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**Testimony
Before the Committee on Resources
Subcommittee on Energy and Mineral Resources**

Hearing on Renewable Ocean Energy: Tides, Currents, and Waves

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Good Morning distinguished Committee members. I would like to thank the committee for inviting representatives from this emerging industry to testify today. My name is John Baylouny and I am the Senior Vice President of Engineering for Ocean Power Technologies, Inc. I am honored to be here to discuss with you the status of wave power technology and opportunities for development in the US. During this discussion, it is my goal to impress upon you that wave energy is economically viable, the US has an abundance of wave energy resource and that the Federal government should play a role in encouraging and supporting its growth.

Wave power has a distinct advantage over other renewable energy sources, in that it has high power density, excellent availability, and predictability. Since water is about 1000 times denser than air, wave energy conversion devices can extract more energy from a smaller footprint than wind energy devices. Waves are a natural means of storing energy. Solar radiation creates wind and wind creates waves. When the winds subside, the waves continue. So wave propagation is highly predictable as much as several days in advance, which is important for the utilities when planning energy production levels.

Ocean Power Technologies has been working in the wave energy field since the early 1990s and has had demonstration systems in the ocean starting in 1997. The technology research phase is now completed and the company is focused on commercialization. Our product is called the PowerBouy™, and we are currently working on projects in Hawaii, New Jersey, France, Spain, Australia, and the UK.

Our company began in this field because its founders believed that wave energy could become the most efficient, low-cost, and environmentally benign renewable source of energy. Today, we feel the same way. The Electrical Power Research Institute, EPRI, has conducted a resource assessment of wave energy in the US. This study concludes that capturing just 24% of the wave energy on the US coast at only 50% efficiency would generate as much electricity as all conventional hydropower now installed in the US (270 TWh/yr). EPRI has also concluded that wave power promises to be one of the most environmentally benign electrical generation technologies. Our experience supports this conclusion. As an example, on our Hawaii wave power station program, for the US Navy, a detailed, independent Environmental Assessment was carried out with a Finding of No Significant Impact. Also, while there has been much debate concerning the aesthetics of other forms of renewable energy, the major portion of our wave power systems are concealed below the surface of the ocean. This makes them almost invisible from land.

EPRI has also conducted a comprehensive economic study of wave power generation. This study concludes that the economics of wave energy could be at least as favorable as wind generation if the same resources that have been invested in wind and solar energy were invested in wave energy. Today the economics of wave power vary based on the size of the station and site and technology used. Project development is progressing in numerous places in the world.

Various governments in Europe have the same vision and have put in place strong initiatives to foster wave energy projects. Our company has recognized the European demand for renewable wave energy, and has signed agreements with Total and Iberdrola to develop wave power stations in France and Spain. Total is one of the largest oil and gas companies in the world, and Iberdrola is Europe's largest utility in renewable energy. These projects are now moving forward.

We believe the cost of wave generated energy by our PowerBuoy systems has the potential, with the proper investment, to approach that of conventional energy in the next five years. Our projections show that during this period wave energy could generate electricity at a cost of 3-5 cents per kilowatt hour.

In the US, we have been working in Hawaii and off the coast of Atlantic City, New Jersey as demonstration sites to further validate our technology. In Hawaii, we have been developing our PowerBuoy technology for the US Navy in order to connect to the Oahu electrical grid at the Marine Corp Base there. In New Jersey the project was funded by the New Jersey Board of Public Utilities. We continue to work these programs and feel that our in ocean experience is one of our most valuable assets. There simply is no better way to learn and further wave energy technology than putting products at sea.

Most recently we filed with Federal Energy Regulatory Commission, FERC, for a permit for a wave power station near Reedsport, Oregon. Our company continues to evaluate additional opportunities in the United States for utility scale wave power stations. In this search, we look for sites with good wave energy resource – initially over 20 kW/m, 50 meter depths at reasonable distances from the shore – typically 3 to 5 miles, a good grid connection in close proximity, and perhaps most importantly, a port nearby with a skilled workforce. Our preference is to stay within state waters – less than 3 miles - in order to avoid the potential interagency jurisdictional issues between FERC and the Department of Interior's Mineral Management Services, MMS, who have both recently claimed jurisdiction over wave power projects on the Outer Continental Shelf. The site we selected near Reedsport is an ideal location as it satisfies all these criteria. There are many others in the US and I am sure that you will see actions taken in the near future to initiate new projects.

We believe these jurisdictional issues need to be resolved and that there needs to be a more cohesive National policy in place to facilitate the commercial roll-out of wave power technologies. Other countries have done just that by establishing programs to provide specific grants and tariff supplements for wave energy projects.

We request your action to include wave energy in this Nation's comprehensive policy to increase utilization of renewable energy. In support of this, I encourage Congress and this Committee to consider the following actions:

1. Provide financial support for wave energy commensurate with that which has been provided previously for wind and solar energy.
2. Include wave energy in the Production Tax Credit (PTC).
3. Modify FERC statues to allow for the rapid permitting of wave power stations.
4. Insure that the MMS rules that are being developed allow for the timely development of pilot scale wave energy projects on the OCS.

In conclusion, let me thank you for having this hearing and inviting members of this emerging industry to address this committee.

I would be happy to take any questions.