May 13, 2021

Senate Energy & Environment Committee
Oregon State Capitol
Salem, OR 97301

RE: House Bill 3375A

Chair Beyer, Vice Chair Findley and Committee Members:

I am writing in support of HB 3375A. I live in Portland and organize with two different communities of volunteers. The Metro Climate Action Team (sponsored by the OLCV) works toward making Oregon a leader in addressing the climate crisis. OCEAN works toward the responsible development of the immense energy resource contained in the offshore wind on Oregon's south coast. The climate crisis is now the overarching global threat and how we deal with it will ultimately determine our success as a functioning society. Energy is at the core of everything we do, make or use.

To address the climate crisis, we will need to electrify more of our transportation, building heating, manufacturing and other activities. Yet, today nearly half of Oregon's electricity is still generated by fossil fuels, much of it imported from other states. In order to meet our state's climate goals we will need to develop substantial amounts of renewable energy. Offshore wind can provide that needed capacity and revitalize the coastal economy with family wage jobs. This will put that region on a sustainable path to the future. Ultimately, it could change Oregon from an importer of polluting energy to an exporter of clean energy.

HB-3375 is a planning bill and sets a goal of 3 gigawatts of offshore wind by 2030. It's an early step toward the responsible development of Oregon's abundant offshore wind resource. It can add certainty to our state's clean energy trajectory and market. This increased certainty drives investment from the federal and private sectors, as well as competition from the development community, signals energy planning agencies and organizations for incorporation of planned development, and provides a timeline for Oregonians to ramp up labor and supply chain capacity for maximum economic benefit.

In March, the Biden/Harris administration set a goal to deploy 30 gigawatts of offshore wind by 2030. According to the announcement from the White House "this target will trigger more than $12 billion per year in capital investment in projects on both U.S. coasts, create tens of thousands of good-paying, union jobs, with more than 44,000 workers employed in offshore wind by 2030 and nearly 33,000 additional jobs in communities supported by offshore wind

activity". A stimulus bill passed in December includes a long-awaited standalone offshore wind ITC. The 30% credit is for any projects where construction begins before 2026 and is not subject to any phase down.

Oregon is home to one of the best offshore wind areas in the world for generating electricity. The National Renewable Energy Lab has estimated Oregon's theoretical offshore wind resource is 62 gigawatts. Developing this natural resource has the potential to reduce green house gas emissions more than any other action the state can take. Each gigawatt of generating capacity from offshore wind farms can displace the equivalent of 2 average coal-fired plants like Boardman and provide clean energy to the NW grid. It can also relieve some of Oregon's existing transmission import congestion to accommodate more renewables to be built in other regions of the state.

Coos Bay is the largest deep draft coastal harbor from San Francisco to the Puget Sound and well suited to become the hub for this emerging industry harnessing the massive clean energy resource located off Oregon's coast. If the supply chain, assembly and service operations take root on the south coast, it will diversify the economy of the region and provide many sustainable family-wage jobs. The IEA predicts "offshore wind generation will grow 15-fold in the next 20 years, emerging as a $1 trillion global industry." According to the National Renewable Energy Laboratory, 3 GW of offshore wind development would infuse $9 - $21 Billion into Oregon's economy based on construction and deployment investments.

In addition to supplying clean energy to the grid, offshore wind can also be utilized to produce hydrogen using electrolyzers that split water (H2O) into its two constituent parts, hydrogen and oxygen. Made this way, it's referred to as renewable hydrogen or green hydrogen and it can play many vital roles in our transition to a low carbon energy future. These include use as a clean fuel where electricity and/or batteries are impractical, decarbonizing key segments of industry and utility-scale long term storage of renewable energy. One promising market for green hydrogen that is well-suited for Oregon's south coast is zero carbon fuel for maritime shipping. Currently, around 90% of world trade is by sea and it accounts for 3% of global greenhouse gas emissions. In 2018, governments pledged to cut shipping greenhouse gas emissions in half by 2050 (compared to 2008 levels), with continuing efforts to phase them out entirely.

There are several ways hydrogen can be used to power ships and there are many projects underway around the world to determine their relative pros and cons. For example, storing hydrogen may be expensive and difficult onboard a ship, so one alternative is to go an additional step in the production process and convert green hydrogen into green ammonia.

Ammonia can be burnt in an internal combustion engine or run through a fuel cell to drive an electric motor. This will enable global maritime fleets to use their existing propulsion systems till the end of their useful lives while planning for more efficient electric propulsion for their future fleets. Ammonia is a well-known commodity from industry and decades of experience with it give green ammonia an added safety advantage.

Using renewable hydrogen as a clean fuel is a recent development and still faces some hurdles before it can be adopted on a large scale such as cost. Many new technologies have a basic chicken-and-egg problem related to cost. Costs can come down with scale but getting to scale often requires costs coming down. At the current small project scale, the cost of renewable hydrogen is significantly more than hydrogen made from and with fossil fuels. However recent global commitments are projected to significantly reduce costs and could bring green hydrogen to cost parity by as early as 2030 thanks to economies of scale and much cheaper renewable energy. In fact, the massive deployment targets in the European Commission's hydrogen plan alone could drive costs of electrolyzers by 2030 to levels below those previously projected for 2050 and beyond. The other key component, renewable energy, is also continuing its rapid cost declines. For example, IRNEA expects the cost of offshore wind could fall by another 50% by 2030.

Thank you for the opportunity to testify.

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