

Resource Adequacy & Hydro Generation in the Southwest

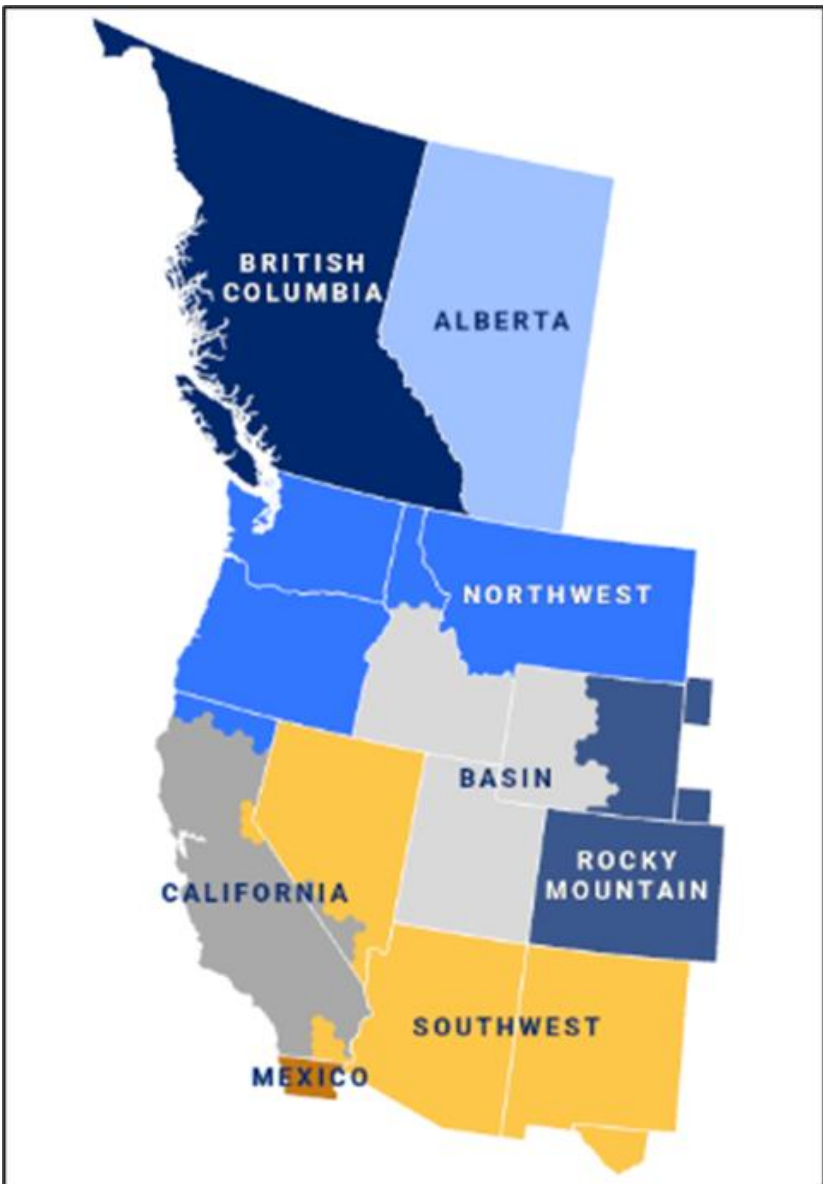
Kris Raper

Vice President of Strategic Engagement & External Affairs



- **Western Interconnection**
- **Resource Adequacy**
- **Resource Portfolio**
- **Aridification**
- **Extreme Heat**
- **Wildfire**
- **Hydro Generation**
- **Glen Canyon & Hoover**

Western Interconnection at a Glance



158,332
TOTAL

Miles of
transmission
lines

90+
MILLION

People living in
the Western
Interconnection

168.2
GW

Interconnection
peak demand

448

Registered
Entities

329

Generation
Owners

52

Transmission
Operators

37

Balancing
Authorities

4

Reliability
Coordinators

Resource Adequacy Assessments

NERC

Long-Term Reliability Assessment (LTRA)

- Annual evaluation of the reliability of the bulk power system over the next decade

Probabilistic Assessment (ProbA)

- Incorporated in the LTRA, provides enhanced resource adequacy metrics

Winter and Summer Reliability Assessments (WRA & SRA)

- Identifies, assesses, and reports on areas with resource adequacy risk for the upcoming winter/summer season

WECC

Western Assessment of Resource Adequacy (Western Assessment)

- Annual evaluation of resource adequacy in the Western Interconnection

Resource Adequacy: NERC SRA & LTRA

2025 Summer Reliability Assessment

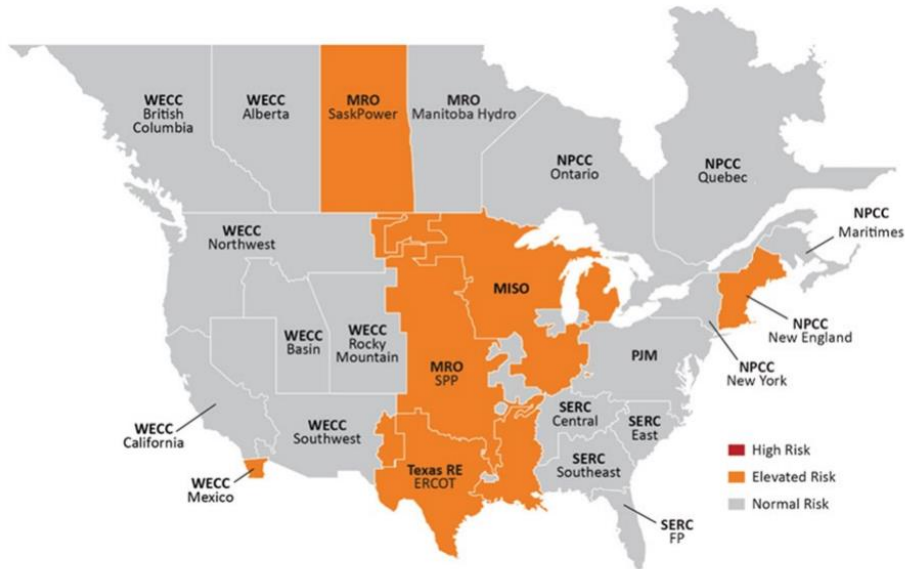


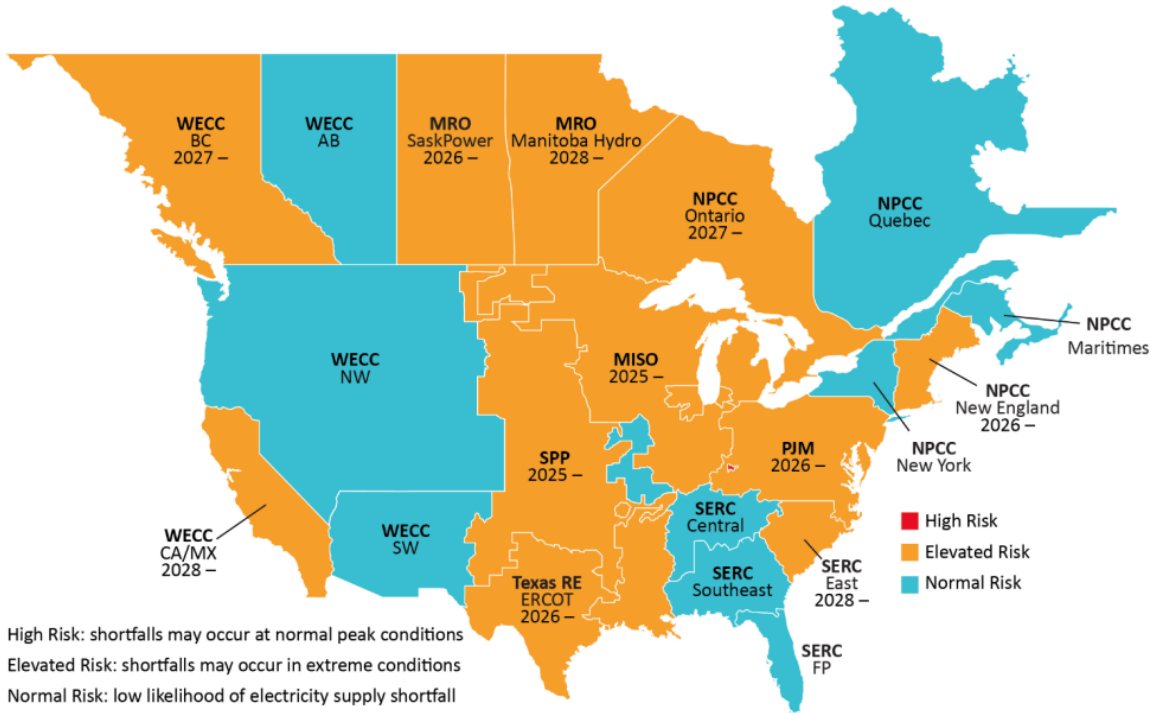
Figure 1: Summer Reliability Risk Area Summary

Seasonal Risk Assessment Summary	
High	Potential for insufficient operating reserves in normal peak conditions
Elevated	Potential for insufficient operating reserves in above-normal conditions
Normal	Sufficient operating reserves expected

WECC Mexico showed elevated resource adequacy risk for this summer

WECC SW showed normal resource adequacy risk for this summer

2024 Long-Term Reliability Assessment



High Risk: shortfalls may occur at normal peak conditions
Elevated Risk: shortfalls may occur in extreme conditions
Normal Risk: low likelihood of electricity supply shortfall

2024 NERC LTRA results indicated that the WECC SW was at Normal Risk for 2025–2029

Preliminary 2025 NERC LTRA results indicate that the WECC SW remains at Normal Risk conditions from 2026–2031

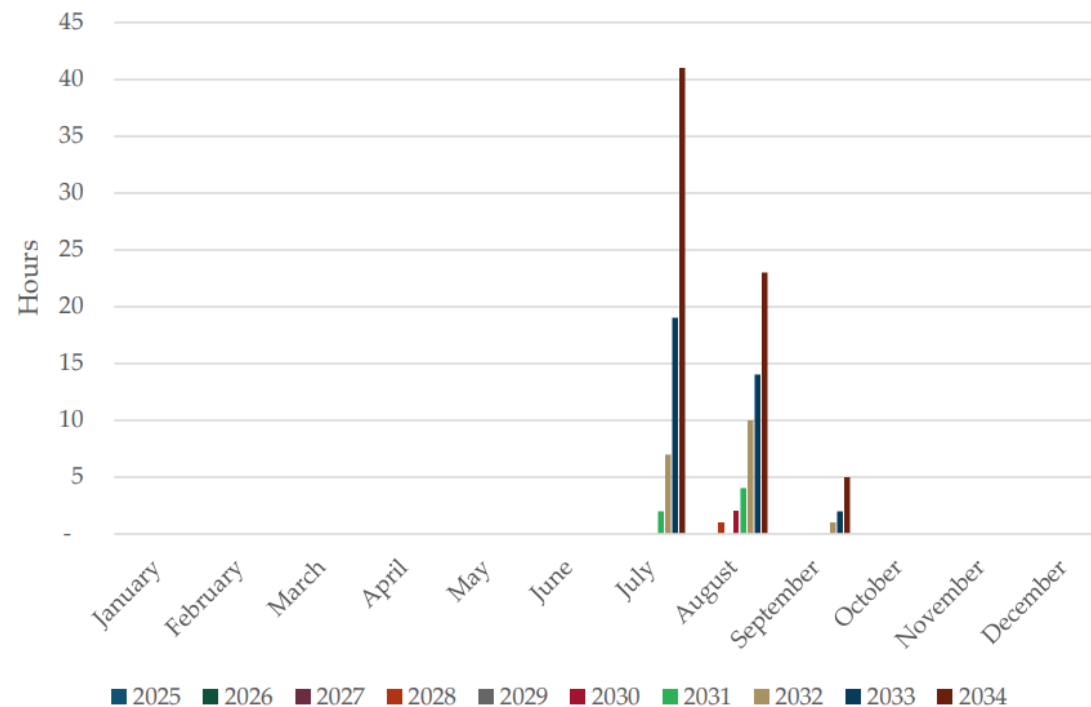
Resource Adequacy: Western Assessment

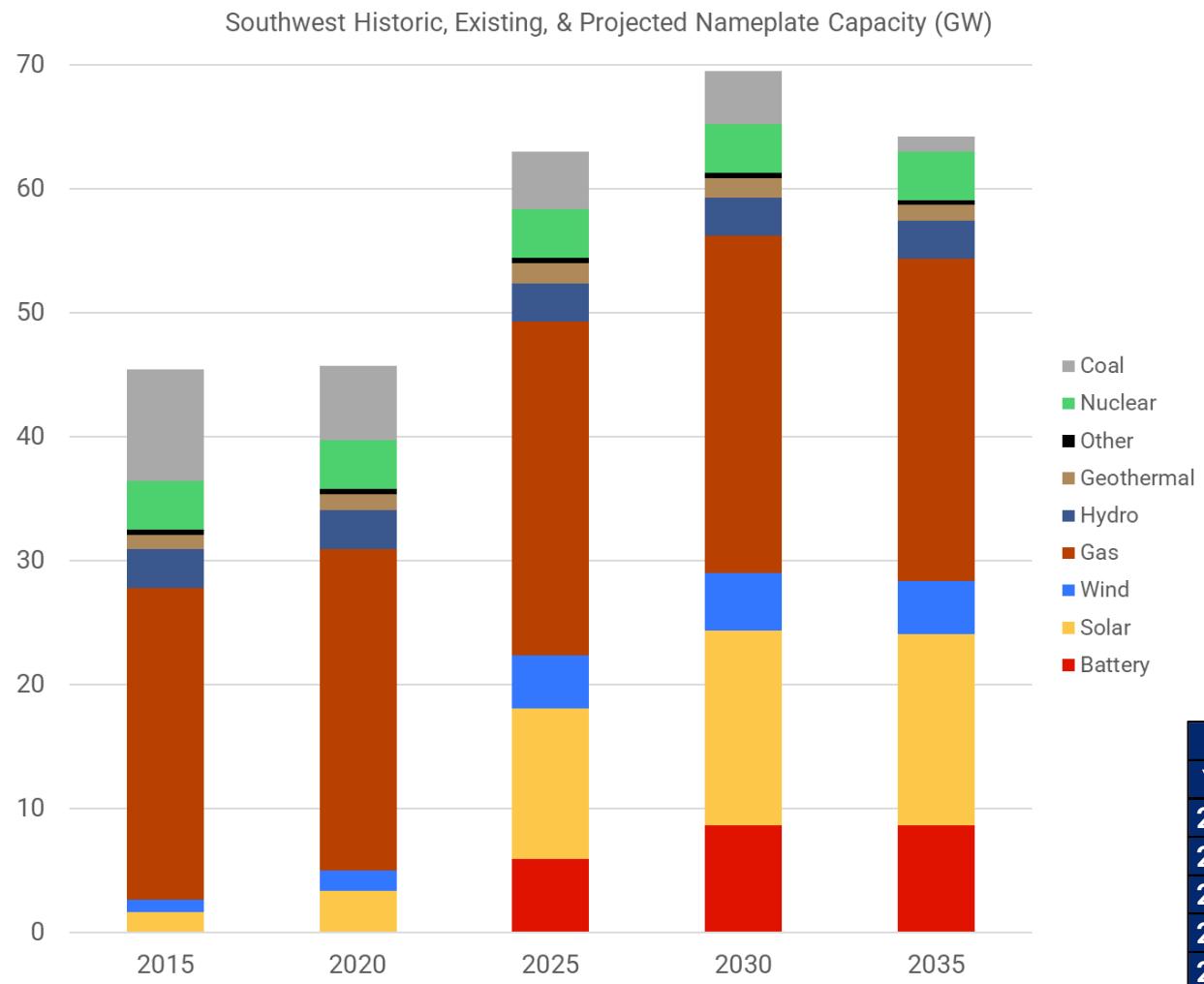
Scenarios

- All planned resources built
- 95% of planned resources built
- 85% of planned resources built
- 55% of planned resources built

The Southwest did not show resource adequacy concerns until the 55% scenario

Southwest Results: 55% Resource Completion





Portfolio Change (2025–2035)

- Growth: Solar & BESS
- Constant: Hydro & Wind
- Decline: Gas & Coal
- Data as of YE 2024

Southwest Historic, Existing, and Projected Nameplate Capacity (GW)										
Year	Battery	Solar	Wind	Gas	Hydro	Geothermal	Other	Nuclear	Coal	Total
2015	0.0	1.6	1.0	25.1	3.1	1.2	0.4	3.9	9.0	45.4
2020	0.1	3.3	1.6	25.9	3.1	1.3	0.4	3.9	6.0	45.7
2025	5.9	12.1	4.3	26.9	3.1	1.6	0.4	3.9	4.7	63.0
2030	8.6	15.7	4.6	27.2	3.1	1.6	0.4	3.9	4.2	69.4
2035	8.6	15.4	4.3	26.0	3.1	1.3	0.4	3.9	1.2	64.2

Aridification

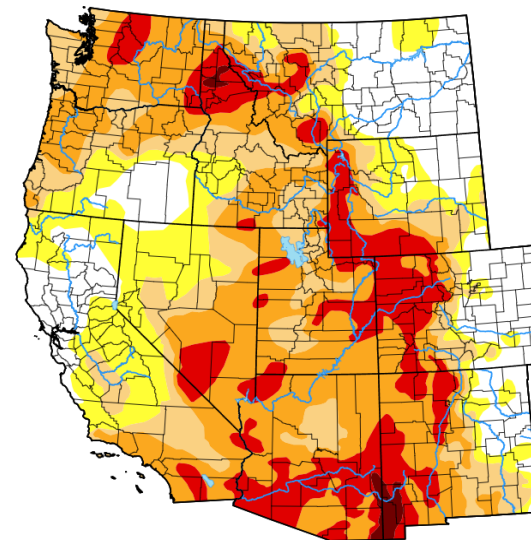
Reliability Risk Priority

The gradual, permanent change of a region from a humid or wetter climate to a drier climate.

Natural events associated with aridification can affect the BPS:

- Extreme Heat
- Wildfire Activity
- Drought

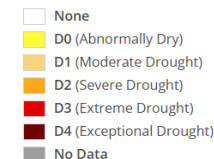
West



Map released: Thurs. September 4, 2025

Data valid: September 2, 2025 at 8 a.m. EDT

Intensity



Authors

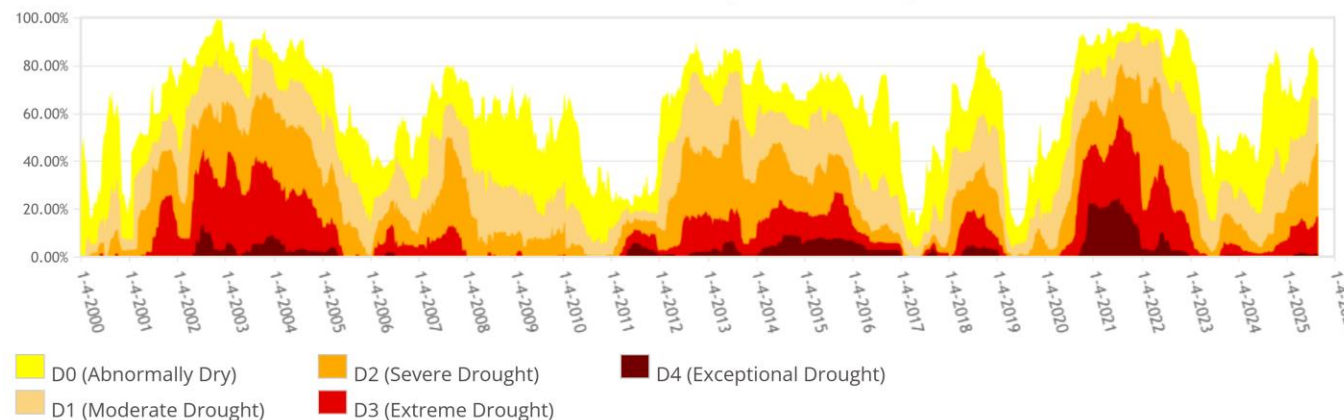
United States and Puerto Rico Author(s):

[David Simeral](#), Western Regional Climate Center

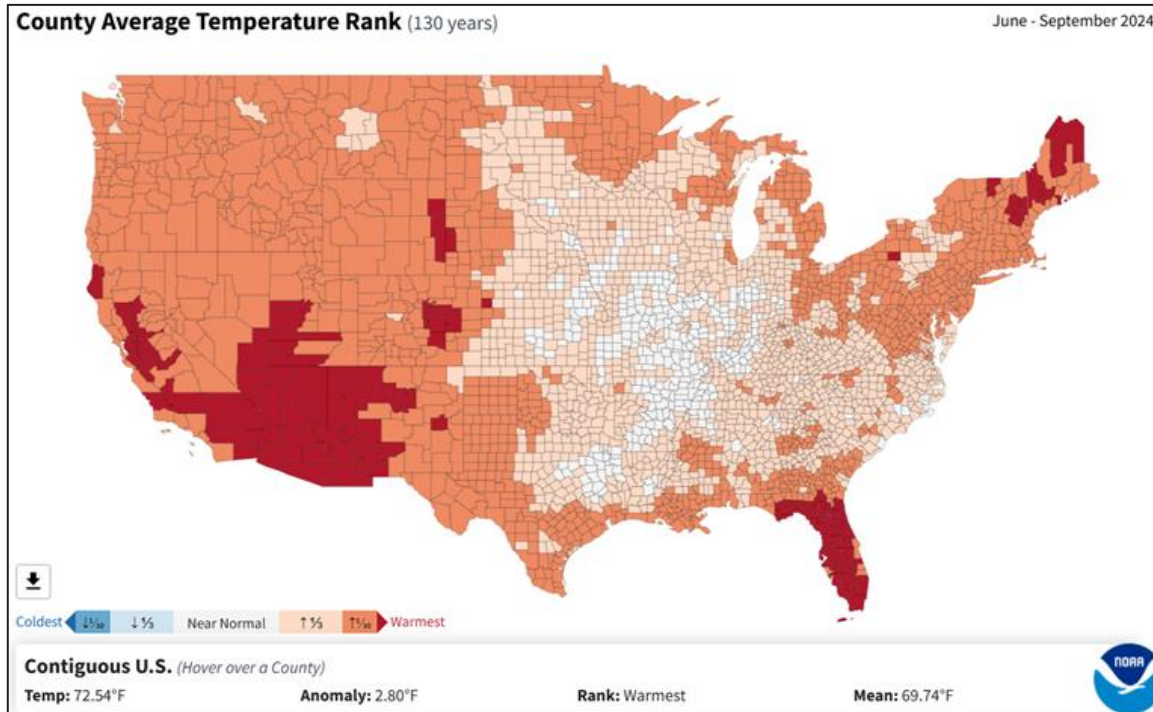
Pacific Islands and Virgin Islands Author(s):

[Anthony Artusa](#), NOAA/NWS/NCEP/CPC

West Percent Area in U.S. Drought Monitor Categories

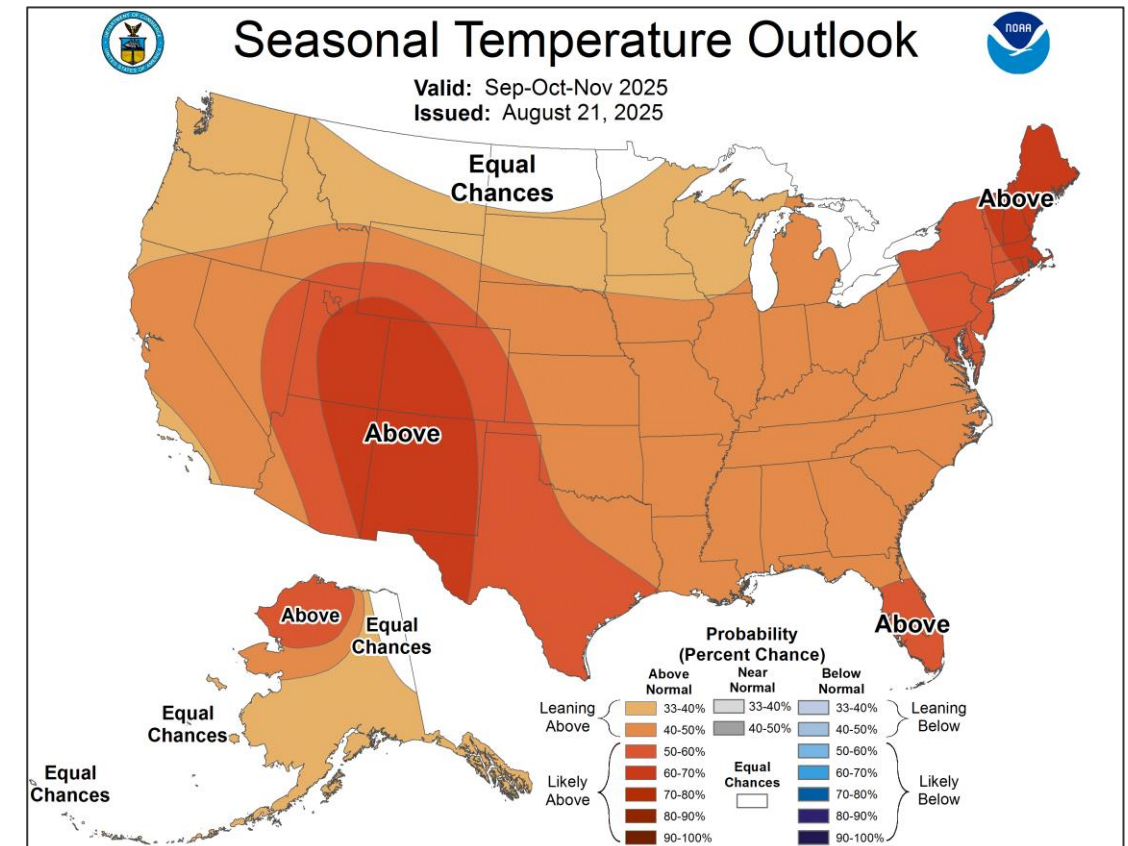


Extreme Heat



“August 2024 set a new monthly temperature record, capping **Earth’s hottest summer since global records began in 1880.**”—NASA

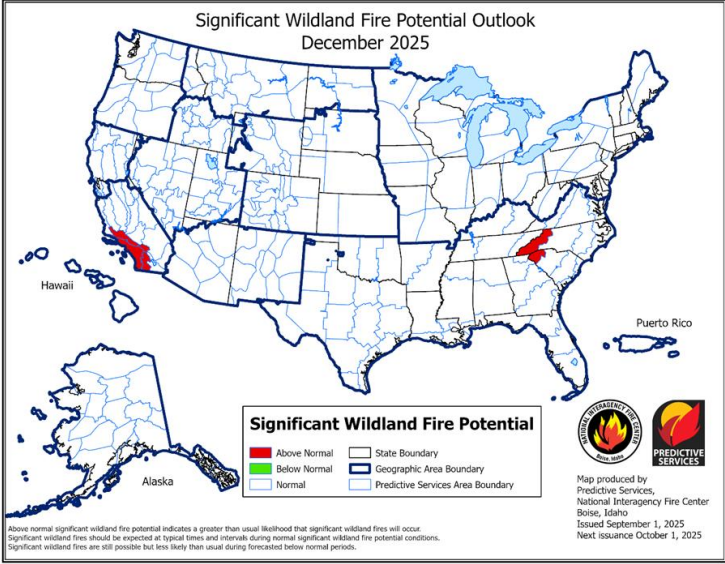
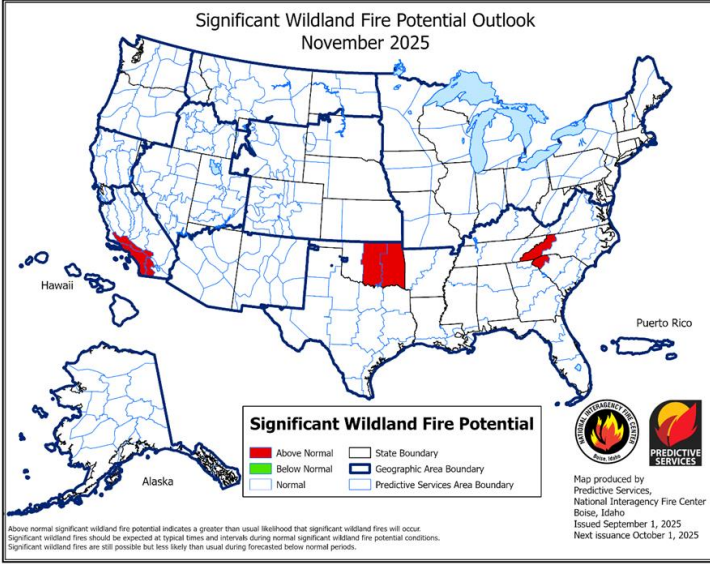
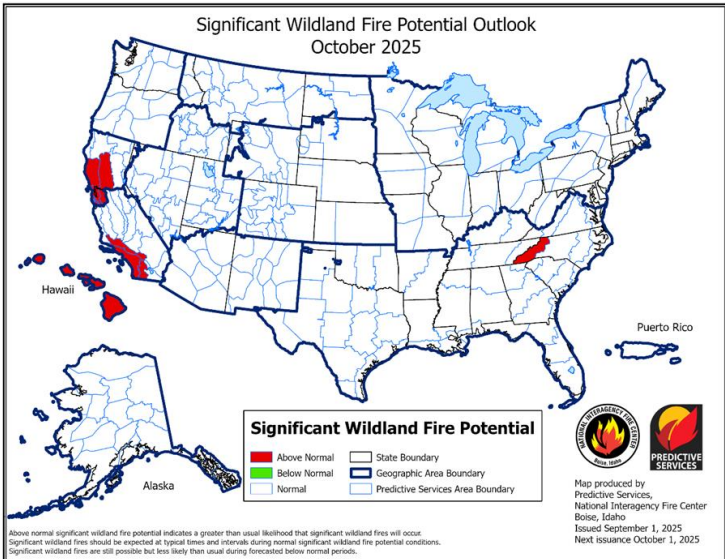
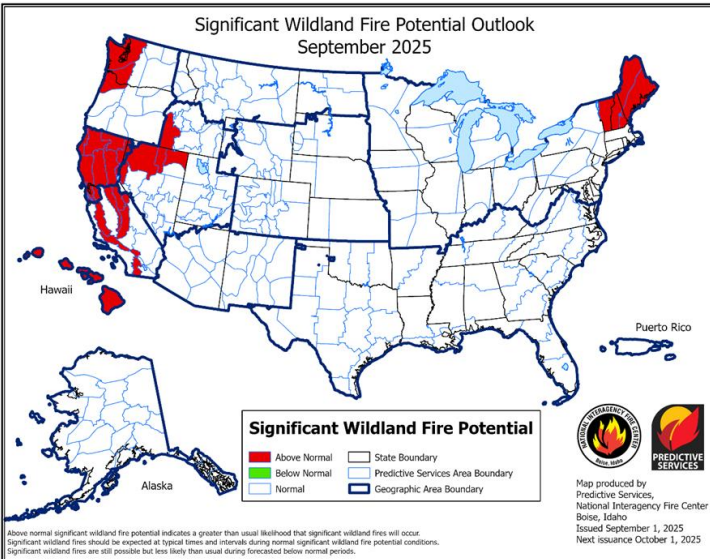
- Elevated demand
- Natural gas derates
- Limited import capability
- Reduction in transmission ratings



Wildfire

- Public safety
- Curtailments of generating assets
- Damage to transmission & distribution
- Can limit import capability

State/Province	Acres Burned		
	2022	2023	2024
Alberta	323,357	5,436,318	1,767,302
Arizona	124,165	319,543	282,989
British Columbia	329,730	7,019,139	2,671,487
California	309,287	357,361	1,081,144
Colorado	45,732	40,527	60,539
Idaho	436,733	96,542	996,762
Montana	137,509	113,152	352,491
Nevada	58,402	9,851	70,410
New Mexico	859,906	172,823	82,531
Oregon	456,082	197,338	1,797,796
Utah	27,245	18,200	90,417
Washington	173,659	155,401	275,593
Wyoming	25,766	7,657	620,069
Totals	3,307,573	13,943,852	10,149,530

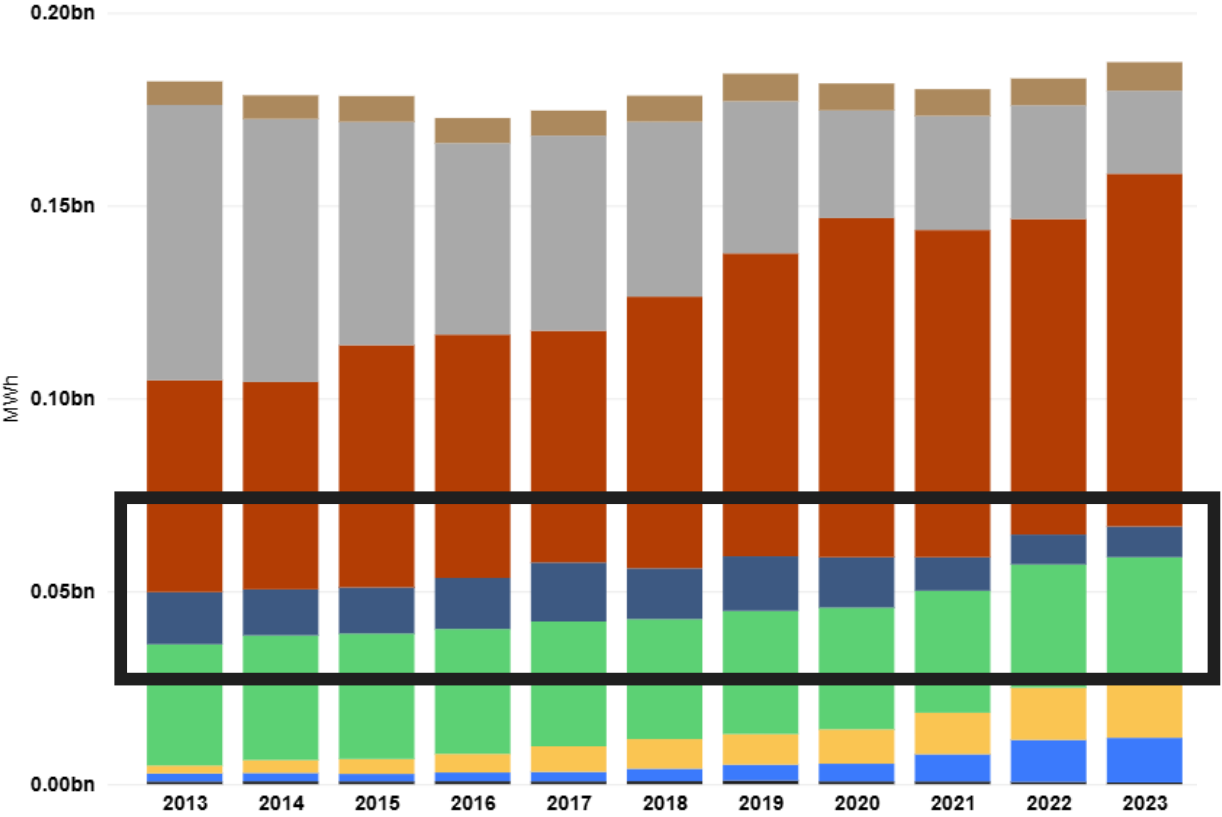


Hydro Generation in the Southwest

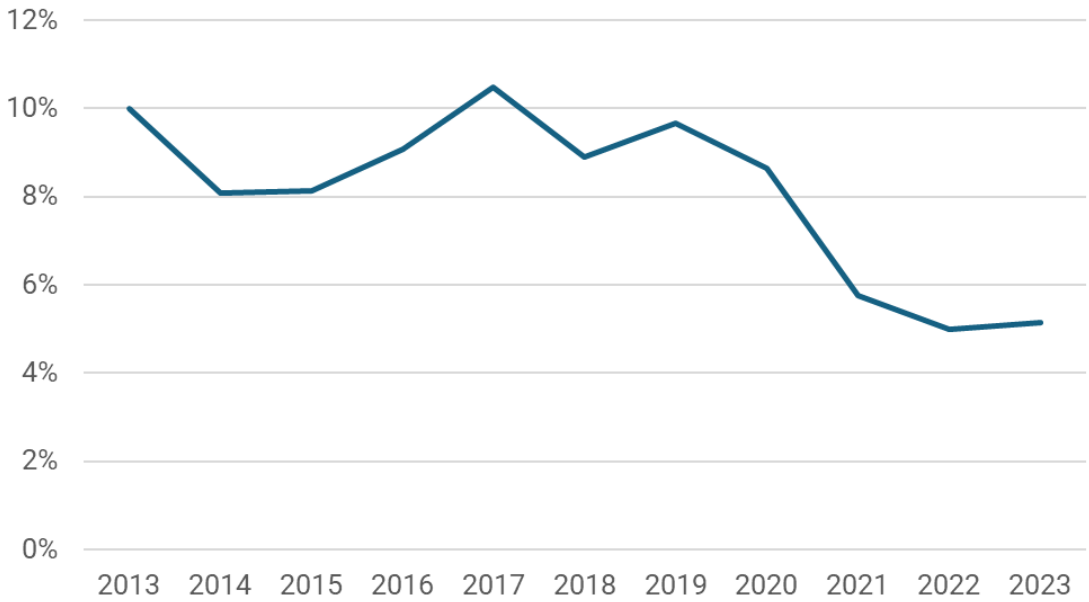
Net Generation (MWh) by Fuel Type

Sources: EIA, Statistics Canada. Mexico not included. (4/3/2025)

Fuel Type: Geothermal, Coal, Gas, Hydro, Nuclear, Solar, Wind, Other

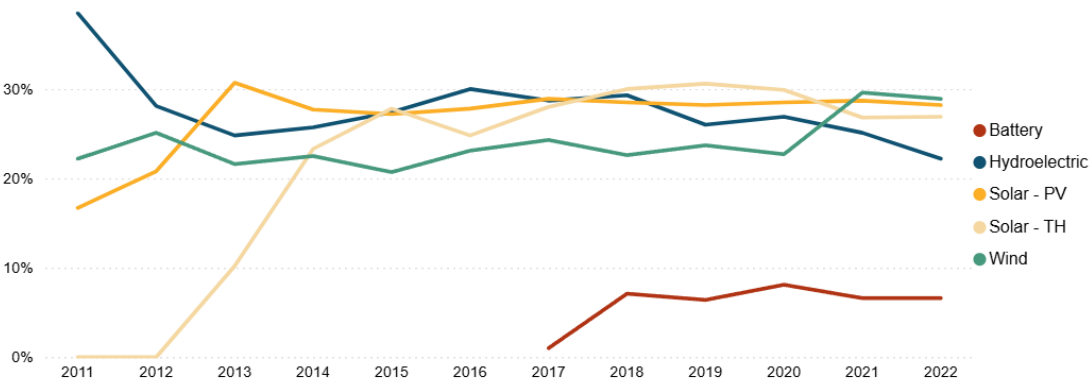


Hydro Generation as a Percentage of Demand

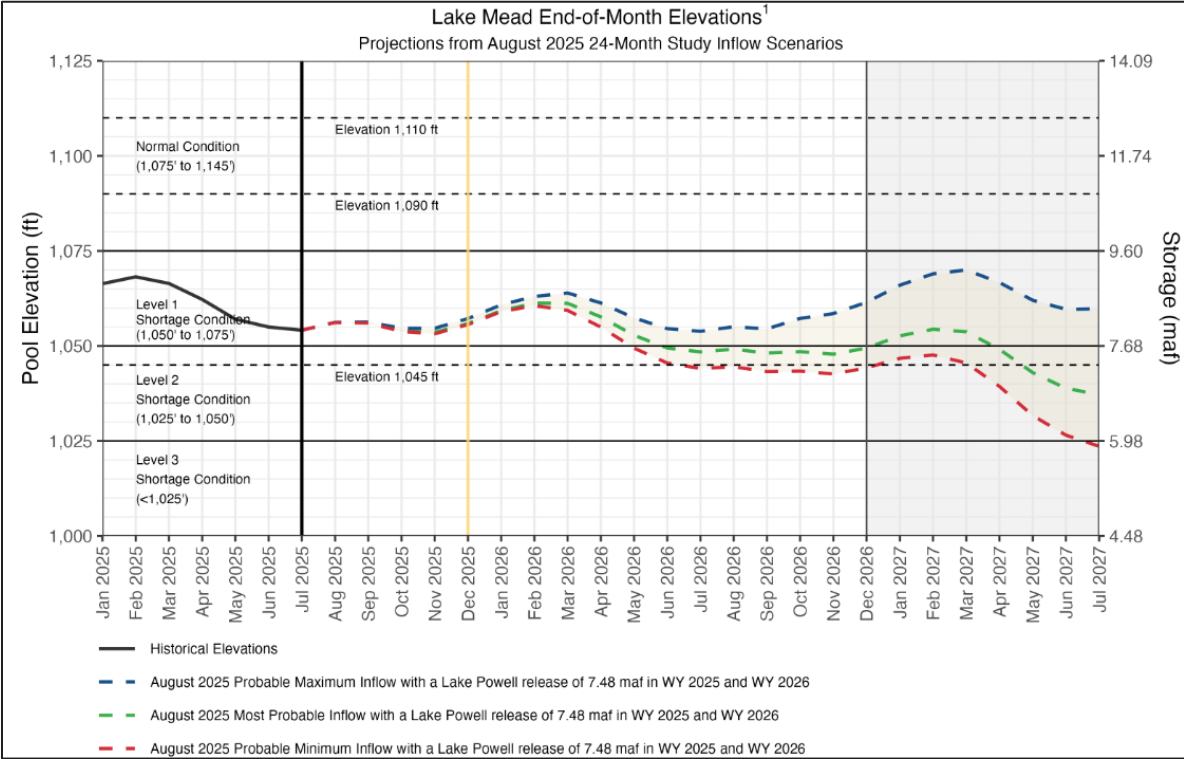
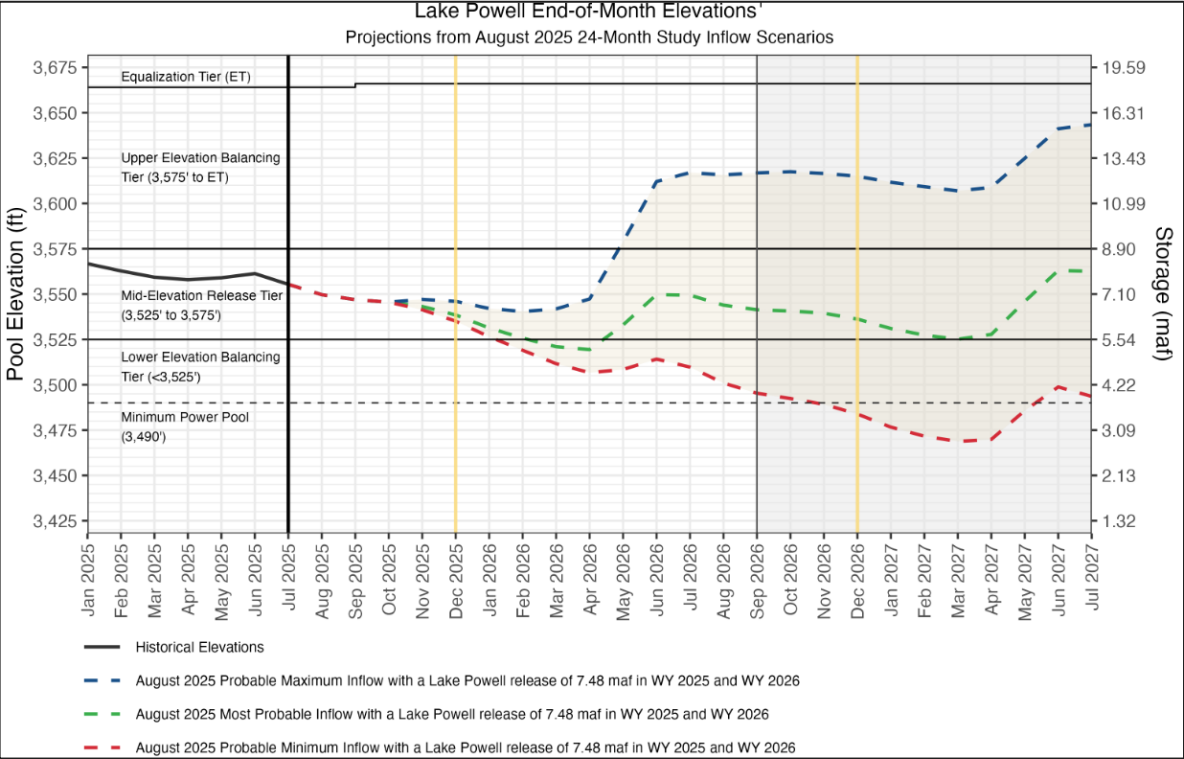


2011-2022 Annual Capacity Factor

Source: EIA (7/22/2024)



Glen Canyon & Hoover



Chance of Reaching Critically Low Reservoir Elevations¹
Comparison of Current (August 2025) and Last Published (April 2025) CRMMs-ESP 5-Year Projections

	Run	WY 2026	WY 2027 ²	WY 2028 ²	WY 2029 ²	WY 2030 ²
Lake Powell less than 3,525 feet	April 2025	10%	13%	13%	17%	10%
	August 2025	77%	50%	30%	27%	20%
	Difference	67%	37%	17%	10%	10%
Lake Powell less than 3,490 feet (minimum power pool)	April 2025	0%	0%	3%	0%	0%
	August 2025	0%	10%	10%	3%	7%
	Difference	0%	10%	7%	3%	7%
Lake Powell less than 3,375 feet (dead pool = 3,370 feet)	April 2025	0%	0%	0%	0%	0%
	August 2025	0%	0%	0%	0%	0%
	Difference	0%	0%	0%	0%	0%

	Run	WY 2026	WY 2027 ²	WY 2028 ²	WY 2029 ²	WY 2030 ²
Lake Mead less than 1,035 feet	April 2025	0%	20%	30%	27%	23%
	August 2025	3%	53%	50%	53%	40%
	Difference	3%	33%	20%	26%	17%
Lake Mead less than 1,020 feet	April 2025	0%	3%	10%	23%	17%
	August 2025	0%	10%	23%	27%	23%
	Difference	0%	7%	13%	4%	6%
Lake Mead less than 950 feet (minimum power pool)	April 2025	0%	0%	0%	0%	0%
	August 2025	0%	0%	0%	7%	3%
	Difference	0%	0%	0%	7%	3%
Lake Mead less than 900 feet (dead pool = 895 feet)	April 2025	0%	0%	0%	0%	0%
	August 2025	0%	0%	0%	0%	0%
	Difference	0%	0%	0%	0%	0%



WWW.WECC.ORG | (801) 582-0353



155 N 400 W, Salt Lake City, UT 84103, USA