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{ REPORT  
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### MARINE AND HYDROKINETIC RENEWABLE ENERGY PROMOTION ACT

JULY 11, 2011.—Ordered to be printed

Mr. BINGAMAN, from the Committee on Energy and Natural  
Resources, submitted the following

### R E P O R T

[To accompany S. 630]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 630) to promote marine and hydrokinetic renewable energy research and development, and for other purposes, having considered the same, reports favorably thereon with amendments and recommends that the bill, as amended, do pass.

The amendments are as follows:

1. On page 3, line 9, strike “3” and insert “4”.
2. On page 3, lines 13 and 14, strike “operating environments” and insert “operating marine environments (including industry demonstrations)”.
3. On page 3, between lines 14 and 15, insert the following:  
    “(2) PREFERENCE.—In awarding competitive grants under this subsection, the Secretary shall give preference to existing marine and hydrokinetic testing facilities and existing Centers established under section 634.”.
4. On page 3, line 15, strike “(2)” and insert “(3)”.
5. On page 3, line 21, strike “(3)” and insert “(4)”.
6. On page 4, line 4, strike “(4)” and insert “(5)”.
7. On page 4, line 14, strike “(5)” and insert “(6)”.
8. On page 4, strike lines 22 through 24 and insert the following:  
    “(iv) a university consortium;  
    “(v) a National Laboratory; or  
    “(vi) a Center established under section 634;  
    and”.
9. On page 5, strike lines 8 through 11 and insert the following:

“(III) energy;  
 “(IV) ocean engineering; and  
 “(V) electrical, mechanical, and civil engineering; and  
 “(ii) partner with other entities (including industry) that”.

10. On page 7, line 13, insert “Centers established under section 634,” after “with”.

11. On page 5, line 7, insert “and riverine” after “marine”.

12. Strike section 8 and insert the following:

**SEC. 8. AUTHORIZATION OF APPROPRIATIONS.**

(a) IN GENERAL.—Section 639 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17215) (as redesignated by section 5(1)) is amended to read as follows:

**“SEC. 639. AUTHORIZATION OF APPROPRIATIONS.**

“(a) IN GENERAL.—There is authorized to be appropriated to carry out this subtitle, to remain available until expended—

“(1) \$70,000,000 for fiscal year 2012; and

“(2) \$75,000,000 for fiscal year 2013.

“(b) RENEWABLE ENERGY FUNDS.—No funds shall be appropriated under this section for activities that are receiving funds under section 931(a) (2)(E) (i) of the Energy Policy Act of 2005 (42 U.S.C. 16231(a)(2)(E)(i)).”.

(b) OFFSETS.—

(1) FISCAL YEAR 2012.—Section 609(d) of the Public Utility Regulatory Policies Act of 1978 (7 U.S.C. 918c(d)) is amended by striking “2012” and inserting “2011”.

(2) FISCAL YEAR 2013.—The amount otherwise made available to carry out section 412 of the Energy Policy Act of 2005 (42 U.S.C. 15972) shall be reduced by \$75,000,000 for fiscal year 2013.

13. Strike section 9 and insert the following:

**SEC. 9. NATIONAL RENEWABLE ENERGY DEPLOYMENT PROGRAM.**

(a) IN GENERAL.—Section 803 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17282) is amended by striking the section heading and inserting “**NATIONAL RENEWABLE ENERGY DEPLOYMENT PROGRAM**”.

(b) DEFINITIONS.—Section 803(a) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17282(a)) is amended—

(1) by striking paragraph (1);

(2) by redesignating paragraphs (2) through (4) as paragraphs (1) through (3), respectively;

(3) in subparagraph (B)(iv) of paragraph (3) (as so redesignated), by striking “Alaska”; and

(4) by adding at the end the following:

“(4) SMALL HYDROELECTRIC POWER.—The term ‘small hydroelectric power’ means power that—

“(A) is generated—

“(i) without the use of a dam or impoundment of water; and

“(ii) through the use of—

“(I) a lake tap (but not a perched alpine lake); or

“(II) a run-of-river screened at the point of diversion; and

“(B) has a nameplate capacity rating of a wattage that is not more than 15 megawatts.”.

(c) RENEWABLE ENERGY CONSTRUCTION GRANTS.—Section 803(b) of the Energy Independence and Security Act of 2007 (42 U.S.C. 17282(b)) is amended—

(1) in paragraph (1)—

(A) by inserting “establish a national renewable energy construction grants program under which the Secretary shall” after “shall”; and

(B) by inserting “, including feasibility studies for such projects” before the period at the end; and

(2) by adding at the end the following:

“(5) PRIORITY.—In making grants to eligible applicants to carry out renewable energy projects under this section, the Secretary shall give priority to applicants that—

“(A) have power costs that are 125 percent or more of average national retail costs; and

“(B) will use the grant to construct renewable electricity projects to replace or partially replace fossil fuel projects.”.

#### PURPOSE

The purpose of S. 630 is to promote marine and hydrokinetic renewable energy research and development, and for other purposes.

#### BACKGROUND AND NEED

There is potential to increase production of energy from waves, tides, and river currents in the United States. Additional research and a more extensive resource assessment are needed to fully understand the wave resource potential and to ensure that hydrokinetic sources can be developed at reasonable costs. Additional research is also necessary to help address the environmental impacts of hydrokinetic projects. Research programs can also help with the deployment and installation of hydrokinetic technologies to make them commercially viable and sustainable.

The Federal Energy Regulatory Commission (FERC) has recently conducted workshops and pilot licensing processes for approval of hydrokinetic projects. As of March 2011, FERC had issued 98 preliminary permits for hydrokinetic projects with the potential to develop over 10,000 megawatts of power, and over 150 preliminary permits were pending with the potential to develop almost 18,000 megawatts of power. FERC has entered into Memoranda of Understanding regarding hydrokinetic energy development with the States of California, Washington, Maine, and Oregon. Additional coordination of research activities and collaboration among stakeholders will promote better research outcomes.

## LEGISLATIVE HISTORY

Senator Murkowski introduced S. 630 on March 17, 2011. The bill is co-sponsored by Senators Begich and Whitehouse. The Committee on Energy and Natural Resources held a hearing on S. 630 on March 31, 2011, and considered and amended the bill at its business meetings on April 12, 2011 and May 26, 2011. The Committee ordered S. 630 favorably reported, as amended, at its business meeting on May 26, 2011.

## COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on May 26, 2011, by voice vote of a quorum present, recommends that the Senate pass S. 630, if amended as described herein.

## COMMITTEE AMENDMENTS

During its consideration of S. 630, the Committee adopted 13 amendments. The first ten, adopted en bloc, create a preference for existing marine and hydrokinetic testing facilities and existing National Marine Renewable Energy Research, Development, and Demonstration Centers in the award of competitive grants, add university consortia to the list of entities eligible to receive grants, add ocean engineering to the list of qualifying fields of expertise, and make additional clarifying and conforming changes. The eleventh adds “riverine” sciences to the list of qualifying fields of expertise. The twelfth reduces and limits the authorization of appropriations for the marine and hydrokinetic program, terminates the authorization of appropriations for rural and remote communities electrification grants, and reduces the authorization for the clean coal technology plant in Healy, Alaska. The final amendment modifies the amendments proposed in section 9 of the bill to the Alaska small renewable energy deployment program in section 803(a) of the Energy Independence and Security Act by expanding the program to apply nationally, but retaining the limitation to small hydroelectric power projects.

## SECTION-BY-SECTION ANALYSIS

*Section 1* provides the short title of the bill and table of contents.

*Section 2* amends section 633 of the Energy Independence and Security Act of 2007 (EISA) by adding additional opportunities for marine and hydrokinetic technology development and deployment.

*Section 3* adds a new subsection (c) to section 633 of EISA that creates a competitive grant program within the Department of Energy to encourage research, development and demonstration of marine and hydrokinetic test facilities to promote new technologies.

*Section 4* amends section 634 of EISA to clarify that national marine and hydrokinetic renewable energy research, development, and demonstration centers should serve as information clearinghouses for marine and hydrokinetic renewable energy technologies.

*Section 5* adds a new section 635 to EISA (and redesignates the existing one) to create a marine-based energy device verification program within the Department of Energy to provide an opportu-

nity to test and evaluate marine and hydrokinetic renewable energy technologies in new areas.

*Section 6* adds a new section 636 to EISA to create an adaptive management and environmental grant program within the Department of Energy to help fund environmental analysis affecting the deployment of marine hydrokinetic devices and help gather data and monitor impacts of demonstration projects.

*Section 7* adds a new section 637 to EISA to establish improved administration of the Department of Energy's existing hydrokinetic research program and requires a report to Congress on the research, development, demonstration, and installation of projects as a result of the program.

*Section 8* amends the authorizations of appropriations in section 636 of EISA (which section 5 of the bill redesignates as section 639) to increase the authorization for fiscal year 2012 by \$20 million, authorize appropriation of \$75 million for fiscal year 2013, prohibit appropriation of funds under the section for ocean energy activities funded under section 931 of the Energy Policy Act of 2005, terminate funding for rural and remote communities electrification grants, and reduce funding for the clean coal technology plant in Healy, Alaska.

*Section 9* amends the Alaska small hydroelectric power deployment program authorized by Section 803 of EISA to make it apply nationally and to establish new priorities for awarding grants under the program.

#### COST AND BUDGETARY CONSIDERATIONS

The following estimate of costs of this measure has been provided by the Congressional Budget Office:

#### *S. 630—Marine and Hydrokinetic Renewable Energy Promotion Act of 2011*

Summary: S. 630 would authorize appropriations to support a variety of activities aimed at promoting the development of hydropower, particularly marine and hydrokinetic energy devices that produce energy from moving water. Assuming appropriation of the authorized amounts, CBO estimates that implementing S. 630 would have a net discretionary cost of \$87 million over the 2012–2016 period. Enacting S. 630 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

S. 630 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary impact of S. 630 is shown in the following table. The costs of this legislation fall within budget function 270 (energy).

	By fiscal year, in millions of dollars—					
	2012	2013	2014	2015	2016	2012–2016
CHANGES IN SPENDING SUBJECT TO APPROPRIATION						
Grants for Marine and Hydrokinetic Energy:						
Authorization Level .....	20	75	0	0	0	95
Estimated Outlays .....	4	21	29	26	12	92
Grants for Small Hydropower Projects:						
Estimated Authorization Level .....	3	3	3	3	3	15
Estimated Outlays .....	3	3	3	3	3	15

	By fiscal year, in millions of dollars—					
	2012	2013	2014	2015	2016	2012–2016
Reduced Authorizations for Energy Projects:						
Authorization Level .....	–20	0	0	0	0	–20
Estimated Outlays .....	–2	–6	–6	–4	–2	–20
Total Proposed Changes:						
Estimated Authorization Level .....	3	78	3	3	3	90
Estimated Outlays .....	5	18	26	25	13	87

Basis of estimate: S. 630 would authorize appropriations to promote the development of marine and hydrokinetic energy as well as authorize the Department of Energy (DOE) to provide grants to pay for half of the cost of constructing small hydropower projects throughout the country. The bill also would eliminate an existing authorization of appropriations to support certain energy projects. Taken as a whole, CBO estimates that implementing S. 630 would result in a net increase in discretionary spending of \$87 million over the 2012–2016 period.

#### *Spending for marine and hydrokinetic energy*

S. 630 would authorize appropriations totaling \$145 million over the 2012–2013 period for DOE to carry out a variety of activities to promote research, development, and deployment of marine and hydrokinetic energy devices. According to DOE, the agency has allocated \$20 million to develop marine and hydrokinetic technologies in 2011.

Current law already authorizes the appropriation of \$50 million for activities related to marine and hydrokinetic energy in 2012; therefore, the incremental increase in funding authorized by S. 630 would total \$95 million over the 2012–2013 period. Under the bill, DOE would use authorized amounts to establish facilities to research and test such devices, develop systems to test and share information on their performance and reliability, and provide grants to support analyses of their impact on the environment. Assuming appropriation of the authorized amounts, CBO estimates that spending for such activities would increase spending by \$92 million over the 2012–2016 period, based on historical spending patterns for existing and similar programs.

#### *Grants for small hydropower*

S. 630 would amend a provision of current law (42 U.S.C. 17282) that authorizes DOE to provide grants to support the construction of certain renewable energy facilities, including small hydropower facilities with a capacity of 15 megawatts or less. Under current law, DOE can only provide support for hydropower projects located in the state of Alaska; S. 630 would remove that restriction and allow DOE to support projects anywhere in the country.

Based on information from the Federal Energy Regulatory Commission (FERC), which must issue a permit for all hydropower facilities regardless of size, CBO estimates that an average of roughly 3.6 megawatts of new generating capacity has been licensed in each of the past 10 years. Based on information from DOE about current costs to build small hydropower facilities and assuming that investments in future years remain in line with trends over the past decade, CBO estimates that total spending to construct

new facilities will average about \$6 million a year over the 2012–2016 period. S. 630 would authorize DOE to provide grants for up to half of that amount; thus, CBO estimates that fully funding this provision would require appropriations of about \$3 million annually over the 2012–2016 period. Assuming appropriation of the estimated amounts, CBO estimates that resulting spending would total \$15 million over that same period.

*Reduced authorization for energy projects*

To offset a portion of increased discretionary spending, S. 630 would eliminate an existing authorization to appropriate \$20 million in 2012 to support certain energy-related projects in rural areas. Assuming future appropriations are reduced accordingly, CBO estimates that implementing that provision would result in \$20 million less in discretionary spending over the 2012–2016 period.

S. 630 would also direct that any amounts authorized to be appropriated in 2013 to cover the federal cost of a direct loan to a specific clean coal facility in Alaska be reduced by \$75 million. Consistent with requirements of the Federal Credit Reform Act, current law authorizes the appropriation of whatever amounts are necessary to cover the anticipated subsidy cost of the authorized loans. CBO estimates that this provision of S. 630 would have no impact on spending subject to appropriation because it would make no corresponding changes to the terms of the authorized loan and would therefore not affect the amount of the subsidy required to support the loan.

Pay-As-You-Go considerations: None.

Intergovernmental and private-sector impact: S. 630 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill could benefit state and local governments by authorizing grants related to renewable energy generated from marine and hydrokinetic sources. Any costs those entities incur to meet grant requirements would result from complying with the conditions of federal assistance.

Estimate prepared by: Federal costs: Megan Carroll; Impact on state, local, and tribal governments: Ryan Miller; Impact on the private sector: Amy Petz.

Estimate approved by: Theresa Gullo, Deputy Assistant Director for Budget Analysis.

#### REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 630.

The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 630, as ordered reported.

## CONGRESSIONALLY DIRECTED SPENDING

S. 630, as ordered reported, does not contain any congressionally directed spending items, limited tax benefits, or limited tariff benefits as defined in rule XLIV of the Standing Rules of the Senate.

## EXECUTIVE COMMUNICATIONS

The testimony provided by the Federal Energy Regulatory Commission, and the Department of Energy, at the March 31, 2011, Full Committee hearing on S. 630 follows:

STATEMENT OF STEVEN G. CHALK, CHIEF OPERATING OFFICER & ACTING DEPUTY ASSISTANT SECRETARY FOR RENEWABLE ENERGY, OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY, DEPARTMENT OF ENERGY

Chairman Bingaman, Ranking Member Murkowski, Members of the Committee, thank you for the opportunity to discuss the three pieces of legislation before us today: S. 629, the Hydropower Improvement Act of 2011; S. 630, the Marine and Hydrokinetic Renewable Energy Promotion Act of 2011; and Title I, subtitle D of the American Clean Energy Leadership Act of 2009 (ACELA, S. 1462 from the 111th Congress).

In his State of the Union address in January, President Obama referred to America's need to transition to a clean energy economy as "our generation's Sputnik moment," a goal so important that we need to "reach a level of research and development we haven't seen since the height of the Space Race."<sup>1</sup> S. 629 and S. 630 would dramatically increase the federal government's investment in both conventional hydropower and marine and hydrokinetic (MHK) renewable energy technologies.

The provisions being considered from ACELA address the interdependence of our energy and water consumption. Water is an integral component of many traditional and alternative energy technologies used for transportation, fuels production and electricity generation. Energy-related water demands are beginning to compete with other demands from population growth, agriculture and sanitation. This competition could become fiercer if climate change increases the risk of drought, making our water supply more vulnerable. The Department of Energy (DOE) has initiated many activities over the last few years to address this energy-water nexus.<sup>2</sup>

Since fiscal year 2008, when DOE restarted its Water Power Program, it has made significant strides in advancing next-generation water power technologies, assessing existing resources, promoting deployment opportunities, and cooperating with other government agencies to accelerate water power development. About 45 percent of all hydropower in the United States is generated at Federally

<sup>1</sup><http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address>.

<sup>2</sup>See, for example, the activities undertaken by the National Energy Technology Laboratory, <http://www.netl.doe.gov/technologies/coalpower/ewr/water/index.html>.



owned facilities, providing clean, renewable power to the grid.<sup>3</sup> DOE's estimates indicate that there could be an additional 300 gigawatts of hydropower through efficiency and capacity upgrades at existing facilities, powering non-powered dams, new small hydrodevelopment and pumped storage hydropower.<sup>4</sup>

DOE works on both conventional hydropower and on marine and hydrokinetic (MHK) technologies. The combined FY 2012 Budget Request for conventional hydropower and MHK technologies is \$38.5 million. Conventional hydropower—energy derived from water using dams, diversionary structures, or impoundments for electric power—generates more electricity than any other renewable energy source in the U.S. Conventional hydropower represented 65 percent of U.S. renewable electricity generation in 2010, and seven percent of total U.S. electricity generation that year.<sup>5</sup> Conventional hydropower principally serves as a baseload electricity supply, but can also function as a dispatchable resource to balance variable renewable energy technologies such as wind and solar.

MHK technologies include energy devices that can extract energy from moving water, including waves and currents in oceans, rivers, and tidal areas, and from ocean thermal and salinity gradients. These resources if also developed in an environmentally responsible manner hold potential for helping our nation meet its clean energy goals.

In a March 2007 report, the Electric Power Research Institute indicated that its conservative estimate was that MHK power (from wave and tidal sources alone) could provide an additional 13,000 megawatts (MW) of capacity by 2025.<sup>6</sup> MHK power and ocean thermal energy are resources that typically can have higher capacity factors than some other renewable energy sources. In addition, they may not present the same level of integration challenges that large-scale development of variable renewable energy sources such as wind and solar may create for electricity grid planners and operators.

Through its Power Marketing Administrations (PMAs), DOE promotes and creates opportunities for new conventional hydropower technologies and development. PMAs encourage the most widespread use of hydropower possible at the lowest rates consistent with sound business principles. Some PMAs have established an active hydropower modernization program, adding hundreds of megawatts of capacity at existing facilities by updating equipment, while others have faced challenges in arranging financing. Because some of the challenges are statutory in nature, the PMAs and their customers may consult with the Committee on measures that would actively encourage expan-

<sup>3</sup>[http://eia.doe.gov/cneaf/electricity/page/eia906\\_920.html](http://eia.doe.gov/cneaf/electricity/page/eia906_920.html).

<sup>4</sup>FY09 DOE Interim Conventional Hydro Resource Assessment, Oak Ridge National Lab.

<sup>5</sup><http://www.eia.doe.gov/cneaf/electricity/epa.pdf>

<sup>6</sup>[http://www.aas.org/spp/estc/docs/07\\_06\\_1ERPI\\_report.pdf](http://www.aas.org/spp/estc/docs/07_06_1ERPI_report.pdf).

sion of hydropower capacity through updates to existing facilities.

Last year, DOE, the Bureau of Reclamation, and the Army Corps of Engineers signed a memorandum of understanding (MOU) on hydropower that aims to build long-term working relationships between agencies by prioritizing similar goals and aligning ongoing and future renewable energy development efforts.<sup>7</sup> The objectives of the MOU include deploying new, environmentally sustainable hydropower capacity, including upgrading existing facilities; powering non-powered dams; and research, development and deployment (RD&D) into new hydropower technologies, among other objectives. The pursuit and ultimate achievement of these goals will serve to strengthen our economy, enhance our national security, and protect our environment.

Water is an integral aspect of energy consumption and generation for many energy technologies other than hydropower as well. Many types of energy production make use of water, particularly for cooling, and increasingly, water-efficient technologies are being developed to reduce these impacts and help America use less water to meet its energy demands and use less energy to meet its water demands. Still, power generation from thermal energy sources (which include coal, natural gas and nuclear energy) accounted for approximately 41% of U.S. freshwater withdrawals in 2005.<sup>8</sup> Although most of the water withdrawn for cooling thermal power plants is subsequently returned to the source, this still can have disruptive effects on water flows and temperatures, which in turn negatively affect aquatic organisms, namely fish populations such as salmon. DOE estimates that there are significant opportunities to reduce water consumption for both electricity and fuels production. For example, in the electricity sector, development of hybrid wet-dry cooling systems may reduce water consumption by 70–80 percent compared to recirculating cooling systems. Moving, pumping and treating water and wastewater is in itself quite energy-intensive, representing roughly four percent of U.S. electricity consumption.<sup>9</sup>

The Department, through its National Laboratories and collaboration with universities and the private sector, is pursuing three major objectives to address the energy-water challenge. First, to address the increasing limited supplies of freshwater, DOE is considering strategies to increase use of nontraditional water resources in the power sector. Second, DOE is working to reduce the consumption of fresh water when generating electricity, while considering the full life-cycle of various energy technologies to determine how much water they demand and what kind of water quality they need. Finally, DOE is researching

<sup>7</sup> <http://www.energy.gov/news/8793.htm>.

<sup>8</sup> <http://pubs.usgs.gov/circ/1344/pdf/c1344.pdf>.

<sup>9</sup> <http://www.circleofblue.org/waternews/wp-content/uploads/2010/08/EPRI-Volume-4.pdf>.

water-efficient technologies for the production of alternative or unconventional fuels for transportation.

I am pleased to offer the Department's perspective on these pieces of legislation. I will discuss these bills in the order they appeared in my invitation to testify before this Committee.

#### S. 629: HYDROPOWER IMPROVEMENT ACT OF 2011

The Hydropower Improvement Act of 2011, S. 629, seeks to substantially increase hydroelectric capacity and generation and improve its environmental performance.

A recent report from the Federal Energy Regulatory Commission (FERC) demonstrates that little additional hydropower is in the pipelines.<sup>10</sup> Concerns include environmental issues, and nontechnical barriers to reduce the expense and uncertainty of the regulatory process is needed.

The most significant provision of S. 629 is a proposed authorization to DOE of \$50 million per year for competitive grants and \$50 million per year for RD&D to increase hydropower generation. This authorization level is significantly higher than the FY 2012 Budget Request for EERE's conventional hydropower program of \$20 million, and would also represent a substantial increase to the FY 2010 Budget for conventional hydropower of \$13 million. These additional resources, if appropriated would enable increases in renewable hydropower generation, and provide for the accelerated demonstration of innovative technologies that can improve environmental performance.

In FY 2010, DOE funded the Hydropower Advancement Project (HAP) for \$3 million. The HAP is focused on the most cost-effective, least-controversial types of new hydropower development, and seeks to stimulate further hydropower development and generation without new dams. The project has already identified multiple opportunities for adding generation and/or improving environmental performance without sacrificing energy efficiency. Current funding allows for fifty initial facility assessments and three to five detailed engineering design studies. Additional resources would be used to support facility improvements that could result in increased hydropower generation at the most cost-effective sites.

DOE has invested in a three year program of research and development (R&D) to address issues related to the environmental performance and siting of hydropower technologies. These efforts focus on increasing fish passage, investigating adequate environmental flows and improving water quality and will help ensure that increases in conventional hydropower generation are coupled with concurrent improvements in the environmental sustainability of the industry, issues that DOE has been working on since the mid 1990s. If realized, the additional funding authorized by S. 629 would help scale-up the advanced turbines and optimize operational scenarios.

<sup>10</sup><http://www.ferc.gov/legal/staff-reports/03-17-11-energy-infrastructure.pdf>.

A quicker, two-year FERC licensing process, as proposed by S. 629 would help accelerate development of conventional hydropower resources. A streamlined licensing approach already has been implemented by FERC for small hydropower projects; expanding this quicker process would be welcomed by DOE and the hydropower industry. At the same time, we must be sure that this quicker licensing process does not sacrifice rigorous maintenance of environmental standards and ensures adequate opportunity to allow for public input. Providing a quicker regulatory process when all environmental and public concerns have been addressed is a valuable goal.

S. 629 would require FERC and the Bureau of Reclamation to conduct workshops on small hydropower projects and conduit hydropower.<sup>11</sup> These workshops would provide opportunities for the federal government, including natural resource agencies, industry, environmental organizations and other stakeholders to reach consensus on strategies to overcome barriers to greater hydropower deployment, including conflicting definitions of eligible projects and complicated, poorly understood permitting and licensing processes.

S. 629 would define a “small hydroelectric power project” according to the definition found in Section 4.30 of title 18 in the Code of Federal Regulations. DOE finds this definition problematic in this context, since this definition specifies that a small hydroelectric power project cannot be “owned or operated by the United States or by an instrumentality of the Federal Government.” A majority of the non-powered dams that are proposed to be powered through this legislation are federally-owned by the U.S. Army Corps of Engineers and the Bureau of Reclamation. In fact, initial analysis by DOE for a forthcoming report indicates that the ten largest non-powered dams in the US with potential to produce more than one megawatt are all operated by the Army Corps of Engineers.<sup>12</sup> DOE accordingly recommends that the definition of small hydroelectric power project that appears in this legislation delete the requirement that the dam not be federally-owned or operated.

The Department appreciates that S. 629 recognizes the non-application of this legislation to the PMAs. In addition, the PMAs believe that they should have the approval right for efficiency power or capacity additions, improvements or replacements at Federal projects, made in association with this legislation, where the Army Corps of Engineers and the Bureau of Reclamation seek appropriations.

All other provisions of S. 629 would either build on or support current DOE activities and areas of interest.

<sup>11</sup> Conduits are defined as tunnels, canals, pipelines, aqueducts, flumes, ditches, or similar manmade water conveyance systems that distribute water for agricultural, municipal, or industrial consumption and not primarily for the generation of electricity.

<sup>12</sup> The National Hydropower Asset Assessment Project, to be released in April 2011.

S. 630: MARINE AND HYDROKINETIC RENEWABLE ENERGY  
PROMOTION ACT OF 2011

S. 630, the Marine and Hydrokinetic Renewable Energy Promotion Act of 2011, seeks to accelerate the growth of the MHK industry through additional federal aid, and expansion of the scope and scale of DOE's MHK activities. The additional funding authorized by this bill would represent a significant increase in DOE's program for MHK technologies and is significantly higher than either the FY 2012 Budget Request of \$18 million or the FY 2010 Budget of \$37 million.

DOE already has several MHK systems engineering efforts underway, but the additional systems engineering required by S. 630 would be used to accelerate these programs.

S. 630 would also require DOE to devote more R&D funding to develop open interface standards. This would ensure consistent design and development and allow unbiased comparison between competing technologies to achieve optimal energy generation in resulting systems. As the U.S. market develops, it will be crucial to avoid the pitfalls seen in the development of MHK technologies in Europe, where, despite tremendous strides that have been made in device development and deployment, the interface standards with devices and data are still being developed.

The creation of a competitive grant program for MHK RD&D test facilities would mimic similar innovative activities already sponsored by DOE for other renewable energy technologies. DOE is currently investing in three MHK test facilities that focus on the demonstration of multiple MHK technologies. Investment in these National Marine Renewable Energy Centers (NMRECs) is critically important in order to help MHK technologies realize their full potential and to support their rapid commercialization if done in an environmentally responsible way. Each Center is currently developing plans for the development of open-water test facilities. Further investment in NMRECs, as called for by this legislation, would enable the open-water test berths to be established. Third-party testing and evaluation of device performance and reliability would enable private sector investment in these emerging technologies.

All three of DOE's existing NMRECs are unrestricted in terms of the device types they develop and support. Although none are geographically located for in-stream testing, tidal device research and development can substitute. It is unnecessary to distinguish between "marine" and "hydrokinetic" centers as the existing NMRECs could conduct research on any type of device.

On June 29, 2010, the Department of Energy and the Department of the Interior (DOI) signed an MOU for the coordinated deployment of renewable energy technologies on the OCS. The MOU's Action Plan includes a number of MHK-related activities, including coordination of studies and other activities to support future BOEMRE-issued

MHK research leases, the development of environmental monitoring and mitigation protocols and collaboration on environmental study efforts, and development of a plan for MHK resource management and prediction. Additionally, on August 3, 2010, DOE announced the designation of Florida Atlantic University (FAU) as a national center for ocean energy research and development. With this designation, DOE awarded the new Southeast National Marine Renewable Energy Center \$250,000 to undertake research and development of technologies capable of generating power from ocean currents and ocean thermal energy. FAU has applied for a five-year limited lease under BOEMRE's Interim Policy. If issued, this lease would allow for limited testing of ocean current devices on the OCS offshore Florida. DOE has also provided funding to the Northwest National Marine Renewable Energy Center to aid in the development of facilities to serve as an integrated, standardized test center for developers of wave and tidal energy, and the Hawaii National Marine Renewable Energy Center for the development of a site for the testing of wave energy conversion devices and ocean thermal energy conversion systems. DOE may seek to obtain research leases from DOI.

If funding is realized under S. 630, development of MHK technologies would be accelerated, speeding their transformation from promising but fledgling technologies to commercially viable, clean, renewable energy sources.

*Title I, Subtitle D of the American Clean Energy Leadership Act of 2009*

Title I, Subtitle D of ACELA contains provisions that would create an energy-water clean technology grant program in DOE and would require several studies on the energy-water nexus.

The grant program created under ACELA could serve as a useful way to spur industry to devote time and resources to develop strategies to minimize water consumption in energy processes. These provisions would also require DOE and other agencies to collaborate on several studies on this subject. The study that would be run by the Natural Academy of Sciences regarding the effects of energy development and production on U.S. water resources would be a useful, in-depth analysis. However, in this legislation, the analysis appears limited to a current assessment. While this in itself would be useful, DOE recommends that any such study also consider the expected increase in water demand from projected growth in energy production, and the water implications of moving to a clean energy economy. This will be especially important since certain clean energy technologies (carbon capture and storage, bioenergy, concentrated solar power, etc.) may result in increased water demands. The effects of climate change on water availability should also be analyzed in order to better understand the potential vulnerability of the energy sector to water constraints.

One of the other studies included in ACELA would require the Department of the Interior (DOI) to evaluate the amount of energy used in water storage and delivery operations. This study would be useful, but DOE suggests that the proposed study would benefit from consultation with other agencies with expertise in the energy-water area, including DOE.

In general, interagency consultation must be an integral component of our national strategy to address the energy-water nexus. Along with energy production, agriculture uses more water than any other sector in the U.S., so engagement with the U.S. Department of Agriculture will be essential. The U.S. Army Corps of Engineers must also play a vital role in developing more efficient water usage strategies. DOE welcomes efforts to build on existing collaborations with these and other agencies, such as the MOU referenced above.

These provisions would also require DOE to develop an Energy-Water R&D Roadmap to define future RD&D and commercialization efforts necessary to address emerging water-related challenges to future clean energy generation and production. DOE has already produced a report examining these issues, which it transmitted to Congress in January of 2007, and has developed a follow-up report, "Energy-Water Challenges and Research and Development Issues," that we expect will be finalized and transmitted to Congress shortly.

### *Conclusion*

In conclusion, I would like to again thank this Committee for its leadership in supporting both conventional hydropower and MHK energy technologies and in confronting the challenges associated with the interrelation of our energy and water consumption.

As Secretary Chu stated last year, "While hydropower is the largest source of renewable electricity in the nation, hydropower capacity has not increased significantly in decades. As the single largest owner of hydropower generation in the United States, it is important for the federal government to tap this valuable asset so it can continue to contribute to our clean energy portfolio and energy security."<sup>13</sup> S. 629 and S. 630 both contain provisions that would help realize this goal; however, both bills contain authorizations significantly in excess of the 2012 Budget request within EERE for Water Programs. The President's FY 2012 budget represents DOE's priorities for applied R&D in energy efficiency and renewable energy technologies.

Transitioning to a clean energy economy will be greatly enhanced if we also identify ways to minimize or eliminate water use associated with energy generation. The ACELA provisions could be the catalyst to finding these solutions.

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<sup>13</sup><http://www.energy.gov/news/8793.htm>.

I would be pleased to address any questions the Committee might have.

TESTIMONY OF JEFF C. WRIGHT, DIRECTOR, OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION

Chairman Bingaman, Ranking Member Murkowski, and Members of the Committee:

My name is Jeff Wright and I am the Director of the Office of Energy Projects at the Federal Energy Regulatory Commission (Commission or FERC). I appreciate the opportunity to appear before you to discuss S. 629, S. 630, and S. 1462. As a member of the Commission's staff, the views I express in this testimony are my own, and not those of the Commission or of any individual Commissioner.

I. BACKGROUND

The Commission regulates over 1,600 hydropower projects at over 2,500 dams pursuant to Part I of the Federal Power Act (FPA). Together, these projects represent 54 gigawatts of hydropower capacity, more than half of all the hydropower in the United States. Hydropower is an essential part of the Nation's energy mix and offers the benefits of an emission-free, renewable, domestic energy source with public and private capacity together totaling about nine percent of U.S. electric generation capacity.

Under the FPA, non-federal hydropower projects must be licensed by the Commission if they: (1) are located on a navigable waterway; (2) occupy federal lands; (3) use surplus water from a federal dam; or (4) are located on non-navigable waters over which Congress has jurisdiction under the Commerce Clause, involve post-1935 construction, and affect interstate or foreign commerce.

The FPA authorizes the Commission to issue either licenses or exemptions for projects within its jurisdiction. Licenses are generally issued for terms of between 30 and 50 years, are renewable, and carry with them the right to exercise federal eminent domain to obtain property necessary for the construction, operation, and maintenance of a project. Exemptions are perpetual, and thus do not need to be renewed, but do not permit the use of eminent domain. Congress has established two types of exemptions. First, section 30 of the FPA allows the Commission to issue exemptions for projects that utilize for generation only the hydroelectric potential of manmade conduits that are operated for the distribution of water for agricultural, municipal, or industrial consumption, and not primarily for the generation of electricity. Conduit projects must be located on nonfederal lands, and have a maximum capacity of 15 megawatts (40 megawatts if the exemptee is a state or local government entity). Second, in section 405(d) of the Public Utility Regulatory Policies Act, Congress authorized the Commission to grant exemptions for small hydro-



electric power projects having an installed capacity of 5,000 kilowatts or less. To qualify for this type of exemption, a project must be located at an existing dam that does not require construction or the enlargement of an impoundment, or must use the hydropower potential of a natural water feature, such as a waterfall. Both types of exemptions are subject to mandatory fish and wildlife conditions provided by federal and state resource agencies.

The Commission has established three licensing processes, with the intent of allowing parties to select the process that is best suited to individual proceedings. The integrated licensing process (ILP) frontloads issue identification and environmental study to the period before an application is filed, and is thus well-suited to complex cases with substantial issues. The alternative licensing process (ALP) allows participants significant flexibility to tailor licensing procedures in a manner that may work well for unique cases. The traditional licensing process (TLP), in which environmental and other work can occur after the application is filed appears to work best for less controversial matters. The TLP may be the process that is best-suited for many simple cases involving exemptions or small, low impact licenses. Commission staff has also developed a pilot licensing process for hydrokinetic projects in which, with the assistance of federal and state resource agencies, a project can be licensed in as little as six months.

It is extremely important to note that project developers and other stakeholders, not the Commission, in most instances play the leading role in determining project success and whether the regulatory process will be short or long, simple or complex. The first key issue is site selection and proposed project operation. For example, the processing of applications tends to be expedited when applicants propose projects that: (1) are located at an existing dam where hydropower facilities do not currently exist, (2) would result in little change to water flow and use, (3) are unlikely to affect threatened and endangered species and are unlikely to need fish passage facilities, and (4) involve lands and facilities that are already owned by the applicant. To the extent that a proposed project, even one of small size, raises concerns about water use and other environmental issues, it may be difficult for the Commission to quickly process an application. It is important to remember that the small capacity of a proposed project does not necessarily mean that the project has only minor environmental impacts.

Another, and related, factor is the extent to which project developers reach out to affected stakeholders. If a developer contacts concerned citizens, local, state, and federal agencies, Indian tribes, and environmental organizations, and works with them to develop consensus as to what information is needed to understand the impacts of a project and what environmental measures may be appropriate, and to develop support for the project, the application and review process is likely to be simpler and quicker.

Where a project comes as a surprise to affected entities or where a developer does not respond to expressed concerns, the Commission's job becomes much more difficult, because the Commission must, and does, ensure that all expressed concerns are addressed.

A final, and again related, matter is the development of the full record that the Commission needs to act on an application. A potential applicant needs to work with Commission staff and with federal and state resource agencies and other stakeholders to determine what information is needed to support an application, and to provide the Commission with a complete application. Where Commission staff or other stakeholders must ask an applicant to provide information that is missing from an application, the regulatory process slows down.

The other entities with roles in the licensing and exemption process regarding small hydropower projects are also key to its success. The quickest, most efficient process can be achieved only where federal and state agencies, as well as other stakeholders, devote the resources early on to help project review move ahead, and where they display the flexibility to look at the merits of individual projects and the willingness to shorten the process in appropriate cases. Commission staff is dedicated to making the regulatory process as short and cost-effective as possible. We can only do that where applicants, resource agencies, and other stakeholders serve as willing partners in the process.

## II. COMMISSION EFFORTS REGARDING SMALL AND INNOVATIVE PROJECTS

The majority of the hydropower projects regulated by the Commission are small projects, with about 71 percent having an installed capacity of 5 megawatts (MW) or less. In recent years, the Commission has seen a greatly increased interest in small hydropower projects, in innovative hydrokinetic projects, and in pumped storage projects, particularly closed loop pumped storage, which does not involve regular water withdrawals from rivers or other water sources. The Commission has responded by implementing a number of measures to facilitate efficient review of project proposals. In 2007, in order to provide personalized, responsive service to entities seeking to develop small hydropower projects, Commission staff established a dedicated phone line and email address for inquiries on small hydropower, developed a brochure to provide guidance to potential developers of small, low impact hydropower projects, and put these resources and a list of frequently-asked questions on the Commission's website.

In light of the continued growing interest in such development, the Commission held a technical conference on December 2, 2009, at its Washington, D.C. headquarters to explore issues related to licensing, and exempting from licensing, small non-federal hydropower projects in the U.S. The December technical conference generated discussion on recommendations that could improve the process for au-

thorizing small hydropower projects. In addition to insights received from the panelists and attendees at the December conference, written comments were solicited and over 40 comment letters were received from industry representatives; federal, state, and local agencies; private citizens; and non-governmental organizations. At the Commission's April 15, 2010 meeting, staff reported on the conference and the comments received, and presented an action plan to assist and expedite the review of small hydropower proposals. The action plan adopted the following immediate changes: (1) adding new web-based resources to the Commission's website ([www.ferc.gov](http://www.ferc.gov)) to make it easier for applicants to understand and complete the licensing process; (2) updating or creating Memoranda of Understanding (MOUs) with other agencies to improve coordination; (3) continuing our small hydropower hotline and email address to answer applicant questions; and (4) educating potential small hydropower developers through a new education and outreach program.

The Commission has, under its small hydro initiative, held numerous outreach meetings with small hydropower developers and interested stakeholders, and implemented web based tools, such as conduit application templates and application checklists, which potential applicants can use to prepare their applications. The small hydro website further contains guidance and sample letters that applicants can use to obtain waivers from fish and wildlife agencies for part of the prefiling consultation process. The Commission staff has also relaxed some of the standards, under Section 4.39 of its regulations, for exhibits and drawings for conduit applications. For those applicants that have filed complete and adequate applications, and for which the Commission has determined that impacts are minimal, the Commission has reduced the public notice period from 60 days to 30 days and the reply period from 45 days to 15 days. A number of conduit exemptions have been approved in as short as two months from the date that an application has been deemed complete.

Since the April 15, 2010 Commission meeting, we have signed an MOU with the State of Colorado to expedite the small hydro licensing process (August 2010); launched a small hydro program website (August 2010); participated in small hydro workshops in Oregon (September 2010), Massachusetts (October 2010), and New Hampshire November 2010); conducted two webinars on our small hydro website (November/December 2010); and updated our small hydro brochure. Upcoming outreach efforts will include: participating in small hydro workshops in Washington, DC, Vancouver, BC, and California as well as conducting another webinar this summer. We have also completed an update on our MOU with the Army Corps of Engineers.

The MOU with the State of Colorado provides an excellent example of a Federal-State solution for developing a pilot process to find flexible and innovative ways to reduce

barriers to small hydro and conduit project development. In order to facilitate the Commission approval of such projects, the MOU provides that Colorado will prescreen any proposals and ensure that the applications are complete and meet Commission regulations before they are filed.

With this background, I will turn to the draft legislation.

### III. S. 629

S. 629, the Hydropower Improvement Act of 2011, has the laudable goal of increasing hydropower capacity and generation in United States. I strongly support that goal, and offer comments on specific sections of the bill.

#### *A. Sections 5 and 6*

Sections 5 and 6 of the bill would authorize the Secretary of Energy to issue grants to increase hydropower generation, and to support hydropower research, development, and demonstration projects. I support these sections, which would assist in the development of additional renewable energy.

#### *B. Section 7*

Section 7 would require the Commission to investigate the feasibility of implementing a two-year licensing process, in particular, with respect to hydropower development at existing, non-powered dams, and for closed-loop pumped storage projects.

I support the goal of an expedited licensing process. Indeed, as I have discussed, it is Commission staff's goal to act on all license applications as quickly as possible, and the Commission has established processes that allow for great flexibility and efficiency. I am thus not certain whether an additional licensing process is necessary. During the last few years, we have been able to issue some licenses in a matter of a few months, where the project proponent had selected a site wisely, stakeholders had agreed on information needs, and state and federal agencies performed their responsibilities quickly. Moreover, the Commission operates under significant constraints imposed by the FPA, and by other legislation affecting the licensing process—the Clean Water Act, Coastal Zone Management Act, Endangered Species Act, and National Historic Preservation Act among them. In the absence of the ability to waive sections of the FPA and other acts, or to set enforceable schedules in licensing proceedings, it is not clear that the Commission, under its existing authorities, can mandate a shortened process.

#### *C. Section 8*

Section 8 would establish various measures to promote conduit and small hydropower projects. Again, this goal is consistent with Commission policy and has been a major focus of Commission's staffs effort in the last few years.

Section 8(a)(1) would amend section 30 of the FPA to allow conduit projects to be located on federal lands. I support this provision, which would remove the current bar on siting conduit projects on federal lands. This section would also amend the FPA to provide conditioning authority to federal land management agencies. These agencies already have the ability to impose conditions on proposed projects through the requirement that developers obtain special use authorizations under the Federal Land Management and Policy Act, so this amendment may not alter the current regulatory regime. As a general matter, however, I do have some concern that authorizing additional mandatory conditioning authority may slow down the licensing process and result in increased potential bars to hydropower development.

Section 8(a)(3) would require the Commission and the Commissioner of Reclamation to conduct regional public workshops on reducing barriers to conduit hydropower projects and thereafter report any recommendations to Congress. We have worked successfully with the Bureau of Reclamation in the past and are prepared to join Reclamation in this effort.

Section 8(b) would require the Commission to conduct regional public workshops on reducing barriers to small hydropower projects, and to report the results of this effort to Congress. Noting the outreach efforts described above, we are prepared to undertake this additional effort should Congress deem it helpful.

#### *D. Section 9*

Section 9 would amend the FPA to authorize the Commission to extend the term of a preliminary permit issued under FPA section 5 once for up to two years. Preliminary permits grant the permittee a “first-to-file” preference with respect to license applications for projects being studied under a permit. Commission staff has heard anecdotally that developers are concerned that the need for environmental studies in some instances makes it difficult to complete a license application within the current maximum three-year term of a permit, with the result that a developer which has invested substantial time and money studying a project may face the possibility of losing its project based on competition from other entities—particularly those with statutorily-granted municipal preference—if it needs to seek a subsequent permit. I therefore support the proposed FPA amendment, which could ameliorate this problem. It might be worth considering, as an alternative, authorizing the Commission to issue permits for terms of up to five years, which could avoid the need for developers to go through the process of seeking an extension.

#### *E. Section 10*

Section 10 would require the Commissioner of Reclamation, in consultation with the Commission, to study barriers to non-federal hydropower development at Bureau of

Reclamation projects and to develop a memorandum of understanding to improve the coordination and timeliness of such development. We have already begun working with the Bureau of Reclamation on this matter, and we have no objection to Section 10.

#### IV. THE MARINE AND HYDROKINETIC RENEWABLE ENERGY PROMOTION ACT OF 2011

S. 630 would authorize the Secretary of Energy to take various steps to promote marine and hydrokinetic renewable energy technology. As a general matter, the bill is consistent with the Commission's initiatives to support the development of appropriate marine and hydrokinetic projects, which I have previously described. I have only two comments on the bill.

Section 3 of S. 630 would allow the Secretary of Energy to issue grants to support national testing facilities for marine and hydrokinetic technology research, development, and demonstration. Commission staff has informally discussed this concept with DOE staff over the last year or so, and I believe that testing centers could be extremely helpful in the development of new renewable technologies. Section 3 provides that test centers may be nonprofit institutions, state or local governments, national laboratories, or National Marine Renewable Energy Research, Development, and Demonstration Centers established pursuant to section 634 of the Energy Independence and Security Act of 2007. The Federal Power Act contains no provisions allowing the Commission to authorize the testing of jurisdictional hydropower facilities; accordingly, with some limited exceptions, tests centers operated by private entities or by state and local government may be required to be licensed by the Commission. Moreover, if a test center were to use a variety of technologies with differing environmental impact, the Commission might be required to issue separate authorizations for individual tests. This would not be the case for centers under the aegis of other federal entities, such as DOE, which do not fall within the Commission's jurisdiction. Therefore, to allow for the maximum flexibility and simplicity, it may be worth considering either placing any test centers under the authority of DOE or another federal agency or providing an exemption from the provisions of Part I of the FPA for such test centers.

Second, section 6 of the bill would authorize the Secretary of Energy to issue grants to advance the development of marine and hydrokinetic renewable energy; to help fund the costs of environmental analysis, the collection and dissemination of environmental data; and to support demonstration projects. The provision of grant funding to address the environmental information needs surrounding these new technologies directly addresses an issue of concern to federal agencies and other stakeholders. Environmental information is essential to the development and regulation of energy projects, yet, because marine and hydrokinetic technology is relatively new, and because

these projects may be sited in areas, such as coastal zones, where the environment is not as well understood as on-shore areas, much necessary information has yet to be developed. The cost of obtaining environmental information falls in large part on pioneering developers, and may thus discourage their efforts. The Commission and other federal agencies are partnering to reduce this burden by assembling and sharing environmental information. However, there are still issues which will require new studies, some of which are relevant to many developers. Federal funding to support gathering such information will help the regulatory process and advance the development of the technology as a whole.

#### V. THE AMERICAN CLEAN ENERGY LEADERSHIP ACT OF 2009

Title I, subtitle D of the American Clean Energy Leadership Act deals with the integration of energy and water resources. While this subtitle would not impose any direct requirements on the Commission, I note that the Commission recognizes the link between energy development and the use of our Nation's water resources. In siting natural gas and hydropower projects, the Commission conducts thorough analyses of the impact of proposed projects on water resources, authorizes only those projects that appropriately balance energy development and environmental protection, and imposes mitigation measures to ensure that approved projects are developed in an environmentally responsible manner.

#### VIII. CONCLUSION

There is a great deal of potential for the development of additional hydropower projects throughout the country, including small projects and marine and hydrokinetic projects. Working within the authority given it by Congress, the Commission continues to adapt its existing, flexible procedures to facilitate the review and, where appropriate, the approval of such projects. Commission staff remains committed to exploring with project developers, its sister federal agencies, Indian tribes, the states, local government, and other stakeholders every avenue for the responsible development of our nation's hydropower potential. The legislation under consideration will, as I have testified, assist in realizing that potential.

This concludes my remarks. I would be pleased to answer any questions you may have.

#### CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as ordered reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics existing law in which no change is proposed is shown in roman):

## ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

Public Law 110–140, Approved December 19, 2007

AN ACT To move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

\* \* \* \* \*

### SEC. 633. MARINE AND HYDROKINETIC RENEWABLE ENERGY RESEARCH AND DEVELOPMENT.

(a) *IN GENERAL.*—The Secretary, in consultation with the Secretary of the Interior and the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, shall establish a program of research, development, demonstration, and commercial application to expand marine and hydrokinetic renewable energy production, including programs to—

(1) study and compare existing marine and hydrokinetic renewable energy technologies;

(2) research, develop, and demonstrate marine and hydrokinetic renewable energy systems and technologies;

(3) reduce the manufacturing and operation costs of marine and hydrokinetic renewable energy technologies;

(4) investigate efficient and reliable integration with the utility grid and intermittency issues;

(5) advance wave forecasting technologies;

(6) conduct experimental and numerical modeling for optimization of marine energy conversion devices and arrays;

(7) increase the reliability and survivability of marine and hydrokinetic renewable energy technologies, including development of corrosive-resistant materials;

(8) identify, in conjunction with the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, and other Federal agencies as appropriate, the potential environmental impacts, including potential impacts on fisheries and other marine resources, of marine and hydrokinetic renewable energy technologies, measures to prevent adverse impacts, and technologies and other means available for monitoring and determining environmental impacts;

(9) identify, in conjunction with the Secretary of the Department in which the United States Coast Guard is operating, acting through the Commandant of the United States Coast Guard, the potential navigational impacts of marine and hydrokinetic renewable energy technologies and measures to prevent adverse impacts on navigation;

(10) develop power measurement standards for marine and hydrokinetic renewable energy;

(11) develop identification standards for marine and hydrokinetic renewable energy devices;

(12) address standards development, demonstration, and technology transfer for advanced systems engineering and system integration methods to identify critical interfaces;



(13) identifying opportunities for cross fertilization and development of economies of scale between other renewable sources and marine and hydrokinetic renewable energy sources; **[and]**

(14) providing public information and opportunity for public comment concerning all technologies~~[[.]]~~; *and*

(15)(A) *apply advanced systems engineering and systems integration methods to identify critical interfaces and develop open standards for marine and hydrokinetic renewable energy;*

(B) *transfer the resulting environmental data to industry stakeholders as public information through published interface definitions, standards, and demonstration projects; and*

(C) *develop incentives for industry to comply with the standards.*

(b) **REPORTS.**—Not later than 18 months after the date of enactment of this Act, the Secretary, in conjunction with the Secretary of Commerce, acting through the Undersecretary of Commerce for Oceans and Atmosphere, and the Secretary of the Interior, shall provide to the Congress a report that addresses—

(1) the potential environmental impacts, including impacts to fisheries and marine resources, of marine and hydrokinetic renewable energy technologies;

(2) options to prevent adverse environmental impacts;

(3) the potential role of monitoring and adaptive management in identifying and addressing any adverse environmental impacts; and

(4) the necessary components of such an adaptive management program

(c) **TEST FACILITIES.**—

(1) **IN GENERAL.**—*In carrying out this section, not later than 180 days after the date of enactment of this subsection, the Secretary shall award competitive grants to support 4 or more geographically dispersed marine and hydrokinetic renewable energy technology research, development, and demonstration test facilities for the demonstration of multiple technologies in actual operating environments operating marine environments (including industry demonstrations).*

(2) **PREFERENCE.**—*In awarding competitive grants under this subsection, the Secretary shall give preference to existing marine and hydrokinetic testing facilities and existing Centers established under section 634.*

(3) **FACILITIES.**—*Grants under this subsection may support—*

(A) *modification of an existing facility (including a Center established under section 634); or*

(B) *construction of a new test facility.*

(4) **PROGRAM OBJECTIVES.**—*In awarding grants under this subsection, the Secretary shall provide for the demonstration of—*

(A) *a variety of technologies at each test facility;*

(B) *a variety of technologies among all of the test facilities established; and*

(C) *technologies on a variety of scales.*

(5) **ACTIVITIES.**—*Each test facility established under this subsection shall—*

(A) provide infrastructure and resources for the evaluation and technical viability testing of marine and hydrokinetic renewable energy technologies; and

(B) conduct and support research, development, and demonstration activities with respect to marine and hydrokinetic renewable energy technologies.

(6) *ELIGIBILITY.*—To be eligible for a grant under this subsection, an applicant for a grant shall—

(A) be—

(i) a nonprofit institution;

(ii) a State or local government;

(iii) an institution of higher education;

(iv) a university consortium;

(v) a National Laboratory; or

(vi) a Center established under section 634; and

(B) demonstrate to the satisfaction of the Secretary the ability and intention to—

(i) combine expertise from relevant academic fields, including fields relating to—

(I) the environment;

(II) marine and riverine sciences;

(III) energy;

(IV) ocean engineering; and

(V) electrical, mechanical, and civil engineering;

and

(ii) partner with other entities (including industry) that have expertise in advancing marine and hydrokinetic renewable energy technologies.

**SEC. 634. NATIONAL MARINE AND HYDROKINETIC RENEWABLE ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION CENTERS.**

(a) *CENTERS.*—The Secretary shall award grants to institutions of higher education (or consortia thereof) for the establishment of 1 or more National Marine and Hydrokinetic Renewable Energy Research, Development, and Demonstration Centers. In selecting locations for Centers, the Secretary shall consider sites that meet one of the following criteria:

(1) Hosts an existing marine renewable energy research and development program in coordination with an engineering program at an institution of higher education.

(2) Has proven expertise to support environmental and policy-related issues associated with harnessing of energy in the marine environment.

(3) Has access to and utilizes the marine resources in the Gulf of Mexico, the Atlantic Ocean, or the Pacific Ocean.

The Secretary may give special consideration to historically black colleges and universities and land grant universities that also meet one of these criteria. In establishing criteria for the selection of the Centers, the Secretary shall consult with the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, on the criteria related to ocean waves, tides, and currents including those for advancing wave forecasting technologies, ocean temperature differences, and studying the compatibility of marine renewable energy technologies and systems with the environment, fisheries, and other marine resources.

[(b) PURPOSES.—The Centers shall advance research, development, demonstration, and commercial application of marine renewable energy, and shall serve as an information clearinghouse for the marine renewable energy industry, collecting and disseminating information on best practices in all areas related to developing and managing enhanced marine renewable energy systems resources.]

(b) PURPOSES.—*The Centers—*

(1) shall—

(A) *advance research, development, demonstration, and commercial application of marine and hydrokinetic renewable energy technologies; and*

(B) *serve as information clearinghouses for the marine and hydrokinetic renewable energy industry by collecting and disseminating information on best practices in all areas relating to developing and managing marine and hydrokinetic renewable energy technologies; and*

(2) *may serve as technology test facilities established under section 633(c).*

(c) DEMONSTRATION OF NEED.—When applying for a grant under this section, an applicant shall include a description of why Federal support is necessary for the Center, including evidence that the research of the Center will not be conducted in the absence of Federal support.

\* \* \* \* \*

**SEC. 635. MARINE-BASED ENERGY DEVICE VERIFICATION PROGRAM.**

(a) ESTABLISHMENT.—*The Secretary shall establish a marine-based energy device verification program to provide a bridge from the marine and hydrokinetic renewable energy capture device design and development efforts underway across the industry to commercial deployment of marine and hydrokinetic renewable energy devices.*

(b) PURPOSES.—*The purposes of the program are to fund, facilitate the development and installation of, and evaluate marine and hydrokinetic renewable energy projects, in partnership with Federally Funded Research and Development Centers, and in conjunction with Centers established under section 634, universities and other institutions of higher education, private business entities, and other appropriate organizations, in order—*

(1) *to increase marine and hydrokinetic renewable energy experience; and*

(2) *to build and operate enough candidate devices to obtain statistically significant operating and maintenance data.*

(c) OBJECTIVES.—*The objectives of the program shall include—*

(1) *verifying the performance, reliability, maintainability, and cost of new marine and hydrokinetic renewable energy device designs and system components in an operating environment;*

(2) *providing States, regulators, utilities, and other stakeholders with a valid opportunity to test and evaluate marine and hydrokinetic renewable energy technology in new areas;*

(3) *documenting and communicating the experience from those projects for the benefit of utilities, independent power producers, other nonutility generators, device suppliers, and others*

*in the marine and hydrokinetic renewable energy development community; and*

*(4) resolving environmental issues through robust characterization, reliable impact prediction, effective monitoring, development, and use of adaptive management, and informing engineering design to improve environmental performance.*

**SEC. 636. ADAPTIVE MANAGEMENT AND ENVIRONMENTAL GRANT PROGRAM.**

*(a) FINDINGS.—Congress finds that—*

*(1) the use of marine and hydrokinetic renewable energy technologies can reduce contributions to global warming;*

*(2) marine and hydrokinetic renewable energy technologies can be produced domestically;*

*(3) marine and hydrokinetic renewable energy is a nascent industry; and*

*(4) the United States must work to promote new renewable energy technologies that reduce contributions to global warming gases and improve domestic energy production.*

*(b) GRANT PROGRAM.—*

*(1) IN GENERAL.—As soon as practicable after the date of enactment of this subsection, the Secretary shall establish a program under which the Secretary shall award grants to eligible entities—*

*(A) to advance the development of marine and hydrokinetic renewable energy;*

*(B) to help fund the costs of environmental analysis affecting the deployment of marine hydrokinetic devices;*

*(C) to help enable the eligible entities—*

*(i) to gather and collect the types of environmental data that are required when working in a public resource (including the waterways and oceans of the United States); and*

*(ii) to monitor the impacts of demonstration projects and make the resulting information available for widespread dissemination to aid future projects; and*

*(D) to help fund the cost of advancing renewable marine and hydrokinetic technologies in ocean and riverine environments from demonstration projects to development and deployment.*

*(2) APPLICATION.—To be eligible to receive a grant under this paragraph, an entity shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.*

**SEC. 637. ADMINISTRATION.**

*(a) IN GENERAL.—In carrying out this subtitle, the Secretary shall—*

*(1) coordinate and avoid duplication of activities across programs of the Department and other applicable Federal agencies, including the National Laboratories;*

*(2) collaborate with (as applicable)—*

*(A) industry;*

*(B) stakeholders;*

*(C) other Federal agencies, including the National Laboratories;*

(D) academic institutions; and

(E) international bodies with relevant scientific expertise;  
and

(3) obtain from the recipient of assistance and make available to the public, through Web sites, reports, and databases of the Department, any research, development, demonstration, and commercial application information produced with respect to supported technology, including information obtained after the completion of supported activities, except to the extent that the information is protected from disclosure under section 552(b) of title 5, United States Code.

(b) **REPORTS.**—Not later than 1 year after the date of enactment of this section and at least once every 2 years thereafter, the Secretary shall submit to Congress a report on findings and activities conducted under this subtitle.

**SEC. 63[5]8. APPLICABILITY OF OTHER LAWS.**

Applicability of any requirement under any environmental or other Federal or State law.

**SEC. 63[6]9. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary to carry out this subtitle \$50,000,000 for each of the fiscal years 2008 through 2012, except that no funds shall be appropriated under this section for activities that are receiving funds under section 931(a)(2)(E)(i) of the Energy Policy Act of 2005 (42 U.S.C. 16231(a)(2)(E)(i)).

(a) **IN GENERAL.**—There is authorized to be appropriated to carry out this subtitle, to remain available until expended—

(1) \$70,000,000 for fiscal year 2012; and

(2) \$75,000,000 for fiscal year 2013.

(b) **RENEWABLE ENERGY FUNDS.**—No funds shall be appropriated under this section for activities that are receiving funds under section 931(a)(2)(E)(i) of the Energy Policy Act of 2005 (42 U.S.C. 16231(a)(2)(E)(i)).

\* \* \* \* \*

**SEC. 803. [RENEWABLE ENERGY DEPLOYMENT] NATIONAL RENEWABLE ENERGY DEPLOYMENT PROGRAM.**

(a) **DEFINITIONS.**—In this section:

[(1) **ALASKA SMALL HYDROELECTRIC POWER.**—The term “Alaska small hydroelectric power” means power that—

[(A) is generated—

[(i) in the State of Alaska;

[(ii) without the use of a dam or impoundment of water; and

[(iii) through the use of—

[(I) a lake tap (but not a perched alpine lake);

or

[(II) a run-of-river screened at the point of diversion; and

[(B) has a nameplate capacity rating of a wattage that is not more than 15 megawatts.]

[(2) (1) **ELIGIBLE APPLICANT.**—The term “eligible applicant” means any—

(A) governmental entity;

(B) private utility;

- (C) public utility;
- (D) municipal utility;
- (E) cooperative utility;
- (F) Indian tribes; and
- (G) Regional Corporation (as defined in section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602)).

[(3)](2) OCEAN ENERGY.—

(A) INCLUSIONS.—The term “ocean energy” includes current, wave, and tidal energy.

(B) EXCLUSION.—The term “ocean energy” excludes thermal energy.

[(4)](3) RENEWABLE ENERGY PROJECT.—The term “renewable energy project” means a project—

(A) for the commercial generation of electricity; and

(B) that generates electricity from—

- (i) solar, wind, or geothermal energy or ocean energy;
- (ii) biomass (as defined in section 203(b) of the Energy Policy Act of 2005 (42 U.S.C. 15852(b)));
- (iii) landfill gas; or
- (iv) [Alaska] small hydroelectric power.

(4) SMALL HYDROELECTRIC POWER.—*The term “small hydroelectric power” means power that—*

(A) *is generated—*

- (i) *without the use of a dam or impoundment of water; and*
- (ii) *through the use of—*
  - (I) *a lake tap (but not a perched alpine lake); or*
  - (II) *a run-of-river screened at the point of diversion; and*

(B) *has a nameplate capacity rating of a wattage that is not more than 15 megawatts.*

(b) RENEWABLE ENERGY CONSTRUCTION GRANTS.—

(1) IN GENERAL.—The Secretary shall *establish a national renewable energy construction grants program under which the Secretary shall* use amounts appropriated under this section to make grants for use in carrying out renewable energy projects, *including feasibility studies for such projects.*

(2) CRITERIA.—Not later than 180 days after the date of enactment of this Act, the Secretary shall set forth criteria for use in awarding grants under this section.

(3) APPLICATION.—To receive a grant from the Secretary under paragraph (1), an eligible applicant shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require, including a written assurance that—

(A) all laborers and mechanics employed by contractors or subcontractors during construction, alteration, or repair that is financed, in whole or in part, by a grant under this section shall be paid wages at rates not less than those prevailing on similar construction in the locality, as determined by the Secretary of Labor in accordance with sections 3141–3144, 3146, and 3147 of title 40, United States Code; and

(B) the Secretary of Labor shall, with respect to the labor standards described in this paragraph, have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (5 U.S.C. App.) and section 3145 of title 40, United States Code.

(4) NON-FEDERAL SHARE.—Each eligible applicant that receives a grant under this subsection shall contribute to the total cost of the renewable energy project constructed by the eligible applicant an amount not less than 50 percent of the total cost of the project.

(5) PRIORITY.—*In making grants to eligible applicants to carry out renewable energy projects under this section, the Secretary shall give priority to applicants that—*

*(A) have power costs that are 125 percent or more of average national retail costs; and*

*(B) will use the grant to construct renewable electricity projects to replace or partially replace fossil fuel projects.*

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Fund such sums as are necessary to carry out this section.

\* \* \* \* \*

## PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978

【Public Law 95–617, Approved November 9, 1978, as Amended】

AN ACT To suspend until the close of June 30, 1980, the duty on certain doxorubicin hydrochloride antibiotics

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

### SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Public Utility Regulatory Policies Act of 1978”.

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## TITLE VI—MISCELLANEOUS PROVISIONS

\* \* \* \* \*

### SEC. 609. RURAL AND REMOTE COMMUNITIES ELECTRIFICATION GRANTS.

\* \* \* \* \*

(c) GRANT ADMINISTRATION.—(1) The Secretary shall make grants under this section based on a determination of cost-effectiveness and the most effective use of the funds to achieve the purposes described in subsection (b).

(2) For each fiscal year, the Secretary shall allocate grant funds under this section equally between the purposes described in paragraphs (1) and (2) of subsection (b).

(3) In making grants for the purposes described in subsection (b)(2), the Secretary shall give preference to renewable energy facilities.

(d) *AUTHORIZATION OF APPROPRIATIONS*.—There is authorized to be appropriated to the Secretary to carry out this section \$20,000,000 for each of fiscal years 2006 through **2012** *2011*.

