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HYDROPOWER REFORM COALITION
Putting water, wildlife, and people back in rivers.

David W. Danner
Executive Director and Secretary
Washington Utilities and Transportation Commission
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P.O. Box 47250
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July 15, 2011

By Electronic Submission to records@utc.wa.gov

RE: *Study of the Potential for Distributed Energy in Washington State,*
Docket UE-110667

Dear Director Danner,

The Hydropower Reform Coalition (Coalition) appreciates this opportunity to comment on specific hydropower related questions on the Washington Utilities and Transportation Commission's (Commission) study relating to development of distributed energy, at the request of the Washington State House of Representatives Technology, Energy and Communications Committee.

Our Coalition is made up of more than 150 outdoor conservation and recreation organizations nationwide that advocate for river protection and restoration by improving the environmental performance of individual hydropower dams regulated by the Federal Energy Regulatory Commission (FERC). The Coalition enjoys an especially strong membership in Washington State due to the value placed on our diverse, wild and beautiful river resources, as well as the intense degree of hydropower development and the considerable contribution of hydropower to Washington's energy portfolio.

Distributed Hydroelectric – Responses to Questions

> 8. What is the state of the technology for generating electricity from wave, tidal, and micro-hydro technologies (maturation, market penetration, retail price of installation)?

We find the inclusion of micro-hydro in this list somewhat puzzling, for two reasons: First, it is unclear what the Commission means by "micro-hydro" (there is no consistent definition). And second, to the extent that "micro-hydro" may mean low-capacity conventional hydropower, it stands out from the other technologies in this list. Unlike wave and tidal energy, conventional hydropower is a mature technology that has already been extensively developed in Washington.

Discussions about "micro-hydro" or "small hydropower" suffer greatly from the lack of consistent defining terms. There exists no clear state, regional, or national description that would distinguish micro

from other forms of hydropower, other than a vague sense that it is smaller. The Commission's notice to file comments, and subsequent "Issues and Comments" unfortunately does not clarify the matter.

Descriptors like "micro" or "small" are often used by hydropower developers to imply that a given facility or technology has fewer environmental impacts. However, most definitions of these terms are based on a single qualifier: a facility's nameplate generating capacity. Because there is no meaningful correlation between a hydropower facility's size and its environmental impact, these two terms are often at odds. Worse, they lead to bad policy, providing subsidies and incentives that encourage the development of facilities with significant environmental impacts, especially relative to their meager energy contribution. Rather than classifying hydropower by its size or capacity, policymakers should instead focus on methods of classification based on individual technologies (e.g. facilities that use specific types of new turbine technology), types of installations (e.g. additional hydropower capacity added to existing dams, canals, pipes, or other water infrastructure), or the environmental performance of individual facilities (e.g. those that have been certified by an independent third party such as the Low Impact Hydropower Institute).

Providing a clear definition is critical if the Commission wishes to avoid policies that will encourage the worst and most damaging types of new hydropower development. There are currently nine pending or issued permits and licenses for small conventional dams in Washington State,[1] each of which has an expected average annual generation of between 2.5 and 10 average MW. Each of these would be located near wilderness, roadless, or high value recreational areas. Some would be located in old growth forests and/or Late-Successional Reserves, and one project is proposed to dam a stretch of river that has been deemed eligible for Federal Wild and Scenic designation, and is classified as a "protected area" by the Northwest Power and Conservation Council.[2] Washington's energy policies should not provide incentives for these types of ill-conceived hydropower projects. Rather, they should actively discourage them, focusing instead on proposals that utilize existing infrastructure in an environmentally responsible manner.

While we strongly advise against the use of generating capacity as a means of differentiating between different types of hydropower projects, since the term "micro" implies capacity, we can discuss maturation and market penetration in those terms. The Federal Energy Regulatory Commission has issued licenses or exemptions to licensing for 71 hydropower projects in Washington state that make up more than 7455 MW of total installed capacity. As the table below demonstrates, low capacity projects make up a significant portion of the total number of hydropower facilities in the state, suggesting that claims of market barriers are overstated. However, those projects make up an insignificant portion of total hydropower generation: doubling or even tripling the number of hydropower facilities with a capacity of 1 MW or less would not have an appreciable impact on the state's mix of energy. We note that these figures significantly inflate the total contribution of these low-capacity projects to the state's hydropower portfolio since the figures here do not include contributions from the Federal hydropower system.

Capacity (MW)	Number of Projects	Share of Total Projects	Capacity (MW)	Share of Total FERC Capacity
(all projects)	71	100%	7455.626	100%
< 1 MW	22	31%	8.139	0.11%
< 5 MW	34	48%	39.181	0.53%
<10 MW	40	56%	78.338	1.05%

[1] Hancock, Calligan, Barclay, Ruth, Swamp and Bear Creeks, White and North Fork Snoqualmie Rivers. The Young's Creek project in the Skykomish watershed is already licensed and under construction.

[2] Stream reaches where the Council determined that hydroelectric development would have unacceptable risks of irreversible loss to fish and wildlife.

Instead of encouraging the development of facilities that rely on a mature, built-out technology with well-documented environmental impacts to deliver a relatively insignificant amount of energy, the Commission should instead focus on nurturing innovative new technologies where Washington has an opportunity to become a market leader. Unlike micro hydropower, the nascent wave and tidal industry, if encouraged to develop in Washington state, has the potential to provide significant economic benefits and high-quality jobs in research and development, engineering, and manufacturing, all without putting additional stress on Washington's last great river resources.

9. Do these technologies pose potential negative environmental impacts?

While all energy production involves some adverse environmental impacts, hydropower is unique among non-fossil-fuel energy in the scope of its proven and significant negative impacts on river systems. Large and small hydropower dams alike disrupt flows, degrade water quality and aesthetics, block the movement of a river's vital nutrients and sediment, destroy fish and wildlife habitat, impede migration of fish and other aquatic species, and eliminate recreational opportunities. In addition, the construction of new hydropower projects requires a significant support structure and often involves building new roads in remote areas for construction and maintenance, new transmission lines, and timber cutting.

The cumulative impacts of multiple low-capacity conventional hydropower projects scattered on multiple streams can be far greater than that of a single large project, while providing significantly less energy. The high financial and environmental costs of building low-capacity projects far outweigh the minimal benefits. Again, refer to our chart above: hydropower projects less than 5 MW account for nearly 40% of FERC jurisdictional dams in Washington, but provide only one half of one percent of their total capacity.

10. Are there potential impacts from current environmental regulations for hydroelectric generation that might adversely affect the development of future distributed hydroelectric generation (in other words, should micro-hydro be treated the same as utility-scale hydroelectric generation? Are there other impacts specific to micro-hydro that ought to be considered)?

While small hydropower projects rely on the same general regulatory framework and process as utility-scale projects, they are in no way treated the same as utility-scale projects. FERC provides significant flexibility in its regulatory framework, and in practice true "low impact" hydropower projects involve significantly less review.[3] Unlike utility scale projects, if a small project (e.g. most conduit hydro projects) is genuinely unlikely to have any environmental impacts, then it can get through FERC very quickly, with minimal environmental studies or requirements.[4] Conversely, if a low-capacity "micro" hydropower project threatens to cause real harm to other valuable public resources (e.g. the construction of a new dam on a pristine protected stream), it should be subject to strict, careful review and environmental analysis. Again, the scope of regulation for an individual project should not be based on a proposed project's potential to generate power ("utility" vs. "micro" scale) that should be considered, but rather on the scale of a project's potential environmental impacts. Existing regulatory processes have the flexibility to consider both factors. Relying solely on generating capacity to determine an appropriate level of regulation would only encourage the development of high-impact projects that are unable to contribute a meaningful amount of energy.

While micro-hydro would be useful in helping meet a small part of the Northwest regional need for power, it would provide a relatively minimal amount of power at a high cost to the outstanding

[3] *See* http://ferc.gov/industries/hydropower/gen-info/licensing/small-low-impact.asp
[4] *See* http://ferc.gov/industries/hydropower/gen-info/licensing/small-low-impact/expedite-process/projects-expedited.xls

environmental, recreational, cultural and aesthetic values of Washington's rivers and streams. Low-capacity hydropower projects also differ in that they are generally constrained by seasonal water availability, limited storage and only intermittent power generation. Often located in remote areas, and far from utility-scale transmission lines, these small projects provide no benefits to help firm other renewable energy generation, or to help integrate distributed energy into the electric grid. Due to seasonal water availability (Washington's high flows are generally late spring/early summer) and lack of storage, small and micro-hydro projects seldom provide winter peaking needs for investor-owned utilities.

Equally important, this power could be easily offset by other renewable generation or by energy efficiency and conservation efforts. The Northwest Power and Conservation Council's 2010 Sixth Power Plan[5] identifies energy efficiency as the least cost resource and envisions that almost 60 percent of the Pacific Northwest's new demand for electricity over the next five years and 85 percent of load growth over the next 20 years could be met cost effectively with energy efficiency. The plan also predicts that this efficiency will reduce the risk of future electricity shortages, reduce emissions from power plants to help meet regional carbon reduction goals and policies, and cost consumers less than relying solely on new power plants (Emphasis added).

Conclusion

With more than 66 percent of our energy coming from hydropower, Washington's energy system is unlike any other state in the country.[6] In 2007, the Energy Information Administration ranked Washington State as #1 of the hydropower producing states, generating over 27% of the total US hydropower capacity for electric generation. Initiative 937 (I-937) was carefully crafted to provide the right incentives to promote development in new 21st century energy technologies. Increasing micro-hydro generation will do little to diversify our energy mix, and will divert valuable public resources away from the development of innovative new renewable technologies.

Under I-937, hydropower is considered a renewable resource, and the initiative provides incentives for efficiency upgrades to enhance hydropower generation at existing dams, for adding generation at non-power dams (e.g. storage and flood control) and for new hydrokinetic projects. The Washington Department of Ecology's 2010 Inventory of Dams lists regulation of more than 1100 dams already in existence,[7] and the 2007 Washington State Resource Assessment Report lists more than 250 existing dams in Washington that either do not have hydropower or are not operating at peak efficiency. The report shows that more than 2,500 MW could be added simply by improving efficiencies or adding hydro to non-power dams. The report also demonstrates that developing all the state's potential hydro sites would only add 762 MW, a figure that greatly overstates the amount of potential capacity by failing to consider feasibility. Doubling the number of hydropower projects in the state with 10 MW or less of capacity would add only 150 MW of new capacity. Given the number of existing dams in Washington State, policies encouraging new dam construction ("micro" or not) should not be contemplated until the entire potential of the State's existing hydropower infrastructure has been exhausted.

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[5] http://www.nwcouncil.org/energy/powerplan/6/final/SixthPowerPlan_Ch1.pdf

[6] http://www.cted.wa.gov/site/539/default.aspx; *See also* http://hydropower.inel.gov/hydrofacts/undeveloped_potential.shtml

[7] http://www.ecy.wa.gov/pubs/94016.pdf

Thank you for the opportunity to submit comments on specific hydropower related questions on the Commission's study relating to development of distributed energy. Please contact me with any questions about these comments or the Coalition.

Respectfully,

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