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Docket No. AD26-8-000

October 15, 2026

The Honorable Debbie-Anne A. Reese
Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Re: Commissioner-led Reliability Technical Conference, Docket No. AD26-8-000 — Comments of the National Hydropower Association on Panel 2, Reliability in the West Under Drought Conditions

Dear Secretary Reese:

The National Hydropower Association (NHA) appreciates the invitation to participate in and to comment on Panel 2 of the Commission's October 21, 2026, Commissioner-led Reliability Technical Conference. NHA is the national trade association representing the U.S. hydropower industry, including conventional hydropower, pumped storage, and marine energy developers, owners, operators, and suppliers.

NHA shares the Commission's concern about the megadrought in the Colorado River Basin. Declining elevations at Lake Powell and Lake Mead are a serious challenge for water supply, for the communities that rely on this power, and for the operators who must plan around them. At the same time, the Commission's reliability planning should rest on an accurate picture of the national and western generation fleet, including hydropower. Two Department of Energy (DOE)-funded studies by Pacific Northwest National Laboratory (PNNL), attached, supply that picture. They support three points:

1. The Colorado River drought, while severe, affects a small share of the nation's hydropower fleet and generation.
2. Western hydropower has proven resilient through the most severe droughts on record, sustaining roughly 80 percent of average generation.
3. DOE projects national hydropower generation will rise, not fall, under future climate conditions, with the Southwest as the main exception. This underscores the need to preserve and enhance the existing fleet.

I. The Colorado River Drought Is Serious, but It Is Not the National Hydropower Story

The megadrought on the Colorado River is a genuine tragedy for the Basin, yet context matters for reliability planning. The roughly 4,500 MW of Colorado River hydropower cited in the notice is concentrated in a handful of facilities, principally Hoover Dam and Glen Canyon Dam. Those facilities are a small fraction of the approximately 2,250 hydropower facilities operating across the United States.[1]

In recent years, Colorado River hydropower has accounted for about two percent of total U.S. hydropower generation. Reliability risks in the Basin are real and warrant the Commission's scrutiny. They should not, however, be read as evidence that hydropower as a whole has become an unreliable resource. As PNNL's lead author observed, coverage of a single dam during drought can leave the misleading impression that hydropower will not be reliable in the future, when one dam is a small portion of overall capacity.[2]

At the same time, operators are taking steps to plan for a more constrained Colorado River where possible. For example, the Bureau of Reclamation is investing in critical infrastructure, operations, and maintenance at Hoover Dam, including replacement older turbines with wide-head turbines designed to operate at lower lake elevations.[3]

II. Western Hydropower Has Sustained About 80 Percent of Average Generation Through Severe Drought

PNNL's retrospective assessment combined 20 years of annual generation data from more than 600 western hydropower plants with historical precipitation data across eight distinct hydropower climate regions, and extended the record back to 1900.[4] Its central finding is that even during the most severe droughts of the last two decades, western hydropower sustained about 80 percent of average generation. That equals roughly 150 terawatt-hours of clean, firm electricity, or approximately 20 percent of electricity demand across the West.[5]

The assessment also found that drought rarely impairs all western hydropower regions at once. In the last 20 years, no drought has affected every major hydropower generating region simultaneously.[6] While California and the Southwest have faced low flows, the largest share of western hydropower comes from the Northern Cascades and Columbia River Basin, where

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[1] Pacific Northwest National Laboratory (PNNLa), *Hydropower Generation Projected to Rise, but Climate Change Brings Uncertain Future* (Aug. 21, 2024), summarizing D. Broman, N. Voisin et al., Environmental Research Letters (Aug. 8, 2024), prepared as part of DOE's SECURE Water Act Section 9505 Assessment.
[2] Pacific Northwest National Laboratory (PNNLb), *In the Face of Drought, Hydropower Still Delivers Electricity* (Sept. 21, 2022), summarizing S. Turner, N. Voisin, V. Tidwell & K. Nelson, retrospective drought assessment for DOE's Water Power Technologies Office (now Hydropower and Hydrokinetic Office).
[3] U.S. Bureau of Reclamation, *Enhancing Hoover Dam's Infrastructure and Energy Reliability* (May 21, 2026). Available at https://www.usbr.gov/newsroom/news-release/5340.
[4] PNNLa
[5] *Ibid*.
[6] *Ibid*.

conditions have often been near or above average. Regional diversity across the Western Interconnection is therefore itself a reliability asset.

PNNL also identified where planners should focus. A repeat of the 1976–1977 western drought, which hit the Northwest and California together, could be worse for hydropower than any drought this century.[7] Companion PNNL modeling of compounding heat waves and drought found that regional interconnections are critical to managing such extreme events.[8]

III. DOE Projects National Hydropower Generation Will Rise, with the Southwest as the Main Exception

The second PNNL study, prepared for DOE's SECURE Water Act Section 9505 Assessment, projects hydropower generation across the continental United States using climate-driven streamflow from Oak Ridge National Laboratory (ORNL). It covers both federal facilities and an additional 1,412 non-federal facilities.[9] The study finds that generation generally increases about five percent in the near term (through 2039) and about 10 percent in the mid-term (2040–2059), consistent with climate models that generally show more precipitation as the climate warms.[10]

The study is clear about where risk is concentrated. Parts of the Southwest are the only region projected to see an average decline, of roughly three to six percent in the near term.[11] The range of outcomes is also wide, from −5 to +21 percent in the near term.[12] And the timing of generation is shifting – less snowpack and earlier melt mean more winter generation and less in late spring and summer in the West, with western summer output projected to decline one to five percent in the near term.[13]

Thus, the challenge for the West is not that hydropower is disappearing. It is that hydropower's seasonal shape is changing in some basins, and planners need to plan for that change rather than assume either historical stability or wholesale decline. PNNL also stresses that, even where seasonal output declines, hydropower remains a dispatchable resource that provides critical stability to the grid.[14]

IV. Implications for Western Reliability Planning

[7] *Ibid*.
[8] *Ibid*.
[9] PNNLb
[10] *Ibid*.
[11] *Ibid*.
[12] *Ibid*.
[13] *Ibid*.
[14] *Ibid*.

Taken together, the PNNL findings point to several practical responses to the Commission's questions:

- **Model hydropower by climate region, not by state or by a single basin (Questions 2 and 5).** PNNL found that grouping plants by climate conditions gives a cleaner assessment of drought impact than state boundaries.[15] Resource adequacy models should reflect regional diversity across the Western Interconnection rather than extrapolating Colorado River conditions to the fleet.
- **Plan for a changing seasonal profile (Questions 2 and 5).** Hydrological forecasts should feed planning as distributions of seasonal output, including the shift toward winter generation, rather than as a fixed historical average.[16]
- **Stress-test against the right extreme event (Questions 3 and 6).** The most consequential scenario is a West-wide drought on the scale of 1976–1977 coinciding with extreme heat and load growth.[17] Planning frameworks should test that case explicitly, and should consider drought implications for thermal generation as well as hydropower.
- **Strengthen interregional transfer capability (Questions 1 and 6).** Because droughts rarely hit all western regions at once, transmission that moves hydropower across regions is one of the most effective drought hedges available.[18]
- **Improve shared data (Questions 4 and 6).** DOE's 9505 data set and PNNL's multiscale assessment are designed to inform water-energy tradeoff discussions.[19] NHA supports making such data readily available to planners, operators, and water managers.

V. Reliability Depends on Preserving and Enhancing the Existing Fleet

If hydropower generation is to remain a large, dispatchable share of western supply even in drought years, the greatest controllable risk to that resource is not hydrology. It is the loss of existing capacity through a costly, slow, and uncertain licensing process. Roughly 12,000 MW of hydropower faces relicensing over the next decade. Every megawatt lost in that process is a megawatt that western planners can no longer count on during the stress conditions the Commission is examining.

VI. Conclusion

The Colorado River drought demands serious, coordinated attention from water managers, utilities, and grid operators, and NHA's members stand ready to contribute. The

[15] PNNLa
[16] PNNLb
[17] PNNLa
[18] *Ibid*.
[19] PNNLb

evidence from DOE and PNNL shows that hydropower remains one of the West's most resilient and dispatchable resources, and that national hydropower generation is projected to grow. NHA respectfully urges the Commission to ground its reliability planning in that full picture, and to support policies that keep the existing hydropower fleet available to the grid.

NHA appreciates the Commission's attention to these issues and would welcome the opportunity to discuss them further.

Respectfully submitted,

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