



California Wind Energy Association

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Via Email: Silvia.Palma-Rojas@energy.ca.gov

RE: January 28, 2016, Workshop for Identifying Challenges and Effective R&D Paths for Promoting Repowering Wind Energy

Dear Dr. Palma-Rojas,

CalWEA was pleased to be invited to participate in the Commission's January 28, 2016, Workshop for Identifying Challenges and Effective R&D Paths for Promoting Wind Repowering. As I explained at the workshop, CalWEA's members -- which include the owners/operators of many early-generation wind energy projects -- view the largest barriers to wind project repowering as not being amenable to R&D-related solutions. However, in contemplating the discussion at the workshop, we would like to share in this letter our thoughts relating to the types of R&D that could be very valuable in terms of keeping existing turbines running until such time as market conditions improve.

Generally, any R&D that might materially reduce the cost of operating existing projects, or increase the value of generation from those projects, could help to keep these projects operating (preserving their valuable generation interconnections) until they are able to obtain a long-term contract that will enable them to fully repower with modern turbines. The following are some specific ideas of the type of R&D that could support existing projects:

- Create an online one-stop-shop marketplace that offers wind turbine services, spare parts and products supporting the maintenance and repair of existing, aged turbines (i.e., the "EBay of wind energy"). Such a marketplace would help to drive down the cost of repairs, allowing components to be more easily found (rather than having them custom-made in machine shops, since the manufacturers have stopped supporting them).
- Re-design and re-engineer failed yaw control systems so that the turbines can once again yaw (turn) into the wind to capture the energy in the wind from all directions and generate more energy at a feasible capital cost.

- Develop smart remote control systems (SCADA systems) for early-generation wind technologies to enable economic dispatch and optimize revenue (e.g., avoid negative payments during over-generation periods) at a feasible capital cost.

CalWEA and its members would be pleased to discuss any of these ideas or to review and comment on any R&D proposals that may be submitted along these or similar lines.

To recap the most significant barriers to wind project repowering that I discussed at the workshop, these barriers are:

- **The 1980s-vintage PURPA contracts are expiring at a time of little RPS demand and low market prices**
 - Two of the 3 investor-owned utilities already have enough renewable energy contracted to meet, or nearly meet, their 2020 RPS requirements
 - The needs of sellers do not always match up with those of other buyers such as ESPs and CCAs (e.g., amount of output, performance guarantees, and timing requirements)
 - For those operating in the market without a long-term power purchase agreement (PPA), market energy prices are very low: the CAISO market paid under 3 cents/kWh in 2015, on average, to a typical Southern California wind project
 - Low market prices make it very difficult to pay for the increasing maintenance and repair costs necessary to keep operating

Projects operating under their original PURPA contracts have too few years left at low prices to enable a full repower, and their buyers will not release them from their current contracts.

- **Repowers face stiff competition from solar PV and larger greenfield wind projects**
 - **Repowers face significant tax policy disadvantages**
 - The California solar property tax exemption puts wind at a 0.5 cent/kWh competitive disadvantage
 - The Federal wind PTC phases out faster than the solar ITC, putting repowers, and wind generally, at a significant competitive disadvantage in California after 2016
 - Tax benefits for existing projects have long since expired
 - **The development of the least-cost, best-fit bid evaluation components likely to favor wind are lagging**
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- The CPUC has not kept integration costs, capacity value, and curtailment valuation current with procurement levels
- This lag favors solar, because the value of solar declines markedly with penetration while the value of wind remains more stable
- **Many 1980s-vintage projects are small & fragmented, creating diseconomies of scale and various commercial challenges**
 - Small legacy projects do not have economies of scale over which to amortize many fixed costs, such as environmental review, equipment (e.g., cranes), turbine transportation, and site reclamation
 - Also see the January 28, 2016, presentation by Thomas Smith
- **Military height restrictions make it impossible to use traditional, modern turbines in some areas in Kern County**

Again, CalWEA and its members would be pleased to contribute to the Commission's process of fostering research in areas that offer the most promise in supporting existing projects until they are able to completely repower with new technology.

Sincerely,



Nancy Rader
Executive Director