DWEA
DISTRIBUTED WIND ENERGY ASSOCIATION

California Energy Commission
1516 9th St.
Sacramento, CA 95814

Docket #: **17-EPIC-01**

Project Title: **Development of the California Energy Commission Electric Program Investment Charge 2018 – 2020 Triennial Investment Plan**

March 20, 2017

RE: **Comments on Topic S4.2.1, Advanced Manufacturing and Installation Approach for Utility-Scale Land-Based Wind Turbine Components**

Dear CEC,

The Distributed Wind Energy Association (DWEA) represents the interests of manufacturers, supply chain vendors, installers, financial services, and others involved in the supply and support of distributed wind systems. Distributed wind systems are installed at the homes, farms, businesses, and facilities where people live and work and may range in size from a 1 kW turbine at a remote home to a small array of multi-megawatt turbines at an industrial facility. When "on-grid", these turbines are typically behind-the-meter and are not directly connected to the electrical transmission network.

We appreciate the opportunity to comment on the draft Electric Program Investment Charge 2018 – 2020 Triennial Investment Plan. Our comments specifically address S4.2.1, Advanced Manufacturing and Installation Approach for Utility-Scale Land-Based Wind Turbine Components.

DWEA believes that the interests of the State of California and California rate payers would benefit by opening the scope of S4.2.1 to include grid-connected land-based wind turbines of all sizes. As currently conceived the topic would exclude smaller systems that include distributed wind systems. We offer the following rationales for opening the scope:

1. **Small and distributed wind systems have a large unmet potential to contribute to California's energy supply portfolio.**
   A 2003 study funded by the CEC concluded that 24% of California, approximately 24 million acres, have an annual average wind speed of at least 11.5 mph at a height of 100 ft. and are, therefore, suitable for a small wind system[1]. DWEA estimates that California has a small and distributed wind potential at rural homes, farms, non-

[1] "Permitting Small Turbines: a Handbook", California Energy Commission, 2003

urban businesses and non-urban facilities exceeding 2,500 MW. As of 2015, however, the US-DOE states that approximately 73 MW of small and distributed wind have been installed since 2003[2]. The DWEA estimate may be conservative. A recent NREL technical report[3], based on modeling similar to its estimates of solar energy potential, estimates the small and distributed wind potential for U.S. at 8,100 GW, or approximately the same potential as offshore wind.

2. **Small and Medium scale wind turbine technology is not as advanced as utility-scale wind technology and there are significant LCOE gains to be made through the development of advanced components and installation techniques.**
Utility-scale turbine technology has benefitted from nearly a billion dollars in US-DOE R&D funding over the last 20 years, plus untold billions of private sector investment and R&D support from foreign governments. Small and medium wind industry investments and R&D support have been a very small fraction of these investment levels. So, while utility-scale turbines have largely mastered the art of placing larger rotors on smaller nacelles and taller towers to dramatically reduce LCOE and allow development in lower wind resource areas, the small and medium wind manufacturers have not, or at least to nearly the same extent. A 2015 DWEA study[4] estimated that LCOE for small and medium scale wind turbines could be reduced by up to 70% by following the same technology pathways as large wind. There are substantial scale effects that limit the direct application of utility-scale wind technology to small and medium scale wind turbines. The US-DOE is funding a "Competitiveness Improvement Project" to support cost-shared component and process R&D for small and medium scale wind turbines. The EPIC program could provide a valuable complement.

3. **EPIC funding is more likely to make a significant impact with investment in small and medium wind technology.**
The greater maturity of utility-scale turbine technology and magnitude of the costs of R&D with these much larger machines means that EPIC funding is unlikely to catalyze a breakthrough in utility-scale LCOE, while it just might in small wind turbines. By allowing a greater range of sizes to apply for funding under S4.2.1 the CEC will encourage greater program participation and will have a larger pool of applications, maximizing potential impacts.

4. **The wind resources in the major distributed wind development areas coincides well with California's peak electricity demand periods and distributed wind can help alleviate sunset grid ramping requirements.**
The major distributed wind development areas of Solano, Kern, Los Angeles, and San Bernardino Counties have wind resources that are summer peaking and statistically extend into the early evening peak demand period. Distributed wind systems

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[2] "2015 Distributed Wind Market Report", August 2016, U. S. Department of Energy

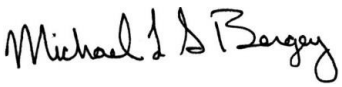
[3] "Assessing the Future of Distributed Wind: Opportunities for Behind-the-Meter Projects", November 2016, NREL Technical Report NREL/TP-6A20-67337

[4] "DWEA Distributed Wind Vision – 2015-2030, Strategies to Reach 30 GW of "behind-the-meter" wind generation by 2030", March 2015, Distributed Wind Energy Association

installed in these areas can, therefore, supply renewable energy after sunset and help reduce ramping stresses without the need for on-site storage (or, at least, with a lower amount of storage).

We encourage the CEC to open the scope of the proposed EPIC Task 4.2.1 to include grid-connect wind turbines of all sizes and evaluate the impact of EPIC funding on "enabling increased wind capacity in California" as a criterion in funding decisions.

Respectfully Submitted,



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