# GRID RELIABILITY AND HYDROPOWER

## NASEO 2024 Energy Policy Outlook

NATIONAL HYDROPOWER ASSOCIATION

NASEO
National Association of State Energy Officials

The New York Times

## California Leaders Credit Cellphone Alert for Sudden Conservation

The jarring message warned millions of residents that blackouts could occur without immediate action.

Give this article 4

Power lines in Cathedral City, Calif., during the heat wave on Tuesday. Alex Welsh for The New York Times

# CASE STUDY 1: CALIFORNIA'S ENERGY GRID CRISIS

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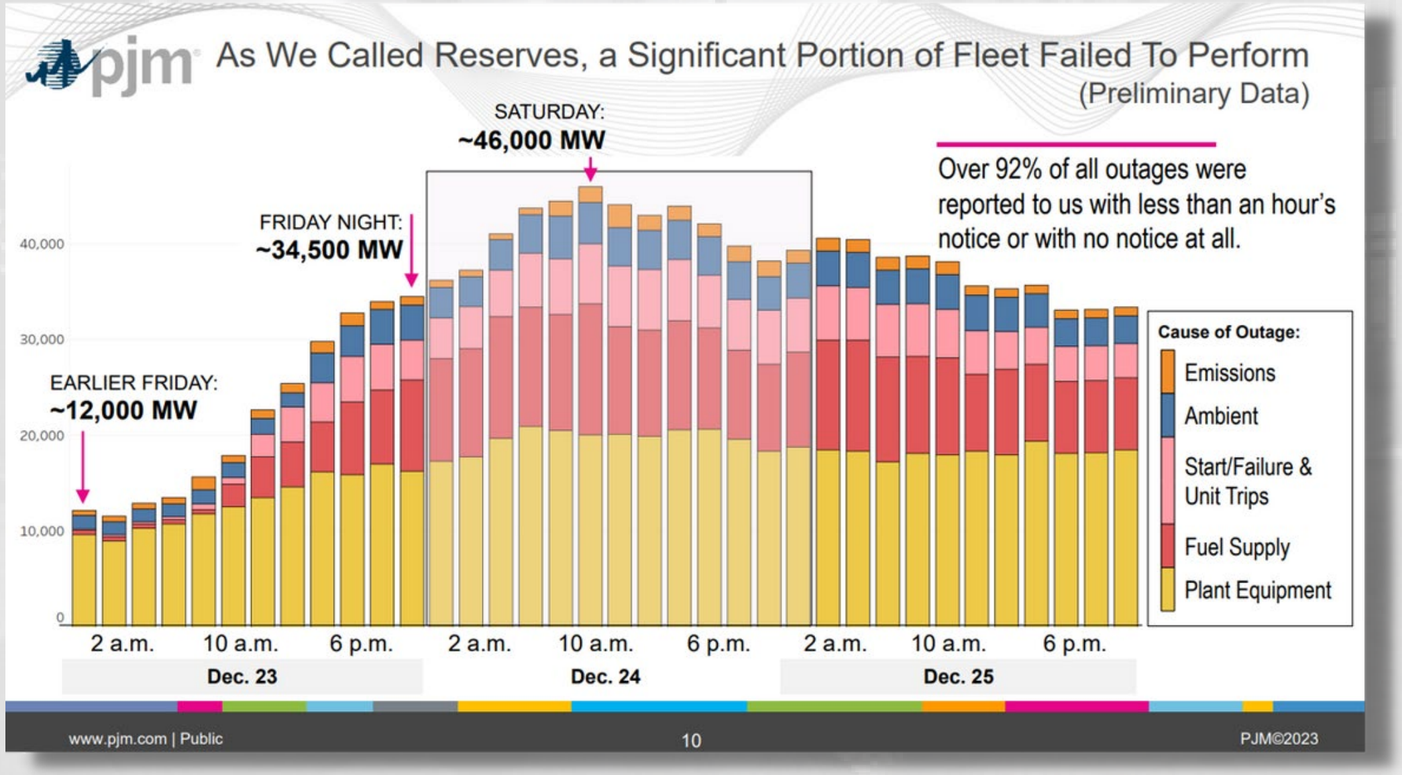
# CASE STUDY 2: PJM & THE POLAR VORTEX




- PJM - Dec 24th: Polar Vortex
- PJM lost 46,000 MWs of generation
- Hydro asked to keep generating past midnight
- Moreover, PSH asked not to pump water to reduce load
- To my knowledge, little or none of 45 GW were hydro

# CASE STUDY 3: ORPC AND THE IGIUGIG VILLAGE

- Sustainable, local energy providing baseload power for an off grid village in Alaska
- Proven operations through harsh conditions and reduced the community's diesel consumption by 60-90%
- Set the record as the longest operating riverine hydrokinetic project in all of the Americas
- Replicable technology and partnership for other off-grid, remote and rural communities to firm-up their power source

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ORPC

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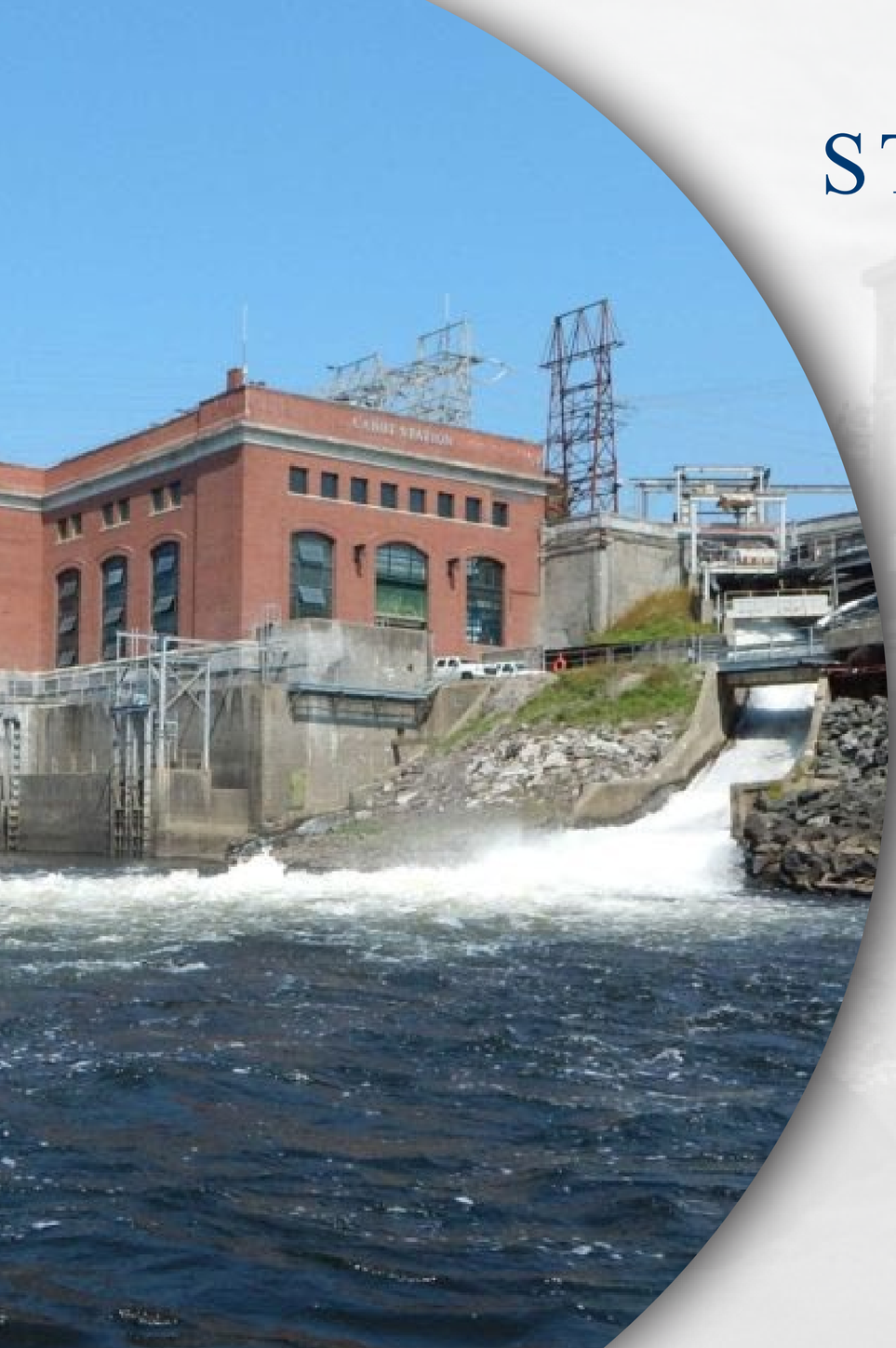
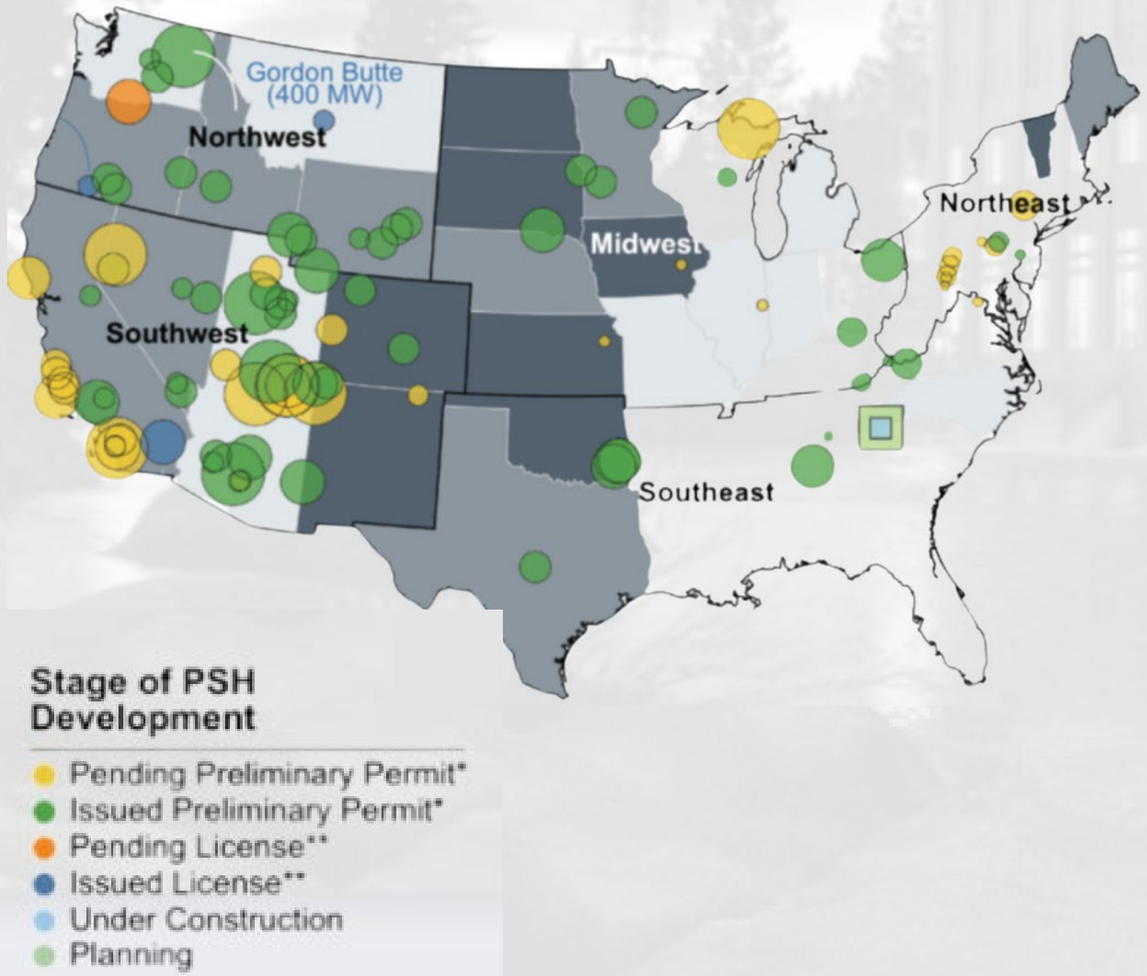


# STATE OF THE U.S. HYDROPOWER INDUSTRY IS STRONG

- 31% of U.S. renewable energy
- Over 6% of all electricity generated
- 96% of current U.S. long duration energy storage
- 80 GW of hydropower capacity
- 22 GW of pumped storage hydropower capacity

# HYDROPOWER HAS POTENTIAL FOR GROWTH

US Pumped Storage Development Pipeline 2023




- 95+ pumped storage projects in FERC pipeline (over 50 GWs)
- Almost 1 GWs of new, carbon-free electricity from the existing fleet from DOE's recent $72M investment
- DOE funded only 34% of requests so lots of additional growth from existing fleet possible

# UNCOMMON DIALOGUE

"U.S. Hydropower: Climate Solution and Conservation Challenge"

NORTHWEST PUBLIC BROADCASTING | PBS | npr

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

By Courtney Fl

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 fro dams.

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RENEWABLE ENERGY

**DOE-backed hydro group launches to cut CO2**

David Iaconangelo, E&E News reporter

*Published: Wednesday, October 14, 2020*

CLIMATE & ENVIRONMENT

Los Angeles Times

## Can hydropower help solve the climate crisis? This $63-billion plan is banking on it

HYDROPOWER + RIVER + CLIMATE

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# CLEAN ENERGY GRID AT RISK DUE TO POTENTIAL WAVE OF RETIREMENTS

- Licenses for 459 hydropower facilities, representing 17 GWs, are set to expire by 2035.
- Relicensing takes, on average, 7.6 years to complete
- Projects of greater than 10 MW reporting licensing costs exceeding $1M, and projects more than 100 MW reporting cost around $10M or more
- Survey: 36.4% of hydropower industry asset owners said that they were "actively considering" decommissioning a facility

# CURRENT CHALLENGES

Lack of Support for Existing Hydropower

Antiquated Licensing Process

Market Design Failures

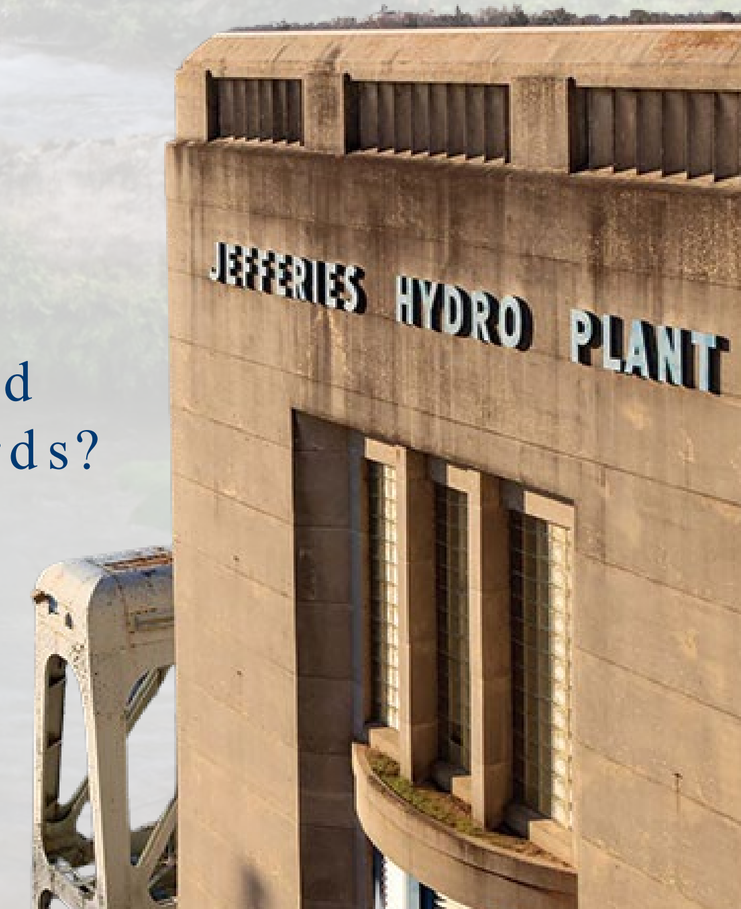
# 4 HOMEWORK QUESTIONS FOR STATE ENERGY OFFICES

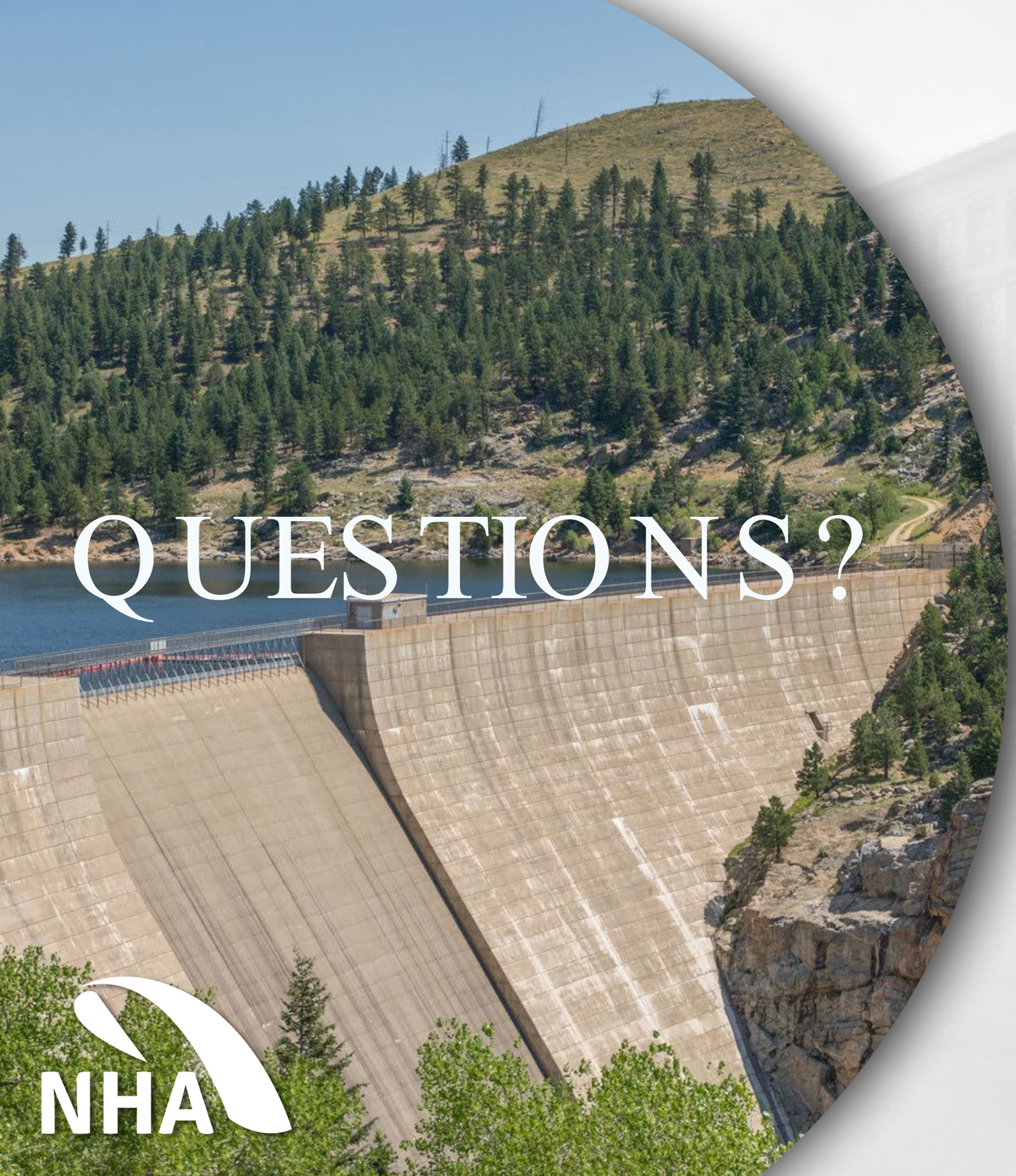
1) Can my state benefit from additional long-duration energy storage to balance variable wind and solar, and if so, are we considering Pumped Storage Hydropower?

2) Can we add generation to existing non-powered dams?

3) As we move to a cleaner grid, is water power being treated similarly to wind and solar on our state clean energy standards?

4) Are local hydro operators in danger of surrendering their hydro licenses?





# QUESTIONS?

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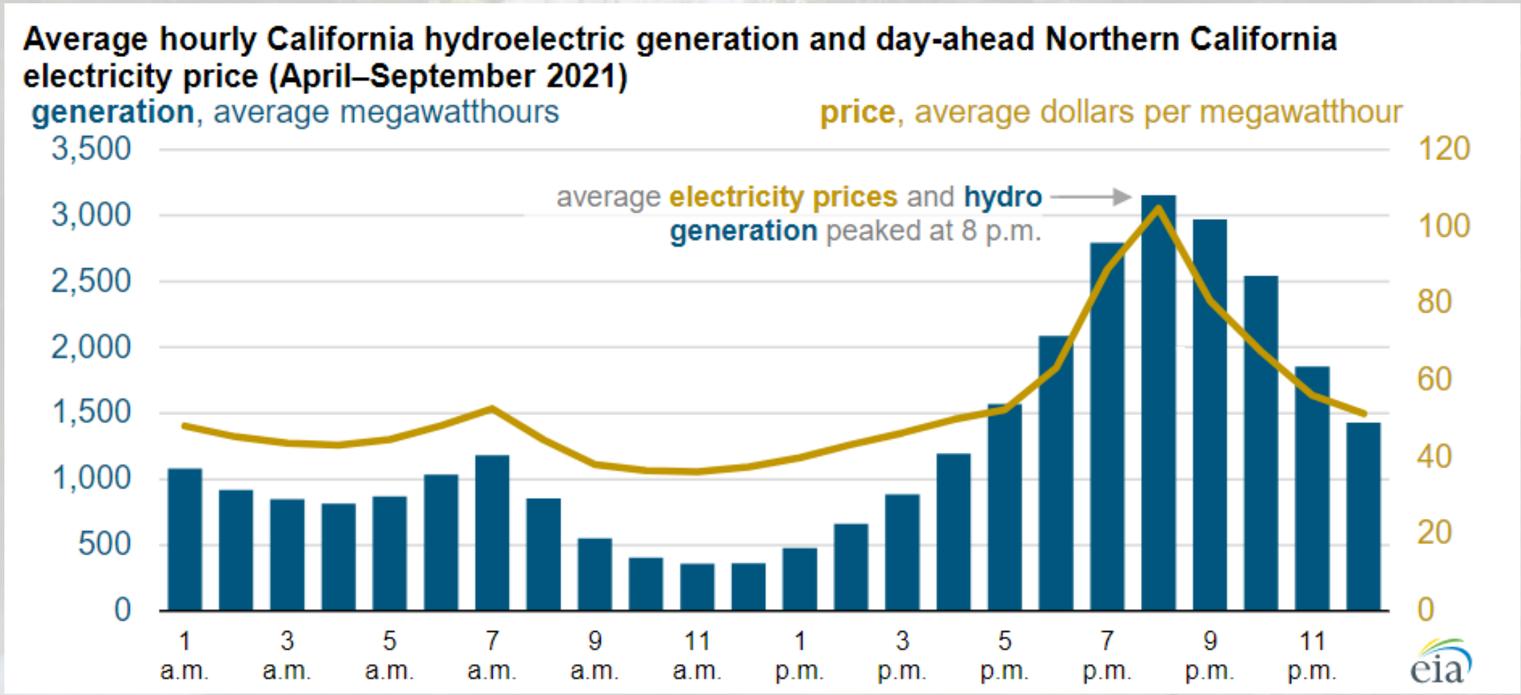
# HYDROPOWER & RELIABILITY

Even during drought, hydro is still there when we need it the most.

The overall western hydropower fleet sustains about four-fifths of the average power generation during severe droughts.

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