

2030 Extreme Weather Study

Stakeholder Presentation

4/10/2024

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RTPS | POWERED
BY **WPP**



WESTERN
POWERPOOL

Anti-Trust



This is an open (public) session.

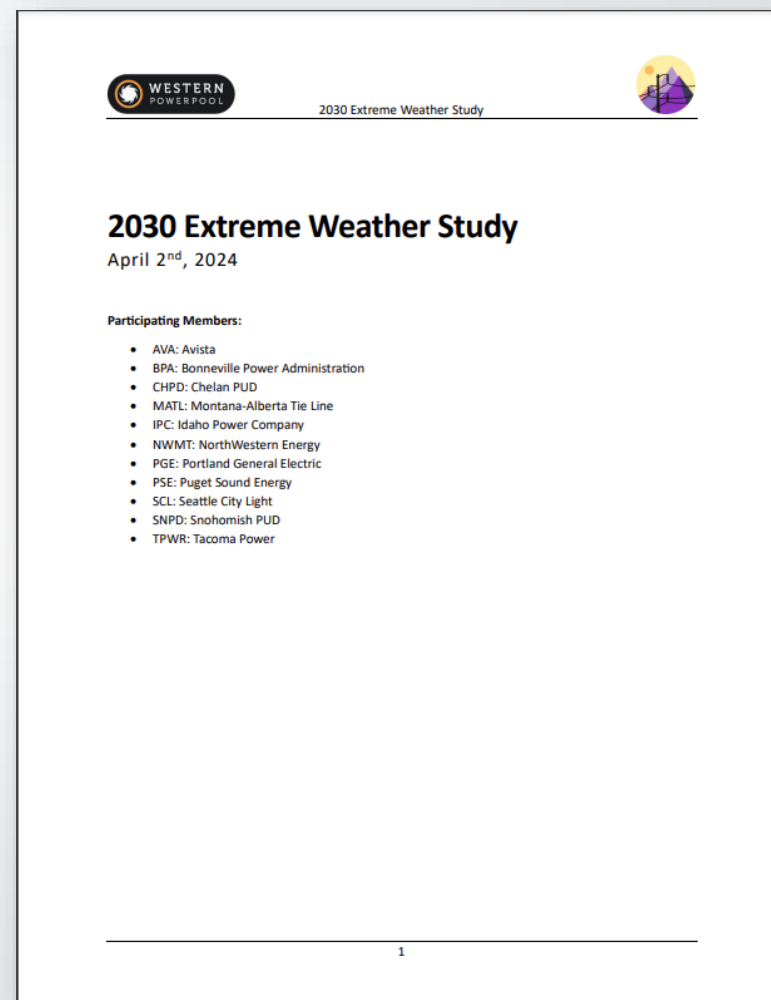


Private or confidential material should not be discussed in open session.

2030 Extreme Weather Study

» Posted on the WPP Website

<https://www.westernpowerpool.org/resources/2030-extreme-weather-study>

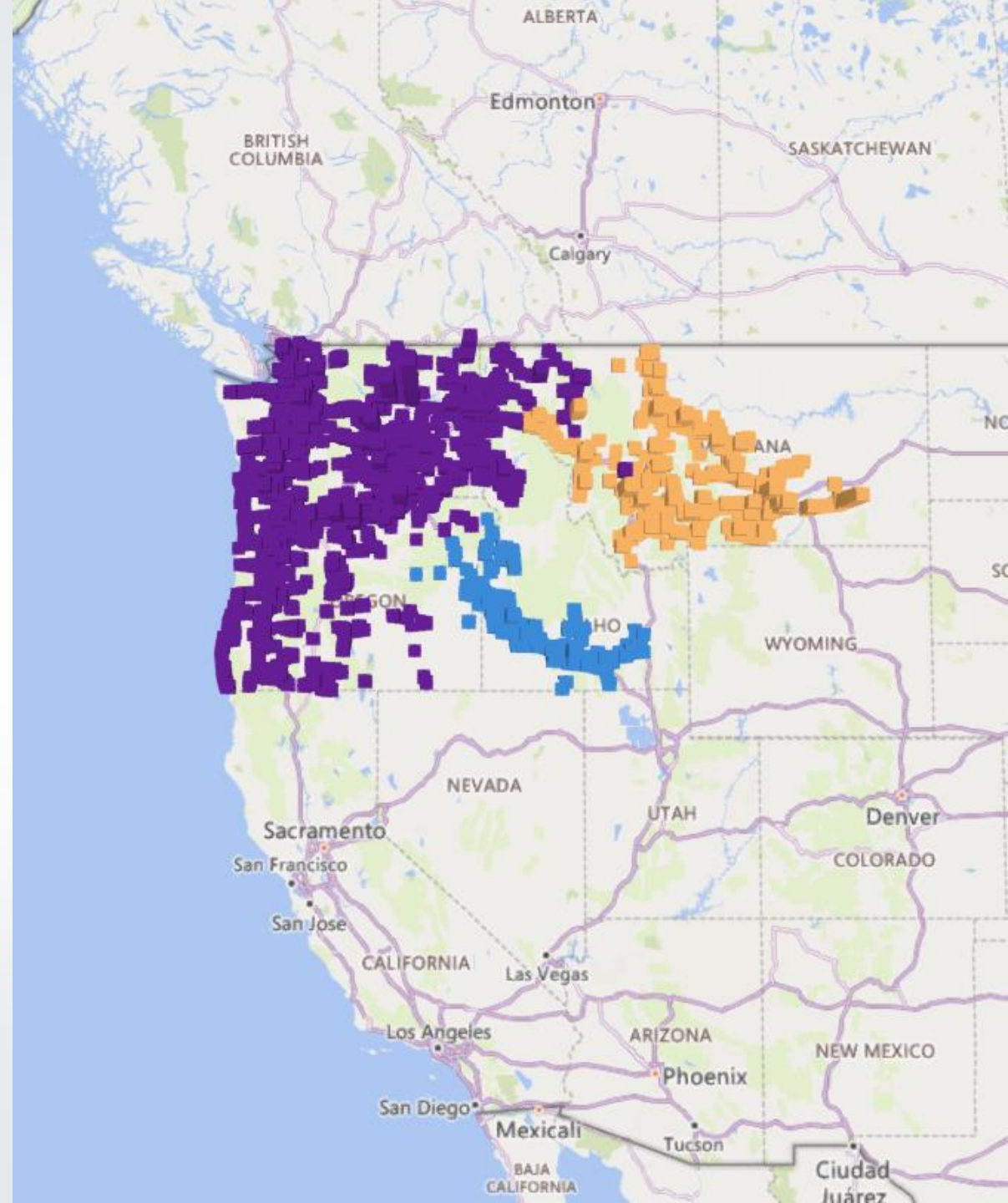


Participants

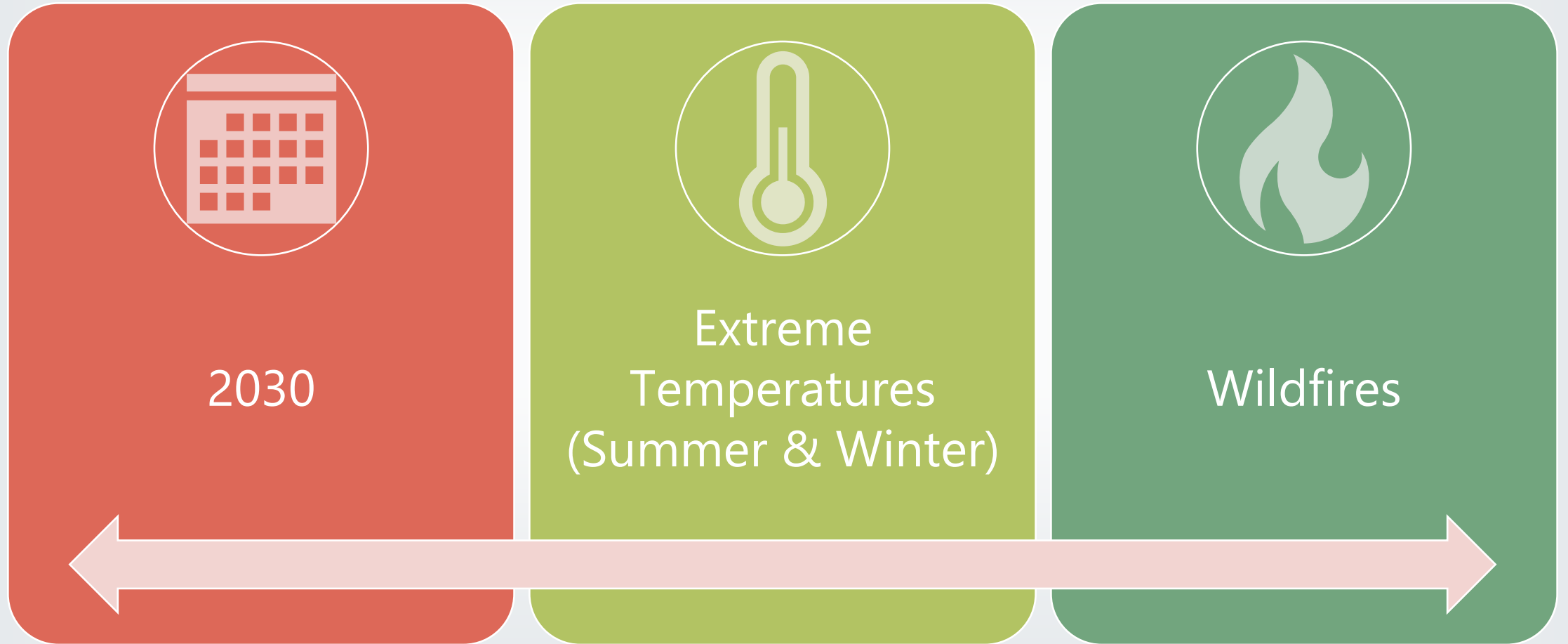
AVA	Avista
BPA	Bonneville Power Administration
CHPD	Chelan PUD
MATL	Montana-Alberta Tie Line
PGE	Portland General Electric
PSE	Puget Sound Energy
SCL	Seattle City Light
SNPD	Snohomish PUD
TPWR	Tacoma Power

IPC Idaho Power Company

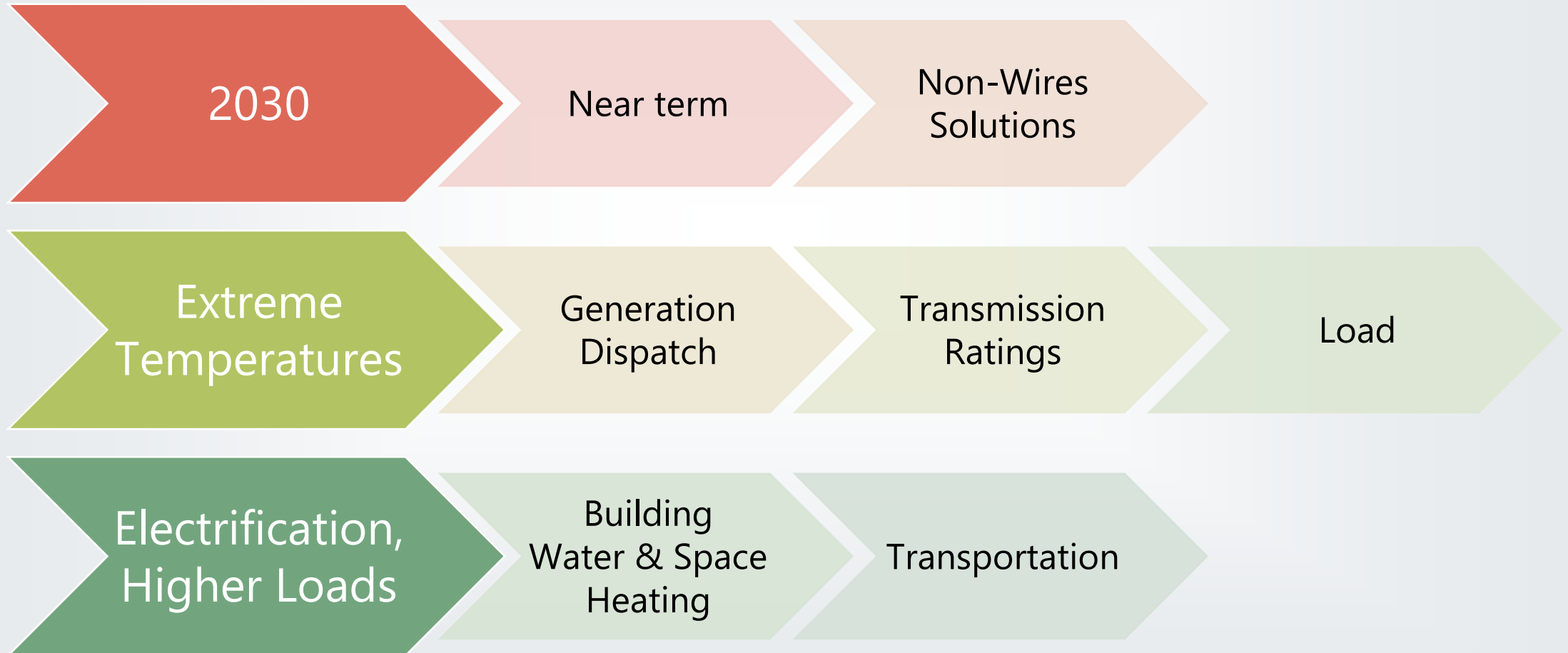
NWMT NorthWestern Energy



Scope



Impacts

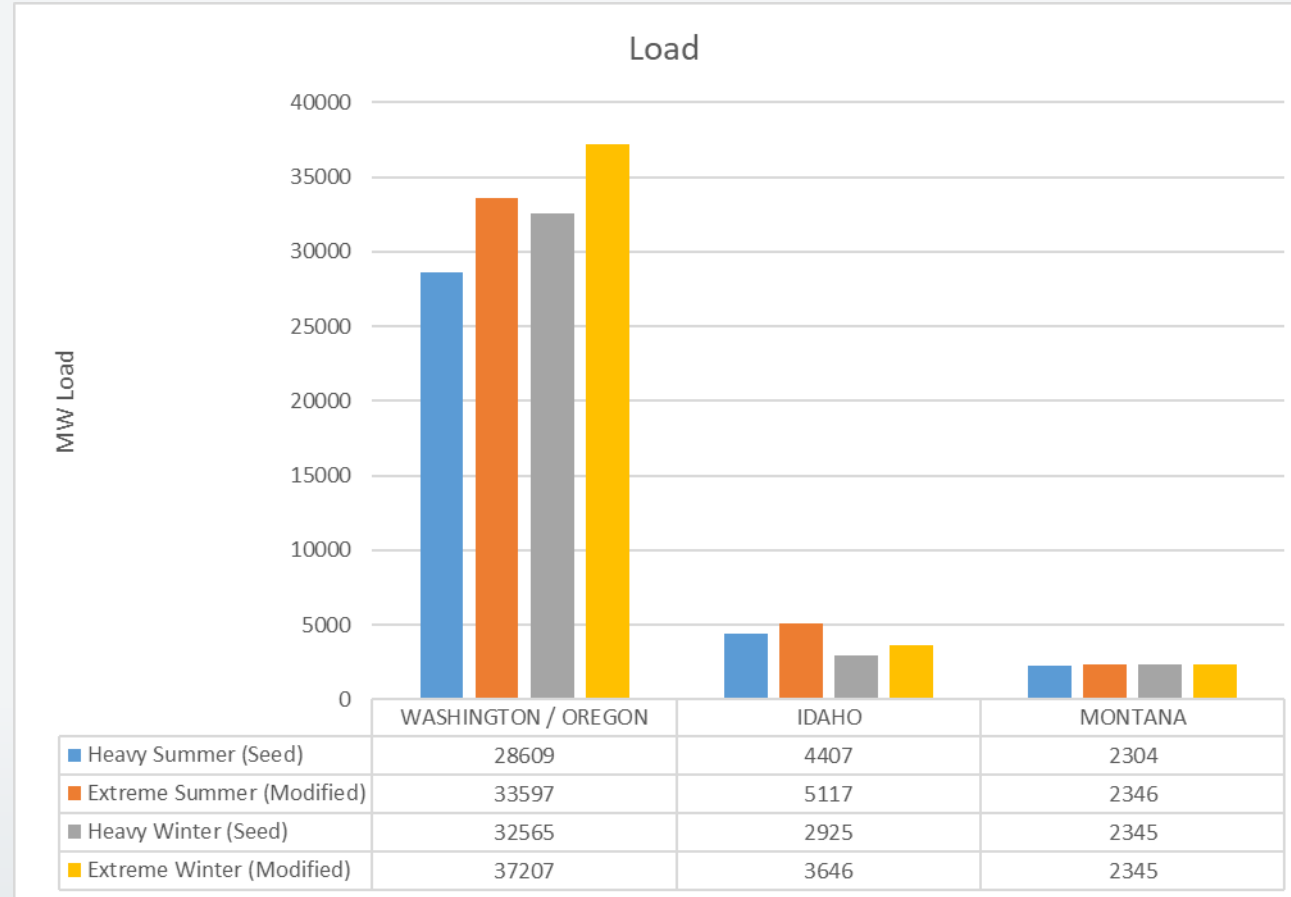




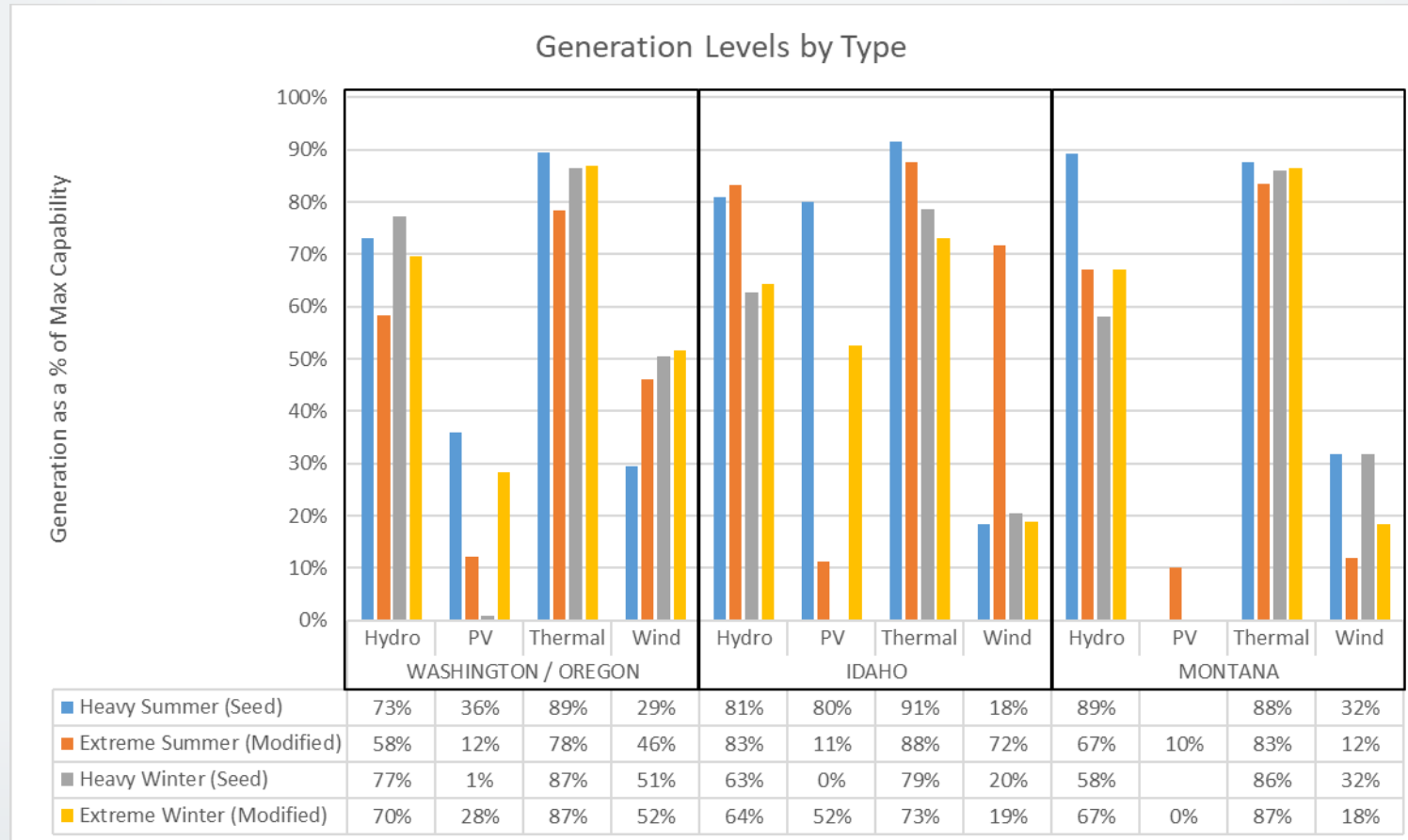
Extreme Summer & Winter



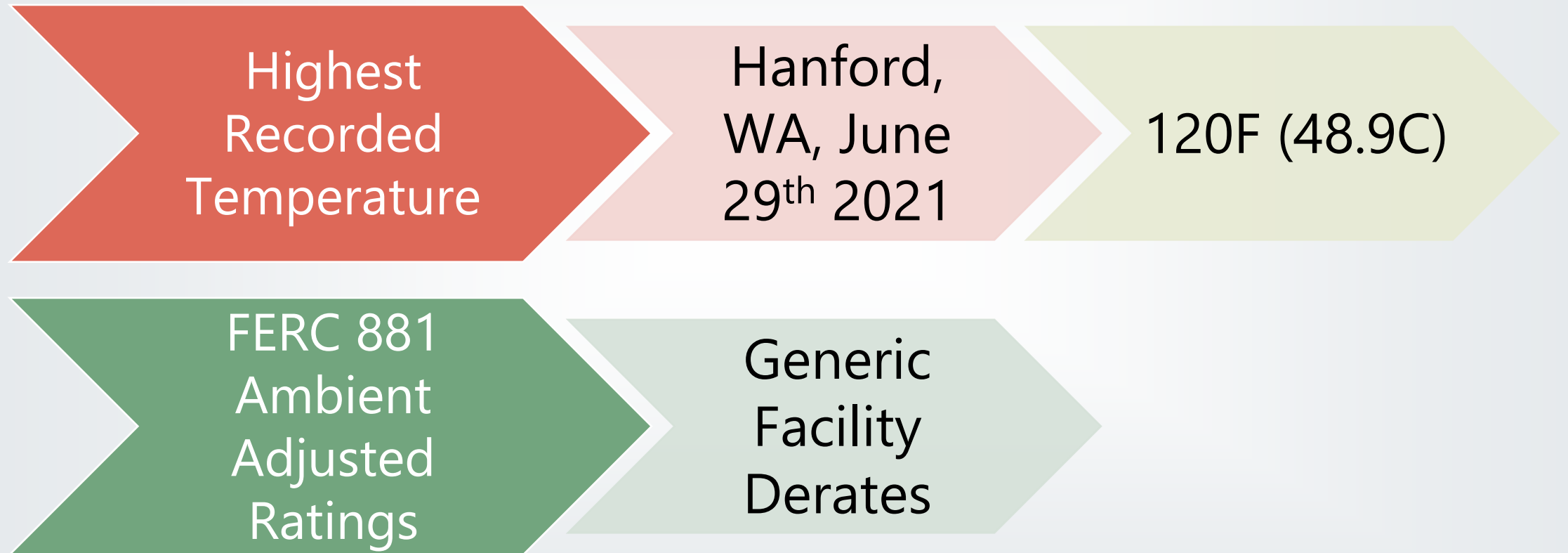
Extreme Summer & Winter Load



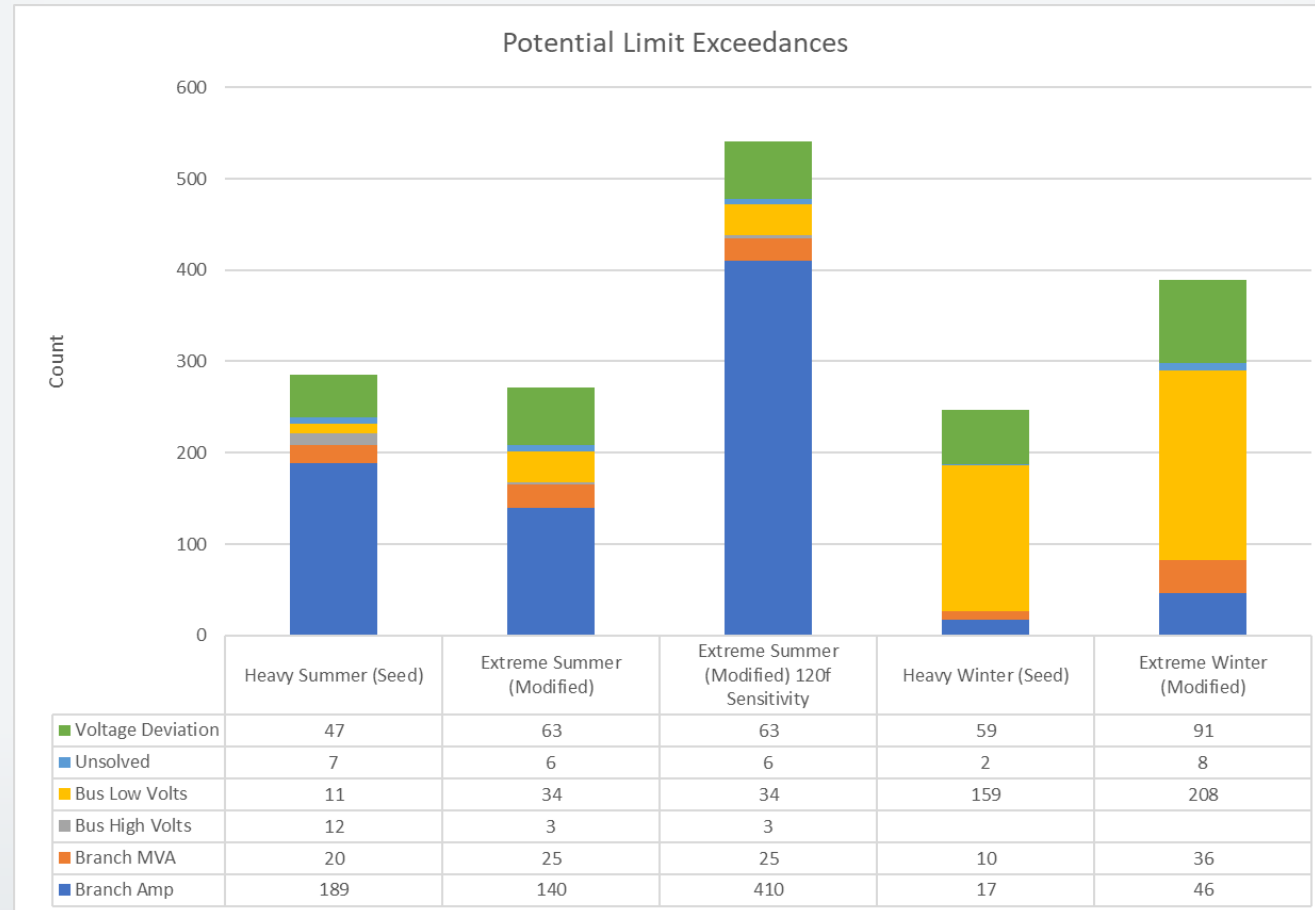
Extreme Summer & Winter Generation



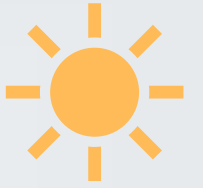
120F (48.9C) Sensitivity



Extreme Summer & Winter Observed Limit Exceedances



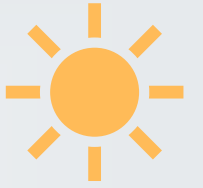
Plans – Extreme Summer



» Idaho Power

- » Overload of a Treasure Valley area 230/138 kV transformer for loss of a 230 kV line.
- » This is a localized issue that does not have regional impacts on other entities.
- » Idaho Power will continue to monitor the transformer for overloads in planning studies and has conceptual plans to either install a Remedial Action Scheme (RAS) to back-trip a 230 kV line or install a second 230/138 kV transformer to mitigate the potential overload.

Plans – Extreme Summer

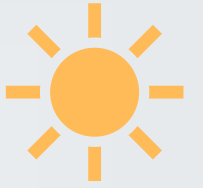


» Puget Sound Energy

» Localized issues with no regional impact. The potential violations identified are alleviated with the following mitigations:

- » Short-term solution: manual load shed in south King County, Long-term solution: Kent/Tukwila Area Project
- » Short-term solution: load shift to south King County through the 115 kV Vashon Tie or manual load drop in Kitsap County, Long-term solution: Kitsap Transmission Capacity Upgrade Project

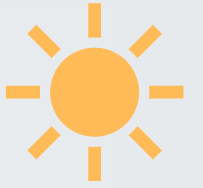
Plans – Extreme Summer



» Snohomish PUD

- » The 2030 Extreme Summer study identified two Snohomish contingencies that overloaded local Snohomish lines.
- » System reconfigurations with load reduction through manual operation may be necessary to alleviate power flowing on the remaining line.

Plans – Extreme Summer



» Portland General Electric

» A few violations in the Portland General area that are alleviated through the following planned upgrades:

- » Rebuild of the 230 kV Horizon to Keeler #1 line
- » Install a third bank at the Evergreen substation
- » Reconfiguration of the Sunset bus
- » Reconductor of the 115 kV Bethel to Market #1 line
- » Portland General has planned responses including area sectionalization and load transfer processes that can be implemented until such time as the planned upgrades are installed.

Plans – Extreme Winter



» Bonneville Power Administration

- » The 2030 Extreme Winter study identified two locations in the Bonneville footprint; these potential violations are fixed through the following planned upgrades:
 - » Installation of shunt compensation at the Troy 115 kV substation to provide voltage support in the Northern Idaho area
 - » Installation of shunt capacitors at the LaPine 115 kV substation to provide voltage support in the Central Oregon area

Plans – Extreme Winter



» Puget Sound Energy

» The 2030 Extreme Winter study identified potential violations in the Puget Sound Energy area that are localized issues with no regional impact. The potential violations identified are alleviated with the following mitigations:

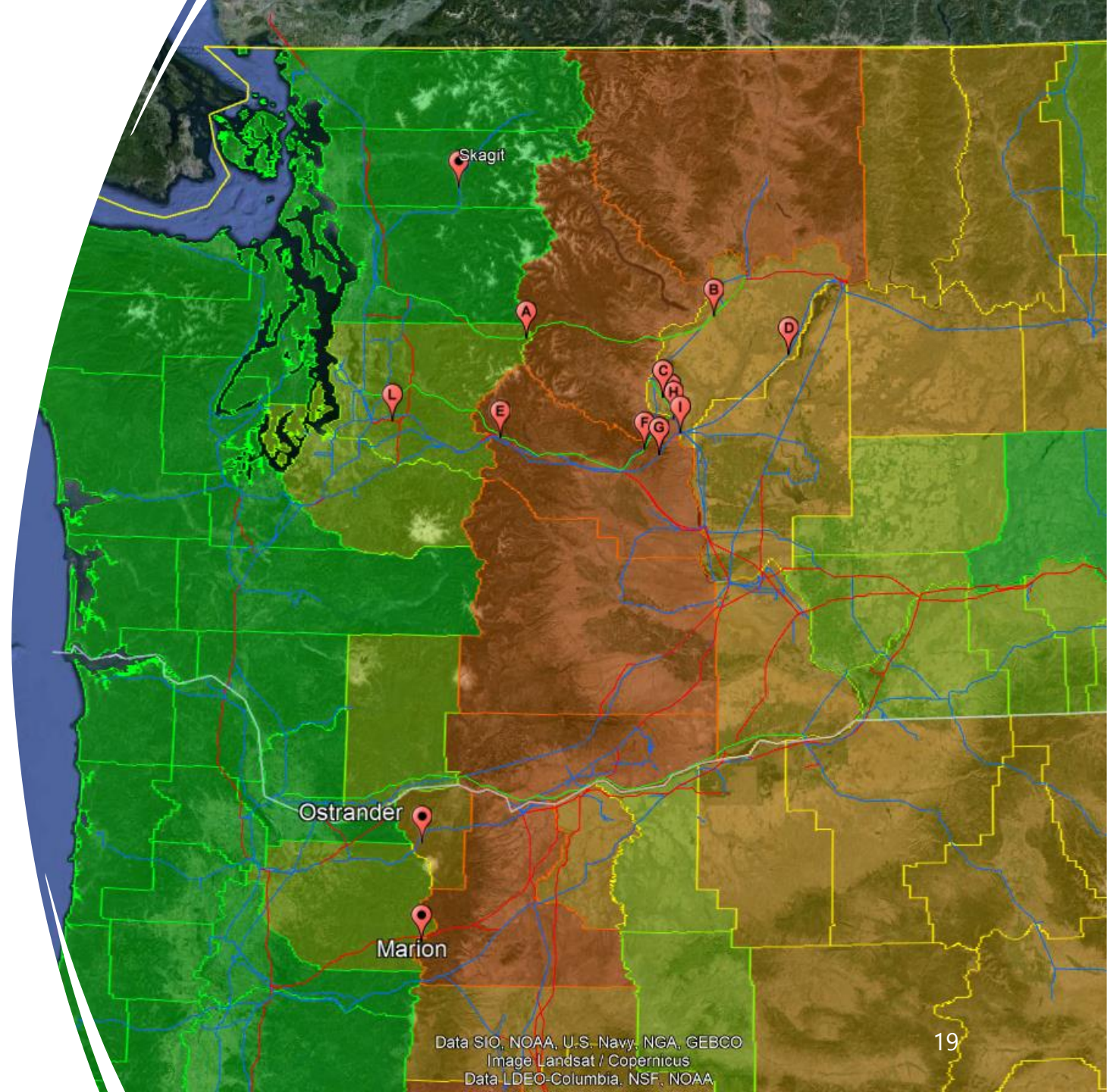
» Short-term solution: manual load shed in south King County, Long-term solution: Kent/Tukwila Project



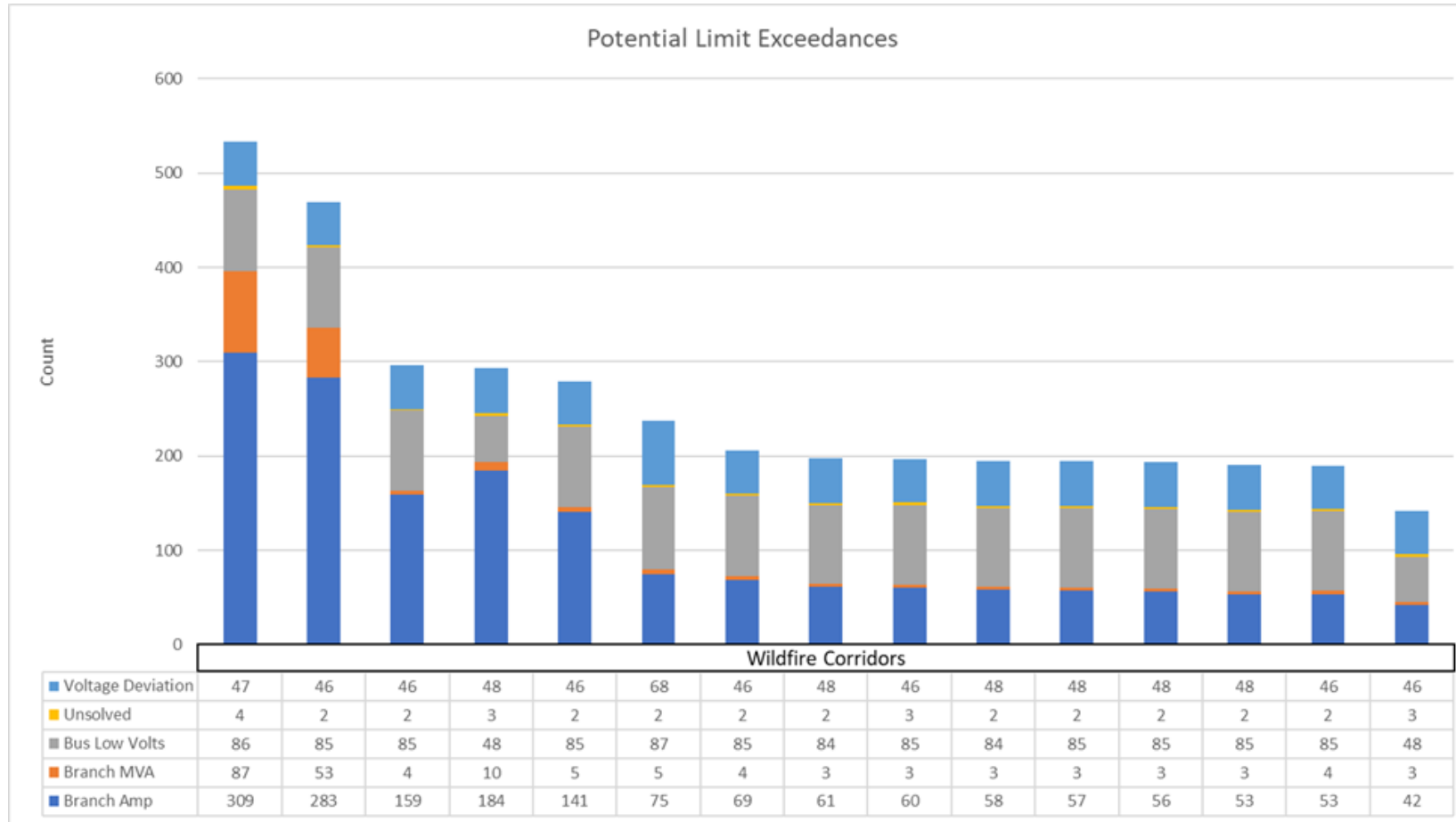
Wildfires

Wildfires

- » Studied Transmission Corridors
- » Overlay:
 - » FEMA Wildfire Risks by County



Wildfires



Plans - Wildfires

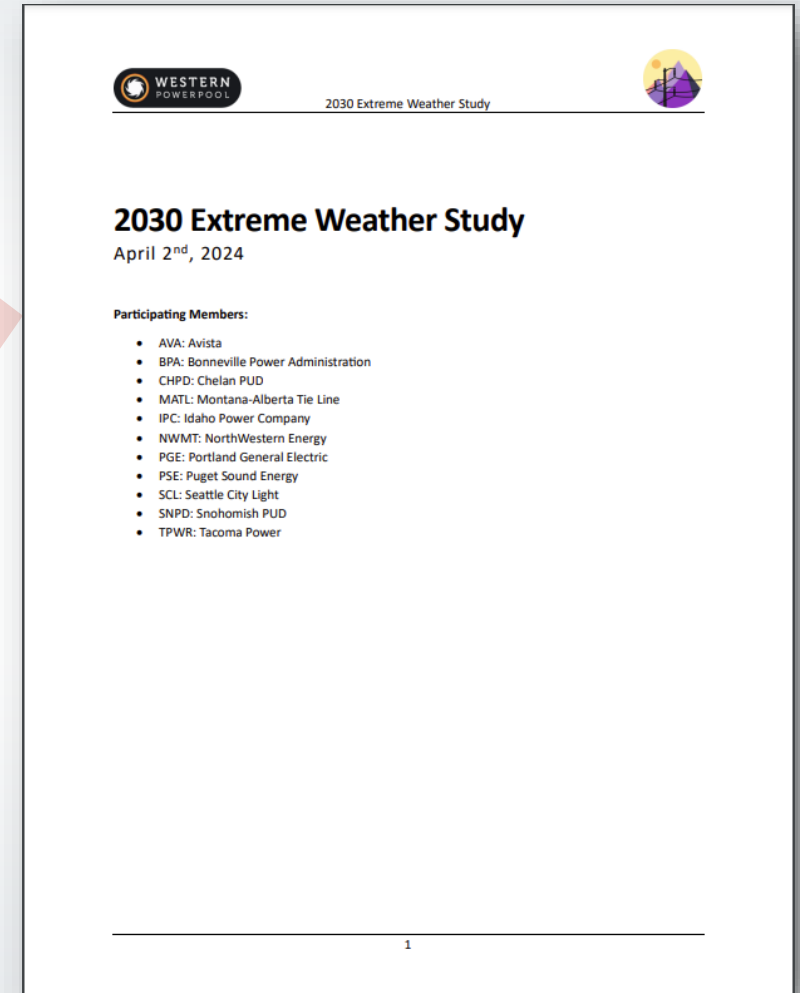
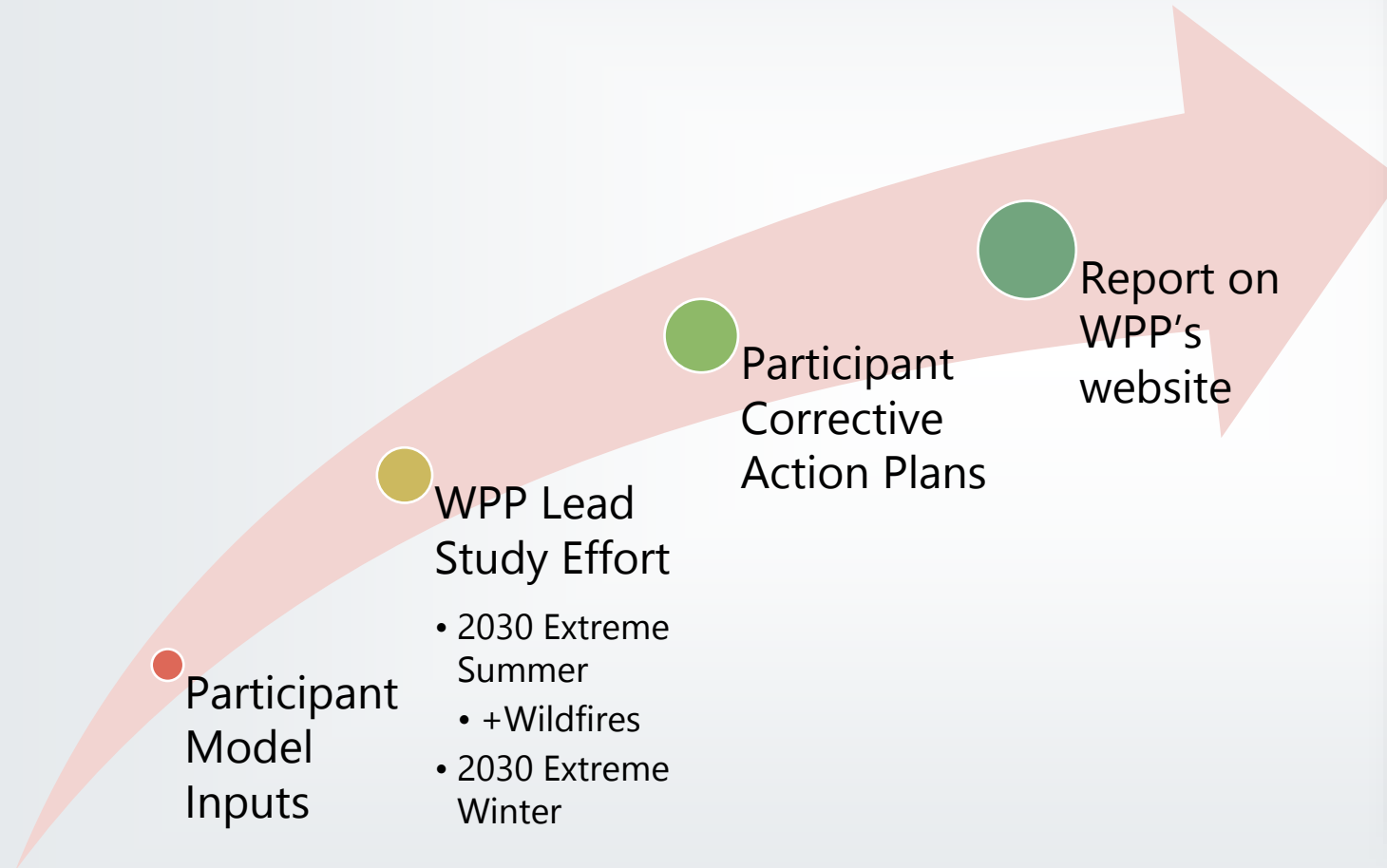
- » BPA has operational redispatch plans for:
 - Marion Corridor Wildfire
 - Ostrander Corridor Wildfire

- » The following planned projects will help in the long-term horizon:
 - BPA Big Eddy – Chemawa 500-kV upgrade
 - PGE Round Butte – Bethel 500-kV upgrade



Conclusion, Next Steps, Opportunities

Conclusion



Opportunities

» FERC 881 – Ambient Adjusted Ratings

- » There is an opportunity for improvement with more accurate facility ratings and heat-wave temperatures, after FERC 881 is implemented.



FERC Order 881

177 FERC ¶ 61,179
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 35

Docket No. RM20-16-000; Order No. 881

Managing Transmission Line Ratings

(Issued December 16, 2021)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Final rule.

Next Steps

» TPL-008

- » NERC Project 2023-07 Transmission Planning Performance Requirements for Extreme Weather
- » FERC Order 896

Standard currently under development.

Future studies may include:

- Ambient adjusted ratings
- Generation derates
- Transient, cascading, voltage stability analysis

TPL-008-1 – Transmission System Planning Performance Requirements for Extreme Temperature Events

A. Introduction

- Title:** Transmission System Planning Performance Requirements for Extreme Temperature Events
- Number:** TPL-008-1
- Purpose:** Establish requirements for Transmission system planning performance for extreme heat and extreme cold temperature events
- Applicability:**
 - 4.1. Functional Entities:**
 - 4.1.1.** Transmission Planner
 - 4.1.2.** Planning Coordinator
- Effective Date:** See Implementation Plan for Project 2023-07.

**Questions?
Comments?**