

2030 Low Carbon, Extreme Weather Study Workshop

Western Power Pool

September 22, 2022

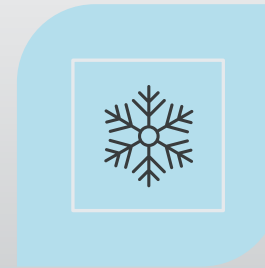
Increasing Concerns for Extreme Conditions



**LOW CARBON
RESOURCES AND LOAD**



EXTREME HEAT



EXTREME COLD



WILDFIRE



Study Objective

Identify whether near-term transmission constraints exist under low carbon resource requirements and extreme weather conditions.



If constraints exist, identify solutions that can be implemented by 2030.



Study Process Highlights

Stakeholder Participation

- Actively engage stakeholders in scope development, assumptions, draft results and proposed solutions
- Workshops

Study Horizon and Low Carbon Assumptions

- Planning year 2030
- Washington CETA and Oregon HB 2021 milestones for 2030
- Load and resource forecasts based on expected public policy, customer preference and demand side management implementations

Data Sources

- WECC Anchor Data Set
- 2032-33 Power Flow Base Cases
- Production Cost Model for identifying stressed conditions

Study Process Highlights

Planned Projects

- Planned projects with in-service dates prior to 2030 will be evaluated for inclusion or exclusion by the project's respective utilities.
- Projects with in-service dates after 2030 will be initially offline and evaluated as potential mitigation.
- Known projects from neighboring utilities external to study footprint will be similarly evaluated.

Transmission Solutions

- Identify mitigations available by 2030
- Identify long-term solutions beyond 2030
- Ability to charge energy storage off-peak

Extreme Heat



- “Heat dome” event in Pacific NW
- Widespread peak summer condition Inland
- Imbalance of wind between Pacific NW and Inland
- Low Hydro availability
- Thermal limits on lines and transformers



Extreme Cold



- Extreme “cold snap” in Pacific NW
- Widespread peak winter condition Inland
- No wind in Pacific NW
- Availability of Natural Gas (generation and pipeline)
- Lessons Learned from Texas - Planned maintenance, generation availability
- Ice Storms



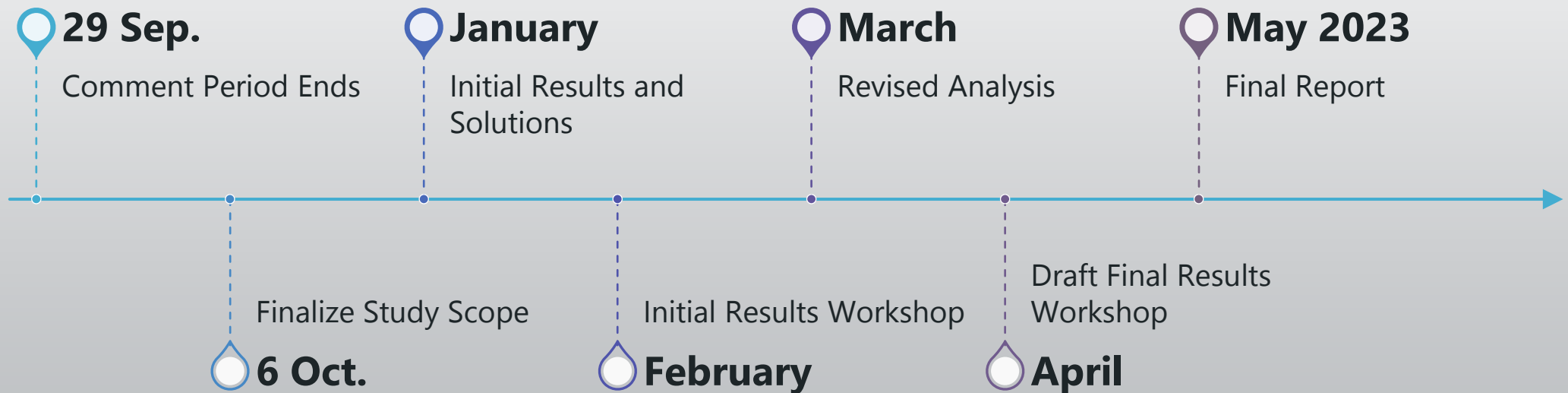
Wildfire



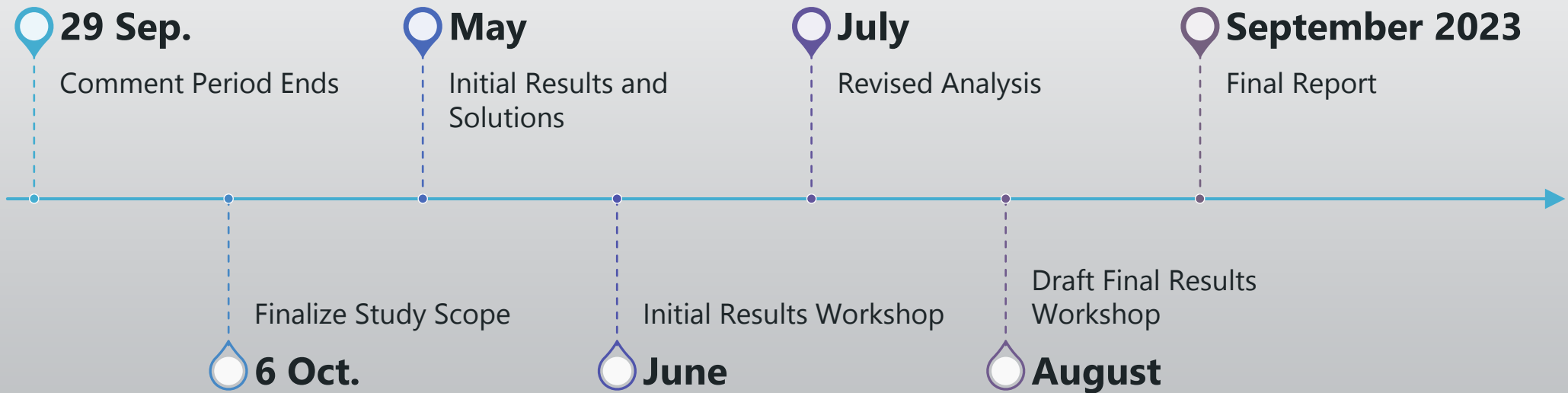
- System integrity following PSPS
- Entire transmission corridor outages
 - Cross-Cascades transmission lines
- Cascading, islanding and uncontrolled separation
- Impacts to load and solar generation due to widespread smoke



Study Milestones – Extreme Heat and Cold Scenarios



Study Milestones – Wildfire





Study Participants

Avista

Bonneville Power Administration

Chelan PUD

Montana-Alberta Tie Line (MATL)

Idaho Power

NorthWestern Energy

Portland General Electric

Puget Sound Energy

Seattle City Light

Snohomish PUD

Tacoma Power

Open Discussion, Questions and Comments

**Submit or Send Any Further
Comments by September 29**

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