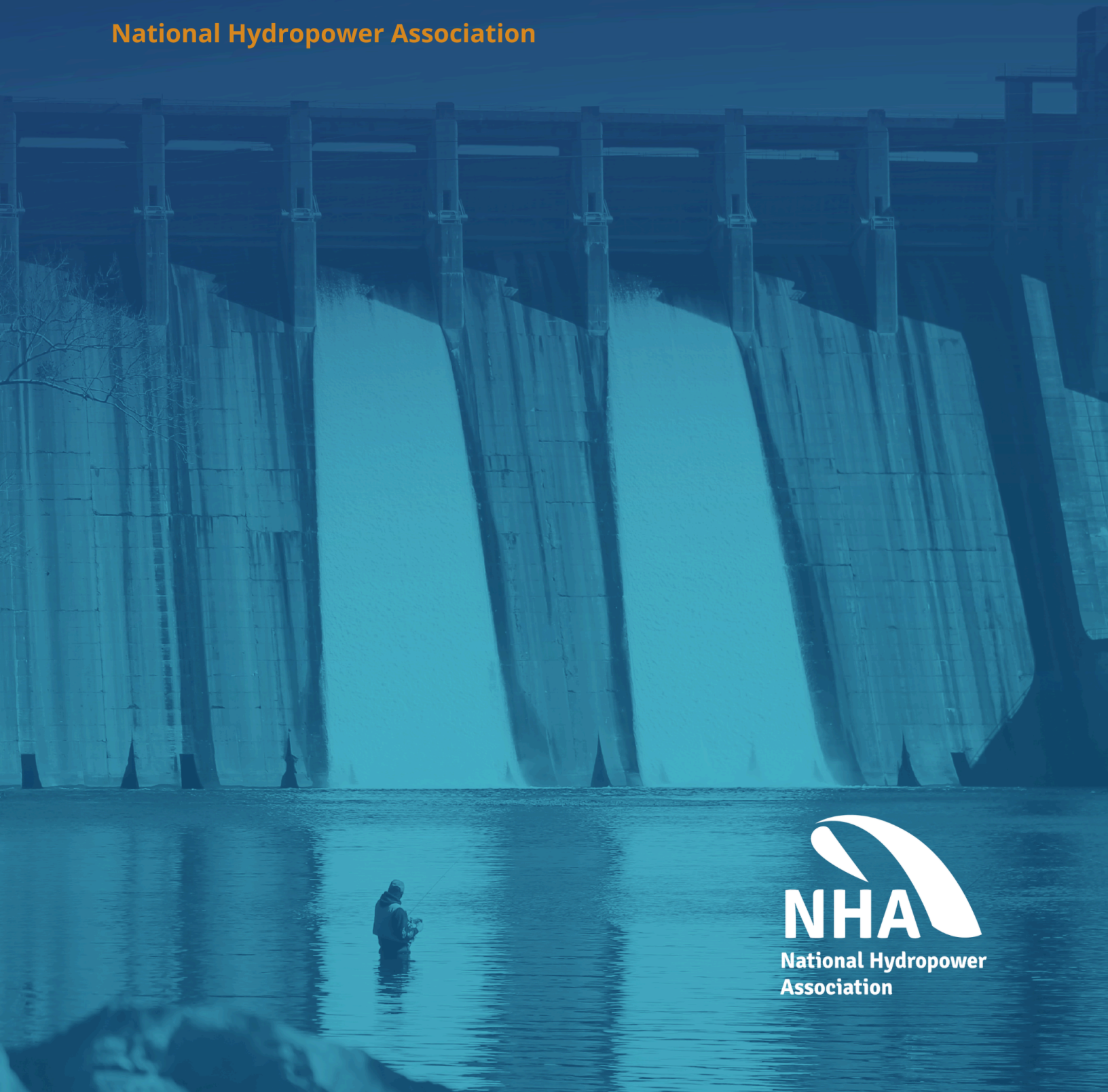
Affordable Power, Broken Process

How Regulatory Overreach Taxes America's Most Reliable Resource

National Hydropower Association



NHA
National Hydropower Association

NHA thanks Nicholas Kelly Consulting for valuable contributions to the data analysis featured in this report.

COVER PHOTO: NORFORK DAM, SALESVILLE, AR | SOURCE: ADOBE STOCK #744628988

Norfork Dam sits in Baxter County, Arkansas, where the North Fork River meets the White River. Built by the U.S. Army Corps of Engineers and completed in 1944, it was authorized under the Flood Control Act of 1938 and remains one of the agency's oldest multi-purpose concrete dams. Its powerhouse runs two 40 MW generators for a combined 80 MW of hydropower capacity, while also providing flood control for the White River basin and cold-water releases that support a popular trout fishery downstream.

Contents

Executive Summary 1

Acronyms 3

Now More Than Ever – Hydropower Is a Critical Grid Resource 4

How NHA Conducted this First-of-its-Kind Analysis 5

How is Regulatory Overreach Taxing Hydropower? 6

- What Do Mandatory Conditions Look Like Today? 6
- How Are Mandatory Conditions Administered? 7
- Where are These Mandatory Conditions Imposed? 7
- By the Numbers: Who Imposes Conditions? 8
- What Do These Conditions Actually Look Like? 9
- The Hidden Risk: Reservations of Authority 10
- Mandatory Conditions Growth Over Time 11
- The Hidden Costs of this Broken Process 12

How Did It Get This Bad? 14

- Why Have These Conditions Persisted? 15

The Real Costs of a Broken Process 16

- We're Losing Small Hydropower 17

How Do We Pair the Permit to the Project? 18

- American Attention Is Rightly Focused on the Electric Grid 18
- Congress is Considering Reforms 18
- Opportunities for Action Today 18

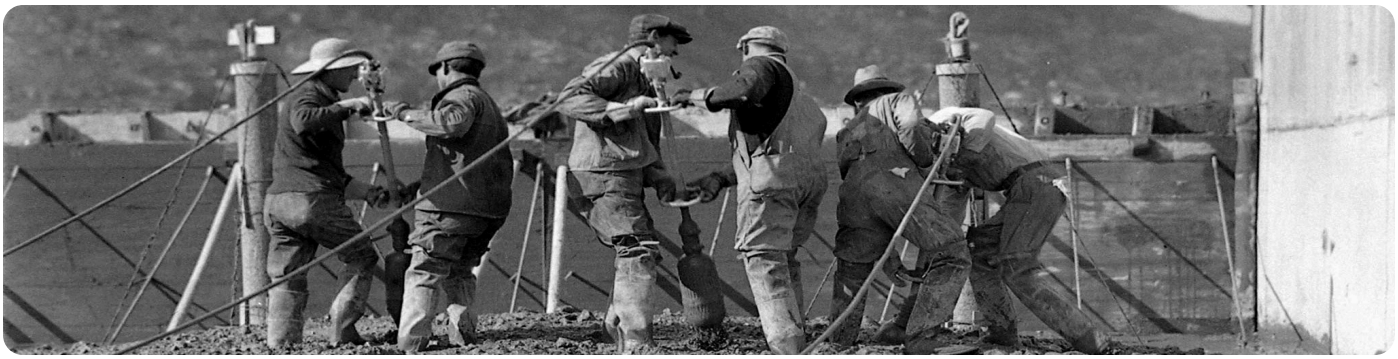
What's Next? 19

Endnotes 20

Executive Summary

Hydropower is Essential to a Reliable, Affordable American Grid

The nation's 80 gigawatts of traditional hydropower and 22 gigawatts of pumped storage serve roughly 30 million Americans and do more than generate affordable, clean electricity: hydropower is the grid's daily shock absorber, ramping output up and down as other resources fluctuate. Hydropower is also the only renewable resource that provides a full range of essential grid reliability services, including the ability to restart the grid from a blackout ("blackstart" capability). That flexibility is becoming more valuable, not less, as artificial intelligence and economy-wide electrification drive the sharpest increase in U.S. electricity demand in decades.



TVA workers in the 1930s, source: Tennessee Valley Authority (TVA)

Yet the Hydropower Regulatory Process is Broken

Like bridges and highways, hydropower facilities are a foundational part of our nation's infrastructure and many continue to operate successfully after over a hundred years. In addition to producing electricity reliably and affordably, they also support myriad other public ambitions, from farming to recreational fishing. However, unlike other large civil works, non-federal hydropower must be re-licensed under a process led by the Federal Energy Regulatory Commission (FERC). The Commission is charged with crafting and issuing licenses based on the public interest, balancing electricity and non-electricity concerns.

Yet, paradoxically, FERC lacks the authority to modify, adapt, or reject license conditions imposed by other federal agencies that are often the most costly and consequential conditions. Four primary federal agencies across three Cabinet departments impose the vast majority of these so-called "mandatory conditions" under Sections 4(e) and 18 of the Federal Power Act (FPA), regardless of cost, relevance, or effect on the nation's electricity grid. While the analysis presented in this white paper focuses on the mandatory conditions issued under the unique Federal Power Act framework, hydropower facilities, like other generation sources, are subject to an array of other federal, state, and local requirements, such as Clean Water Act Section 401, the Endangered Species Act, and the National Environmental Policy Act.

The National Hydropower Association's (NHA) first-of-its-kind analysis uses large language models with human auditing to read through the record and understand how mandatory conditions are imposed in practice. Across a dataset of over 5,000 mandatory conditions extracted from 4,819 licensing documents filed between 1980 and 2026 across 46 states, NHA found that:

- The majority of licenses carry a reopener provision under which additional conditions may be imposed at any point in the life of the license (See The Hidden Risk: Reservations of Authority).
- Compared against their own earlier licenses, hydropower facilities now carry roughly ten times as many mandatory conditions. (See Mandatory Conditions Growth Over Time).
- Most mandatory conditions have unknown costs – fewer than 15 percent of conditions include a cost figure (See The Hidden Costs of this Broken Process).
- The U.S. Forest Service (USFS) issues two-thirds of all mandatory conditions, more than every other agency combined (See By the Numbers: Who Imposes Conditions?).

Additionally, because this regulatory burden does not scale with project size, it falls hardest on small hydropower plants, increasing the likelihood of license surrender. Thus, the reality of our current regulatory scheme is the loss of generation resources at the exact moment the grid can least afford to lose them. Between 2026 and 2036, 348 FERC licenses will reach expiration, representing 12,324 MW of capacity.

Congress and the Administration Have the Tools to Fix This

Executive Order 14154, *Unleashing American Energy*, expressly identifies hydropower as a priority resource and directs federal agencies to eliminate undue burdens on domestic energy development.[1] Acting on that authority alone, the Secretaries of Agriculture, Commerce, and the Interior ("Secretaries") can immediately promulgate regulations to focus the exercise of their authorities under Sections 4(e) and 18 by crafting conditions that actually address a project's direct effects. Relatedly, the Secretaries of Commerce and the Interior can work with FERC, pursuant to Section 1701 of the Energy Policy Act of 1992, to promulgate a regulatory definition of "fishway".

At the same time, Congress has an opportunity to accelerate this reform through the common-sense Hydropower Licensing Affordability Act (HLAA), introduced in the House by Representative Bentz (OR-02) as H.R. 9337, and in the Senate by Senator Daines (MT) as S. 5048. The bill would tie mandatory conditions to a project's direct adverse effects, thus preventing operational constraints and other costs from being imposed without regard to corresponding and direct adverse environmental effects. The HLAA would fast-track permanent statutory certainty and go a long way to fix this broken process.

Acronyms

BLM – Bureau of Land Management (a division of the U.S. Department of the Interior)

EIS – Environmental Impact Statement (an analysis document under the National Environmental Policy Act)

E.O. – Presidential Executive Order

FERC – Federal Energy Regulatory Commission

FPA – Federal Power Act

FPC – Federal Power Commission (FERC's predecessor agency)

FWPA – Federal Water Power Act (predecessor of the Federal Power Act)

FY – Fiscal Year

GW – gigawatts

GWh – gigawatt-hours

HLAA – Hydropower Licensing Affordability Act

MW – megawatts

NEPA – National Environmental Policy Act

NERC – North American Electric Reliability Corporation

NHA – National Hydropower Association

NMFS – National Marine Fisheries Service (a division of the U.S. Department of Commerce)

ORNL – Oak Ridge National Laboratory

PSH – pumped storage hydropower

REN – Rede Elétrica Nacional, Portugal's grid operator

Secretaries – Secretaries of Agriculture, Commerce, and the Interior

USFS – U.S. Forest Service (a division of the U.S. Department of Agriculture)

USFWS – U.S. Fish and Wildlife Service (a division of the U.S. Department of the Interior)

Now More Than Ever – Hydropower Is a Critical Grid Resource

The U.S. hydropower fleet has been essential to American electricity production and prosperity for over a century, today providing 80 gigawatts of hydropower and 22 gigawatts of pumped storage, enough to serve roughly 30 million Americans. Beyond generating affordable, clean electricity, pumped storage hydropower (PSH) remains the largest source of long-duration energy storage in the U.S. Hydropower is also the only renewable resource that provides a full range of essential grid reliability services, including the ability to restart the grid from a total blackout ("blackstart" capability). These core attributes are becoming more valuable, as we face the sharpest increase in U.S. electricity demand in decades.



Raccoon Mountain Pumped Storage Plant. Source: Tennessee Valley Authority (TVA)

After nearly two decades of essentially flat electricity demand, U.S. consumption is rising again: the U.S. Energy Information Administration (EIA) projects that 2026 will set a new all-time consumption record, surpassing the previous high set in 2024.[2] The most recent assessment from the North American Electric Reliability Corporation (NERC) projects summer peak demand will climb 224 GW over the next decade — a 24 percent increase from 2025 levels and 69 percent higher than NERC projected just a year earlier, with winter peak demand growing even faster, by 246 GW.[3] Yet, sheer generating capacity is not sufficient for a reliable grid: adding gigawatts does not guarantee the system stays stable, nor that the grid can recover if it goes down.

The stakes of that flexibility were on stark display most recently on April 28, 2025, when a cascading voltage failure blacked out the Iberian Peninsula, cutting power to more than 50 million people in Spain and Portugal for up to 16 hours. Just like the 2003 blackout in the Northeast and Midwest U.S. and eastern Canada, hydropower carried the restoration. Portugal's grid operator, REN, called for blackstart at the Castelo de Bode hydroelectric plant within two minutes of the collapse,[4] and Iberdrola's PSH fleet in Spain had its first unit back online within ten minutes and more than 70 percent of the fleet running within two hours, energizing lines that then let other plants restart.[5] Here in the U.S., the U.S. Department of Energy has found that although hydropower makes up less than 10 percent of U.S. generating capacity, it accounts for over a third of the nation's blackstart-certified units. Because hydropower plants need little to no external electricity to start, more than 80 percent of U.S. hydropower capacity can reach full output from a cold start within ten minutes, and hydropower units provide the inertia needed to stabilize system frequency while the rest of the grid reconnects.[6]

However, as this paper demonstrates with a first-of-its-kind data-driven analysis, a broken regulatory system threatens this essential resource just as it is needed most.

How NHA Conducted this First-of-its-Kind Analysis

NHA used large language models to read the entire record and found each condition and collected data points: the verbatim text, the agency that imposed it, the statutory authority behind it, the kind of work it requires, and the cost where available. Each figure and conclusion in this paper is linked to a specific filing or filings, available in depth at https://hydro.org/affordable-power-broken-process/.

For this report, NHA analyzed:

- Over 5,000 mandatory conditions
- 4,182 imposed under Section 4(e)
- 934 prescribed under Section 18
- 4,819 licensing documents filed between 1980 and 2026
- Across 46 states and
- 1,642 FERC-regulated hydropower assets
- 281,603 pages of materials containing over 100 million words.

Benchmarked against the Commission's roll of active licenses, this review covers approximately 93 percent of hydropower licenses.

Until this comprehensive analysis, it has not been widely known outside the hydropower industry how many mandatory conditions have been imposed nationwide and over time, what these conditions have required, how their content has changed, or what they cost. Within the industry, it is rare to take a comprehensive look at the growth in number and imposition of conditions outside of one's own projects. This has allowed **the overall impact of this licensing process to remain hidden from policy makers and regulators alike**. Every figure or statement in this paper is based on FERC license orders and NEPA documents. Counts are based on one document per project, whichever is the most recent condition-bearing document, whatever its stage. Each project therefore appears only once: 771 projects are counted at their issued license and 140 at the environmental-review stage for proceedings that are not yet complete.

For a complete review of the dataset and methodology, visit https://hydro.org/affordable-power-broken-process/.

How is Regulatory Overreach Taxing Hydropower?

The tangled regulatory framework unique to hydropower results in a licensing process that is very often complex, unpredictable, and hostage to myriad forces outside the control of any operator or even the intended regulator, FERC. Over the course of several decades, the licensing process has evolved far from Congress's original intent of "one-stop shopping" with a single agency—the Federal Power Commission (FPC), FERC's predecessor agency—determining the public interest and establishing all applicable license terms and conditions. Over many decades, it has evolved into today's fractured scheme involving multiple agencies imposing conditions and where no single agency is empowered to consider – and act on – the totality of the conditions and the project's benefits. As a result, the licensing process has become vulnerable to overreach, with agencies able to impose conditions that meet parochial priorities and policies, rather than addressing an identified direct effect of the project at hand.

In short, for every nonfederal hydropower project that requires FERC to issue or reissue a license, certain departmental Secretaries have the power to issue mandatory conditions that FERC must adopt and enforce, regardless of whether or not FERC's expert staff agree that the conditions have any relevance to the project or its environmental effects.

Like bridges and highways, hydropower facilities are a foundational part of our nation's infrastructure and can last for generations. In addition to producing electricity reliably and affordably, they also support myriad other public ambitions, from farming to recreational fishing. However, unlike other large civil works, non-federal hydropower must be re-licensed under a process led by the Federal Energy Regulatory Commission (FERC). The Commission is charged with crafting and issuing licenses based on the public interest, balancing electricity and non-electricity concerns.

What Do Mandatory Conditions Look Like Today?

For decades, FPA Sections 4(e) and 18 hydropower license conditions (here, collectively, "mandatory conditions", "FPA conditions", or "prescriptions") have been imposed on a project-by-project basis, typically by local or regional agency personnel with little insight into how the conditions they place in the license have significant, adverse repercussions on the electric grid. This paper summarizes NHA's analysis of this collective burden, with the full analysis available at https://hydro.org/affordable-power-broken-process/.

As just one extreme example of the mandatory conditioning burden imposed upon hydropower resources, the Deer Creek Project (FERC Project No. 14530), a small, 5.5-megawatt (MW) project in California, is facing 232 preliminary Section 4(e) conditions, based on the current status of the environmental impact statement (EIS).

How Are Mandatory Conditions Administered?

Four federal agencies across three Cabinet departments impose nearly all mandatory conditions: The U.S. Forest Service (USFS), a division of the Department of Agriculture; the National Marine Fisheries Service (NMFS), a division of the Department of Commerce; the U.S. Fish and Wildlife Service (USFWS), a division of the Department of the Interior (DOI); and the Bureau of Land Management (BLM), also a division of DOI. Together they account for 97 percent of the mandatory conditions in effect.

Mandatory conditioning under Section 4(e) applies to any nonfederal hydropower project that occupies a federal "reservation," which the statute defines as "national forests, tribal lands embraced within Indian reservations, [and] military reservations," and which also includes other lands (and interests in lands) owned by the United States that are "withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws." Under this broad definition of a "reservation," Section 4(e) authority can be wielded by USFS, BLM, and other federal land management agencies whenever the licensed project occupies any portion of a federal "reservation" – whether the project in its entirety, or even a fraction of an acre.

Due to the vast federal holdings in the Western states, USFS and BLM wield considerable authority under Section 4(e) – particularly because courts have interpreted Section 4(e) authority as pertaining to the entire federal reservation and not confined to the portions of the lands that are occupied by the project itself.

In contrast, Section 18 applies only to "fishways"—obligating FERC to "require the construction, maintenance, and operation by a licensee at its own expense of … such fishways as may be prescribed by" NMFS or USFWS.

Where are These Mandatory Conditions Imposed?

These differences in threshold and mission have a direct influence on the geographic distribution of hydropower projects affected by mandatory conditions. For example, the conditions USFS imposes under Section 4(e) track where federal land is most prevalent: it has imposed project conditions in 23 states, half in California alone, with Washington, Alaska, and Colorado following behind. Similarly, 97 percent of BLM conditions are imposed in California.

The fish agencies trace watersheds rather than land ownership. USFWS prescriptions concentrate where inland dams meet historic runs, including Maine (185) and New York (145) as well as along the Columbia River in Washington and Idaho. Conditions prescribed by NMFS concentrate where coasts host migrating fish species, from California to Alaska and from Maine down the Atlantic seaboard into Georgia (see figure 1 on next page).

A hydropower project needed 0.7 miles of road. The Forest Service required 22.7. (P-2106, EIS, 2011, California)

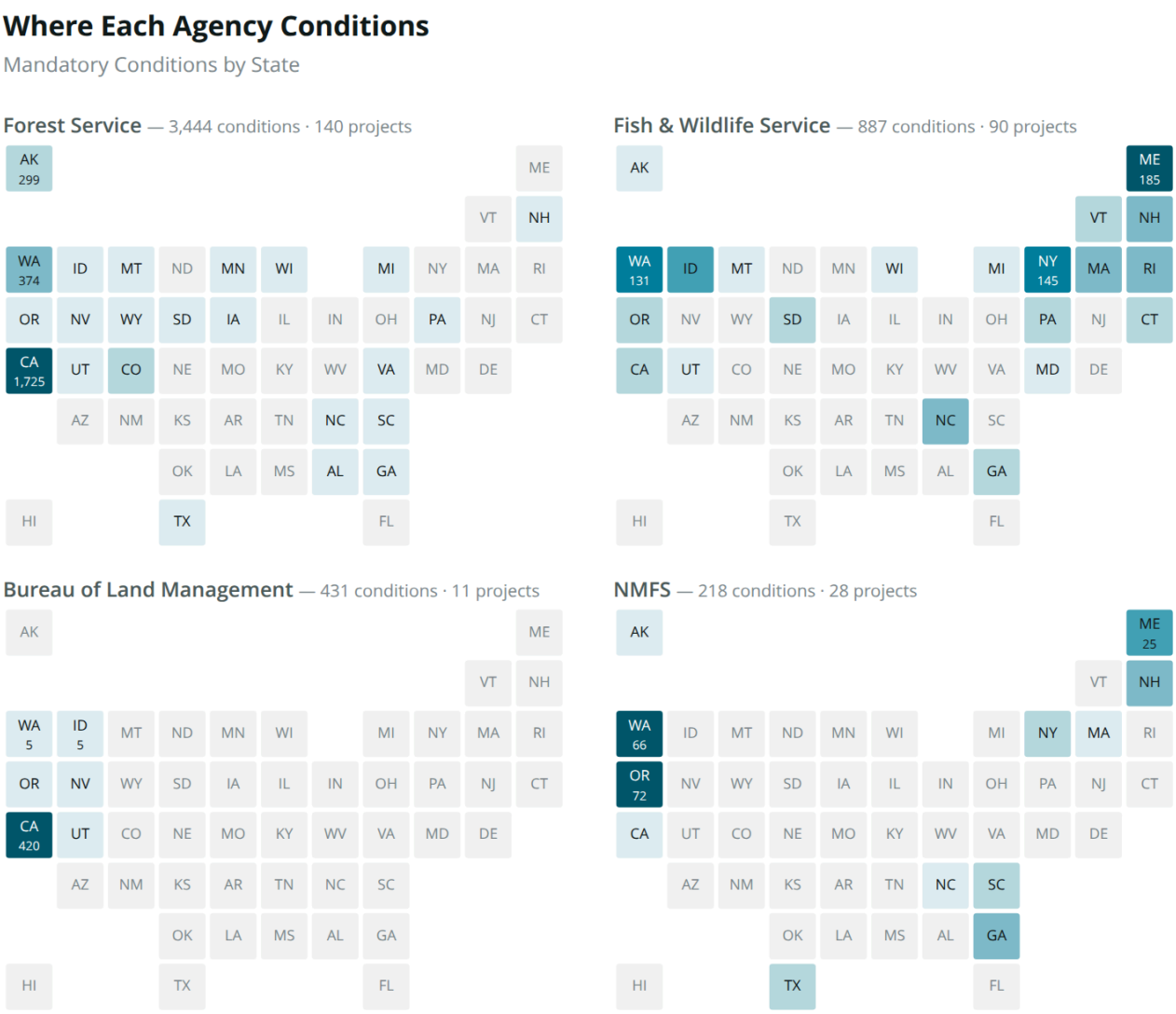


Figure 1

By the Numbers: Who Imposes Conditions?

As shown in Figure 2, the USFS imposes the highest number of conditions – two-thirds of all mandatory conditions examined were required by the USFS under Section 4(e). While BLM imposed conditions on just 11 projects we analyzed, they recommended a median of 33 conditions per project. Of the 431 BLM conditions, 425 are pending at the environmental-review stage (see Figure 2).

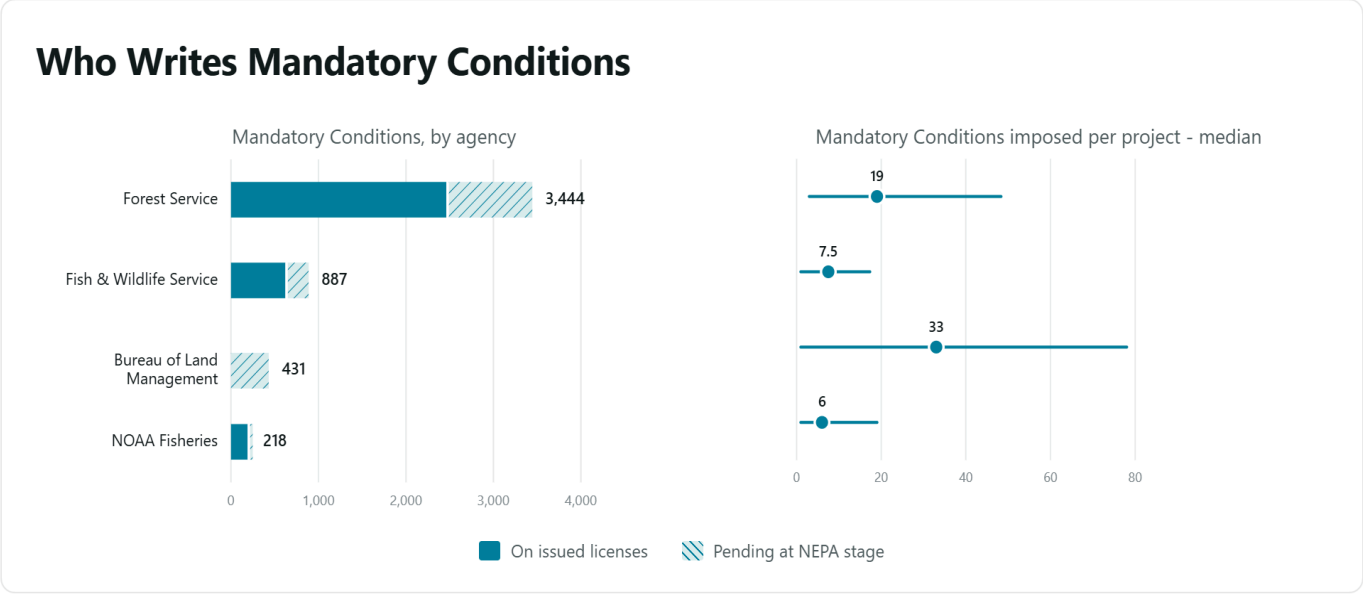


Figure 2

What Do These Conditions Actually Look Like?

Under Section 4(e), land management is the largest substantive category of conditions for both agencies, with 728 Forest Service conditions and 106 at BLM, followed by wildlife (204 USFS and 37 BLM), recreation (188 USFS and 30 BLM), flow requirements, endangered species measures, and erosion control. Plans generally cover control of noxious weeds, fire, erosion, and hazardous substances. Alongside the plans are physical obligations on facilities for public use, including fencing, road maintenance, and cost sharing for infrastructure the agency owns.

> The National Marine Fisheries Service required fish passage for 2 million migratory fish. There were 20,000. That's a lot of empty seats. (Maine, P-2808-017, EA, 2019)

Fish passage is the sole authorization under Section 18's mandatory prescriptions, with 316 fishway prescriptions imposed by USFWS and 123 from NMFS. However, requirements imposed under a Section 18 prescription aimed at fish passage have morphed to include species-wide monitoring and research programs well beyond reasonable maintenance and monitoring (see example in callout box). Post-construction monitoring is required in 89 USFWS conditions and 28 NMFS conditions, and the passage obligations themselves arrive with deadlines, effectiveness testing, and performance standards. NMFS's conditions are often the most operationally complex in the mandatory record, including full passage facilities and trap-and-transport programs. In some instances, fishway prescriptions have mandated species-level protection programs, despite clear Congressional directive that fishways be physical structures, rather than programs.

You can't make this up

- Ever had to measure floating wood debris? That's what one facility was asked to do by the U.S. Forest Service. FERC didn't get it either, but it's in the final permit. (P-619, EIS, 2020, California)
- The Bureau of Land Management asked a facility to build and permanently maintain a livestock water trough. A hydropower producer. Building a cow bar. (P-298, EA, 2024, California)
- The U.S. Forest Service ordered a utility to secure access to a private road — on land the Forest Service doesn't own. FERC said "what?" but the order remained. (P-2035, FEIS, 2019, Colorado)

The Hidden Risk: Reservations of Authority

The conditions described above are the ones people picture when they think of mandatory conditioning: build the fishway, release the flow, treat the weeds. They may sometimes be demanding and out of scope, but they are knowable.

In contrast, "reservations of authority" preserve the right to impose new conditions at any point during the term of the license. The majority of projects carry at least one reservation of authority condition. The USFS has issued 379 of these conditions, 11 percent of its total since 1980. Eighty-two percent of USFS-conditioned projects analyzed carry at least one reservation of authority. Due to these reservations of authority, **four in five projects conditioned by the USFS may not know the full range of the conditions of their licenses at the time of FERC's issuance of the license**, which undermines the regulatory and cost certainty that the licenses are designed to provide and which are necessary for investment in the asset. Similarly, BLM applies the same "reserve" language to three-quarters of projects it conditions. While utilized less often, the Departments of Commerce and the Interior have the ability to add one of the largest costs: the prescription of a fishway at some later date. Reservations of authority cannot be reliably priced, and so cannot be reliably financed or planned.

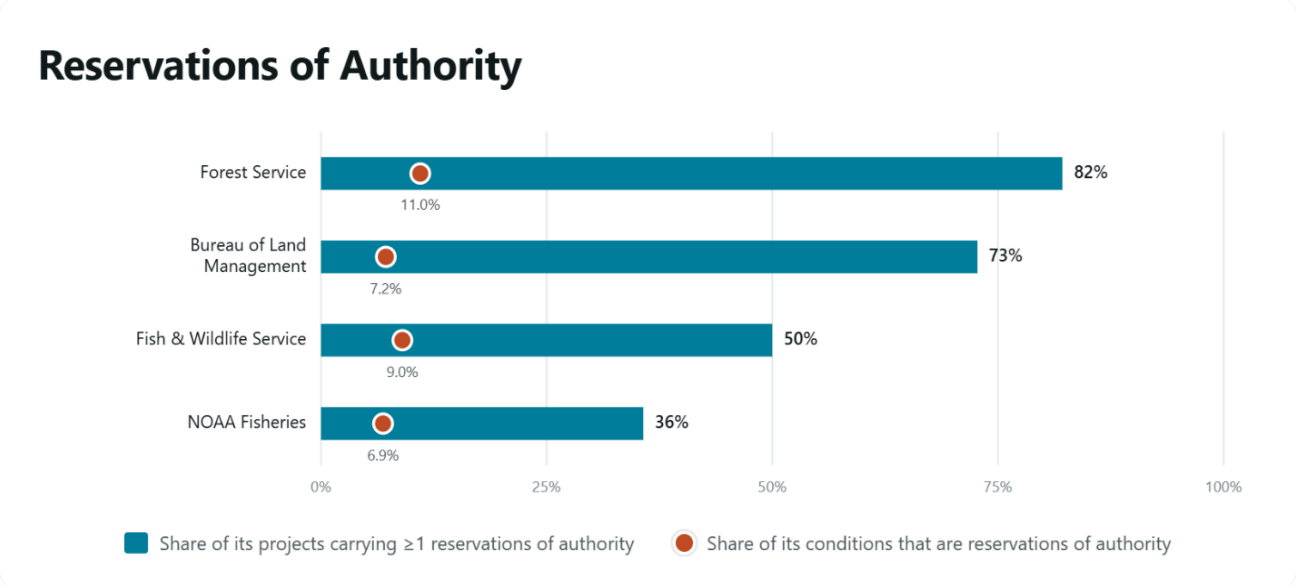


Figure 3

"Authority is reserved for the National Marine Fisheries Service to modify these Prescriptions for Fishways at any time before license is issued, as well as any time during the term of any license issued, after review of new information or for other pertinent reasons."

— Yadkin-Pee Dee (Blewett Falls) (P-2206) – 108.6 MW – §18 – issued license

Mandatory Conditions Growth Over Time

Mandatory conditions have grown over time. One way to look at this is to compare a project against its previous license. When you do so, you reach a startling conclusion: new licenses have roughly 10 times the mandatory conditions of their original license.

We compared 87 projects against themselves. This included 55 new license orders and 32 still in relicensing, with mandatory conditions already in the record. The two documents are a median of 32 years apart. The earlier licenses contained 79 conditions in all, whereas today the same facilities have 806 conditions: roughly ten times the conditions. Bucks Creek is the extreme case: no Forest Service conditions in its 1974 license, 62 in its 2022 license.

Same dam, same river, 10 times the conditions

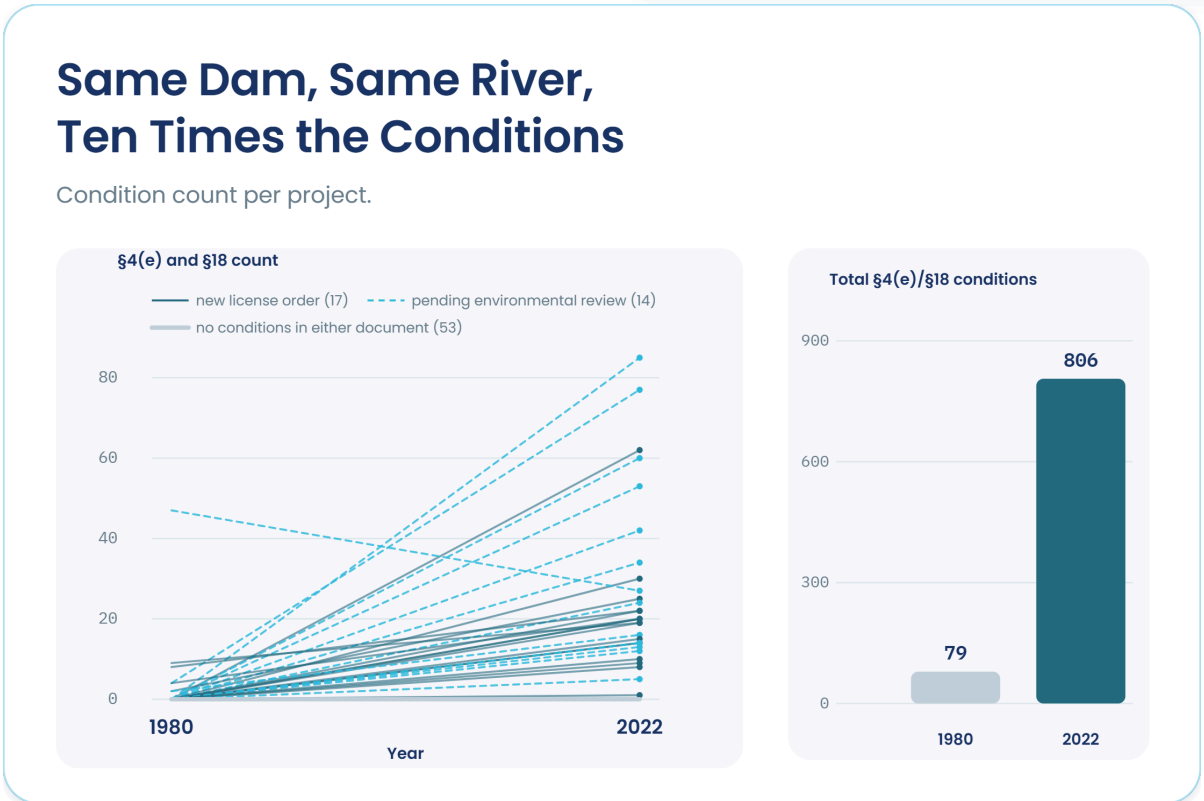


Figure 4

When looking at the entire fleet of hydropower licenses that carry mandatory conditions, the number of Section 4(e) and 18 conditions in the final license order have roughly doubled since 1986. Section 4(e) conditions had a one-time increase. Land conditioning ran near twelve conditions per order through the 1980s and 1990s, increased to 26 at the turn of the century, and has held at 24 since 2010.

Section 18 conditions have continued to increase. Fishway prescriptions per order rose from two in the 1990s to nine in the 2000s and 11 since 2010, a trend of 58 percent per decade since 1986. The median order held four fishway conditions in the 2000s but holds 11 today.[7]

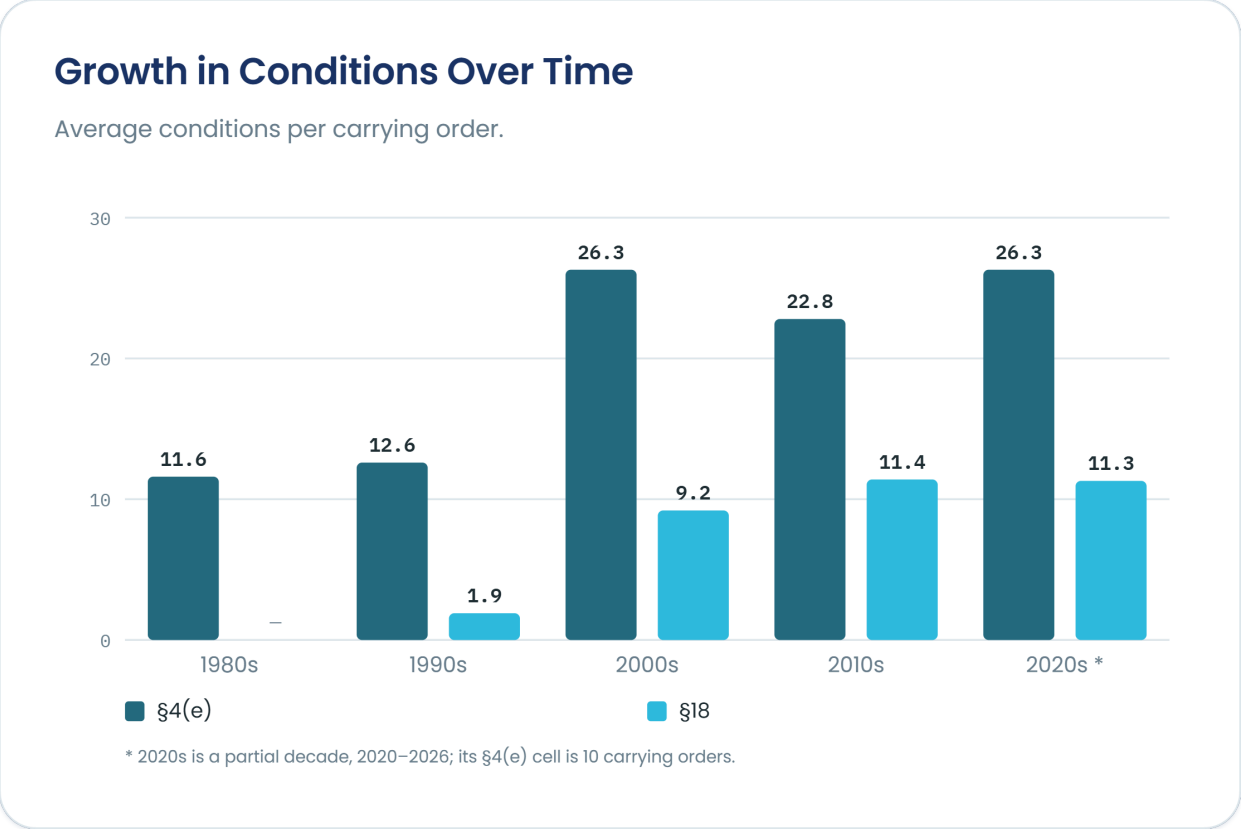


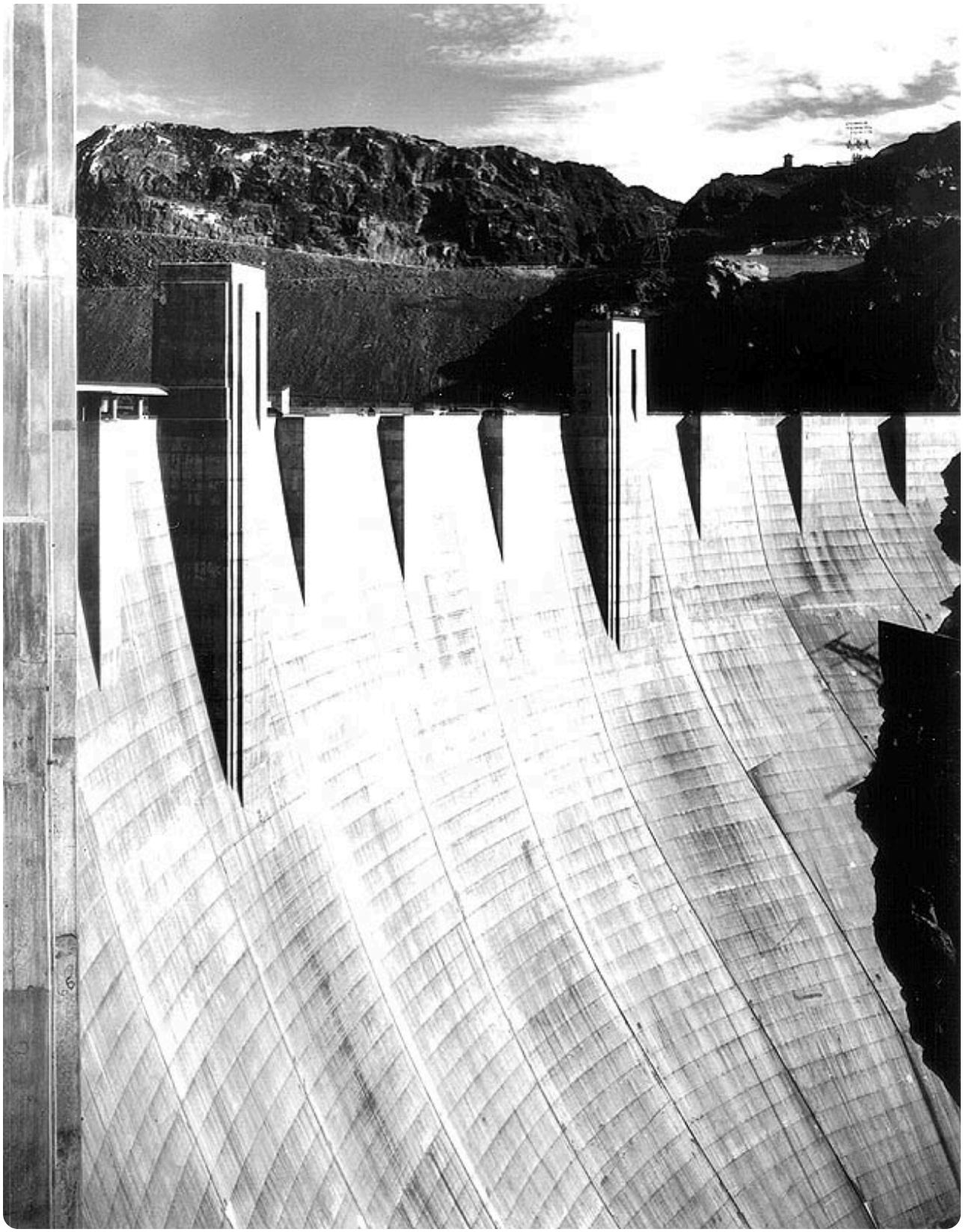
Figure 5

The Hidden Costs of this Broken Process

The most notable finding is how rarely costs of mandatory conditions are written down or properly assessed. Only 13 percent of Section 4(e) conditions and six percent of Section 18 prescriptions include a dollar figure. The vast majority are imposed without considering cost.

When they are written down, they often represent a fraction of the true cost – what gets priced more often are studies, operating measures, and monitoring requirements, not the fishways themselves.

In contrast, Section 10(j) recommendations, which the Commission must weigh against project economics and may reject, are priced out more than 40 percent of the time, unlike Section 18 prescriptions.



Hoover Dam by Ansel Adams. Source: Bureau of Reclamation

How Did It Get This Bad?

The issue of mandatory conditions is deeply rooted in the history of hydropower and found in one of the original statutes written to regulate non-federal hydroelectricity over 100 years ago: The Federal Water Power Act of 1920 (FWPA). Fifteen years later, the Federal Power Act of 1935 (FPA) extended the Federal Power Commission's authority to interstate transmission and wholesale electricity sales. Congress has since returned to hydropower licensing repeatedly, through the Electric Consumers Protection Act of 1986, the Energy Policy Act of 2005, the Hydropower Regulatory Efficiency Act of 2013, and America's Water Infrastructure Act of 2018. Despite all these changes, two sections of the original FWPA remain: Section 4(e) and Section 18.

These two sections are the primary reason that hydropower permitting breaks down in the modern era. These conditions are used by federal resource agencies to unilaterally impose binding requirements on a hydropower license.

FERC is not authorized to modify these mandatory conditions and is required to incorporate them into any license as issued regardless of their cost, their relationship to the project at hand, or their effect on the nation's energy supply.

For instance, Section 4(e) permits the Departments of Interior and Agriculture to condition any hydropower project sited on federal land. Similarly, Section 18 permits the Departments of Interior and Commerce to require fish passage at any licensed project. Strangely, this authority continues to supersede that of FERC, the federal agency Congress tasked with authoring, issuing, and enforcing the license.

This misalignment produces contradictions between the statute and practice. Congress amended the FPA in 1986 to require FERC to give equal consideration to power development and to fish and wildlife protection, recreation, and other aspects of environmental quality. As the lead federal agency on hydropower, Congress tasked FERC with a duty to balance competing interests. The same statute also added Section 10(j), discussed above, as a new path for fish and wildlife measures that were now subject to Commission adoption or rejection. Congress recognized that, while resource agencies were the preeminent experts on matters of biology and ecology, FERC – having its own expertise on how these resource issues apply to hydropower – was the organization best positioned to integrate that information into a regulatory regime that reflected the public interest. This was a reasonable approach.



Capitol building in Washington, DC. by Toshe_O
Source: Canva

Unfortunately, Congress did not finish the job. The Section 4(e) and 18 authorities written in 1920 remained law, despite being antithetical to the spirit of the 1986 amendments and leaving a glaring hole in the Commission's ability to administer them. Because resource agencies could still issue mandatory conditions under the original Sections, the duty to balance energy and environmental interests fell on a Commission with no means to do so. As a result, FERC staff must analyze the merits of conditions that cannot be denied.

It was never supposed to be this way. The original Federal Power Commission, the first body with Section 4(e) and 18 authority in 1920, was the Secretaries of War, Interior, and Agriculture, all sitting *ex officio* without independent staff. Congress replaced the *ex officio* commission with five full-time appointees in 1930, and in 1977, abolished the Federal Power Commission altogether, transferring its functions to FERC. However, it never revisited mandatory conditioning authority, which simply transferred to their respective agencies.

Why Have These Conditions Persisted?

The pressure is real and the response is rational. It is also poor public policy. The appropriations power belongs to Congress. When a federal agency obtains funding and staff labor from a regulated industry through conditions the Commission cannot review, it is exercising a power it should not have. Public priorities should be set by accountable, elected officials voting on a scored budget, not assembled one license at a time in proceedings that almost nobody outside them observes.

Instead, resource agencies have free rein to levy what is functionally a tax on private industry, without the expertise to weigh whether that goal serves the public interest. That was a tolerable inefficiency when electricity was abundant and demand was flat. Today, however, load growth has made generating capacity the binding constraint on American economic success. Every dollar and staff hour diverted from operating and improving our hydropower fleet is a cost the public absorbs without ever being asked. This should not continue.

The U.S. Forest Service asked a facility to create a climbing and caving plan, because nothing says hydropower like a good spelunking session. (P-1971, SEIS, 2026, Oregon / Idaho).

Extreme Use of 4(e): Civil Rights for Fish

This use of mandatory conditioning authority, and FERC's inability to constrain it, is illustrated to an extreme in a license in which USFS sought to enforce its own understanding of the Civil Rights Act of 1964. In a FERC relicensing proceeding for a project within a national forest, USFS imposed a condition under Section 4(e) to prohibit a broad range of discriminatory employment and service practices already illegal under Title VI and VII of the Civil Rights Act of 1964. FERC included the condition but noted that both (1) this condition bore no relationship to protecting a national forest, and (2) the Commission did not have the authority to decline the condition while issuing the license.

While this is an extreme anecdote, it highlights FERC's inability to hold back conditions with which it disagrees.

The Real Costs of a Broken Process

In short, the true cost of this broken process is that we are facing a wave of potential hydropower license surrenders in the next few years, just as electricity production needs to be growing, not shrinking. Hydropower licensees are required to notify FERC five to 5.5 years before the end of their license whether they intend to seek relicense. As shown in Figure 6 below, a significant number of licensees must begin notifying FERC soon if they intend to seek relicense.

In one in eight license surrenders, the cost of relicensing or mandated measures is explicitly cited. Another one-third cite economics generally. Given the important distinctions in reasons why licensees choose to surrender a valuable hydropower license, NHA has engaged in a consulting project to understand more granularly how these decisions are made and what specific factors are paramount. We expect to publish the results of our initial analysis by early 2027.

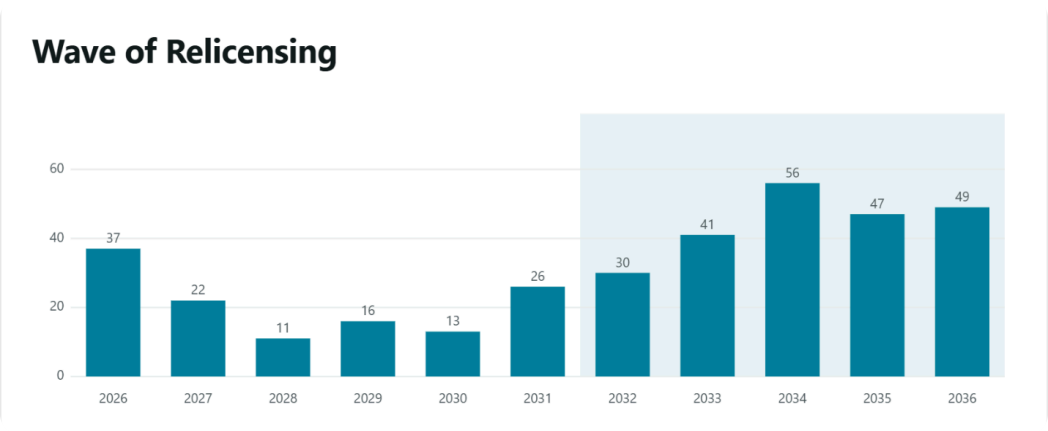


Figure 6

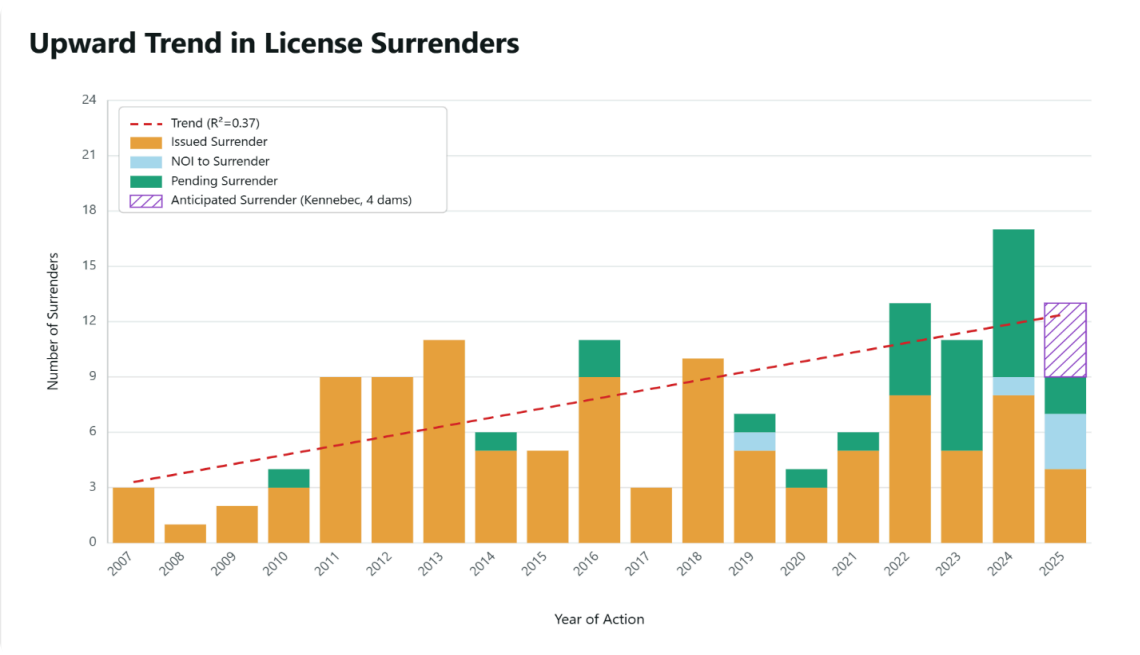


Figure 7

We're Losing Small Hydropower

Licensing carries a somewhat fixed overhead. In NHA's analysis, the number of conditions in a license barely scales with the size of the project. Per megawatt, that fixed workload lands roughly an order of magnitude heavier on small projects.

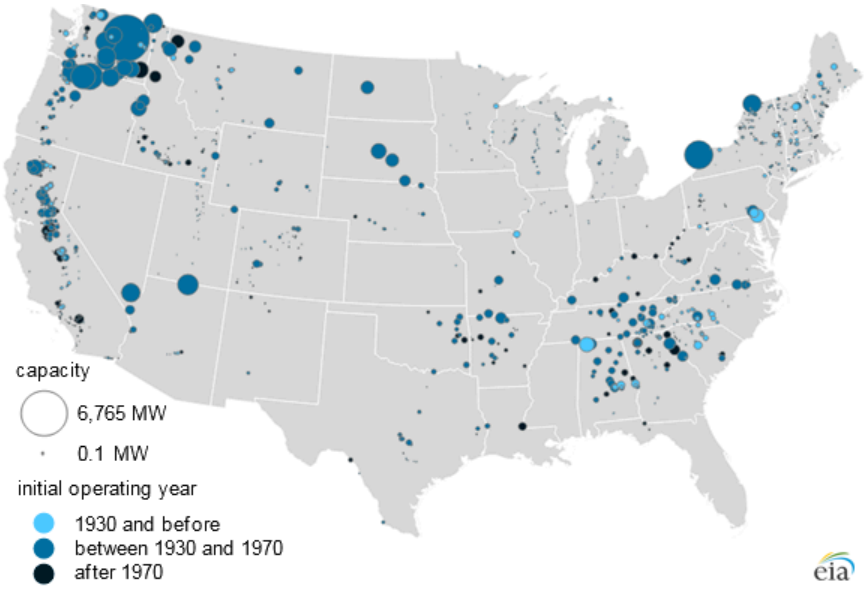
The conditions themselves illustrate the burden. Sub-megawatt plants like Beaver City in Utah, at 0.3 MW, and Campton in New Hampshire, at 0.6 MW, are required to meet many of the same license conditions of projects many times their size. Obligations a large facility may be able to absorb can be, for smaller facilities, the difference between relicensing or surrendering the project.

This is where an immeasurable cost ends up costing the public something highly consequential – namely, clean, baseload, and dispatchable power.

The trend is predictable and now documented: smaller hydropower projects are surrendering their licenses and giving up generation (and usually myriad other community flood control, recreation, water supply, and other benefits), just as grid operators are scrambling to keep up with unprecedented demand. Like the smaller nuclear plants that were the canaries in the coal mine 15 years ago, this trend rightly alarms those focused on grid reliability.

Our analysis confirms a common-sense assumption that license surrender is overwhelmingly a small plant phenomenon. Across 305 completed outcomes in the ORNL relicensing and surrender record, comprising 112 surrenders and 193 relicenses, each tenfold increase in capacity cuts the odds of surrender by roughly 78 percent.

The economics of decommissioned plants readily explain why. The median plant whose operator surrendered a license generated about 2,100 MWh per year. At an illustrative $84,000 of annual revenue (at $40 per MWh), license conditions, any change in conditions – or conditions that cannot be priced – is a death knell.



Distribution of Conventional Hydroelectric Plants in the Lower 48 States. Source: EIA

How Do We Pair the Permit to the Project?

While the existing process is dysfunctional at many levels, there are several targeted solutions that would make a meaningful difference to maintaining current assets and setting the stage to grow hydropower resources in the U.S.

American Attention Is Rightly Focused on the Electric Grid

As the U.S. grapples with how to meet the demand of artificial intelligence, data centers, and economy-wide electrification, now is the time to unleash America's oldest reliable resource.

Resource agencies are, as this analysis confirms, affecting the operational certainty and economic viability of hydropower. This trend has been accelerating since the 1980s and is actively growing in current license proceedings.

However, after decades of flat net load growth, the confluence of artificial intelligence and economy-wide electrification has resulted in sharp upticks in electricity consumption and, far more dramatically, near-term demand projections. The time has never been better to grab the low-hanging fruit of reasonable policy reforms and real megawatts saved.

Congress is Considering Reforms

NHA asks that Congress clarify that a condition imposed under FPA Section 4(e) or Section 18 address the direct and present effect of a licensed project.

On June 18, 2026, Representative Cliff Bentz (OR-02) introduced H.R. 9337, the House version of HLAA. Shortly after, Senators Daines (MT), Risch (ID), and Murkowski (AK) introduced the Senate companion, S. 5048, on July 21, 2026. This straightforward bill proposes to limit Sections 4(e) and 18 mandatory conditioning to those conditions that are related to the "direct adverse effects" of the project. Thus, this simple fix would ensure that mandatory conditions are responsive to actual, identified adverse effects of the project—and not overburdened with superfluous conditions that often burden a project with overreaching, unnecessary, and costly requirements.

Opportunities for Action Today

Executive Order 14154, *Unleashing American Energy*, identifies hydropower by name as a priority resource, directs all agency heads to review any agency actions that "impose an undue burden on the identification, development, or use of domestic energy resources," and demands that agencies "prioritize efficiency and certainty over any other objectives" in the permitting process. That directive aims at the heart of the mandatory conditioning problem: when resource agencies impose conditions on hydropower licenses that bear little-to-no connection to the projects at issue, the result can become an insurmountable burden of higher energy costs for consumers, delayed investment in critical infrastructure, and a broken regulatory process that prevents the energy development that national security and economic prosperity require. Executive Order 14154 was designed to begin to address this burden, and NHA applauds this first step.

NHA further encourages the President to issue an Executive Order directing the Secretaries to immediately require conditions currently under consideration in current relicensing proceedings under Sections 4(e) and 18 be strictly limited to mitigating direct effects of the licensed project itself, and then to promulgate regulations to codify that standard for all projects in the future. This two-pronged approach would have a meaningful and immediate impact on reducing cost burden on generators and preserving and protecting existing hydropower. An Executive Order would bring measurable regulatory certainty to projects currently undergoing relicensing (see The Real Costs of a Broken Process, above) and provide much-needed long-term certainty for the industry.

To be truly meaningful to such a long-lived resource, these changes must be incorporated into notice and comment rulemaking from all conditioning agencies (Agriculture, Commerce, and the Interior). Even in advance of an Executive Order, NHA strongly urges the Secretaries to initiate notice and comment rulemakings to ensure that mandatory conditions are directly related to the impacts of a project, in line with statutory plain language of the FPA, as well as including a definition of "fishway" in line with Congress's directive from the Energy Policy Act of 1992.

What's Next?

In an increasingly electrified and global economy, maintaining reliable, affordable, and resilient electricity for all Americans has never been more important. Hydropower already delivers on that mission: it provides more than a third of the nation's blackstart capacity, some of the grid's most affordable power, and over 100 GW of flexible, always-available generation, precisely as demand from artificial intelligence and economy-wide electrification climbs faster than it has in decades. The only open question is whether a broken licensing process built for a different century's priorities will be allowed to keep taxing that resource until more of it disappears – and new is never built.

The Secretaries of Agriculture, Commerce, and the Interior can act immediately by requiring their staffs to impose only mandatory conditions under FPA Sections 4(e) and 18 that mitigate a project's direct and present effects, and by following that clarification with durable notice-and-comment rulemaking stating the same. Congress can make this standard permanent by passing the Hydropower Licensing Affordability Act (H.R. 9337, S. 5048). Neither path depends on the other, and both are straightforward tasks policymakers can begin right now.

With the policy certainty these regulatory and legislative fixes would provide, all Americans would retain the affordable, reliable hydropower generation now at risk of surrender, and plan the new hydropower and pumped storage capacity the country will need to meet the demand growth ahead.

Endnotes

1 Hydropower is included in E.O. 14156, Declaring a National Energy Emergency, and E.O. 14213, Establishing the National Energy Dominance Council.

2 U.S. Energy Information Administration, After More Than a Decade of Little Change, U.S. Electricity Consumption Is Rising Again, Today in Energy (2026), https://www.eia.gov/todayinenergy/detail.php?id=65264.

3 North American Electric Reliability Corporation, 2026 Long-Term Reliability Assessment (Jan. 2026), https://www.nerc.com/globalassets/our-work/assessments/nerc_ltra_2025.pdf.

4 Apagão: REN demorou dois minutos a pedir "black start" para Castelo de Bode, Jornal de Negócios (Apr. 2025), https://www.jornaldenegocios.pt/empresas/energia/detalhe/apagao-ren-demorou-dois-minutos-a-pedir-black-start-para-castelo-de-bode.

5 International Hydropower Association, Unlocking the Value of Hydro Pumped Storage After the Iberian Blackout (2025), https://www.hydropower.org/blog/unlocking-the-value-of-hydro-pumped-storage-after-the-iberian-blackout.

6 Jose R. Gracia et al., Hydropower Plants as Black Start Resources: A Technical Overview, U.S. Department of Energy / Oak Ridge National Laboratory (May 2019), https://www.energy.gov/sites/prod/files/2019/05/f62/Hydro-Black-Start_May2019.pdf.

7 Full analysis available at https://hydro.org/affordable-power-broken-process/.