000	51,700
Solar	11,300	13,700	18,000	19,300	20,800	23,400	25,000
Wind	400	400	3,500	5,900	9,600	17,800	20,700

Changes in System Strain

2022 Western Interconnection Potential Loss-of-Load Hours with Peak Demand PRM (13.6%)



2022 Western Interconnection Potential Loss-of-Load Hours with Fixed PRM (15%)

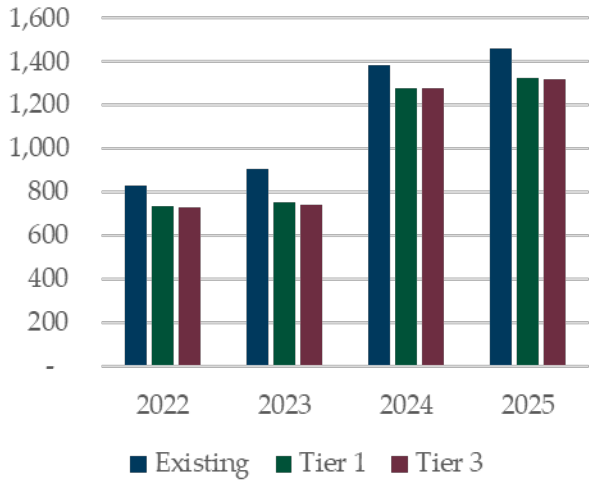


3. Recalibrate PRMs Based on Variability

Subregional Total Reliability Planning Reserve Margins

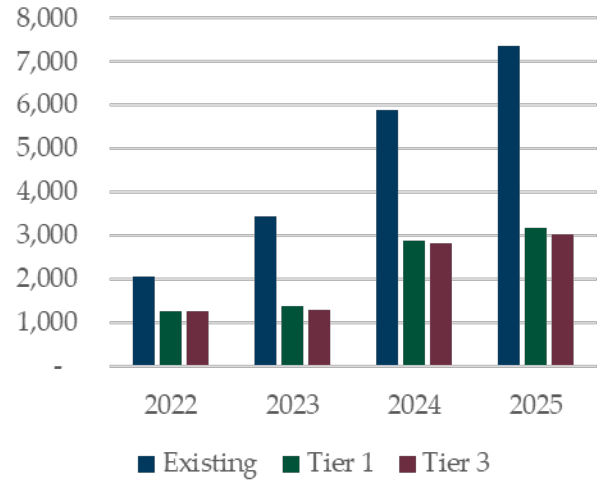
	2022	2023	2024	2025	2031
NWPP-NW	23.9%	23.9%	23.5%	23.5%	22.7%
NWPP-NE	16.1%	16.7%	17.3%	17.5%	20.6%
NWPP-C	17.8%	17.7%	20.1%	20.3%	20.4%
CAMX	21.6%	20.6%	22.0%	21.8%	28.1%
DSW	15.0%	17.7%	18.7%	18.5%	19.3%

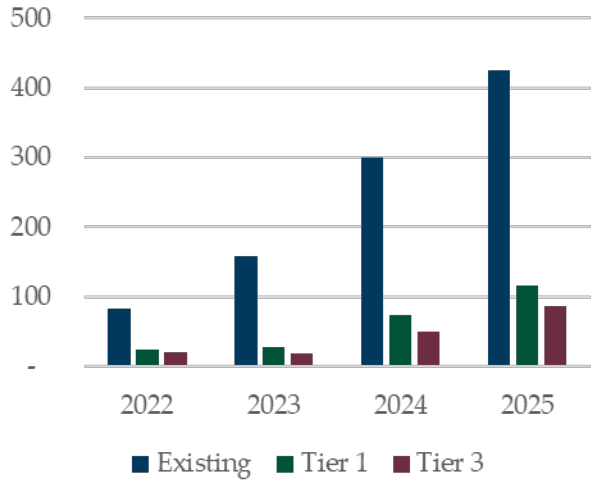
4. Change How to Count on Imports



NWPP-Central demand at risk before imports (hours)

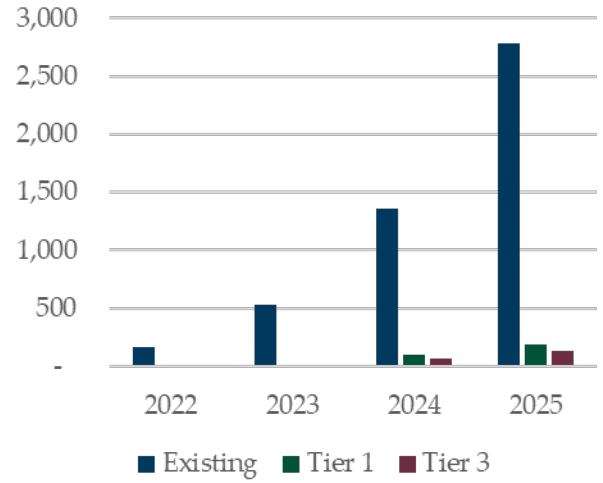
NWPP-Central demand at risk before imports (GWh)





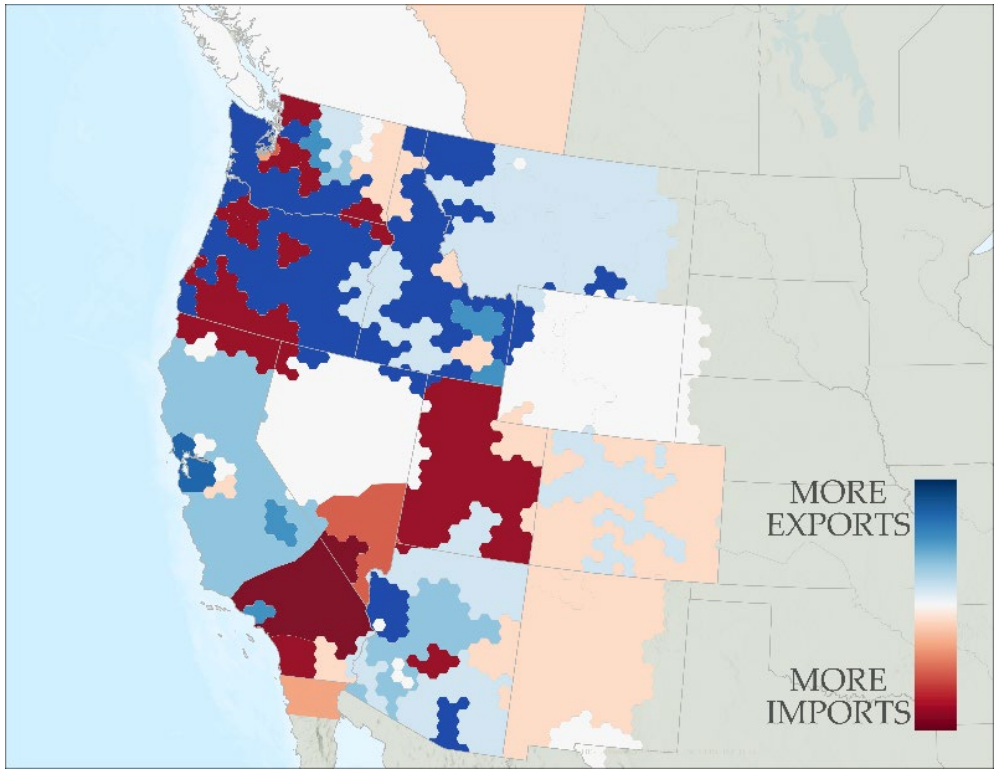
NWPP-Central demand at risk after imports (hours)

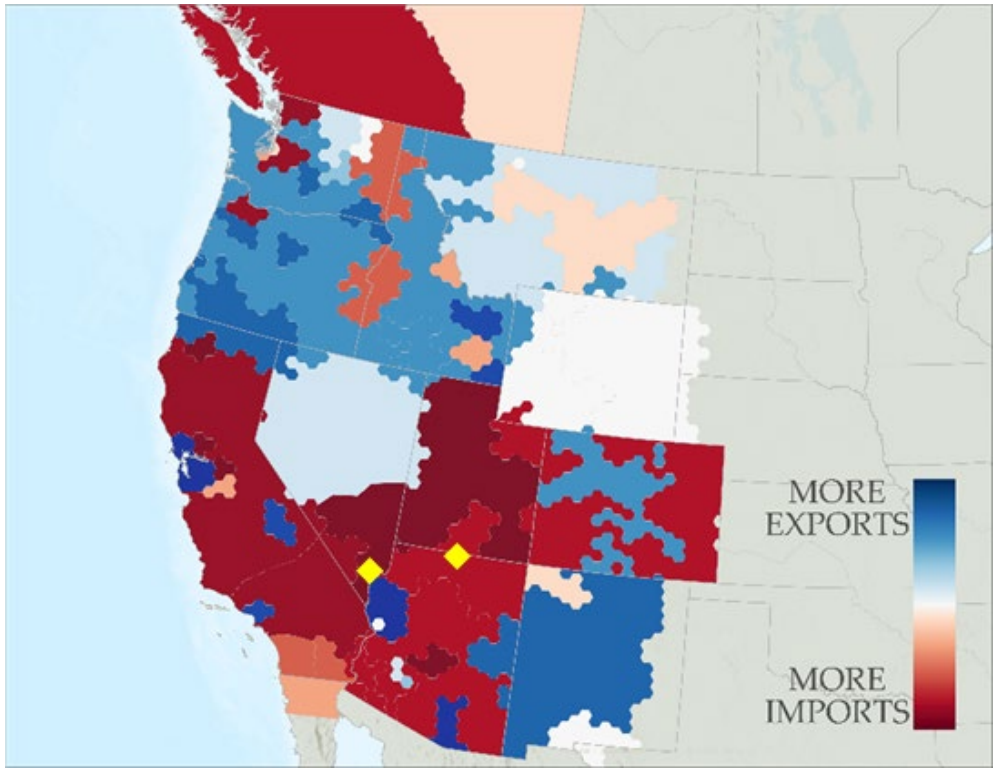
NWPP-Central demand at risk after imports (GWh)



4. Change How to Count on Imports

- Import availability and needs change under extreme scenarios





WECC

Electric Reliability and Security for the West

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Victoria Ravenscroft

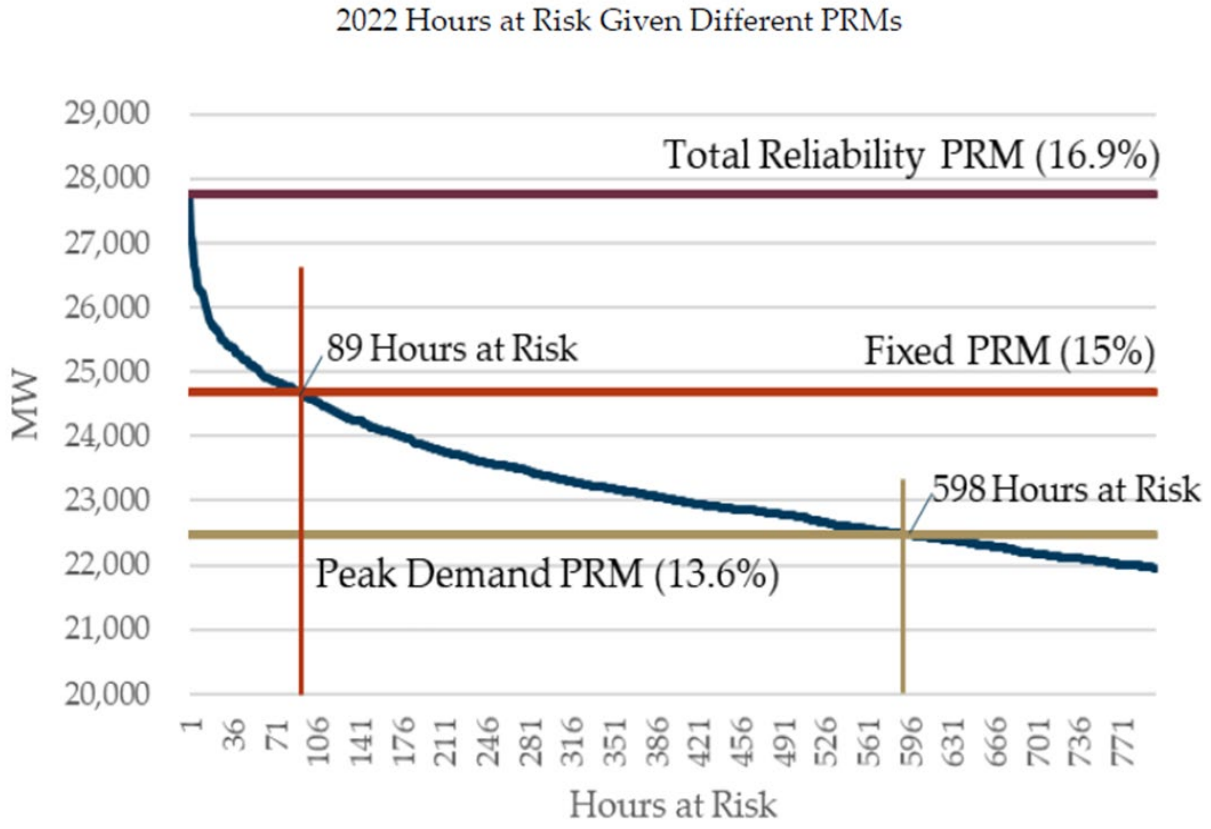
vravenscroft@wecc.org

WIRAB Staff Interpretation

- WECC's unique approach and findings deliver a new perspective of the challenges we face in Western Interconnection:
  - "Increasing variability [creates a] need for urgency"
  - "[Shifting] system strain"
  - "Changing reliance on imports"
- WECC's strong recommendations improves how the analysis is understood:
  - "…Act now[!]"
  - "Calculate planning reserve margins based on energy, evaluate the most strained time on the system that may not be the [traditional] peak"
  - "[Reconsider] how we account on imports"

WIRAB Staff Interpretation

- The WARA should offer WECC's determination of resource adequacy or inadequacy
- If inadequacy is determined, it should clearly state a procurement target (in MW) that would satisfy the One Day in Ten Year standard in this analysis
  - Is the procurement need for the WI 5,400 MW?



Upcoming Meetings

WIRAB Monthly Teleconference Meeting

First Thursday of every month at 11:00 AM MT

Next Meeting: March 3, 2022 at 11:00 AM MT

Spring 2022 Joint CREPC-WIRAB Meeting

To Be Announced

https://westernenergyboard.org/

Thank You!

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