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Committee on Appropriations - Subcommittee on Energy and Water Development
Department of Energy (WPTO); Corps of Engineers; Bureau of Reclamation

The National Hydropower Association (NHA)¹ submits this statement in support of \$100 million for the U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) and its research and development (R&D) activities and initiatives for Fiscal Year 2018.

In addition, NHA also strongly advocates directing significant funding to the operations and maintenance (O&M) programs of the U.S. Army Corps of Engineers (USACE) and Bureau of Reclamation (BuRec) to increase both capacity and power generation at these federal hydropower facilities, as well as to those regulatory programs that fund the engagement and review of applications for non-federal hydropower development at USACE's and BuRec's water infrastructure.

Requesting \$100 million in FY 2018 funding for the DOE WPTO

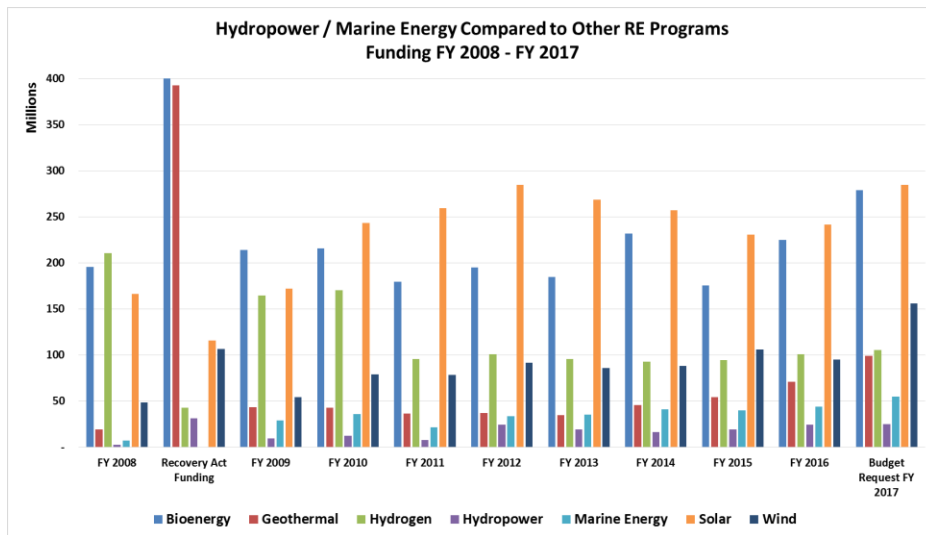
NHA encourages funds to be directed across all water power technology sectors – hydropower, pumped storage, marine and hydrokinetic and conduit power. **For FY 2017, NHA supports funding \$35 million for the hydropower program area and \$65 million for the marine and hydrokinetic (MHK) program area.**

The WPTO, through hydropower and pumped storage, represents the single largest source of renewable, flexible, baseload electricity generation in the United States today. The recently released DOE Hydropower Vision Report demonstrates, with the right policies in place (including continued R&D advancements), approximately 50 GW of growth in the sector is

¹ NHA is the national association dedicated to advancing the interests of hydropower, pumped storage, conduit power and marine energy technologies. NHA's 220+ members include utilities, independent power producers, developers, equipment manufacturers and service providers.

possible by 2050.² In addition, the WPTO supports the development of pre-commercial marine energy technologies generating electricity from abundant resources found in ocean waves, currents, tides and rivers. However, the WPTO remains one of the smallest programs within the Office of Energy Efficiency and Renewable Energy (EERE), particularly when compared to the funding levels over time for other EERE programs, such as wind and solar.

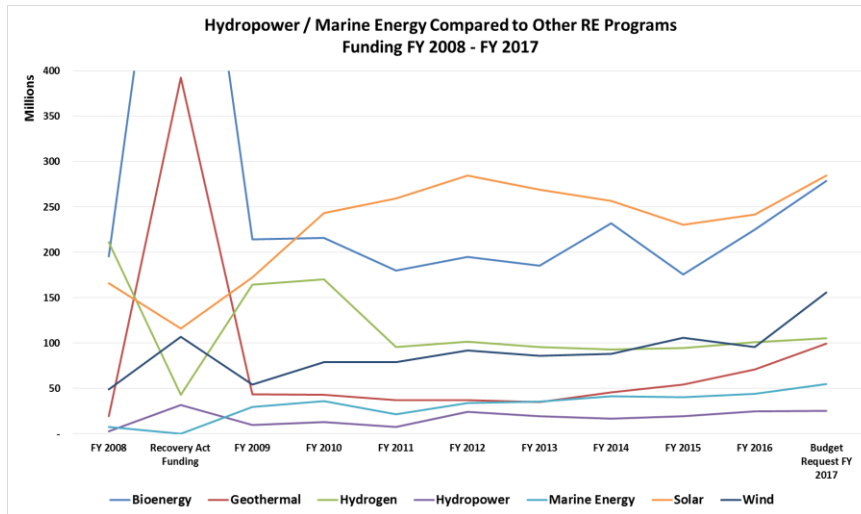
Yet, there is a growing recognition in Congress and the new Administration for the need to expand our underutilized hydropower and marine energy resources and capture the substantial grid services and clean air benefits they can provide. As such, the NHA request for increased support for the DOE WPTO is in line with an “all-of-the-above” energy strategy. The graph that follows charts the funding levels for the EERE programs from FY 2008 through the FY 2017 funding request, including American Recovery and Reinvestment Act of 2009 (ARRA) funding.³



The next graph presents the same information, but more clearly shows the trend lines through time for each individual renewable energy technology program.

² <https://energy.gov/eere/water/downloads/hydropower-vision-chapter-4-hydropower-vision-roadmap-pathway-forward>

³ Office of Management and Budget Annual Congressional Budget Requests (FY2008 - FY2017)



NHA appreciates the growing investments in the DOE’s WPTO activities in recent years. However, as the charts above clearly indicate, the level of support is still substantially below that afforded other renewable technologies, with hydropower receiving the least funding, followed by marine energy receiving the next lowest level of funding. And when considered over time, this disparity with the other EERE programs is even more pronounced.

We believe one of the factors for the tremendous growth in U.S. wind and solar deployment over the last decade is the sustained investment shown by the federal government in technology R&D and market acceleration initiatives in these sectors. Development of new, innovative water power technologies would benefit from a similar level of federal investment.

As previously demonstrated in NHA’s past testimony, there remains significant untapped potential across all water power resources. For hydropower, these include: increasing efficiencies and expanding capacity at existing projects, adding generation to existing non-powered dams, new pumped storage facilities, and new stream-reach development.⁴ On the marine energy side, great potential exists in ocean wave, tidal, thermal and in-stream hydrokinetic resources.⁵

⁴ <https://energy.gov/eere/water/articles/hydropower-vision-new-chapter-america-s-1st-renewable-electricity-source> and http://www1.eere.energy.gov/water/pdfs/npd_report.pdf and <http://nhaap.ornl.gov/nsd>

⁵ <http://energy.gov/eere/water/marine-and-hydrokinetic-resource-assessment-and-characterization>

Specific WPTO and other Federal Initiatives

- **EPAct 2005 Section 242 hydropower production incentive** – Report language from FY 2014-2016 has included funding for this incentive designed to help bring down costs that in turn can determine the viability of a given project. NHA supports continued funding for the program, which DOE is currently implementing.⁶
- **R&D funding for pre-commercial marine energy systems and components** – NHA advocates for a balanced portfolio of funding opportunities to support industry-led RD&D of ocean, wave, tidal and instream energy conversion systems and components.
- **R&D funding for innovative technologies and new market analysis for hydropower and pumped storage** – Technology advancements are occurring in the hydropower and pumped storage sectors, some of which have never been deployed domestically. Further analysis is also needed on the market gaps that exist throughout the country in the valuation and compensation of the grid services these resources provide.
- **Construction of an offshore wave energy test facility** – NHA supports this initiative, which will evaluate utility scale wave energy converter (WEC) performance, environmental interactions and survivability, and help meet the goal of reducing the levelized cost of energy of wave energy technologies.
- **Hydropower fellows program** – With DOE support, the Hydropower Research Foundation (HRF) awards fellowships to masters and doctoral degree students throughout the U.S. NHA supports the program, which stimulates new student research and academic interest and careers in hydropower and pumped storage.

⁶ NHA can report that the continued implementation of the Section 242 program is proceeding well with award notices and decisions being processed and issued in a timely manner.

- **Hydropower development at federal facilities** – NHA also urges the Congress to direct support to the Army Corps of Engineers Civil Works and the Bureau of Reclamation efforts to operate, maintain, and upgrade their existing hydropower projects, as well as to add non-federal hydropower development to their existing non-powered infrastructure assets.⁷

Conclusion

Unlocking the energy potential of our rivers, oceans, tides and conduits by accelerating the funding for the DOE WPTO would allow the U.S. to realize the tremendous energy and environmental benefits of these resources.

Hydropower and pumped storage projects are the backbone of the U.S. grid, ensuring reliability and resiliency, while providing the services needed to integrate increasing amounts of intermittent renewable generation. With the continued support of the WPTO for technology and operational improvements, even more can be done. The marine energy sector is a nascent industry, similar to the positions of the wind and solar industries over a decade ago. The WPTO funding will help unlock its potential by lowering costs and increasing technology performance.

The DOE Water Power Technologies Office is an important source of research and development support for the project developers and owners, researchers, and scientists working to advance these clean energy options. This support stimulates private investment in the construction, manufacturing, engineering and environmental science sectors and strengthens the thousands of businesses that make up the U.S. supply chain. Supporting these industries expands and employs an already sizable skilled U.S. workforce.

Again, we urge Congress to support a \$100 million funding level for the DOE WPTO.

⁷ DOE and other studies show that 12 GW of new capacity exist at U.S. non-powered dams, including Army Corps of Engineers' dams, as well as significant growth potential at existing Bureau of Reclamation dams, canals and conduits.