Written Testimony of

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On behalf of

The National Hydropower Association

Before the

House Energy and Commerce Committee
Subcommittee on Energy

Hearing on Legislation Addressing Pipeline and Hydropower Infrastructure Modernization

May 3, 2017

Executive Summary

1. In the last several years, hydropower has provided approximately 6 percent of all U.S. electricity generation and nearly half of renewable generation. By 2030, approximately 400 projects representing 18,000 MW of capacity of the existing system will be up for relicensing.
2. Hydropower has significant untapped growth potential, particularly at existing infrastructure and with low impact projects, such as capacity additions at current hydropower facilities, adding generation to non-powered dams, and closed-loop pumped storage, among others. The Department of Energy's recent Hydropower Vision Report estimates that close to 50 GW of new capacity is available by 2050, with the right conditions and policy support in place.
3. New hydropower project development, as well as the relicensing of existing projects, faces a variety of obstacles, with one of the most challenging being the complex, time consuming and costly regulatory process. NHA strongly supports policies to address regulatory inefficiencies and to improve coordination in the overall hydropower project approval process, which we believe can be done in ways that promote the hydropower resource while protecting environmental values.
4. Hydropower has a critical role to play in meeting our nation's energy, environment, and economic objectives. The benefits from this resource are many – low-cost, reliable, base load renewable electricity, along with additional ancillary grid services (load following, frequency response, energy storage, etc.).
5. As the Congress works to address our energy and infrastructure needs, whether through hydropower-specific legislation, a national infrastructure program, or an energy bill, policies that improve the regulatory environment and provide greater certainty and predictability must be included. A greater recognition that our hydropower infrastructure is incredibly valuable is needed, and continued investment and re-investment in the system is critical to our energy future and national security.

Introduction

Good morning Chairman Upton, Ranking Member Rush, and members of the Committee. I am Jeffrey Leahey, Deputy Executive Director of the National Hydropower Association (NHA). I am pleased to be here to discuss the importance of hydropower to the U.S. electric system, its untapped growth potential, the challenges that impede growth, and the discussion drafts and bills before the Subcommittee that aim to address these impediments.

As background, NHA is a nonprofit national association dedicated to promoting clean, affordable, renewable U.S. hydropower – from conventional hydropower to pumped storage to marine energy to conduit power projects. NHA represents more than 220 companies, from Fortune 500 corporations to family-owned small businesses. Our members include both public and investor-owned utilities, independent power producers, developers, equipment manufacturers and other service providers, and academic professionals.

U.S. Hydropower Statistics

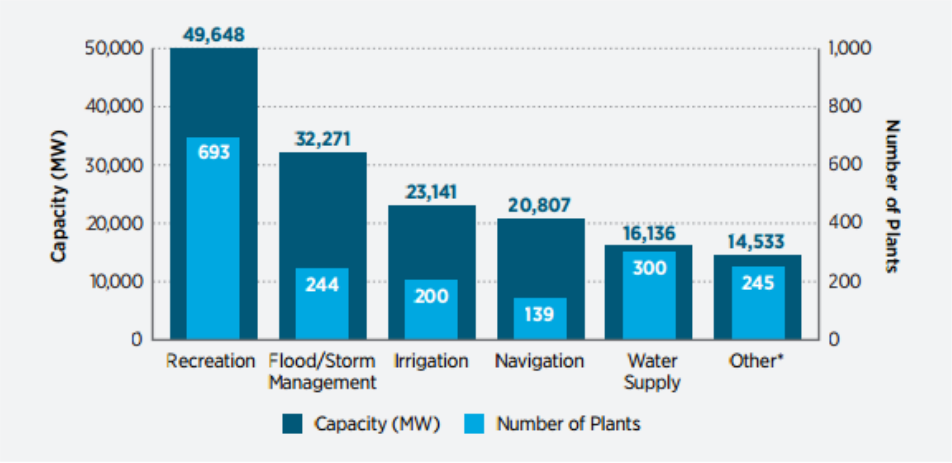
Currently, the U.S. conventional hydropower fleet is made up of almost **2200 individual plants** with a total capacity around **80 GW**. In the last two years, these plants provided approximately **6 percent** of all U.S. electricity generation and **almost half** of all renewable electricity generation – making hydropower the single largest provider of renewable electric power in our country. Looking over the long term, hydropower has supplied a cumulative 10 percent of U.S. electricity generation over the past 65 years (1950-2015), and 85 percent of cumulative renewable power generation over the same time period. [1]

[1]

In addition to the conventional hydropower system there are an additional **42 hydropower pumped storage plants** with approximately **22 GW** of capacity – projects that make-up almost all, **97 percent**, of energy storage in the U.S. today.[2]

Hydropower generation is a clean air resource and avoids millions of metric tons of carbon emissions each year. In fact, regions that rely on hydropower as a primary energy source (like the Northwest) reap the benefits of significantly cleaner air with some of the lowest carbon intensity rates in the country.

In addition to this clean and renewable energy, hydropower infrastructure provides other important benefits, including managing river flow for aquatic species and habitat protection, flood control and drought management, water supply, irrigation and more, as the chart below illustrates.[3]



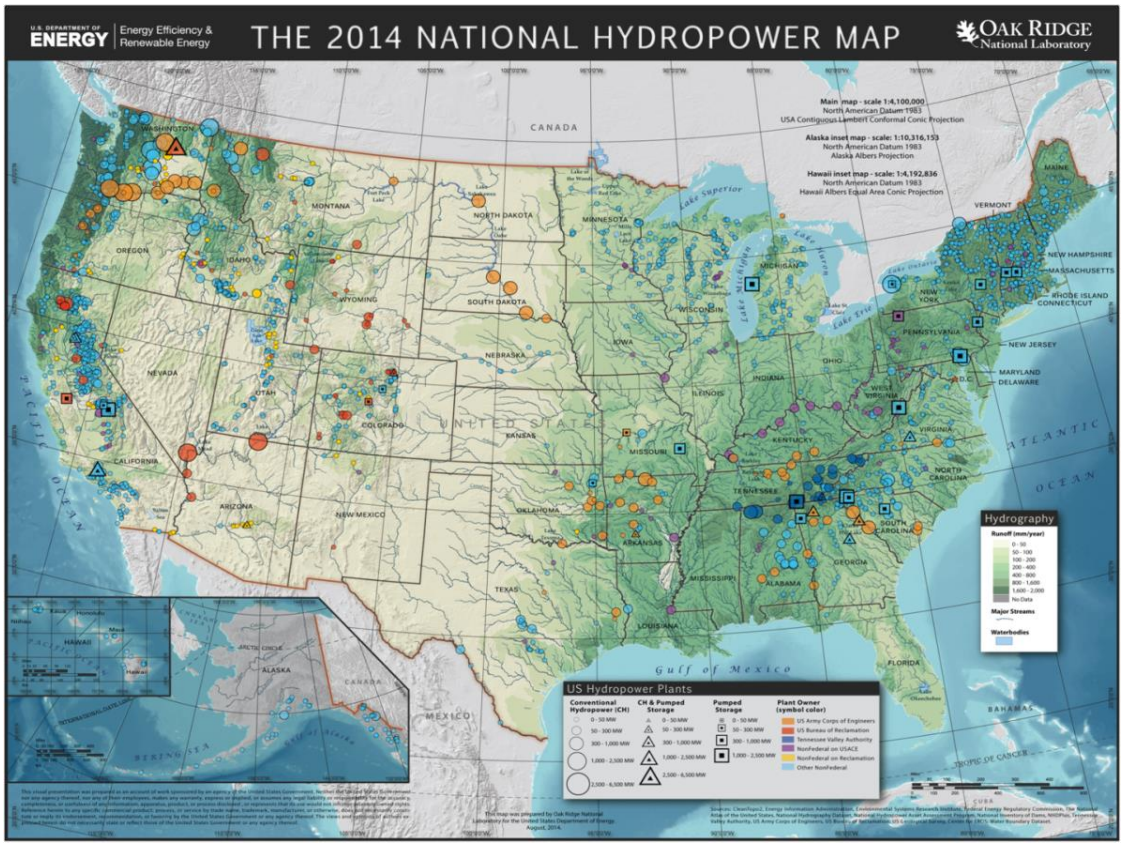
Note: The use categories are not mutually exclusive; a given dam can be included in more than one category. The data include only powered dams.
Source: Uría-Martínez et al. 2015 [2]

Figure 2-11. Total capacity and number of plants for six separate uses (illustrated by the blue bars) of existing hydropower dams and reservoirs

The next map below was developed by the Department of Energy (DOE) through Oak Ridge National Laboratory (ORNL) and provides a visual representation of the size and location of projects for both the federal and non-federal hydropower systems. Existing hydropower assets are located in all but

[2] 2016 Hydropower Vision Report, Department of Energy, Office of Energy Efficiency and Renewable Energy, Wind and Water Power Technologies Office, Executive Summary P. 9. https://energy.gov/sites/prod/files/2016/10/f33/Hydropower-Vision-Executive-Summary-10212016.pdf
[3] Hydropower Vision Report, Chapter 2, Page 83.

two states (Delaware and Mississippi), though every state receives the benefit of the clean renewable generation that these projects provide.



The contributions of the existing hydropower fleet to the electric grid are many (baseload power, peaking generation, load-following, energy storage, reliability and more). With the need for more of these benefits and services as the nation strives to become more energy independent, NHA has seen the hydropower industry grow and expand in recent years.

In fact, the United States experienced a net capacity increase of 1.4 GW[4] from 2005 to 2013, enough to power over half a million homes[5]. FERC has reported an additional 260 MW of capacity being placed in service since then, with even more projects in licensing or in the construction phase today. And

[4] 2014 Hydropower Market Report, Executive Summary P. VI.
[5] An Assessment of Energy Potential at Non-Powered Dams in the United States, Department of Energy, Office of Energy Efficiency and Renewable Energy, Wind and Water Power Technologies Office and Oak Ridge National Laboratory, April 2012, Executive Summary P.VII, Footnote 1. http://nhaap.ornl.gov/sites/default/files/NHAAP_NPD_FY11_Final_Report.pdf

this number could significantly increase with a modernized regulatory approval process that currently takes years longer than that of other renewable resources – in some cases licensing can take 10 years or longer.

In addition, hydropower projects bring multiple economic benefits to the communities in which they are located and those that they serve. To start, the industry itself currently employs a sizable workforce. 143,000 jobs are created just from the continued operation and maintenance, as well as upgrades, of the existing system, with additional employment opportunities gained in the pursuit of new project development and deployment.[6]

One recent example that demonstrates the jobs benefit is AMP Public Power Partners of Ohio. AMP is building 4 new hydropower projects on existing Corps of Engineers' dams on the Ohio River (3 are completed and 1 is still under construction). The company reports that approximately 1800 construction jobs were created over a 4 year construction window, with the operation of the projects providing an additional 50 permanent jobs. Another example is Missouri River Energy Service's Red Rock project on the Des Moines River near Pella, Iowa, currently under construction at a Corps of Engineers dam. The company estimates that 250 workers will be needed on site through 2017-2018.

On top of this, the access to low-cost, reliable clean power is attracting many companies to regions with hydropower. For example, major high-tech companies like Google, Facebook, and Yahoo require large, energy-intensive data centers to drive their businesses. Specifically, in September 2010, Yahoo opened a new facility in Lockport, New York to utilize hydropower provided by the New York Power Authority. And again, in 2013, New York officials cited the importance of low-cost hydropower in Yahoo's decision to expand the Lockport facility.[7]

[6] Vision Chapter 2, Page 203-204. https://energy.gov/sites/prod/files/2016/10/f33/Hydropower-Vision-Chapter-2-10212016.pdf
[7] http://www.nypa.gov/Press/2013/130322.pdf

Another example of hydropower supporting economic development and new job creation partnerships is BMW. Access to low-cost and reliable hydropower along with other renewables lured the company to Moses Lake, Washington. Breaking ground on its $200 million manufacturing facility in July 2010, the plant, a joint venture with SGL Automotive Carbon Fibers, was built to supply parts for BMW's line of high performance cars. In fact, the company in 2014 announced it would fund a $100 million expansion of the facility – again citing access to affordable hydropower along with other renewables.[8]

Growth Potential

One of the largest misconceptions of the hydropower industry is that any growth potential is "tapped out". In its new report issued in 2016 titled, Hydropower Vision: A New Chapter for America's 1st Renewable Electricity Resource, the Department of Energy smashes that myth. The Vision analysis finds that U.S. hydropower could grow to nearly **150 GW by 2050**. This would represent close to a **50 percent** increase in capacity.

The report identifies opportunities for **13 GW** of new hydropower capacity by adding generating facilities to existing non-powered dams and canals, upgrades to existing hydropower facilities, and limited development of new stream reaches. It also finds the potential to add up to **36 GW** of new pumped storage capacity.

Looking to the benefits of this potential, the report finds $148 billion in cumulative economic investment. $58 billion in savings in avoided mortality, morbidity and economic damages from air pollution. Cumulative 30 trillion gallons of water withdrawals avoided for the electric power sector. 5,600,000,000 metric tons of CO_2 emissions reductions with $209 billion in avoided global damages. And over 195,000 hydropower-related gross jobs spread across the nation in 2050.[9] These are quite substantial benefits for our country. A brief analysis of the growth opportunities follows below.

[8] http://www.seattletimes.com/business/bmw-plans-big-expansion-of-moses-lake-carbon-fiber-plant/
[9] Hydropower Vision, Executive Summary P. 7 and 23.

Adding Generation to Non-powered Dams

One of the prime areas of growth in the hydropower industry is on existing infrastructure, such as non-powered dams and conduits. Of the approximately 80,000 dams in the U.S. today only **3 percent** have electric generating facilities. Put another way, **97 percent** of our dams do not produce power and were built for other purposes such as water supply, flood control, irrigation, navigation and recreation.

NHA recognizes that not every existing dam may be a suitable candidate to add power generating equipment, as many factors come into play in development decisions: project development costs and revenue opportunities; energy generation potential; natural resource considerations; transmission needs; dam safety; etc. However, this statistic shows the large untapped universe of potential opportunities – and that are not being developed in significant part because of the concerns about the uncertain, duplicative and lengthy regulatory process.

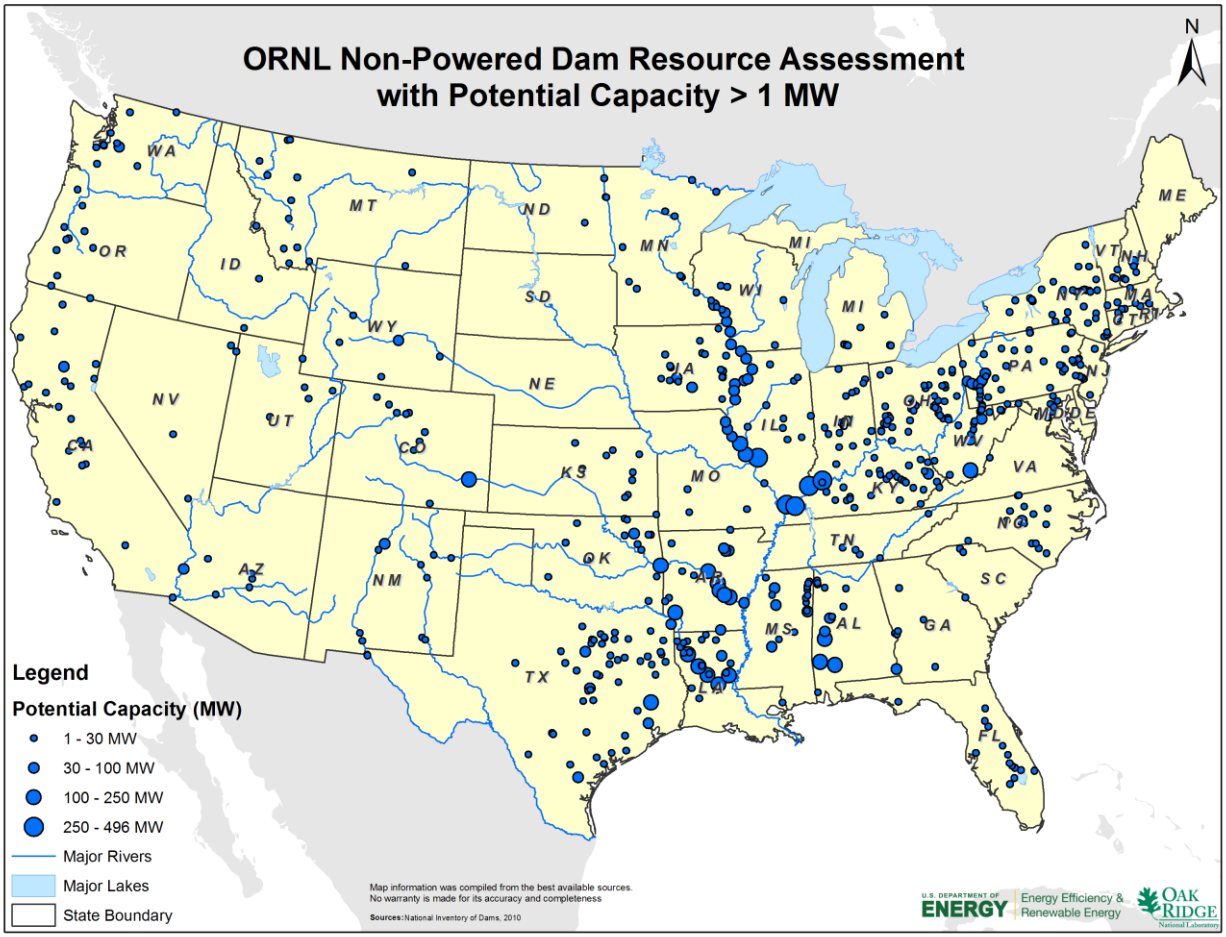
Those dams that are prime candidates for hydropower development are infrastructure that will continue to exist, operate and release flows for the other purposes for which they were originally constructed – regardless of whether hydropower facilities are installed. It is good public policy to take advantage of these existing releases to capture the energy currently untapped at these sites to add to our portfolio of renewable, carbon-free resources.

The U.S. Department of Energy recognized this opportunity and in 2012, through the Oak Ridge National Laboratory, released an assessment of potential capacity at non-powered dams for projects greater than 1MW. The map below on the following page depicts the size and location of the top projects of that survey with capacity greater than 1 MW.[10]

It is noteworthy that many of these opportunities are located in parts of the country that some may consider unexpected, such as the Southeast and Rust Belt states. These are parts of the country for which

[10] http://www.energy.gov/eere/water/hydropower-resource-assessment-and-characterization

conventional wisdom says there are not as great renewable energy and for which local economic development opportunities are needed and being sought.



The results of the study show that over **12 GW** of potential exist across the existing system with **8 GW** of potential available at the top 100 sites.[11] Also of interest, **81 of the top 100** sites were located on federal facilities, in particular, Army Corps of Engineers dams.[12]

These types of projects are some of the lowest impact new developments in the energy sector. No new dams need to be built and the projects aim to utilize existing flows through the projects. This water is already moving through the system, what better way to maximize the benefits of this infrastructure by also generating clean, renewable power with them.

[11] 2012 Non-Powered Dams Report, Executive Summary P.VII and VIII.
[12] 2012 Non-Powered Dams Report, Executive Summary P.VIII.

Capacity Additions/Efficiency Improvements at Existing Hydropower Infrastructure

The potential for new hydropower generation is not only about adding new capacity at non-powered dams. Existing facilities are also expanding through upgrades and efficiency improvements. In fact, since EPAct of 2005 and the inclusion of hydropower as an eligible technology in the production tax credit (PTC), over **150 projects** have received certification. These projects have seen, on average, about a **9 percent** gain in generation.[13] These 150 projects represent a small fraction of the hydropower fleet, so there are even further gains to be had if more projects undertake these kinds of power infrastructure upgrades.

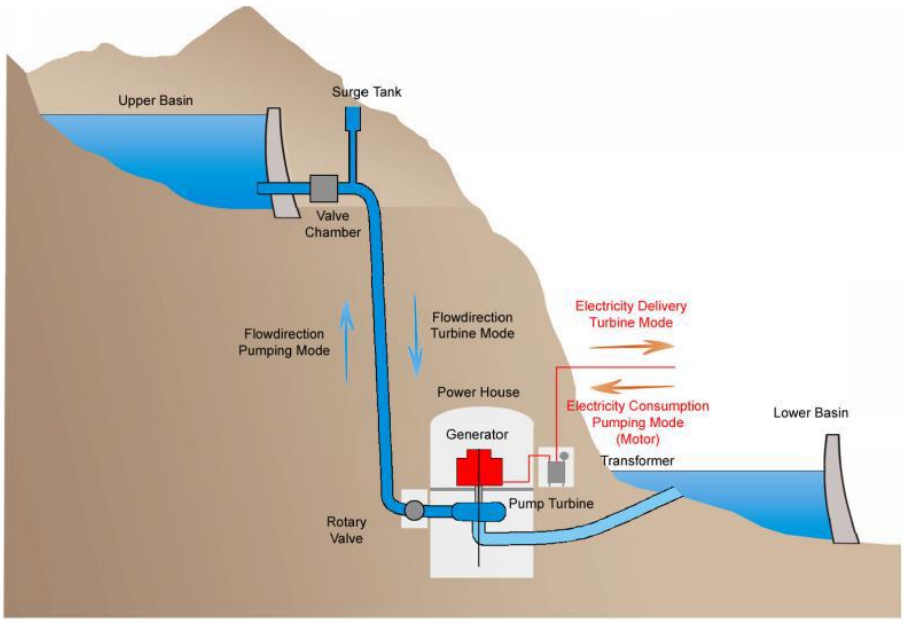
And in many instances with these upgrades, the project realizes not only an increase in capacity or generation, but also an increase in environmental performance. The Wanapum Dam Turbine Replacement Project by Grant County Public Utility District in the state of Washington illustrates this. The project includes replacing the original turbines and replacing or refurbishing generating equipment at the dam. The advanced equipment is designed to be 3 percent more efficient. It will also reduce wear on the equipment and improve passage of juvenile salmon.[14]

NHA also notes from an infrastructure perspective that there is tremendous opportunity for re-investment in the federal hydropower system. Almost half of the U.S. hydropower generation comes from the federal system, with the bulk owned and operated by the U.S. Army Corps of Engineers, the Bureau of Reclamation and the Tennessee Valley Authority. The median age for federal hydropower projects is 50 years.[15] Turbine and other equipment refurbishments (including repairs, replacements and upgrades) are available and can improve the project performance from both an energy and environmental perspective.

[13] Federal Energy Regulatory Commission data.
[14] http://www.grantpud.org/your-pud/projects/wanapum-dam-turbine-and-generator-replacement-project
[15] Hydropower Vision, Chapter 2, Page 147.

Hydropower Pumped Storage

Pumped storage is a modified use of conventional hydropower technology to store and manage electricity. As shown below, pumped storage projects store potential electricity by circulating water between an upper and lower reservoir.[16] Electric energy is converted to potential energy and stored in the form of water at an upper elevation. Pumping the water uphill for temporary storage "recharges the water battery" and, during periods of high electricity demand, the stored water is released back through the turbines and converted back to electricity like a conventional hydropower station. See illustration below.



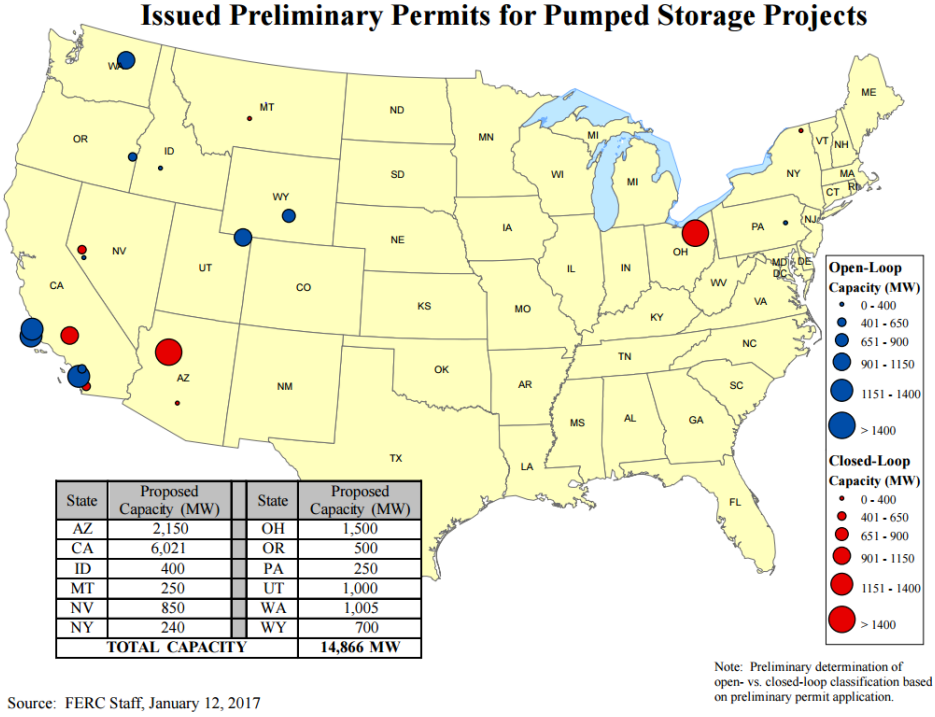
Pumped storage projects able to rapidly shift, store, and reuse energy generated until there is the corresponding system demand and for variable energy integration. This energy shifting can alleviate transmission congestion, which helps more efficiently manage the electric grid, and can reduce the need for costly new transmission projects, as well as to avoid potential interruptions to energy supply.

As more intermittent generation is added to the grid, particularly in the West, the need for the services that pumped storage provides is increasing. As a result, we are seeing a significant renewed interest in these projects, including closed-loop project proposals, which are the subject of one of the draft

[16] Illustration provided by GE Renewable Energy.

bills for this hearing today.[17] As the map below shows, there are currently close to **15,000 MW** of proposed new pumped storage projects before FERC with preliminary permits right now.

Issued Preliminary Permits for Pumped Storage Projects



State	Proposed Capacity (MW)	State	Proposed Capacity (MW)
AZ	2,150	OH	1,500
CA	6,021	OR	500
ID	400	PA	250
MT	250	UT	1,000
NV	850	WA	1,005
NY	240	WY	700
TOTAL CAPACITY			**14,866 MW**

Source: FERC Staff, January 12, 2017

Note: Preliminary determination of open- vs. closed-loop classification based on preliminary permit application.

Again, NHA recognizes that not all of these projects may be developed, however, they clearly rebut the proposition that hydropower is a "tapped out" resource.

Conduits

Conduit projects utilize existing tunnels, canals, pipelines, aqueducts and other manmade structures that move water. These are fitted with electric generating equipment and are often small projects able to extract power from the water without the need for additional infrastructure or a reservoir.

One of the prime opportunities in this sector is at Bureau of Reclamation infrastructure. In a recent study, Reclamation identified 373 potential sites with a capacity of 103 MW, enough to power 33,000

[17] Closed loop pumped storage projects are physically separated from existing river systems. They present minimal to no impact to existing river systems because after the initial filling of the reservoirs, the only additional water requirement is minimal operational make-up water required to offset evaporation or seepage losses.

homes.[18] In addition, as a result of the expedited review of non-federal conduit projects under the Hydropower Regulatory Efficiency Act of 2013, the Federal Energy Regulatory Commission (FERC) has approved dozens of small conduit projects across the country.[19][20]

Also, in 2013, legislation was passed focusing on similar small conduit development at Bureau of Reclamation infrastructure and changes to its lease of power privilege (LOPP) program. Reclamation continues to see increased interest in these project opportunities as well.[21]

New Stream-Reach Development

Lastly, the DOE has also recently conducted a study of potential new greenfield projects. The assessment concluded that the technical resource potential is 85 GW of capacity. When federally protected lands—national parks, national wild and scenic rivers, and wilderness areas—are excluded, the potential is about 65 GW of capacity.[22] Not all of these new hydropower opportunities are likely to move forward once site-specific considerations are taken into account. Site selection will be an important factor.

[18] Site Inventory and Hydropower Energy Assessment of Reclamation Owned Conduits (Final Report - March 2012). https://www.usbr.gov/power/CanalReport/
[19] https://www.ferc.gov/industries/hydropower/indus-act/efficiency-act/qua-conduit.asp
[20] Picture of Natel Energy, Monroe Hydro Project, a 250 kw hydroelectric plant located in an irrigation canal, in partnership with Apple.
[21] https://www.usbr.gov/power/LOPP/index.html
[22] http://www.energy.gov/eere/water/downloads/new-stream-reach-hydropower-development-fact-sheet

Additionally, the industry and the DOE are investigating innovative new technologies and operational regimes to see where some of this potential can be realized, while also minimizing potential impact.

Challenges in the Hydropower Federal Licensing Regime and Impacts on Applicants

Hydropower has the longest, most complex development timeline (for existing project relicensing or new project approvals) of any of the renewable energy technologies, with some projects taking **10 years or longer** from the start of the licensing process through construction to being placed-in-service.

NHA is appreciative of the work this Committee has conducted over the past several years to examine the problems experienced by industry regarding the federal hydropower licensing process. An extensive record has been developed on these issues. Since 2012, the Committee has held multiple hearings and received testimony from project owners and developers across the sector from all across the country. These include:

- Andrew Munro, Grant County Public Utility District (WA), on May 9, 2012. *The American Energy Initiative: Hearing on the Hydropower Regulatory Efficiency Act of 2012*.
- Kurt Johnson, Colorado Small Hydropower Association (CO), also on the May 9, 2012 hearing.
- Marc Gerken, AMP Public Power Partners (OH), on March 6, 2013. *Hearing on American Energy Security and Innovation: The Role of a Diverse Electricity Generation Portfolio*
- Randal Livingston, Pacific Gas and Electric Company (CA), on May 13, 2015. *Hearing on Discussion Drafts Addressing Hydropower Regulatory Modernization and FERC Process Coordination under the Natural Gas Act.*
- John Suloway, NHA Past President, also on the May 13, 2015 hearing.
- Jeffrey Leahey, NHA, on February 2, 2016. *Hearing on Eight Energy Infrastructure Bills – Hydropower Extension of Commence Construction Deadlines*
- Ramya Swaminathan, Rye Development (MA), on March 15, 2017. *Hearing on Modernizing Energy Infrastructure: Challenges and Opportunities to Expanding Hydropower Generation.*

This record is supplemented by additional substantive hearings on the challenges and opportunities to modernize the hydropower licensing process held in the House Committee on Natural Resources and by those in the Senate Committee on Energy and Natural Resources.

Throughout these hearings, the message has been consistent. The federal hydropower licensing process contains many challenges – it takes years to complete, requires substantial upfront costs, and contains too much uncertainty and risk – all of which, as a developer, creates a significant barrier to securing capital, or, as a utility, is difficult to justify project economics and receive internal approvals. As Ramya Swaminathan testified in March of this year,

> "Private investors in the power generation space find the length and complexity of hydropower's timeline difficult to manage. As a result, hydropower development becomes expensive due to compounding of interest costs over long periods coupled with the unclear risk profile. When faced with these factors, many investors choose to invest in other forms of generation with far shorter timelines and clearer risk assessments."

This was echoed by Randal Livingston in his testimony in 2015,

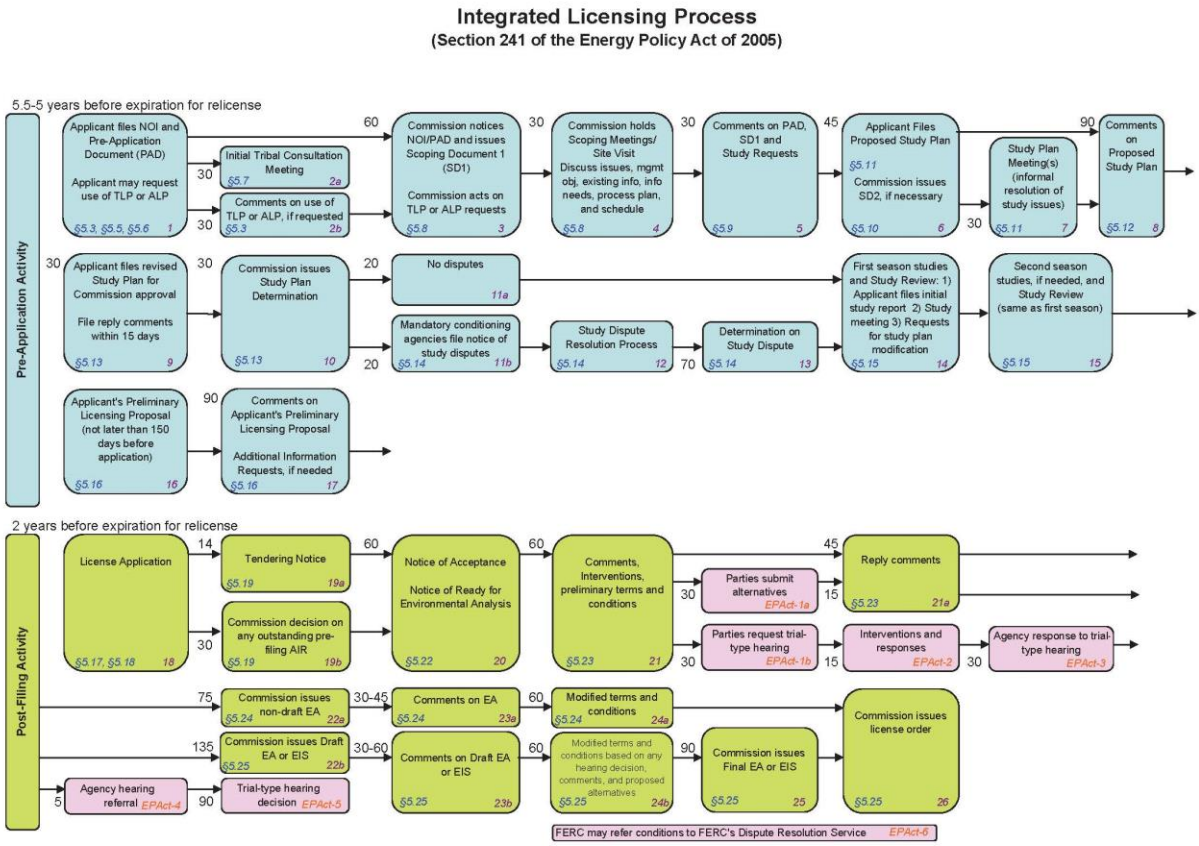
> "…the process to relicense existing hydroelectric projects requires extensive consultation with multiple State and federal agencies, consistently takes at least seven years, and frequently lasts more than ten years.
>
> Meanwhile, the cost to PG&E customers to obtain a license renewal has routinely exceeded $20 million per license, and some current proceedings will exceed $15 million. When, and if, a license is approved and received, implementing the conditions of the license also routinely costs tens-of-millions of additional dollars.
>
> …the cost and duration associated with licensing is typically far greater than any other established electric generation technology."

The Department of Energy itself has recognized the problem noting in the Hydropower Vision Report that

> "[n]avigating the complex system of federal and state regulations to secure project approvals creates hurdles for renewable energy developers. Uncertainty regarding the duration and outcome of the permitting process can be a deterrent for investment in clean energy and can delay construction of renewable energy and related transmission projects."[23]

The chart below outlines the integrated licensing process or ILP, the default process, of several, for authorizing hydropower projects.

[23] DOE Hydropower Vision Report p. 53.



*Section 241 of the Energy Policy Act of 2005 in pink.

A multitude of federal and state agencies, as well as the public and other stakeholders, play a major and important role in the process. And in the chart above, additional authorizations such as those required by federal dam owners if building on their infrastructure, are not included. These decisions and authorizations have tended to come at the end of the timeline after the FERC issuance of the license.

The following is a list by FERC of the pertinent federal laws related to non-federal hydropower project development. They include:

- Federal Power Act (FPA)
- Rivers and Harbors Act of 1899
- U.S. Bureau of Reclamation Statutes
- National Environmental Policy Act (NEPA)
- Clean Water Act (CWA)
- Endangered Species Act (ESA)
- Fish and Wildlife Coordination Act

- National Historic Preservation Act
- Coastal Zone Management Act
- Magnuson-Stevens Fisheries Conservation Act
- Marine Mammal Protection Act
- Wild and Scenic Rivers Act
- Pacific Northwest Power Planning and Conservation Act

This does not include other state or local statutes or permits that may also be required in the course of developing a project. Water is a public resource and NHA and the industry recognize the necessity for, and value of, thorough review of project applications. However, redundancies and sequential reviews contained in the overall process are key reasons for delays.

For example, for projects adding generating facilities to non-powered federal dams, FERC may issue a license, yet that project cannot commence construction until it has received additional approvals from the federal owner of the dam (Corps of Engineers or Bureau of Reclamation). If there are unanticipated delays for those additional needed approvals, no work can commence.

Marc Gerken's experience in this area proves illustrative. In his 2013 testimony he stated,

> "The regulatory process plays a critical role in a project schedule and ultimately can drive whether or not a project comes to fruition.
>
> A developer must have significant capital (millions of dollars in many cases) to cover the cost of the hydropower project through permitting, including: design, subsurface core drilling, hydraulic model studies, design and initial payments for equipment with long lead times. Long-term financing is unlikely until a developer has all the required permits in hand, which can drive when you can access the market and the cost of money."

This statement proved prophetic as AMP now reports that the delays on their Willow Island hydropower project (adding generation to a Corps of Engineers dam) due to the permitting process had a substantial dollar impact on the project. The delays affected when the company could go out to the market for its bonds for financing, costing it approximately 2 basis points.

It is a similar case for state issuances of CWA Section 401 water quality certifications and biological opinions under the ESA. A license cannot be issued, nor work commenced, until these approvals are issued. Herbie Johnson, the current President of NHA, will testify later today before the House Natural Resources Committee, Subcommittee on Water, Power and Oceans. In his testimony, he will highlight an example from a recent Duke Energy relicensing, where the company experienced delays in both the CWA and ESA authorizations they sought as part of their relicensing. The following cites the company's experience with the ESA for one of their projects,

> "Delayed biological opinions under Section 7 of the Endangered Species Act also greatly extends relicensing time. Biological opinions are required by regulation to be completed in 165 days; however they routinely take years to prepare (e.g., the Sturgeon Biological Opinion for Duke Energy's Catawba-Wateree Hydro Project took four years to develop.)"

At the same hearing later today, David Montagne, Executive Vice President and General Manager of the Sabine River Authority of Texas, will testify to the costs associated with the recent relicensing of the Toledo Bend project stating,

> "…costs will increase the Project's total operating costs by more than $7 million each year over a 50-year license term. These relicensing costs substantially increase the Project's total operating costs by nearly 44% annually…"

Reviewing FERC data on current relicensings, NHA is aware of close to 3 dozen projects where the Commission has completed its NEPA analysis, but for which another agency approval is delayed (e.g. Clean Water Act Section 401 certification by the state; Endangered Species Act biological opinion by Fish & Wildlife Service or National Marine Fisheries Service). In some of these cases, the delay on the needed approval is years overdue - a handful still waiting for a decision after 10 years.

This result not only negatively impacts the license applicant through increased costs and uncertainty, but it also postpones the implementation of environmental, natural resource and other

mitigation and improvement measures that are included as part of the final license, which is a no-win scenario for the industry and the environment.

NHA believes the time, cost and risks associated with licensing hydropower projects are not commensurate with the impacts, particularly when compared with other forms of generation – conventional or renewable. As former NHA President John Suloway testified in 2015, because of this, when faced with the choice of what type of generation to install, there is less risk in choosing a simple cycle turbine or a combined cycle plant that burns natural gas or low-sulfur oil, than building a hydropower plant.

And this is not just an issue for new project deployment, but also for existing projects that are undergoing relicensing. In fact, by 2030, **approximately 400 projects**, representing **18,000 MW** of capacity, will be in or have gone through relicensing. NHA has already begun to hear from owners of smaller projects, particularly in the Northeast, but across the country, that the process costs for licensing may render projects uneconomic and result in the surrender of licenses. As states continue to press for more clean and renewable energy resources, it would be unfortunate to lose the many benefits these existing hydropower projects provide.

NHA believes that Congress and the Administration should seek to reduce uncertainties in the hydropower licensing and relicensing processes, eliminate unnecessary and/or duplicative studies or other requirements, create discipline in the schedule, and reduce the time for obtaining federal and state approvals. In doing so, policymakers would be recognizing the value of hydropower as a critical component in the nation's energy supply portfolio. In addition, NHA believes process improvements can maintain the substantive ability of federal and state regulators to appropriately protect, mitigate and enhance natural resources.

Comments on the Hydropower Discussion Drafts

NHA strongly supports policies to address regulatory inefficiencies and to improve coordination in the overall hydropower project approval process, which we believe can be done in ways that promote the hydropower resource while protecting environmental values. Today's hearing on the 8 hydropower discussion drafts and introduced bills is important as it initiates a focused dialogue on both the problems with the federal hydropower licensing process and advances consensus, common-sense solutions. My testimony will touch on both the discussion drafts and the bills to extend the deadlines for the commencement of construction of the individual projects:

- Hydropower Policy Modernization Act of 2017
- Promoting Hydropower Development at Existing Non-Powered Dams Act
- Promoting Closed-Loop Pumped Storage Hydropower Act
- Promoting Small Conduit Hydropower Facilities Act of 2017
- Supporting Home Owner Rights Enforcement Act
- H.R. 446, H.R. 447, and H.R. 2122, To extend the deadline for commencement of construction of a hydroelectric project

Hydropower Policy Modernization Act of 2017

To begin, the Hydropower Policy Modernization Act incorporates a series of bipartisan proposals that were included in either House or Senate legislation in the 114th Congress. It is a crucial first step to address the barriers to developing our nation's untapped hydropower potential, particularly with proposed improvements to the licensing and administration of the nation's non-federal hydropower resources, both existing projects and new development.

My comments will focus on some of the key regulatory improvement provisions that NHA believes are needed as part of any hydropower licensing bill. For example, the discussion draft empowers FERC as the lead agency to coordinate the schedule for all of the federal authorizations required as part of the hydropower licensing process. FERC is also required to consult with other agencies and the other agencies are required to coordinate with the Commission. The draft also seeks to facilitate concurrent

decision-making amongst all agencies and calls for early identification of issues that could impact the schedule, while also elevating disputes to the Secretary level in order to reach resolution.

As discussed earlier, the main cause for uncertainty and delay in the federal licensing process is the lack of adherence to, and predictability with, the schedule. All of the aforementioned provisions should result in a process that increases coordination, transparency and accountability, and eliminates delays.

NHA also commends the provisions on study improvements, requiring the compilation and increased accessibility of studies and data, as well as encouraging the greater use of existing applicable information. Having to replicate information for multiple agencies on the same issue can significantly increase costs due to the unnecessary duplication of work and effort, and cause delays, particularly if certain studies are dependent on the time of year for their execution.

NHA also supports the license amendment improvements. This new expedited process would unlock the industry's ability to proceed with project upgrades. The qualified upgrades would include capacity additions and efficiency improvements, but also environmental enhancements, and improvements to public recreation. As discussed above, these are a tremendous growth opportunity for the industry and represent opportunities for a win-win result for both power production and the environment.

At this time, NHA would also like to point out areas of needed improvement in the discussion draft. For example, the language appears to rescind important existing provisions under the law that were adopted in EPAct of 2005. The first of these is the current legal requirement under Section 33 of the Federal Power Act directing mandatory conditioning agencies to give "equal consideration" to developmental and non-developmental values when crafting their mandatory conditions. Prior to EPAct of 2005, only FERC was required to provide such "equal consideration" in its review of license applications. The adoption of the provision for the resource agencies then ensured all of the government

participants in the licensing process were subject to the same standard. By proposing to strike subsections (a)(4) and (b)(4) Of Section 33, the discussion draft bill would eliminate a necessary improvement to the hydropower licensing process. NHA requests that the "equal consideration" requirement be added to the bill when introduced.

The second way in which the discussion draft appears to eliminate important advances gained in EPAct 2005 concerns the trial-type hearings on critical factual disputes regarding agencies' mandatory conditioning authorities. While NHA supports the discussion draft bill's provision that would move all of these hearings to administrative law judges at FERC, the legislative text that makes this change drops a critical aspect of these hearings: the opportunity for discovery and cross-examination of witnesses. These foundational components of any fact-finding hearing were included in EPAct 2005 and are required under existing law under FPA sections 4(e) and 18. These requirements were omitted in the discussion draft bill when creating the proposed new Section 35 of the FPA. NHA requests that the bill, when introduced, add these pivotal provisions back to the legislative text to avoid losing a fundamental improvement, which would otherwise undercut the effectiveness and purpose of the trial-type hearings.

These existing requirements received bipartisan support when adopted, and were also backed by the industry and stakeholders alike. As such, we believe they must be retained and the discussion draft amended to do so. NHA also notes that for some other provisions in the draft (e.g. license terms and credit for early action) that continued dialogue on the issue has resulted in new language that provides further clarity and direction that should be adopted into the draft bill.

Finally, NHA believes the dissemination of the discussion drafts creates an opportunity for further engagement and renewed dialogue on issues that were not included in the draft (e.g. the use of final conditions or other federal authorizations to circumvent the trial-type hearing and alternative conditions processes). We look forward to continued conversation with the Subcommittee and other stakeholders to

further examine issues that have been raised in the past and documented in the record, but for which provisions have not been advanced.

Promoting Hydropower Development at Existing Non-Powered Dams Act

As discussed earlier, there are significant opportunities to add generation to existing non-powered dams. Yet, project deployment has not progressed as far as expected considering that potential and the fact that these projects have lower costs and lower impacts as they utilize existing infrastructure.

We support the Committee's work to create a new regulatory review process for these projects, which would maximize the public benefit of this infrastructure. One of the main issues is that dam owners fear that by allowing hydropower development at their facility, irreparable changes will be forced on them to the detriment of the original purposes for which the dam was built.

The exemption process detailed in the draft is an innovative solution to this problem by prescribing FERC's jurisdiction to the hydropower facility itself, together with any associated transmission line. This approach is consistent with the treatment for conduit facilities, as well as FERC's licensing policies for non-federal hydropower facilities located at Federal dams. This exemption program just extends that program to non-powered dams as well—but only for proposals that would not seek to change the existing flow regime.

NHA also notes that the draft includes a provisions designed to support basin-wide environmental improvements by creating a new annual charge for environmental enhancement activities in the watersheds that these new projects would be located. And finally, there is a provision that recognizes the importance of dam safety by requiring, as a qualifying criterion, that a project be certified by an independent consultant approved by FERC as complying with the Commission's dam safety requirements.

Promoting Closed-Loop Pumped Storage Hydropower Act

NHA supports the Committee's work to promote the increased use of closed-loop pumped storage. In helping to balance grid operations, pumped storage facilities reduce overall system generation costs and provide ancillary services to the grid, including frequency regulation and voltage support. They also support the integration of variable generation, like wind and solar, helping to avoid or minimize stability issues due to over-generation. The DOE Hydropower Vision Report finds no greater growth opportunity in the hydropower sector than pumped storage. But again, despite the benefits, value, and potential, project deployment is proceeding at a slow pace, including closed-loop projects that do not have a permanent connection to a navigable waterway and do not influence such river flows.

Similar to the Promoting Hydropower Development at Existing Non-Powered Dams Act, this draft creates an innovative new licensing process for this lower-impact subset of pumped storage projects. It recognizes the specialized purpose of these pumped storage projects. Unlike conventional hydropower projects, these facilities are not conducive to supporting public recreation. And, because they have no continuous connection to navigable waters, they do not present a fish passage barrier, affect water quality, or impact the riverine environment.

Again, like the draft bill for non-powered dams, this draft bill contains a dam safety provision requiring FERC to assess the safety of existing dams and other structures related to the project.

Promoting Small Conduit Hydropower Facilities Act of 2017

As stated by Kurt Johnson of the Colorado Small Hydropower Association in 2012, the regulatory costs for small projects, such as the conduits at issue in the draft, are particularly burdensome and can potentially exceed the costs of the hydropower generating equipment itself.

The discussion draft builds on the Hydropower Regulatory Efficiency Act of 2013 (HREA) – at the time, the first energy bill enacted into law in 4 years – and for which NHA was a strong supporter. The HREA has been a successful program with over 80 small conduit project approvals secured for projects throughout the country. The draft would restructure this process for very small projects of 2 MWs or less on existing conduits, which would be a further positive inducement for these developments.

NHA understands that the vast majority of similar projects under the current HREA process have received approvals and that few, if any, concerns have been raised as part of those reviews. As such, and as these are some of the lowest impact developments, NHA supports creating this more simplified review process for this subset of projects.

Supporting Home Owner Rights Enforcement Act

NHA recognizes that shoreline management is an important issue for both asset owners and for landowners adjacent to hydropower reservoirs or within project boundaries. Many issues come into play – project operations, property rights, recreation opportunities and more.

NHA and the hydropower industry believe when it comes to the safe operation and management of project facilities, the protection of lives and property are the top priority. As such, NHA would need more time to review and vet with our membership the discussion draft to better understand any potential effects on project operations before the association could express a view on the draft. Therefore, NHA takes no position at this time, but looks forward to further discussions with the Subcommittee on the substance of the bill.

H.R. 446, H.R. 447, and H.R. 2122

New small hydropower projects, such as these, have a critical role to play in meeting our nation's energy, environment, and local economic development objectives and will add to our portfolio of renewable, clean energy resources. As I testified to previously in 2016, hydropower projects can face a

variety of obstacles that push back construction timelines. These include delays in necessary post-licensing construction approvals, additional environmental permits, refinements in final project design, continuing negotiations on power purchase agreements, securing financing, and others.

NHA notes that the draft of the Hydropower Policy Modernization Act of 2017, also before the Subcommittee today, specifically aims to address the problem at hand for these hydropower projects. It contains a provision for an applicant to receive an extension from FERC of the commence construction deadline for up to an additional 8 years. This would alleviate the need for individual project developers to get these congressionally-approved extensions. NHA supports the efforts by Congress to address this issue, which requires projects to expend considerable additional time, money and effort on individual congressional legislation.

Conclusion

Both the existing system and new hydropower projects have a critical role to play in meeting our nation's energy, environment, and economic development objectives and much is at stake for hydropower and the families, businesses and communities that rely on its low-cost, reliable, renewable generation.

NHA and the hydropower industry stand ready to help meet our common clean energy goals and we look forward to working further with Congress and the Administration to find pathways to address the important policy issues to fully maximize and unlock the potential of the hydropower resource.

As the Congress works to address our energy and infrastructure needs, whether through hydropower-specific legislation, a national infrastructure program, or an energy bill, policies that improve the regulatory environment and provide greater certainty and predictability must be included. A greater recognition that our hydropower infrastructure is incredibly valuable is needed, and continued investment and re-investment in the system is critical to our energy future and national security.

I thank the Committee for this opportunity to testify and I look forward to answering questions.