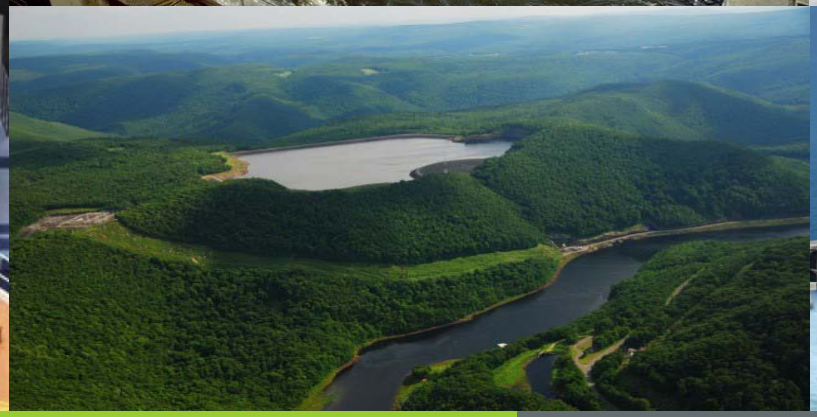
2013 NHA Annual Conference

April 22, 2013

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy



Jose Zayas

Director, Wind & Water Power Technologies Office
United States Department of Energy

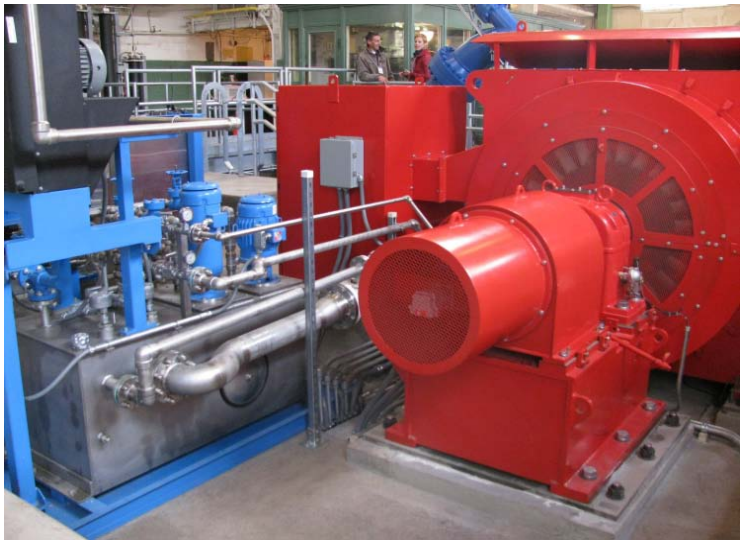
The Clean Energy Race: In It to Win It

"The path towards sustainable energy sources will be long and sometimes difficult. But America cannot resist this transition, we must lead it. We cannot cede to other nations the technology that will power new jobs and new industries, we must claim its promise…"

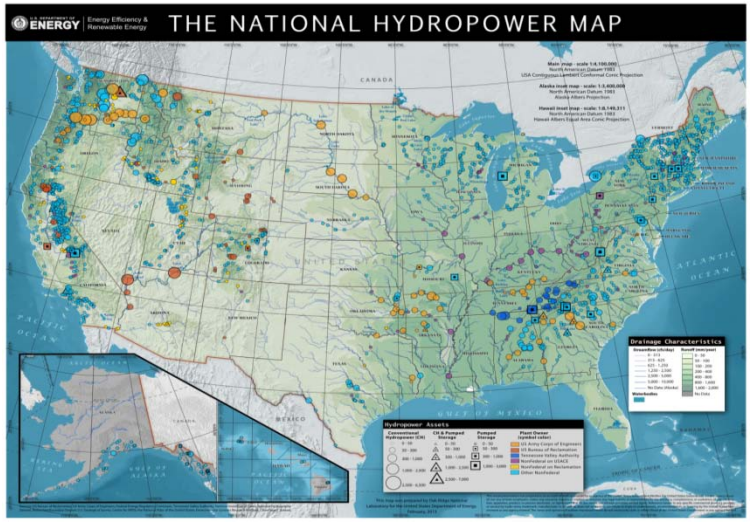
-President Obama, Inaugural Address
January 21, 2013

Official White House Photo by Lawrence Jackson

Water Power Program Accomplishments



The Boulder Canyon Hydroelectric Facility's new, highly-efficient turbine



GIS map of U.S. Hydropower Assets created by Oak Ridge National Laboratory

Exemplary Applications of Hydropower Technologies

Boulder Canyon Hydroelectric Plant Modernization: Two older turbines were replaced by a single, highly-efficient unit– capable of generating 30% more energy.

Cheoah Dam Modernization Project: Modernization project boosted total generating capacity to 129 megawatts – a 28% increase in power output at very low cost.

Open Information Sharing

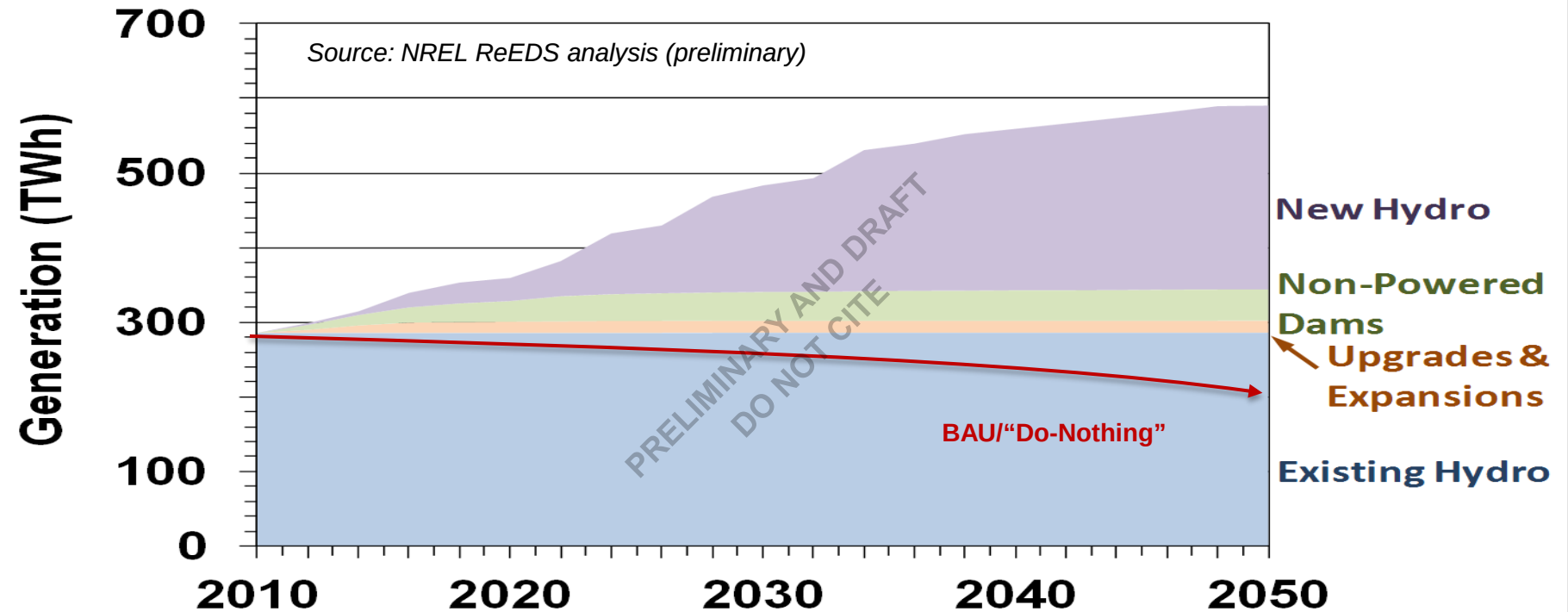
In 2012, DOE launched a water power gateway on Open EI, collaborated with ORNL to host the public Hydro GIS tool and database, and created an introductory Hydro 101 video.

Nationwide Assessment of New Hydropower Resources

As part of its goal to help the industry double hydropower, DOE has embarked on a nationwide assessment of new hydropower resources. Preliminary results are promising and will available by the end of this year.

Defining a Vision for the Future

The Energy Department supports the goal of doubling the contribution of hydropower to the United States electricity system by 2030.



A major expansion of hydropower in the United States requires an all-of-the-above energy approach including:

- **Developing new hydropower**
- **Powering non-powered dams**
- **Eliminating major market barriers**
- **Facilitating the deployment of advanced pumped storage**
- **Validating ancillary benefits of hydro to the nation's power grid**

Hydropower Priority Areas Within Water Power Program

New Hydropower

- Modeling & Analysis
- Components R&D for Major Cost Reductions
- Demonstrations

Existing Hydropower

- Hydro Systems Optimization
- Industry Analysis

Flexibility, Integration, and Storage

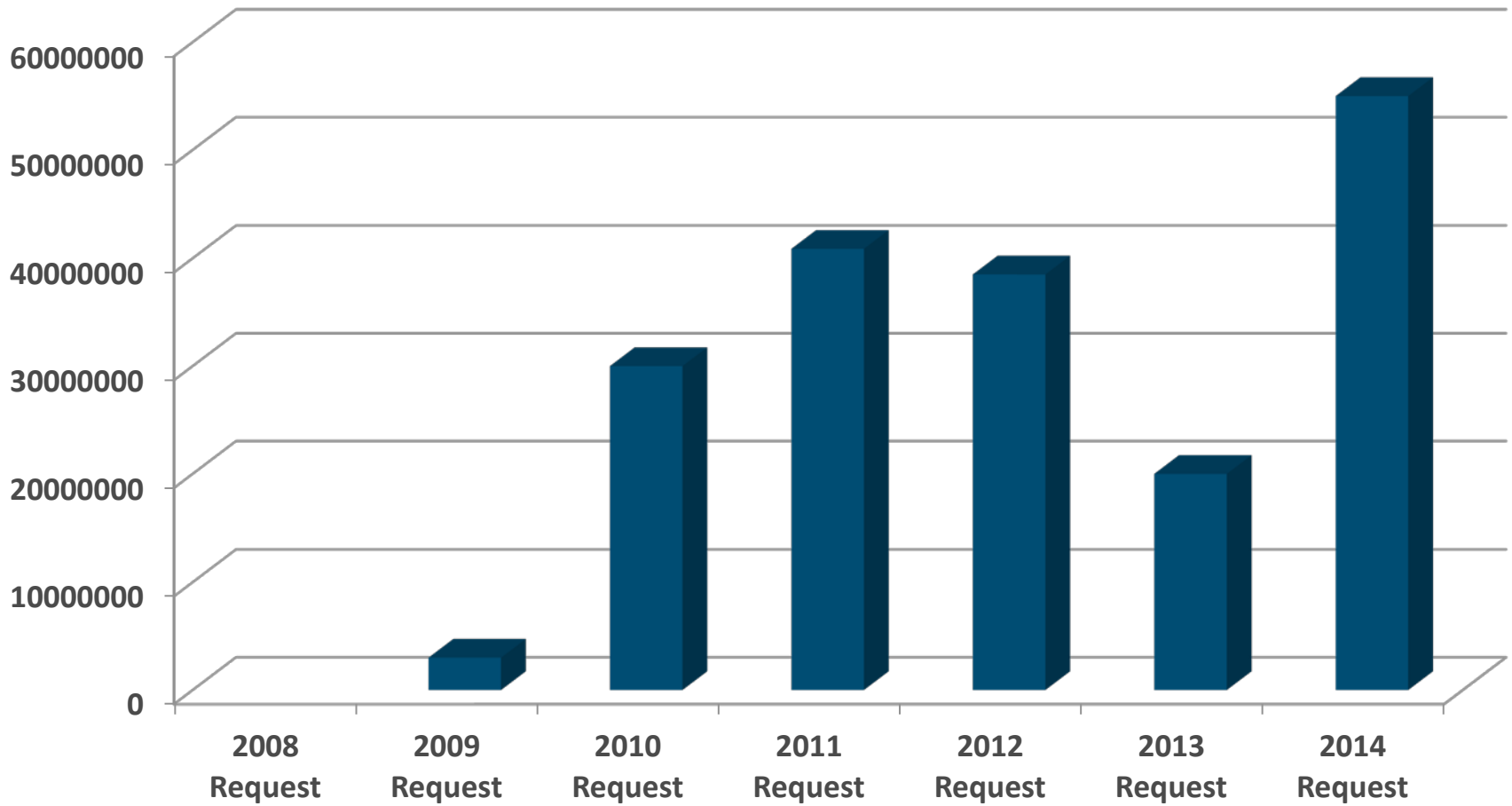
- Model Advanced Technologies and their Benefits
- Maximize Flexibility
- Advanced Technology RD&D

Market Acceleration and Deployment

- Environmental Studies and New Technology Validation
- Regulatory Initiatives
- Education and Workforce Development

Budget Request History

Department of Energy requested $55 million for Water Power Technologies in 2014 – the highest request in the program's history



FY14 Budget Highlights

$5M for a Clean Energy Manufacturing Initiative. U.S. clean energy manufacturing is a key economic opportunity for America to innovate, compete, and lead the way in a growing global marketplace, and we want to help win the race. Under this initiative, the program will initiate a series of manufacturing initiatives focused on lowering LCOE and promoting technology pathways conducive to enabling a robust U.S. manufacturing presence for water power technologies.

A new **Incubator Program** to introduce potentially high-impact "off-roadmap" new technologies. These activities will enable the "rapid on-ramping" of potentially transformational new energy technologies into the EERE portfolio, dramatically increasing the rate of technology innovation.

Aggressive R&D to **lower the cost of new, sustainable hydropower development through specific, high-leverage components**.

Investigating **modular designs of pumped storage** units to facilitate flexible, phased deployment closely matched with variable renewables growth, which will significantly reduce market and financing risks and help with **grid integration**.

Addressing market barriers through continued research that will help us to understand the environmental characteristics of hydropower developments, and design systems to avoid or address potential problems. DOE will continue to focus on science that will help to answer key questions and improve the regulatory process, by developing advanced environmental modeling and measurement tools

Thank you!

Questions?

Water.energy.gov

Water Power Program
Wind and Water Power Technologies Office
U.S. Department of Energy