American Rivers
Thriving By Nature

Written Testimony
Submitted to the
United States Senate
Committee on Energy and Natural Resources

On S. 629 (The Hydropower Improvement Act of 2011)
and S. 630 (The Marine and Hydrokinetic Renewable Energy Promotion Act of 2011)

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1 Introduction

Chairman Bingaman, Ranking Member Murkowski, and Members of the Committee: thank you for this opportunity to testify and share American Rivers' perspective on the three bills that are before your committee today.

American Rivers is the nation's leading voice for healthy rivers and the communities that depend on them. We believe rivers are vital to our health, safety and quality of life. American Rivers mobilizes an extensive network comprised of tens of thousands of members and activists located in every state across the county. We have been working to protect and restore the health of rivers that have been impacted by hydropower dams since we were founded in 1973. We also serve on the Steering Committee of the Hydropower Reform Coalition, a broad consortium of more than 150 national, regional, and local organizations with a combined membership of more than one million people. In doing so, we represent stakeholders – from canoeists to conservationists to lake homeowners – that seek to improve the water quality, fisheries, recreation, and general environmental health of rivers that have been damaged by antiquated hydropower dam operations. Coalition members are active in most of the hydropower licensing proceedings currently pending before the Federal Energy Regulatory Commission (FERC), the Bureau, and the Corps, and have constructively contributed to numerous hydropower-related policy discussions. Most recently, we worked with your staff, the staff of other Senate offices, and industry representatives as you developed S. 629, the Hydropower Improvement Act that is before your committee today.

We support S. 629, and while we believe that S. 630 has promise, we oppose section 9 of S. 630 as it is currently written.

2 Towards a balanced Federal hydropower policy that encourages environmentally responsible hydropower development and operation

American Rivers is emphatically *not* anti-hydropower. Conventional hydropower is one of the oldest and most well-established among a growing number of technologies that provide low-emissions alternatives to fossil-fuel energy. Nationally, hydropower provides about 96,000 megawatts of capacity, representing nearly 7% of total generation. We expect that hydropower will continue to be a part of our nation's energy mix for years to come, and accordingly we have signed dozens of agreements supporting the operation of hydroelectric dams that together provide our nation with thousands of megawatts of generating capacity. Reasonable modifications have dramatically improved the performance of these dams, providing fish passage, improving flows, enhancing water quality, protecting riparian lands, and restoring recreational opportunities.

American Rivers supports the development of new hydropower resources that can be brought online while avoiding significant additional harm to local ecosystems. In recent years, we worked closely with the National Hydropower Association to craft renewable energy legislation that provides incentives for new hydropower development. In short, we support hydropower that is developed and operated in a responsible manner that avoids harm to America's precious river resources. Given the very real environmental and social impacts of global climate change – especially on vital freshwater systems –we

understand the need to develop new sources of energy that can replace America's reliance on fossil fuels. Hydropower will be an important part of this mix.

However, we also know that the energy we receive from hydropower comes at an enormous cost to the health of our nation's rivers and communities. Hydropower is unique among renewable resources in the scale at which it can damage the environment. Hydropower's environmental and social impacts are serious and extremely well documented. Hydropower dam operations are responsible for the extinction and near-extinction of a number of species. Hydropower plants often divert water around entire sections of river, leaving them dry or constantly alternating between drought and flood-like conditions. Hydropower dams have flooded forests, destroyed fisheries, diminished recreational opportunities, and decimated the local – mostly rural – economies that depend on those resources.

The harm caused by most hydropower dams can be avoided if hydropower is sited, constructed, and operated in a responsible manner, particularly if management decisions are made at a basin-scale rather than at the individual project level. A few simple changes can make an enormous difference in the health of a river. Hydropower operators can change the timing of power generation to mimic a river's natural hydrologic conditions, stabilize lake levels and dam releases to protect riverside land from erosion, provide fish ladders and other measures that protect fish and allow them to pass safely upstream and downstream of dams, restore habitat for fish and wildlife, alter the design and operation of plants to maintain appropriate temperature and oxygen levels in rivers, and provide public access and release water back into rivers so that people can fish, boat, and swim. These types of changes have a miniscule impact on overall generation: when FERC studied more than 240 non-federal dams where such measures had been introduced, it found that such changes cost, on average, only 1.6% of power generation. Indeed, since many of these modifications involve replacing outdated generating equipment with more efficient modern technology, overall generating capacity has actually *increased* by 4.1%. The benefits to human and natural communities have been immense.

When it comes to water, climate changes everything – when, where and how much water is available, how water is used, and the ecosystems in which humans, fish and wildlife live. Warmer temperatures are increasing evaporation and lowering water levels in rivers and aquifers. Mountain snowpack, which acts as a natural reservoir that releases water throughout summer months, is shrinking and melting earlier in the year. Precipitation is also becoming more erratic and shifting towards winter months. As a result, droughts and floods alike are becoming more frequent and more intense. These changes may make our hydropower system less reliable in the coming decades. They also highlight the urgent need to improve the environmental performance of existing hydropower dams. Poorly operated hydropower plants radically alter the timing, magnitude, and duration of streamflows, change water temperature, and stress aquatic species. In other words, hydropower operations anticipate – and exacerbate – the impacts of climate change on our rivers and watersheds.

The threat of global warming demands urgent action on two major fronts. First, we must dramatically reduce greenhouse gas emissions. But even if we bring emissions under control, the carbon already in the atmosphere from historic emissions will cause inevitable changes to the climate. We must therefore also take immediate action to help both human and natural communities adapt to inevitable climate changes by making them more resilient. Resilient communities are able to withstand extreme events

and recover quickly from disasters. By protecting and restoring healthy watersheds, increasing water efficiency and improving the quality of our infrastructure we can build resilient communities and ecosystems that stand a better chance of weathering the impacts of global warming.

Hydropower policy must play a role on both fronts. Developed responsibly, hydropower can increase our nation's portfolio of emissions-free energy. However, we must consider more than just increased megawatts. America is still blessed with many healthy, free-flowing watersheds, wetlands and floodplains that provide numerous services and values. We must preserve these intact systems and promote them as a vital part of our water supply and flood protection infrastructure. At the same time, we must rehabilitate rivers and streams that have been damaged by existing hydropower projects, and protect habitat from further degradation. A failure to improve the health of rivers now will doom more species to extinction as the world warms. Now and in the years to come, we need hydropower projects that are sited, built, and operated to produce power while minimizing impacts to the rivers that sustain America's human and natural communities. Federal agencies with a role in U.S. hydropower policy, including the Bureau of Reclamation, the U.S. Army Corps of Engineers, the Department of Energy, and the Federal Energy Regulatory Commission must make the enhancement of environmental quality – at existing and new sites alike – a top priority.

A balanced and responsible hydropower policy must take seriously both the promise of hydropower and the risks of hydropower development. It must encourage responsible development while also continually holding developers and federal operators accountable for their environmental impacts and insisting on the strictest performance standards. It must remove obstacles to development while recognizing at the most fundamental level that a high level of environmental performance and the costs of achieving that performance are not an "obstacle" to development but a fundamental and necessary component of it. It must encourage new development to take place while also accepting that some sites are simply not appropriate for new or increased hydropower production. Congress must address both sides of this equation equally.

3 The Hydropower Improvement Act (S. 629)

The Hydropower Improvement Act (S. 629) is a good step towards a well-balanced U.S. hydropower policy like the one described above. American Rivers joined the National Hydropower Association in working with the bill's sponsors to help them to craft a bill that would meet the twin goals of encouraging the development of new hydropower capacity while enhancing hydropower's environmental performance. This bill represents a substantial improvement over the Hydropower Improvement Act (S. 3570) that was introduced in the previous Congress. American Rivers is pleased to support this bill. We would like to thank all of the parties involved with drafting this bill for their extremely hard work and willingness to incorporate our perspective.

American Rivers supports this bill for three main reasons. First, we believe that it appropriately distinguishes between those hydropower projects which should be encouraged and those which should not and directs its attention towards the former. Second, it has a strong focus on research and development that focuses on improving hydropower's environmental *and* technical performance, recognizing that both are equally important. Third, it encourages regulators and stakeholders alike to work together to find creative and innovative ways to improve the existing regulatory process without

falling into the all-too-common trap of equating critical environmental protections with "regulatory barriers."

3.1 S. 629 encourages appropriate hydropower development

American Rivers supports the development of hydropower projects that are sited, constructed, and operated in a responsible manner so as to avoid harm to America's precious river resources. S. 629 recognizes that not all hydropower development is appropriate by focusing on those types of projects which can be brought online with the least impact to aquatic resources. Hydropower projects that re-use existing water and hydropower infrastructure are the best candidates for responsible development.

Section 5 of S. 629 would create a competitive grant program which would encourage projects which upgrade aging facilities or provide power to non-powered dams. This section also recognizes that solid environmental performance is critical to any new development, providing funding for studies and mitigation measures that can help to reduce a project's environmental footprint.

American Rivers has long advocated for policies that would encourage or require hydropower operators to upgrade aging turbines and generating equipment with updated, modern equipment. We believe that the public should receive the full benefit of each drop of water that passes through a turbine, and antiquated, inefficient equipment dilutes these benefits. Efficiency improvements are relatively low-cost, use turbines and equipment that is manufactured in the United States, and can often contribute to improved environmental outcomes. These efficiency upgrades are the simplest, most cost-effective, and lowest-impact means of increasing hydropower generation. The potential gains in generation are significant: in many cases, these upgrades can result in a 10-20% increase in generation from the same amount of water. There are substantial environmental benefits to these upgrades as well: modern turbines often feature designs which are less harmful to fish, and can operate efficiently across a different range of release levels, allowing for managed flow regimes which more closely mimic a natural river.

Turbines can also be added to many existing hydropower and non-hydropower dams. While these retrofits are not appropriate in every case, they offer new capacity for minimal additional environmental impacts when done right. In some cases, retrofitting existing dams for hydropower can leverage additional environmental improvements to the affected river reach. For instance, a pending retrofit at the Holtwood project on the Susquehanna River in Pennsylvania will more than double that project's generating capacity while also providing for substantially improved fish passage. Several years ago, American Rivers worked closely with the hydropower industry and members of Congress to craft legislative language that would encourage such forward-thinking development. This language has since been incorporated into the federal law which provides a Production Tax Credit for Renewables, providing developers with an incentive to develop at existing dams that are currently operated for flood control, navigation, and water supply and that could be developed without harmful changes to river flows. S. 629 carries this basic concept further in two ways: Section 5 provides grant funding for these types of projects, while sections 7 and 8(b) encourage regulators and stakeholders to test new ways to improve the regulatory process for these projects in order to allow capacity to be brought online faster without sacrificing critical environmental safeguards.

Finally, an increasing number of developers – especially in the west – are exploring off-stream hydroelectric development. Some developers propose to place turbines in existing water conveyance pipes. Others are adding hydropower capacity to irrigation canals. Still others are placing turbines in municipal water treatment facilities. Many of these projects have the potential to create substantial environmental benefit. For instance, some irrigation districts are using the revenue from power sales to fund projects that will result in the more efficient use of water, leaving more water in the river to provide ecosystem services. S. 629 encourages these types of projects in five ways: Section 5 provides grant funding for developing these projects; Section 8(a)(1) updates the conduit exemption provisions in the Federal Power Act to allow projects on Federal land to qualify while preserving critical environmental protections; Section 8(a)(2) encourages federal agencies to better coordinate their review of these projects; Section 8(a)(3) opens a public dialogue about ways that the regulatory process for these projects might be improved to bring capacity online faster while protecting the environment and public health and safety; and the updated definition of "conduit" in Section 3 will prevent abuse of the existing exemption by ensuring that it is only applied to appropriate projects that use water infrastructure that was built for some other legitimate beneficial use.

3.2 S. 629 has an appropriate focus on hydropower research and development

Section 6 of S. 629 directs the Secretary of Energy to develop a plan for research and development which will facilitate new hydropower generation and improve the environmental performance of hydropower technology. It also provides dedicated funding for this work. This would build on the excellent work that the Department of Energy's Office of Energy Efficiency and Renewable Energy Water Power Program is already doing in this area, both on its own initiative and as part of the Federal hydropower MOU that was signed in 2010. This section appropriately places increased generation and improved environmental quality as co-equal goals. American Rivers is particularly heartened by this section's requirement that the secretary provide technical assistance to project proponents that will help them to address environmental issues through studies and mitigation measures, as well as the requirement that the Secretary consult with other federal agencies that play important roles in protecting non-power public resources affected by hydropower projects.

3.3 S. 629 aims to improve the regulatory process for hydropower without falsely equating critical environmental protections with "regulatory barriers."

Sections 7 and 8 of S. 629 direct FERC to explore ways "to improve the regulatory process and reduce delays and costs" associated with hydropower development. As a frequent participant in regulatory proceedings for individual hydropower projects, American Rivers has an interest in reducing inefficiencies in these regulatory proceedings as well as the costs associated with participating in them.

Our enthusiasm for regulatory reform, however, is tempered by our recognition that the existing permitting system for hydropower provides critical protections for the ecological health of rivers, public safety, recreation, and many other non-power values. American Rivers emphatically does not subscribe to the notion that our nation's environmental, health, and safety regulations constitute "barriers" in need of streamlining, "delays" that must be shortened, or "costs" that need to be reduced. Hydropower is not intrinsically clean energy: it must be sited, constructed, and operated in an appropriate manner, or it can cause enormous environmental damage. Laws like the Federal Power Act, the Clean Water Act, the National Environmental Policy Act, and the Endangered Species Act are critical to ensuring that

hydropower is done right. We encourage this Committee to be clear that any proposed modification to the regulatory process for hydropower that would weaken any of these vital environmental protections would be unacceptable.

In our view, S. 629 largely gets this distinction right, recognizing FERC's willingness to innovate to help good projects get built more quickly. When developers choose appropriate sites for hydropower projects and invest in addressing resource issues up front, FERC has shown remarkable flexibility in processing license applications quickly and efficiently. For example, we have seen FERC staff waive pre-filing requirements with the concurrence of stakeholders in cases where there are no controversial resource issues. FERC recently published a list[1] on its website of more than 20 hydropower projects that have been permitted in less than *one* year since 2006. The Commission also recently signed an innovative Memorandum of Understanding with the State of Colorado[2] that identifies classes of projects that are likely to be permitted quickly, with FERC agreeing to expedite the processing of those applications where the state has conducted pre-screened to ensure that there are no complex or contentious resource issues at stake.

Despite FERC's willingness to be flexible, there are a number of points in the process where FERC can do better. For instance, FERC's Integrated Licensing Process was designed to synchronize FERC's NEPA scoping and record development with the information requirements of other state and federal agencies that have separate – and critical – statutory responsibilities. These other agencies can now can identify at the beginning of a licensing those information gaps that must be filled in order for them to complete their own processes. Some applicants are unwilling to provide this information because it might result in additional requirements to mitigate project impacts. The resulting stalemate is a perennial source of delay in licensing. While FERC staff have the authority to order applicants to provide this information, they often choose not to do so, arguing that the information is not necessary for FERC's licensing decision. This may be technically true – FERC may not consider the information necessary for its own analysis – but the reality is that FERC cannot issue a license until it has received a Water Quality Certification from the state and all required ESA consultation is complete. Staff may be able to work with agencies to narrow the scope of the necessary information, but ultimately those agencies must decide what information is necessary for them to act. The Commission should direct its staff to improve their cooperation with other federal and state agencies, especially where those agencies have identified a need for information that will enable them to fulfill their own responsibilities and clear the path for FERC to issue a license. By doing so, FERC would substantially increase the likelihood that licenses will be issued on time and with an appropriate set of environmental protections.

S. 629 directs FERC to solicit recommendations like these from the public and examine how it might implement such improvements to the licensing process. It then directs the Commission to test some of

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[1] http://ferc.gov/industries/hydropower/gen-info/licensing/small-low-impact/expedite-process/projects-expedited.xls

[2] http://ferc.gov/legal/maj-ord-reg/mou/mou-co.pdf

those ideas through a pilot process and ultimately report to Congress on what works, what does not, and how it intends to translate those lessons into more formal policies that improve the licensing process. This gives FERC the flexibility to conduct controlled experiments, further refining some of the tools it is already using to permit noncontroversial projects more quickly. Any resulting policy change will be better by virtue of having been tested in a real-world situation first.

S. 629 also gives FERC the ability to limit this flexibility to only those projects where it is likely to work. A one-size-fits-all two year process is unlikely to be appropriate for all projects. Hydropower projects that feature more complex resource issues often need more time to process, and this is entirely appropriate. Consider, for instance, two proposals to add hydropower to an existing dam. The first would add a turbine to an existing control structure at the base of the dam to capture uncontrolled flows that are already passing through the dam. The second proposes to divert water from behind an existing dam to a powerhouse two miles downstream, dewatering a section of river that is known as a high-quality trout stream and a popular destination for canoeing. While the first project might be quite simple to license, the second would almost certainly require one or more season of studies in order to determine appropriate operating guidelines that would protect the river's fisheries and recreational resources; it would be very difficult to fit such a project into a two-year process without glossing over these complex resource issues.

American Rivers supports this inquiry, and we look forward to participating in the Commission's examination of its licensing processes. We also encourage the Committee to ensure that FERC will have sufficient resources to complete this undertaking. FERC has more new applications for preliminary permits and hydropower licenses before it now than at any other time in recent memory. The new requirements that S. 629 proposes to place on the Commission should not become a workload burden for Commission staff that creates the very processing delays that it was designed to reduce.

4 Hydrokinetic and Marine energy (S. 630)

There has been a great deal of discussion about damless hydrokinetic technologies that use free-flowing rivers, waves, ocean currents, or other means to generate electricity. As a river conservation group, American Rivers does not claim to be an authority on Marine energy. However, we have followed the development of instream hydrokinetic technologies closely. Moreover, since ocean and instream hydrokinetic technologies are often lumped together, we have participated in a number of policy discussions that have addressed both technologies.

We are hopeful that these new technologies will eventually allow us to harness the power of moving water in a responsible manner that avoids the devastating impacts associated with dam-building. Unfortunately, there is still precious little information available about how these technologies interact in a natural setting. As of today, we are aware of only one instream hydrokinetic project that is currently licensed to generate in U.S. waters, and our understanding is that it is currently out of service. With so little information available, it is difficult to assess the environmental impacts of these technologies, let alone their commercial feasibility. We can only speculate as to what the costs and benefits of these technologies might be.

It is clear, then, that there is a need for more testing, as well as for research into the potential environmental impacts and new and innovative ways that those impacts might be avoided. There is also a need for strong siting criteria that take into account environmentally sensitive areas or areas that are vital to economic activity (like transportation or commercial fishing), and consider the risk that the cumulative impacts of additional development may simply be too high in some watersheds that are already highly impacted by existing hydropower development.

S. 630 largely addresses these needs, focusing on research, development, and the creation of testing zones where environmental and operating data can be collected in a controlled environment. The proposed amendments to The Energy Independence and Security Act of 2007 are an incremental improvement to a public policy that is already largely good. The adaptive management and environmental grant program, like the program proposed by Section 6 of S. 629, is a particularly good idea. While we believe that the information gaps about the environmental impacts of these technologies need to be filled before these projects are deployed at a full commercial scale, we also recognize that the cost of filling these gaps places the initial developers of these technologies in an extremely precarious financial situation. It makes sense to devote public resources towards filling these gaps, both at the macro level and the individual project level, in order to take some of this pressure off of the individual project developers. The bill also insures that the public receives a return on this investment by requiring that most information developed as a result of studies performed under this grant program be made publicly available. This is good policy, and will accelerate the responsible development of these technologies.

American Rivers is, however, opposed to section 9 of S. 930 as it is currently written. Section 9 would authorize federal funds to be granted for the construction of new hydropower dams. Given the relatively high economic, environmental, and social costs associated with new dam construction and the enormous amount of new hydropower capacity that can be developed without constructing new dams, we do not think it makes sense for federal funds to be obligated to projects that involve new dam construction. Rather, scarce taxpayer dollars should be directed towards projects that minimize environmental harm by making use of existing water infrastructure like the projects that would be eligible for grants under Section 5 of S. 629.

We understand that the intent behind this section was to encourage the development of new sources of renewable energy in remote communities that rely primarily on expensive sources of fossil-fuel fired generation for their electricity. We agree that this is a laudable goal, and we recognize that this bill attempts to give priority to grants to communities that find themselves in this situation. We recognize that in some rare and exceptional cases, the construction of a new hydropower dam may be the only feasible renewable energy alternative for some of these communities. If federal funds are to be obligated for the construction of new non-federal dams – something which in general we do not support – then it should only be limited to exceptional cases where the construction of a dam is truly a last resort. As it is currently written, the bill's support for new dam construction is too broad, and could be used to fund the constructions of dams that simply should not be built. We recommend that the Committee explore alternate approaches to achieving what is an otherwise worthy goal of encouraging renewable energy development, and we stand willing to offer our assistance.

5 Conclusion

A balanced U.S. energy policy must recognize that hydropower has impacts as well as promise, and it should address both. New hydropower development must be sited, operated, and mitigated responsibly, and it must simultaneously encourage increased generation and improved environmental stewardship at new and existing projects. American Rivers supports the development of new hydropower resources that can be brought online responsibly, avoiding significant additional harm to local ecosystems. S. 629 represents a substantial step forward down this path, and American Rivers is pleased to be able to support it.

Thank you again for this opportunity to testify before the Committee today. I look forward to answering your questions.