

Idaho Power



Oregon Distribution System Planning



OPUC Special Public Meeting

September 15, 2022

Idaho Power in Oregon



Oregon Customers **20,477**

4,000
SQUARE MILES

Peak Demand and Generation



Connected Generation

- 1.7MW Oregon Customer Generation (Net Metering)
- 142MW Oregon Small Generation
- 136MW Oregon Large Wind & Geothermal

279.7 MW Total Generation

145 MW Peak Load Demand

Idaho Power Reliability



WE KEEP THE LIGHTS ON

99.9%

OF THE TIME

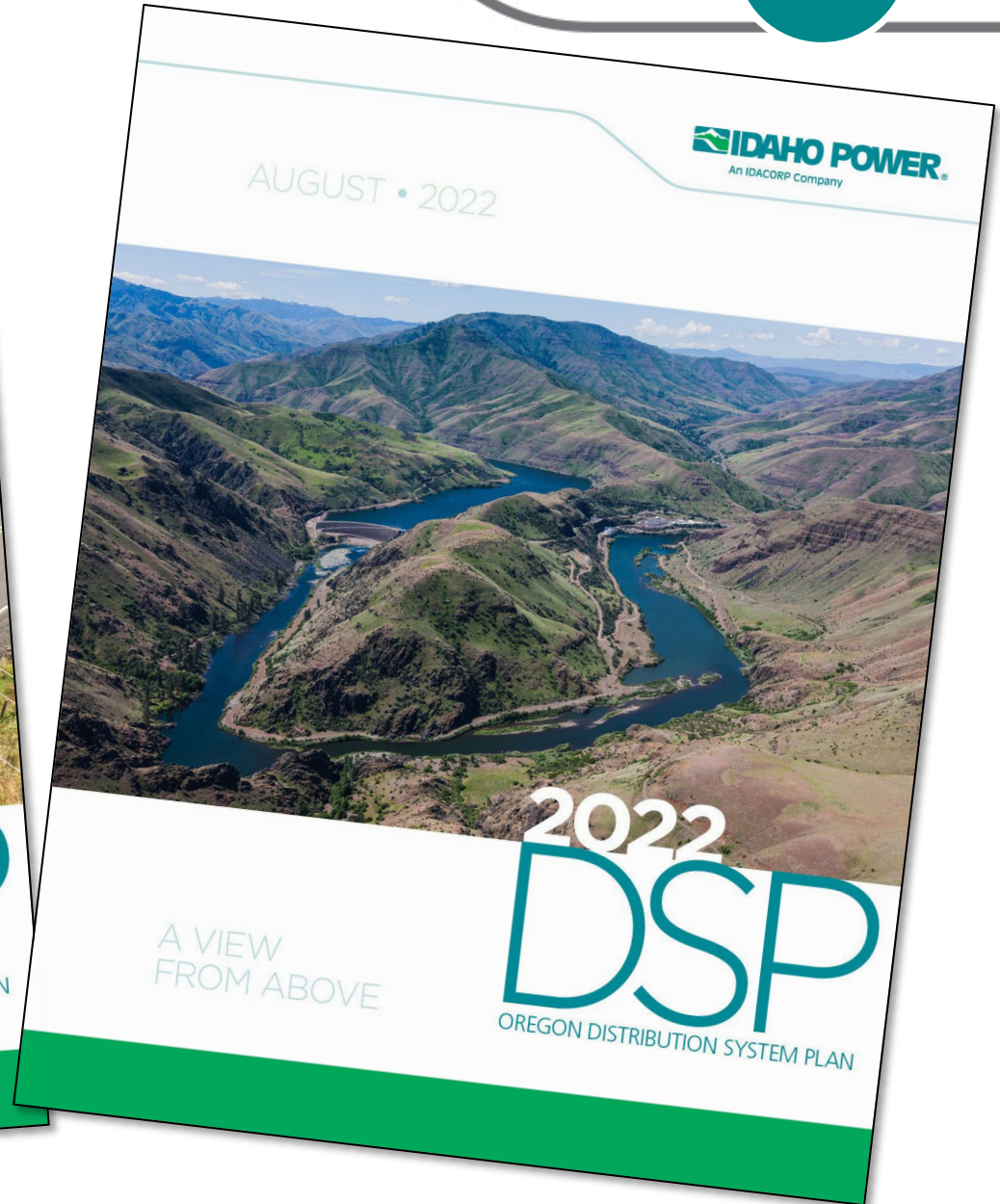
Idaho Power in Oregon



**Providing safe,
reliable, and
affordable energy**



DSP Part 2 Review



DSP Part 2 Topics



- Part 1 Review - Baseline Data & System Assessment
- Forecasting Load Growth, DER Adoption, and EV Adoption
- Grid Needs Identification
- Solution Identification (NWS Alternatives)
- Near-Term Action Plan

Part 1 Review



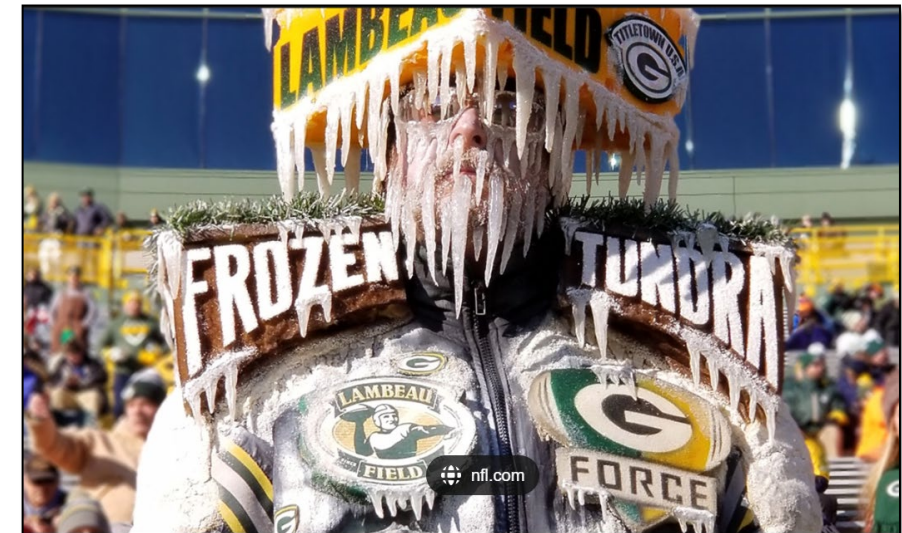
Baseline Data & System Assessment

- Some assets have advanced age – substation transformers and electromechanical relays
- Assets are regularly tested and show no performance decline
- Long life attributed to low historical growth
- Asset replacement projects currently in progress
 - 8 Substation transformers projects identified for 2024-2028
 - All electromechanical feeder relays will be upgraded by 2026

Distribution Forecasting Development



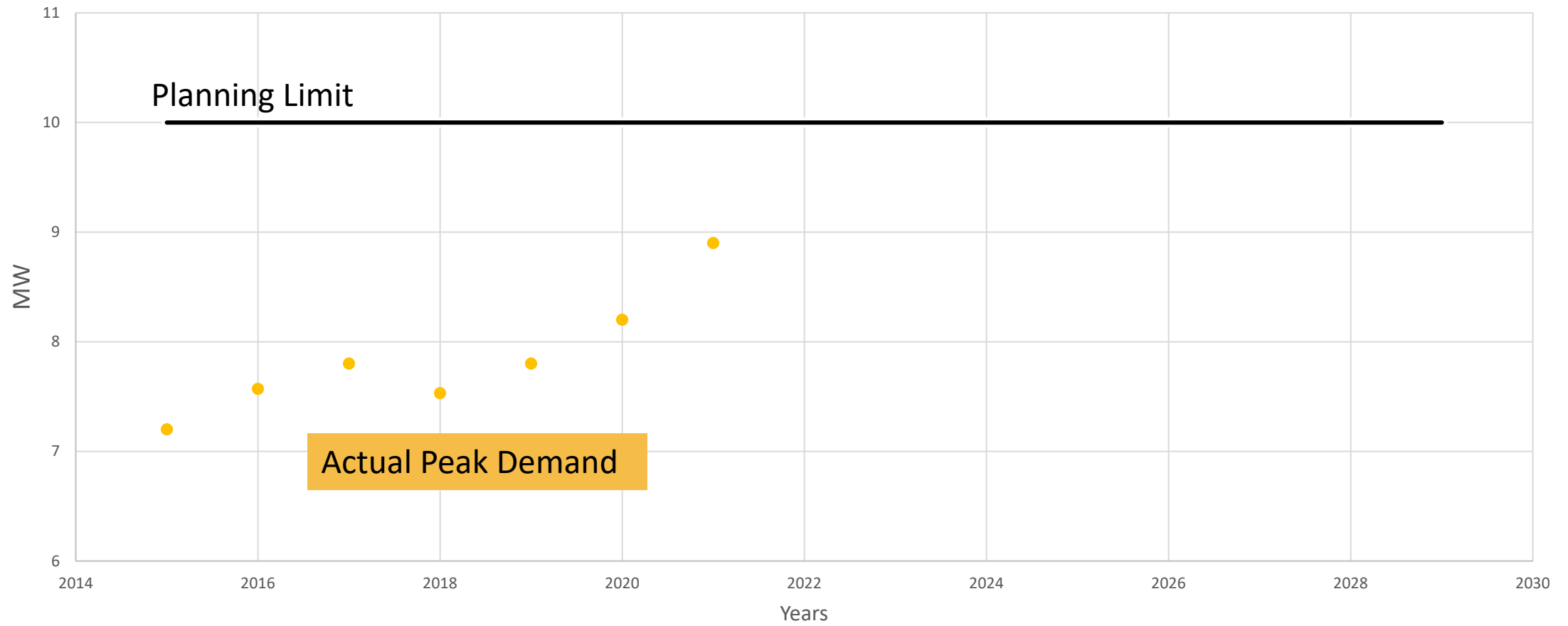
- Historical Peak Demand
- Temperature Impact
- Growth from Customers
(residential/commercial/industrial)



Load Forecast Example



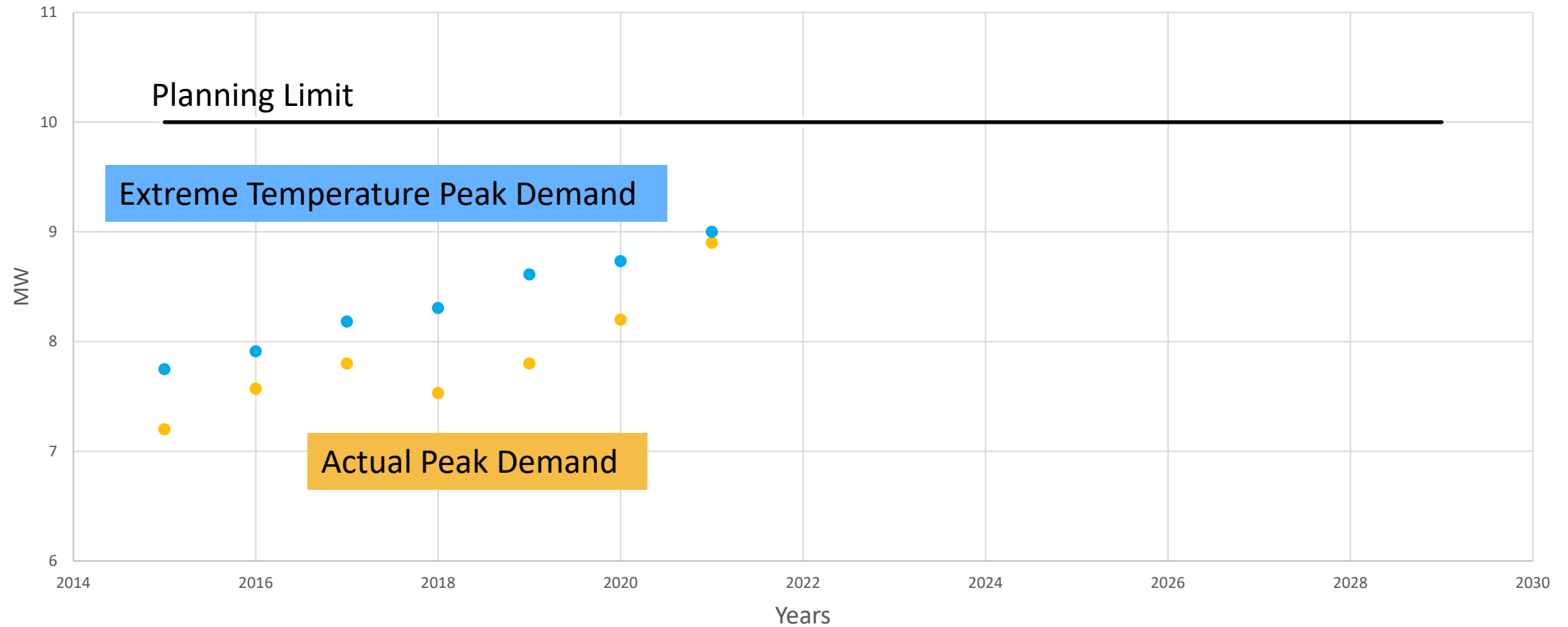
Idaho Power Distribution Circuit Example



Load Forecast Example



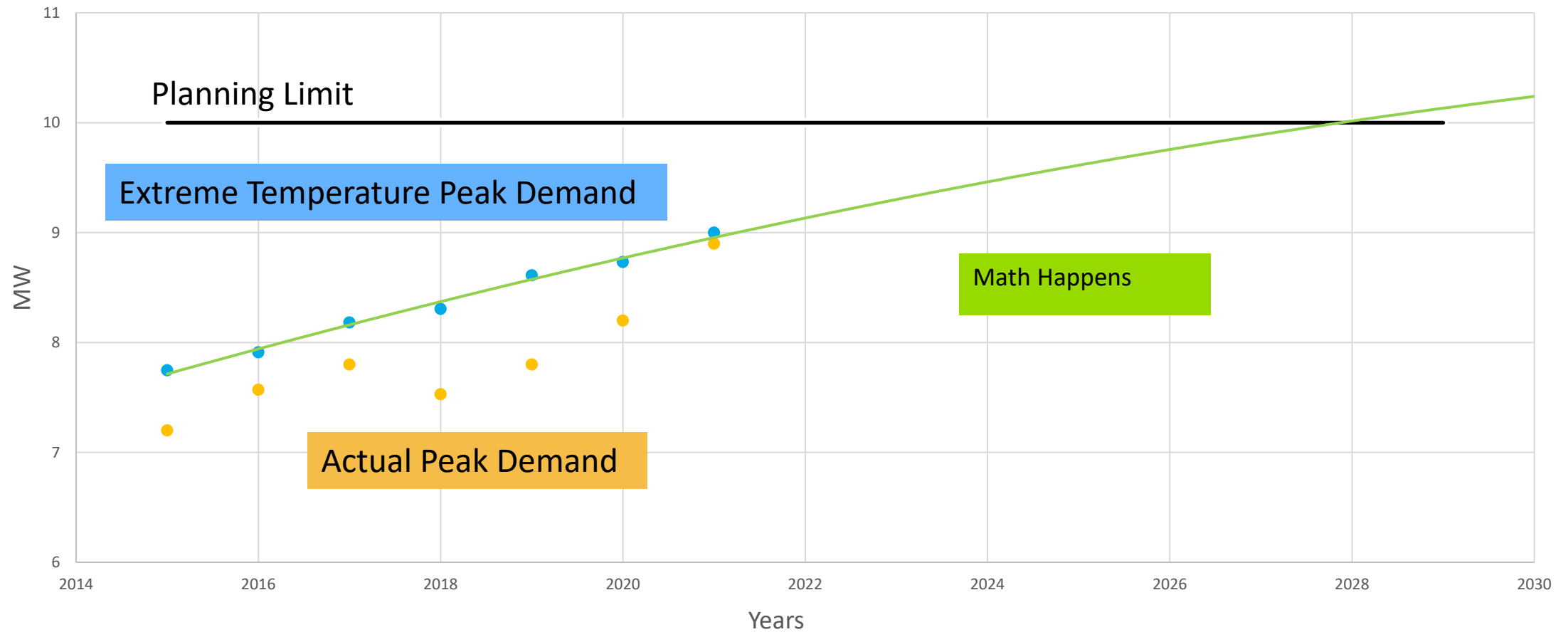
Idaho Power Distribution Circuit Example



Load Forecast Example



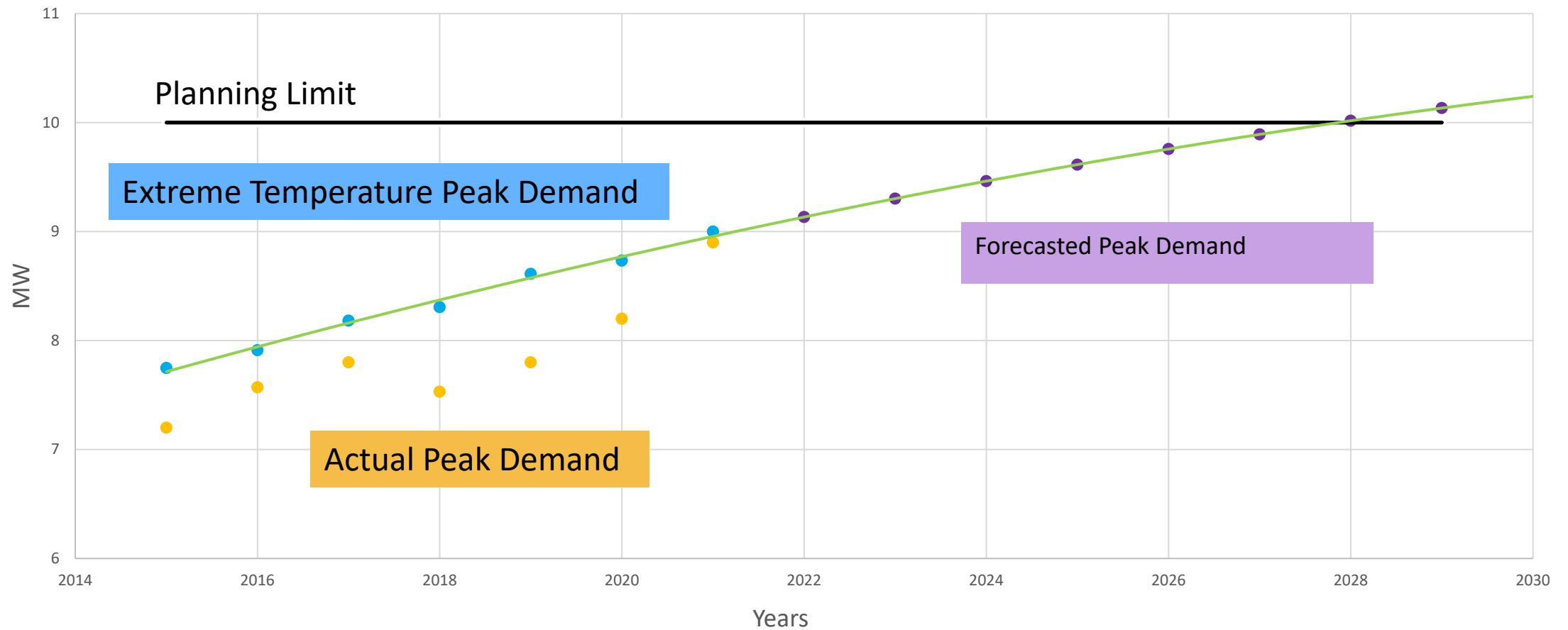
Idaho Power Distribution Circuit Example



Load Forecast Example



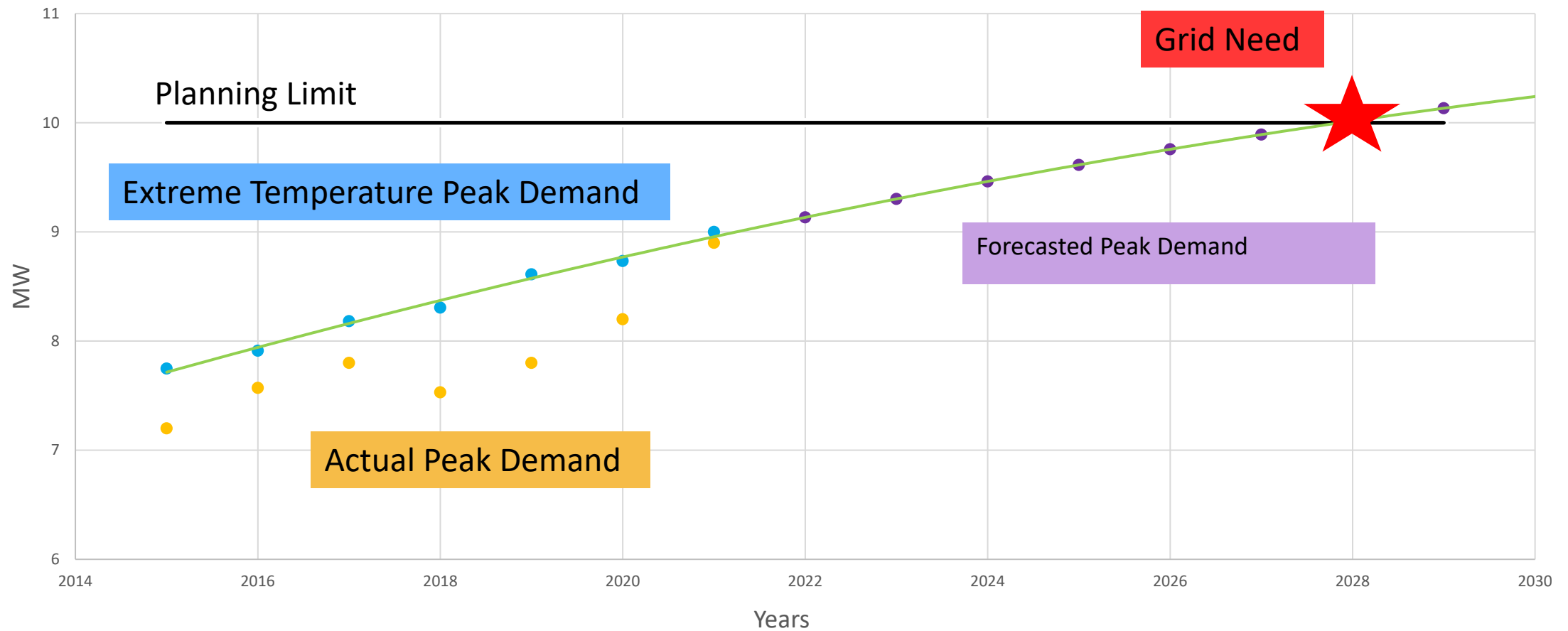
Idaho Power Distribution Circuit Example



Load Forecast Example



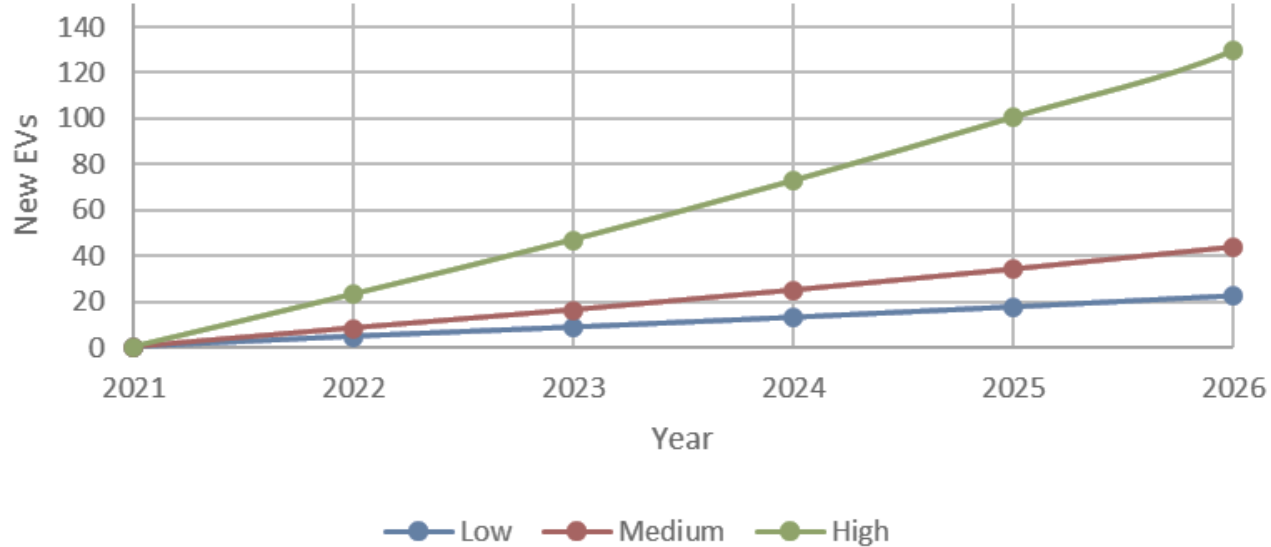
Idaho Power Distribution Circuit Example



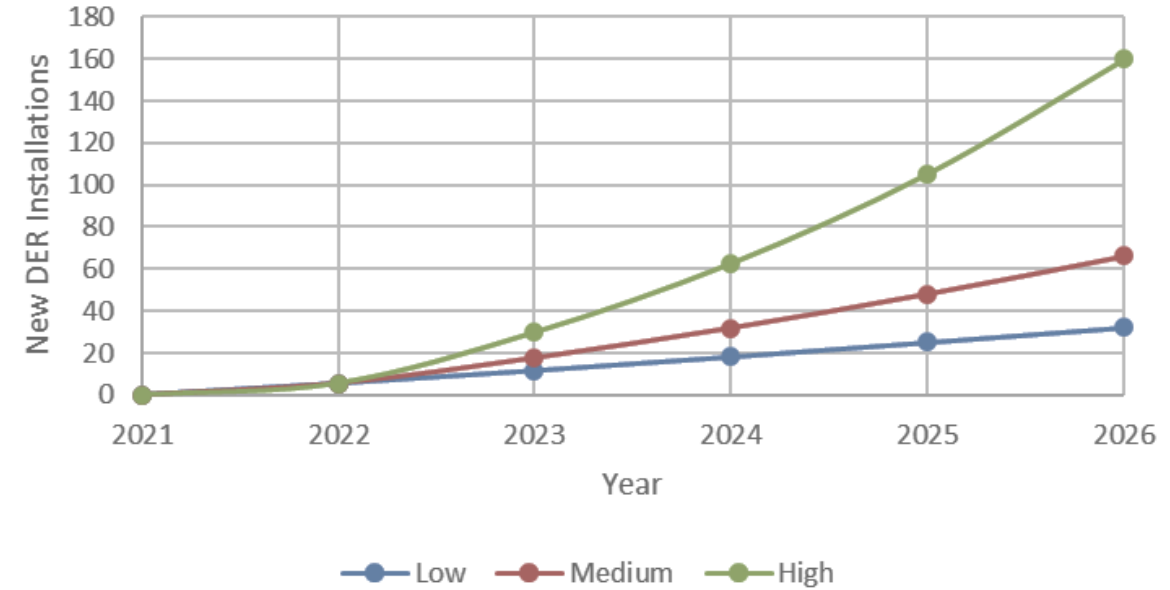
Near-Term EV & DER Growth



Near-Term EV Forecast Scenarios



Near-Term DER Forecast Scenarios



Forecast Adjustments



- EV adoption
 - Presently 20 EVs registered with high forecast of 148 in 2026
- Customer Generation (aka net metering) adoption
 - Presently 1.7MW of generation capacity with a high forecast of 2.7MW in 2026 (mix of residential, irrigation, and commercial)

Low impact in the near-term forecast (2 - 4 years)

Distribution Planning Process



Distribution Planning Process



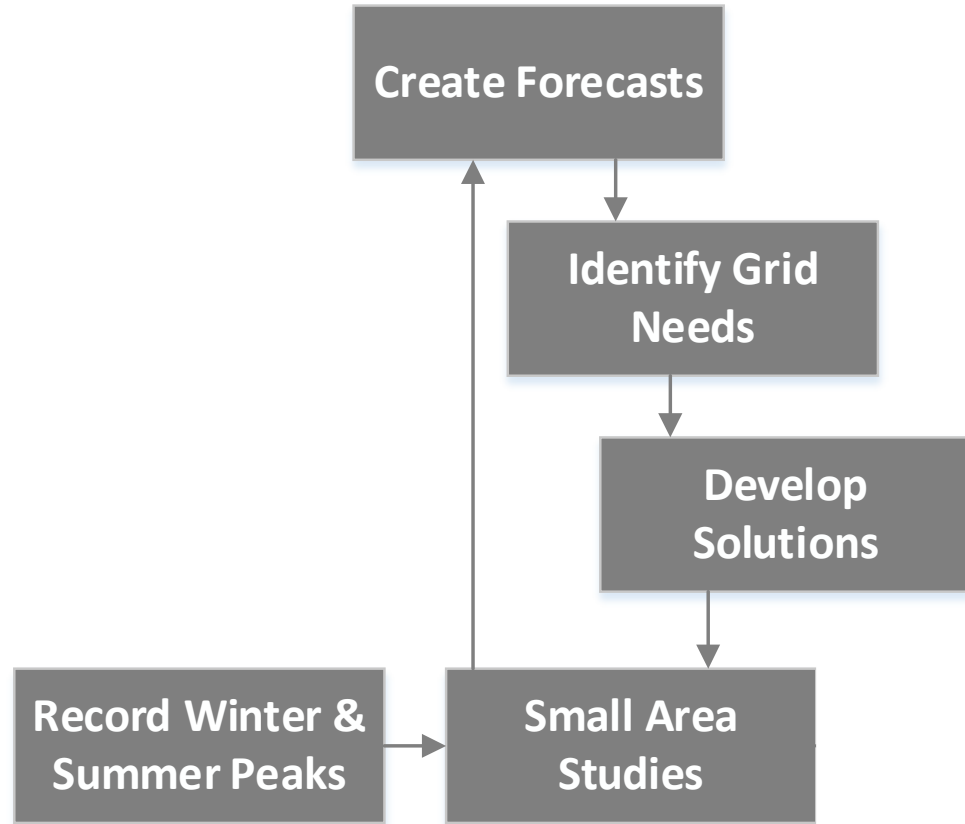
Record Winter &
Summer Peaks



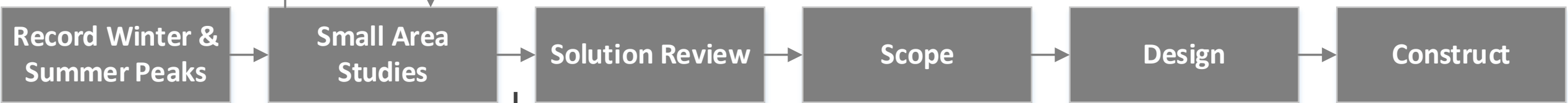
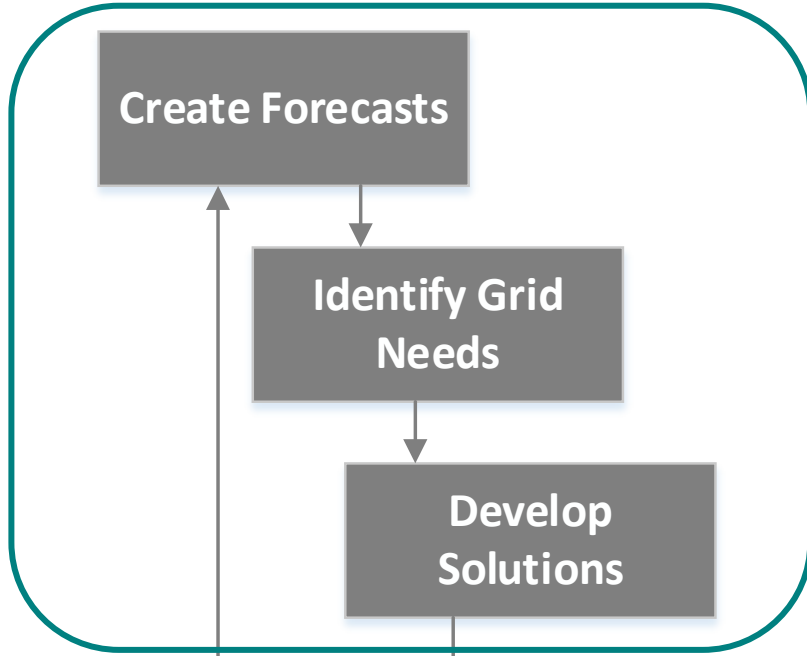
Small Area
Studies



Distribution Planning Process



Distribution Planning Process



3 – 5 Year Process

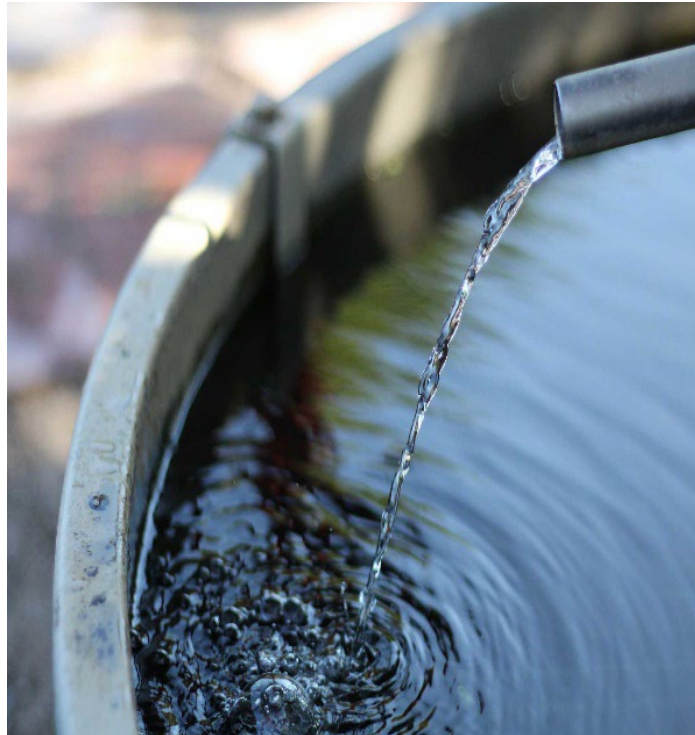


Capacity Limits



Distribution System Growth

- Residential
- Small Commercial
- Large Commercial



- **Thermal Limit**
- **Planning Limit**



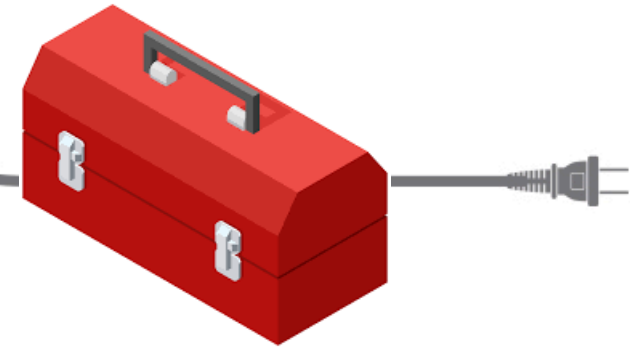
Distribution Grid Needs



Distribution grid needs drivers include:

- Growth and Reliability
 - Limited capacity
 - Low/high voltage
 - Frequent outages
- Asset Replacement
 - Signs of failure
 - Asset no longer supported by manufacturer
 - Line relocation due to road widening

Solution Development Toolbox



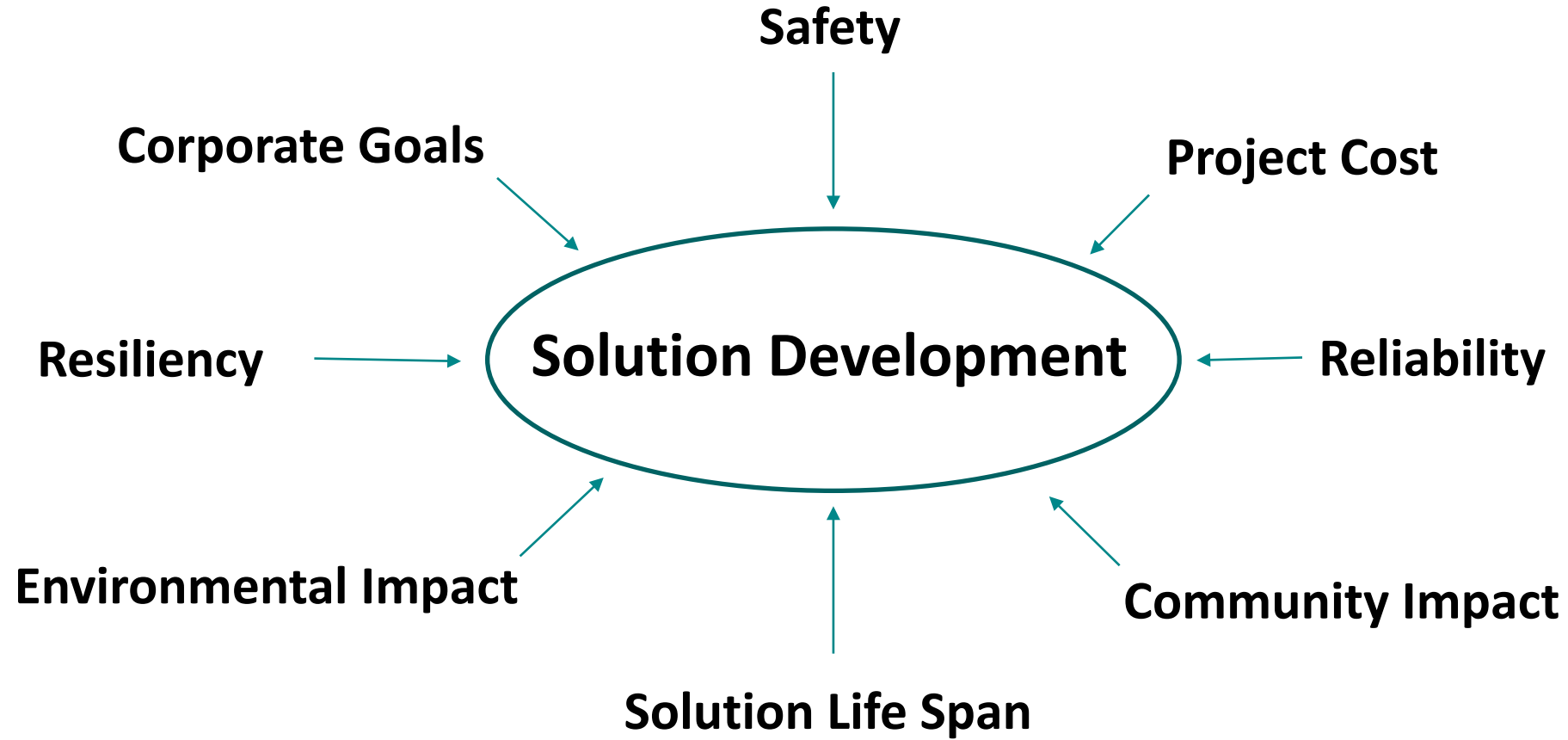
Traditional Solutions



Non-Wire Solutions (NWS)



Solution Evaluation Process





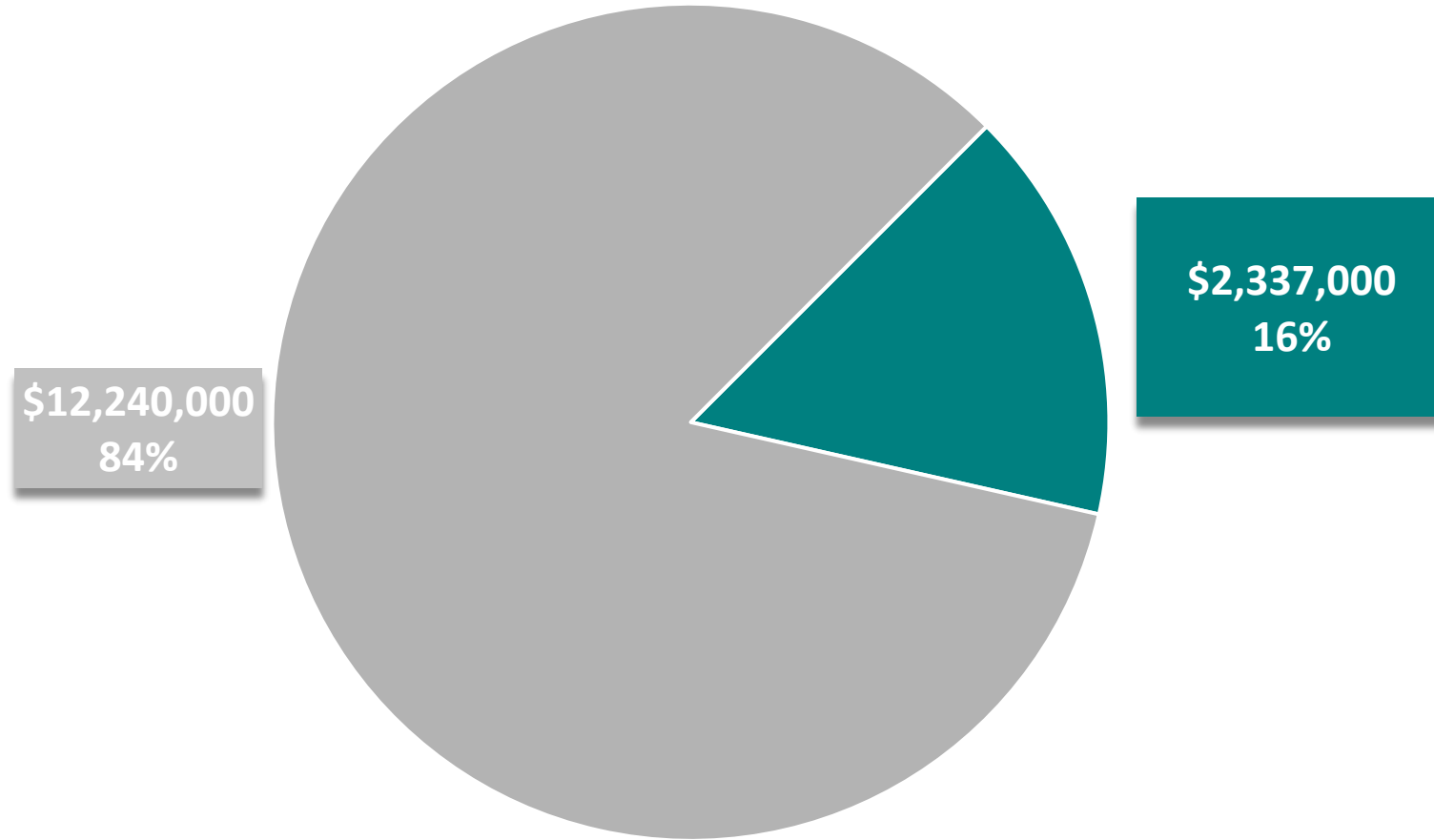
Distribution Grid Needs

Asset Replacement Grid Needs don't typically work well with Non-Wire Solutions (NWS)



Oregon Distribution System

Investment 2023 – 2026

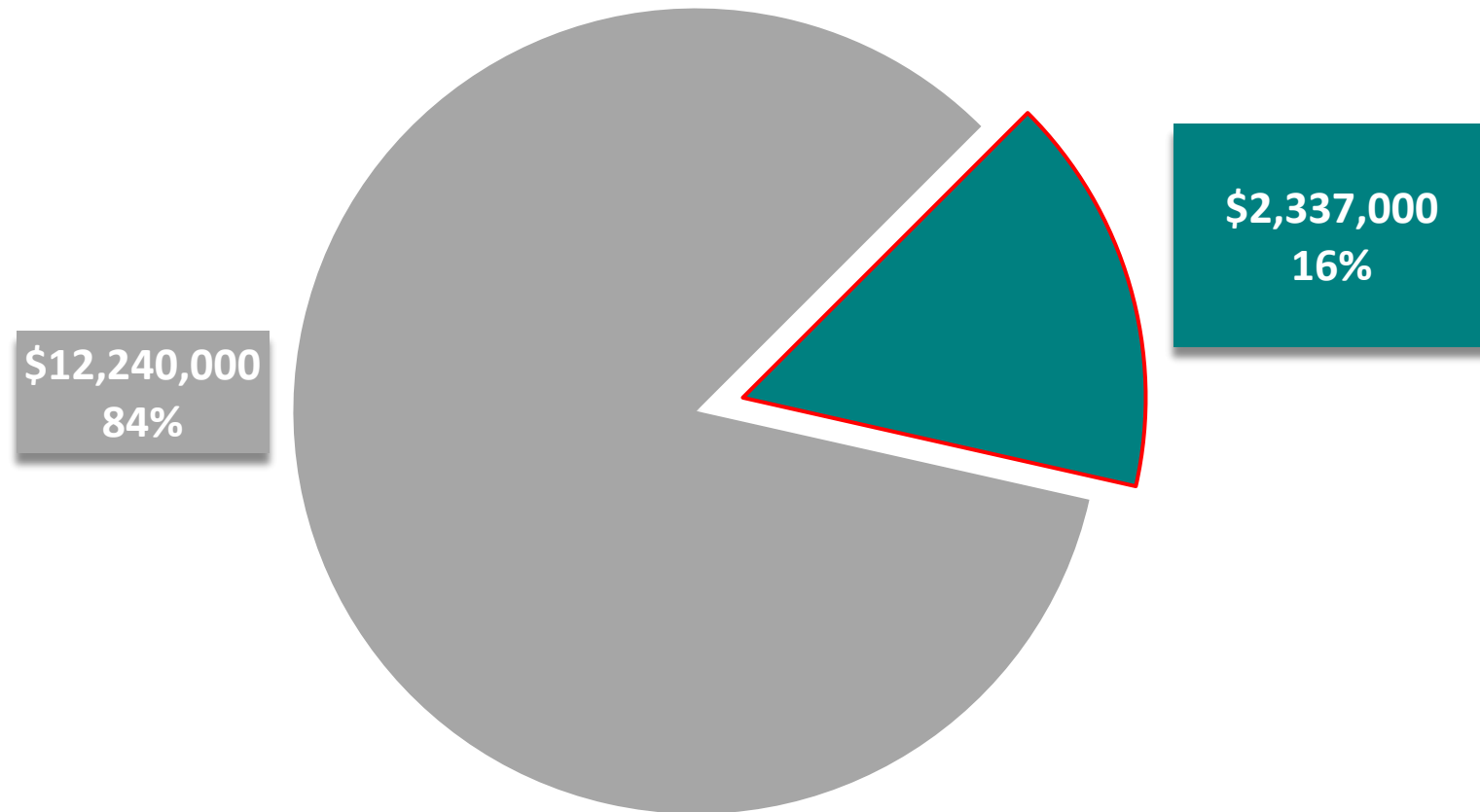


■ Growth and Reliability

■ Asset Replacement

Oregon Distribution System

Investment 2023 – 2026



 Growth and Reliability

 Asset Replacement

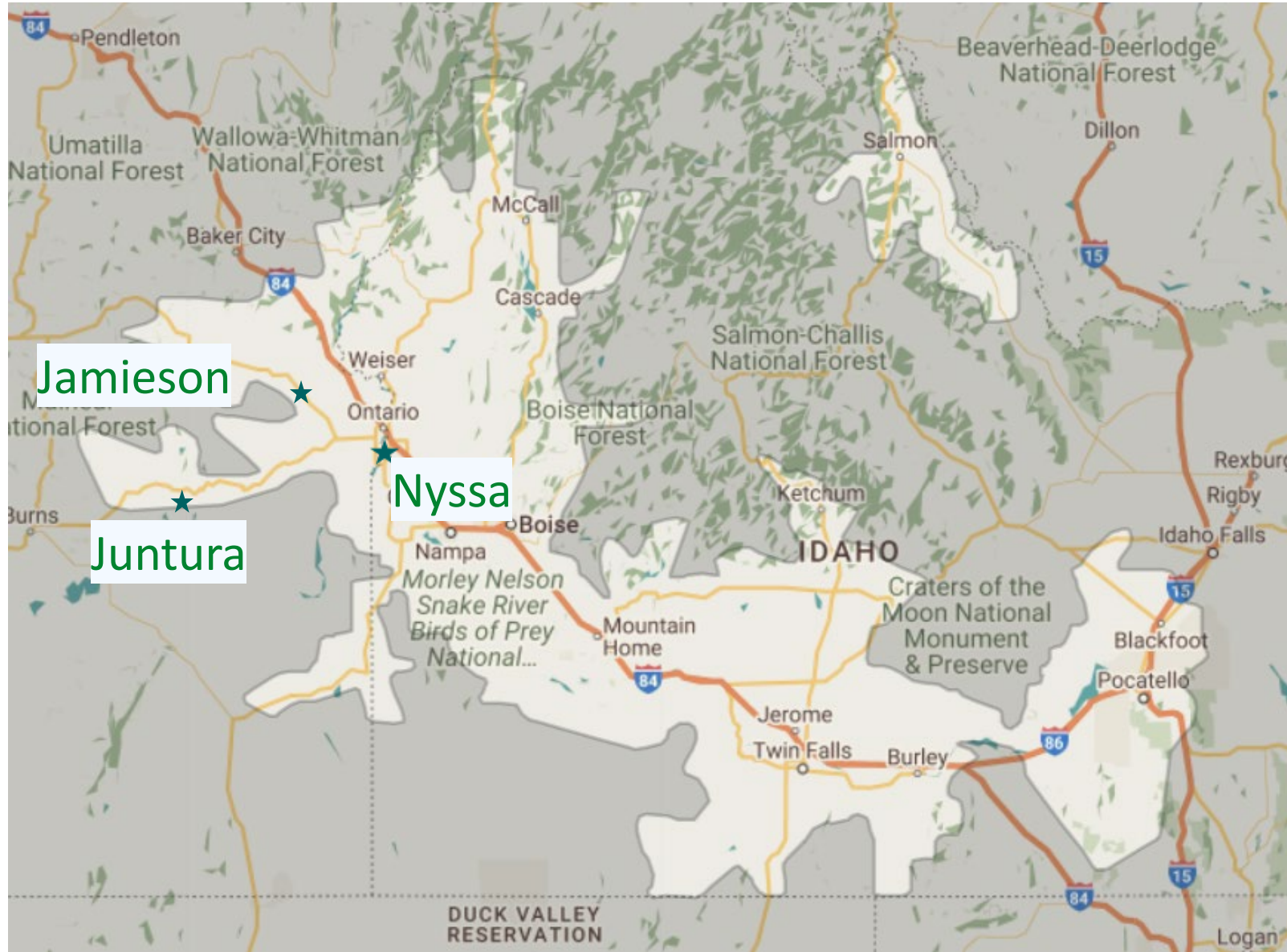
Review Distribution Grid Needs

2023 - 2026



Review Distribution Grid Needs

2027 - 2028



NWS Screening vs Traditional Solution



- Ideal grid need characteristics well-suited for NWS

Characteristics	Ideal NWS Candidate
Growth	Low
Traditional Solution Cost	High
NWS Cost	Low

NWS Example - WESR Battery Energy System



NWS Example - WESR Battery Energy System



Peak occurs summer at 9 p.m.

Modest growth <0.85% per year

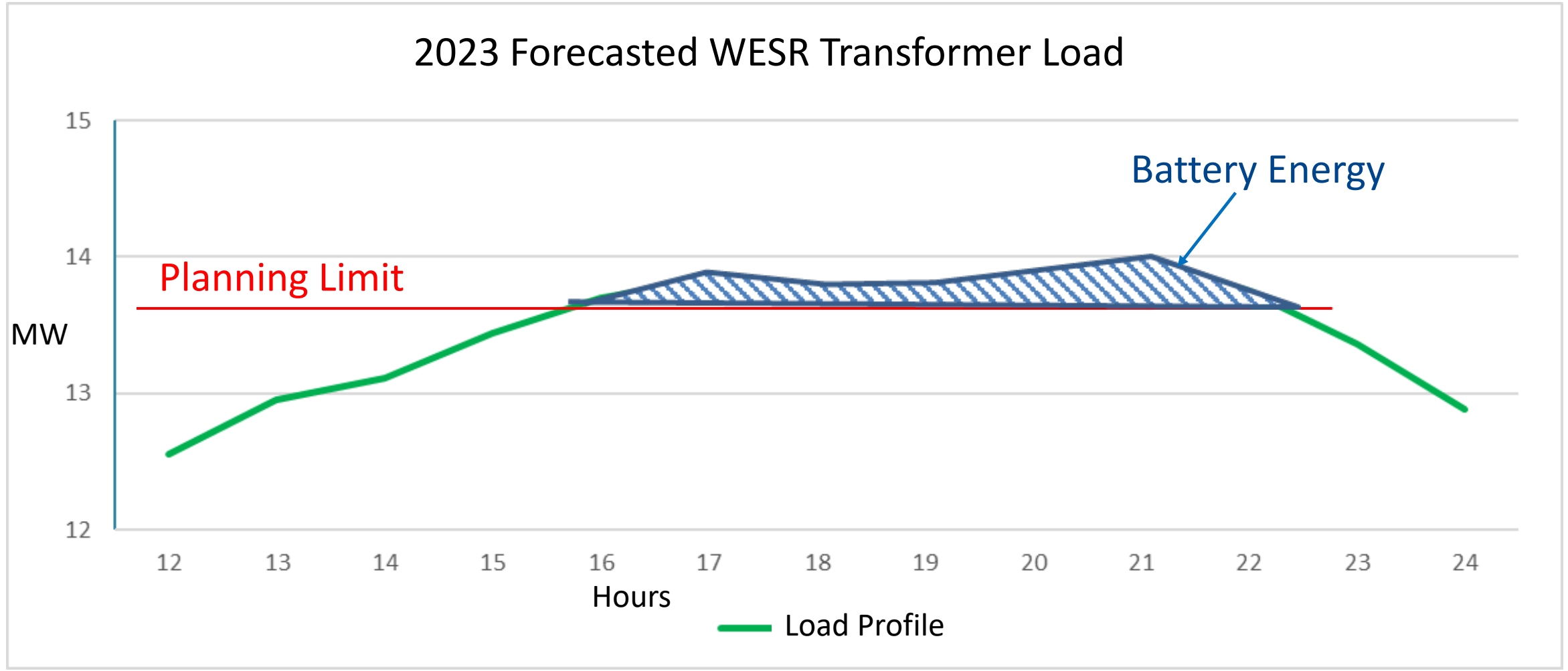
Land area available for storage

Integrated Resource Plan (IRP) identified need for storage

WESR Storage Peak Shaving



2023 Forecasted WESR Transformer Load



NWS Example – WESR Battery System



Battery Project Details

- 3MW capacity 4-hour battery (12MWh)
- Expandable to 4MW capacity 4-hour battery (16MWh)
- Expected to defer project for 8 years

Traditional Project Cost - \$2,530,000

Deferring Project from 2023 to 2031 - \$1,816,000

- May reduce the overall cost and satisfy IRP system resource need



Questions?

