



Malcolm Woolf

NHA President
and CEO



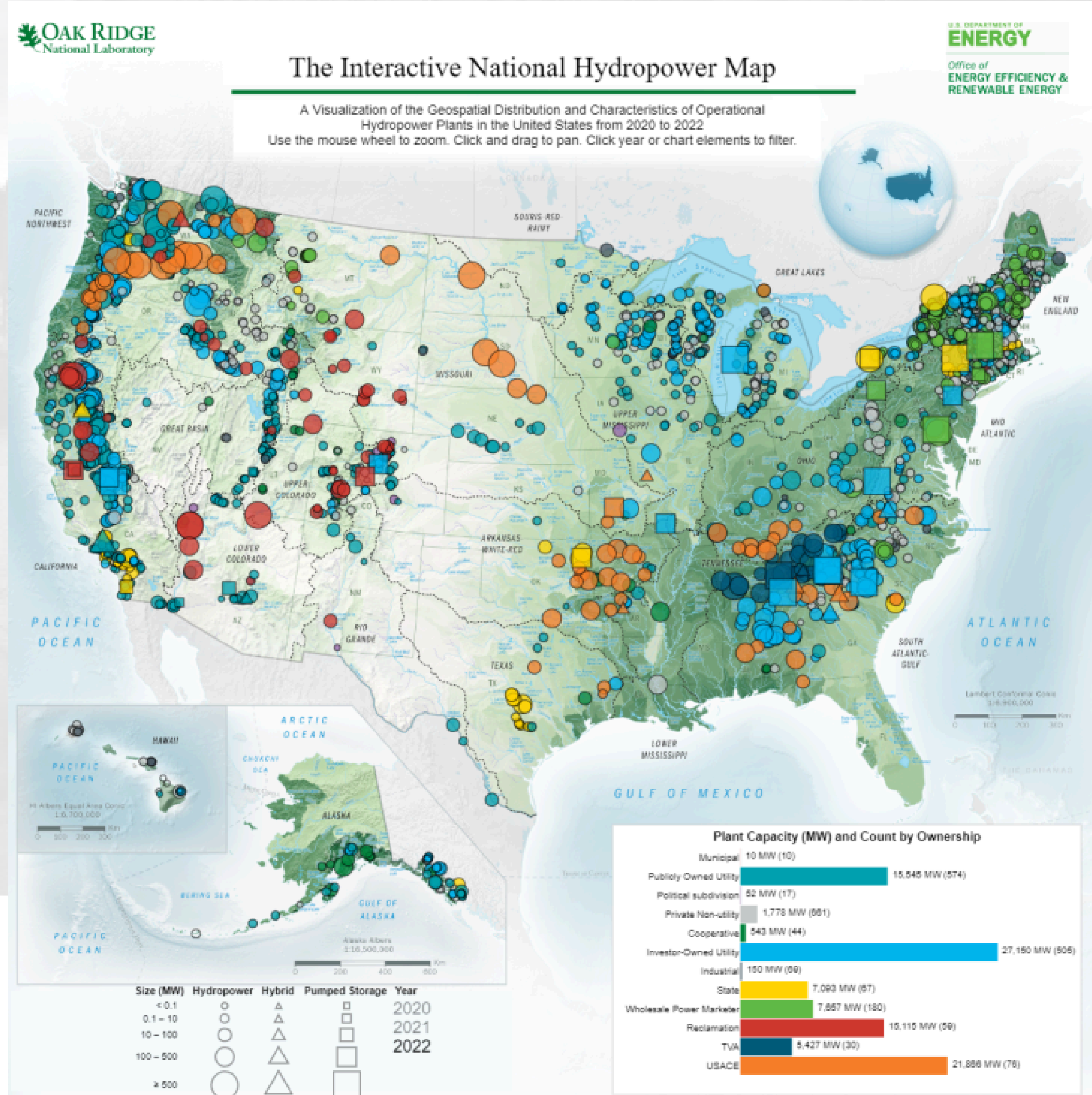
The background of the slide features a large, semi-transparent circular graphic on the left side containing a close-up of blue water with ripples. The rest of the background is a faded image of a dam with water cascading over it, set against a light sky.

Small % of Dams, Yet Major Source of Renewable Electricity

- Provides power to roughly 30 million+ Americans
- About 30% of U.S. renewable energy
- 96% of current U.S. electricity storage capacity
- 80 GW of hydropower capacity
- 22 GW of pumped storage hydropower capacity
- Globally produces more electricity than all other forms of renewables combined

Clean Power in Nearly All States

Hydrosources.ornl.gov/



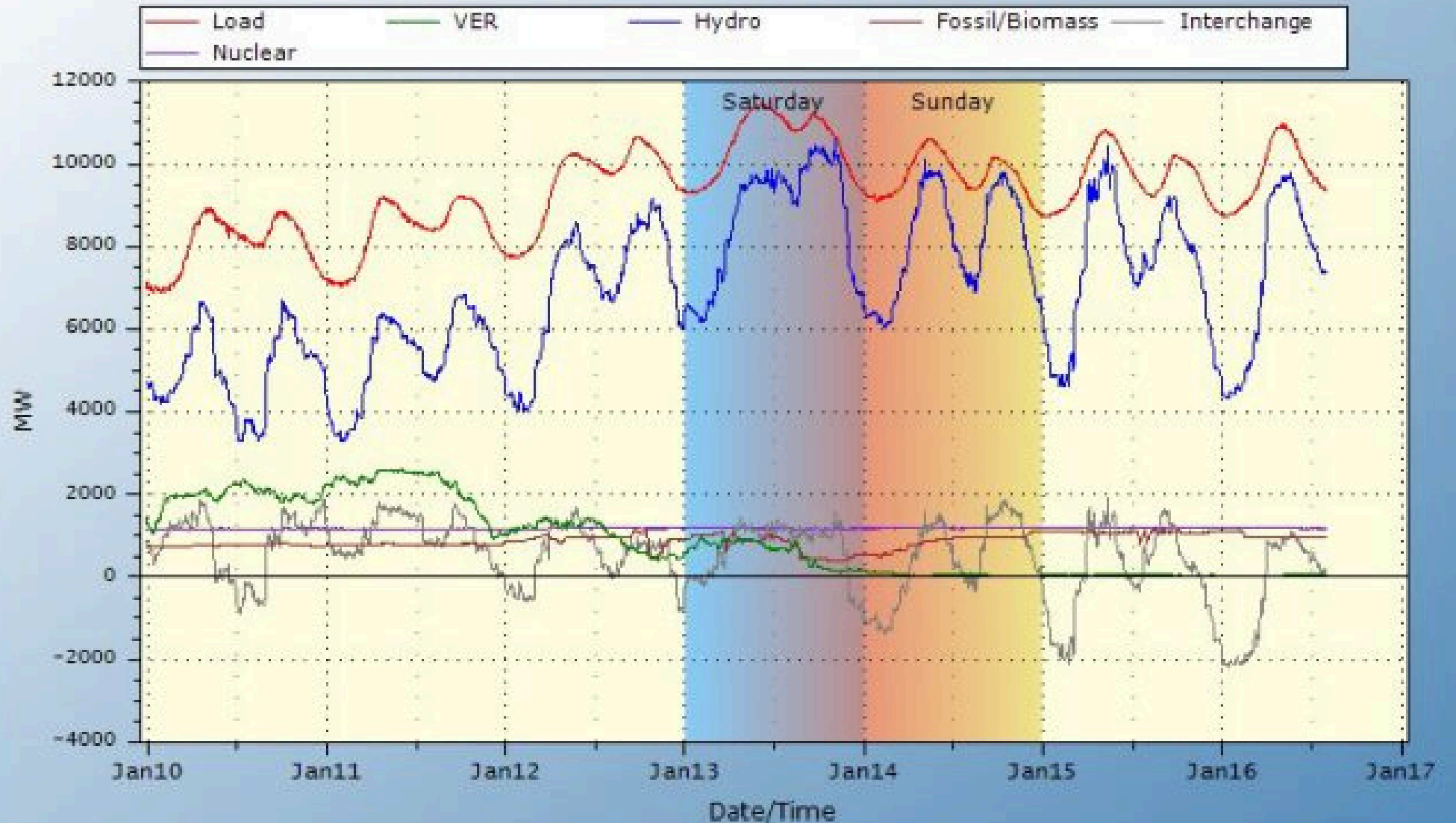
Critical to 24/7 Reliability on a Clean Energy Grid

Stronger winter weather is coming: More stormy conditions approach Pacific Northwest for weekend

WEATHER
Powerful winter storm whips into Portland area, across Oregon

How the Pacific Northwest's Federal Hydro System Powered the Region Through an Arctic Blast

BPA Balancing Authority Load & VER, Hydro, Fossil/Biomass, Nuclear Generation, and Net Interchange Last 7 day 10Jan2024 - 17Jan2024 (last updated 16Jan2024 14:00:28)



Based on 5-min readings from BPA's SCADA system for points 45583, 177167, 79682, 79685, 164377, and 70681
Balancing Authority Load in Red, VER in Green, Hydro Gen. in Blue,
Fossil/Biomass Gen. in Brown, Nuclear Gen. in Cobalt and Net Interchange in Gray.
BPA Technical Operations (TOT-OpInfo@bpa.gov)

This represents loads and resources in BPA's Balancing Authority (BA) including some that are not BPA's. It does not include BPA loads served by transfer, scheduled out of region, or scheduled to customers with their own BAs such as Seattle and Tacoma

Growth Opportunities Using Existing Infrastructure

U.S. Pumped Storage Hydropower Development Pipeline, 2023

Map Source: Schmidt, E., Johnson, M.M., and Uri-Martinez, R. 2023. U.S. Pumped Storage Hydropower Development Pipeline Map FY2023. HydroSource, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. DOI: 10.21951/HMR_PipelineMaps/1972069
 Data Source: Johnson, M.M., and Uri-Martinez, R., (2023). U.S. Hydropower Development Pipeline Data, 2023. HydroSource, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. DOI: 10.21951/HMR_PipelineFY23/1972069

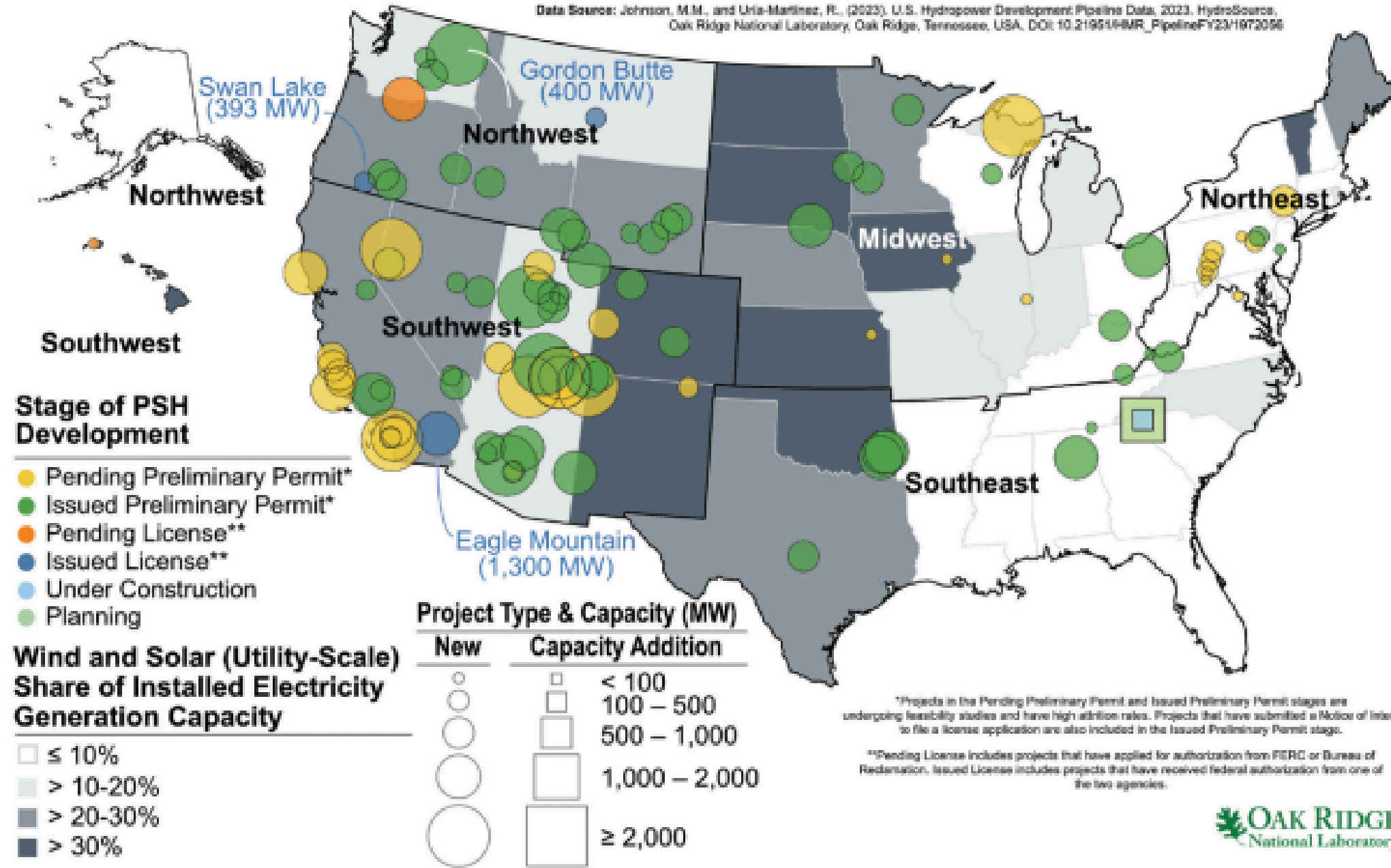


Figure 11. PSH project development pipeline by region and status in relation to state variable renewable (wind and solar) shares of electricity generation capacity

As of 2023, the U.S. hydropower development pipeline included:

96 PSH projects with a combined power storage capacity of 91 GW

117 new facilities with a combined capacity of 1.2 GW

23 active upgrade projects, which would increase the capacity of the existing feet by 254 MW

Potential Wave of Retirements

- Licenses for 459 hydropower facilities, representing 17GWs, are set to expire by 2035.
- Relicensing takes, on average, 7.6 years to complete, but often much longer.
- Relicensing requires millions of dollars of paperwork and potentially hundreds of millions in project upgrades.
- Survey: 36.4% of hydropower industry asset owners said that they were “actively considering” decommissioning a facility.

Current Challenges

- Lack of federal tax parity for existing hydropower (S.2994, H.R. 6653)
- Antiquated licensing process (S.1521, H.R. 4045)
- Market design failures



Dam Removal: No Longer a Four Letter Word (in Appropriate Circumstances)



Environmental And Energy Industry Groups Commit To Working Together On (Some) Hydro Projects

By Courtney Flatt on October 12, 2020

The New York Times

Environmentalists and Dam Operators, at War for Years, Start Making Peace

Facing a climate crisis, environmental groups and industry agree to work together to bolster hydropower while reducing harm from dams.

ENERGYWIRE

THE T

RENEWABLE ENERGY

DOE-backed hydro group launches to cut CO2

David Iaconangelo, E&E News reporter

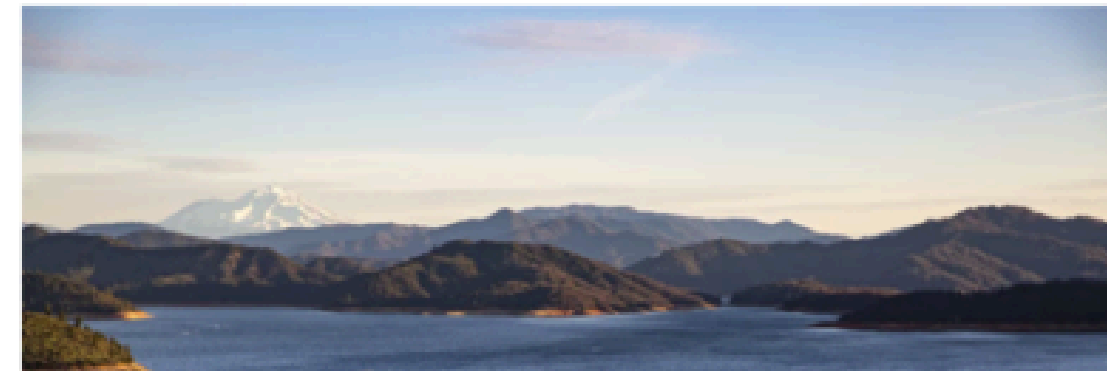
Published: Wednesday, October 14, 2020

UNCOMMON DIALOGUE

“U.S. **Hydropower**: Climate Solution and Conservation Challenge”

Los Angeles Times

CLIMATE & ENVIRONMENT
Can hydropower help solve the climate crisis? This \$63-billion plan is banking on it



HYDROPOWER + RIVER + CLIMATE



Thank you!

