

<b>Applicant Name:</b>	Wind Harvest International	<b>Proposal Number:</b>	07
<b>Project Title:</b>	Researching and developing the potential of VAWTs to double capacities of California's wind resource regions while preventing harm to birds-Phase I		
<b>Technical score (# 1-4):</b>	46.5 (Fail)		
<b>Proposal Summary</b>			
<p>This proposal is for the installation of 2 to 4 Wind Harvest International's full scale G168 VAWTs in southern Solano County. By changing the blade direction on a pair of VAWTs, different downwind wakes will result. Field data on these wakes from these installed turbines will be collected from Doppler LiDAR, sonic anemometers and other sensors. This data will be used in a CFD model to validate a methodology for predicting how the wake from VAWTs in different length arrays spreads and decays. This modeling will be used to predict how different configurations can be used for siting for VAWTs in among HAWT and entirely VAWT wind farms.</p> <p>DTBird's motion-activated cameras will be used to collect bird strike data on VAWTs in conjunction with an on-site mortality study. One unit will be used in Texas and another unit will be used in California. A field mortality study will supplement the video data. If bird mortality occurs, then project device will be programmed to slow down or stop the VAWTs if its dissuasion tools are ineffective.</p> <p>Proposed VAWT is close to receiving certification.</p>			
<b>Key strengths:</b>			
<ul style="list-style-type: none"> <li>- Turbine is anticipated to be certified early in 2018.</li> <li>- Use of advanced measurement technology such as LIDAR, sonic anemometers and drones.</li> </ul>			
<b>Key Weaknesses:</b>			
<ul style="list-style-type: none"> <li>- Technology Readiness Level for the G168 VAWT is clearly greater than 6, this is a demonstration project, and outside of the solicitation scope.</li> <li>- Data collected will be used in CDF modeling to predict how different configurations can be used for siting for VAWTs alone and in combined wind farms. This accounts for two-thirds of the EPIC funding. In the questions and answers for the solicitation, answer #30 states that <i>"Projects focused mainly on siting or optimally locating wind turbine including wind pattern modeling, are outside of this solicitation."</i></li> <li>- Not enough information on the WHI G168 VAWT, benefit analysis is more about general VAWT technology deployment in general.</li> <li>- DOE is already funding the testing of the DTBird system at other locations, thus these efforts may be redundant.</li> <li>- A major justification for utility scale VAWTs is for infill among HAWT in a wind farm or in areas where taller towers are not allowed, yet there is no specific industry support for this concept, nor does the proposal clearly test this proposition<sup>1</sup>.</li> <li>- Page 7 of narrative states that the Solano County representative agreed that the turbines could be permitted with a mitigated negative declaration. It goes on to state that WHI proposed mitigation would be changes in turbine operation by slowing turbine or complete shutdown if a bird of concern "...enters the DT Bird detection zone." WHI is clearly proposing to use EPIC funding to meet CEQA (permit) requirements.</li> </ul>			

<sup>1</sup> Dabiri et al. 2015 *A New Approach To Wind Energy: Opportunities And Challenges*. Page 55: "It remains unknown how co-located VAWTs and HAWTs will interact aerodynamically or how to optimize that interaction. Previous experience in full-scale studies of VAWTs has proven that it is essential to complement labscale experiments and computer models with testing in the field to answer this type of question rigorously".

- CEQA process has not started yet, may delay agreement approval and project start.
- Other permit requirements?
- No pre-construction bird and bat use survey mentioned.

**Score:**

Criterion No.	Criteria	Possible Points	Scorer A	Scorer B	Scorer C	Scorer D	Average
1	Technical Merit and Need	20	14	14	12	12	13
2	Technical Approach	20	12	12	12	14	12.5
3	Impacts and Benefits for California IOU Ratepayers	20	12	14	12	14	13
4	Team Qualifications, Capabilities, and Resources	10	8	8	8	8	8
5	Budget and Cost Effectiveness	10	8	7	7	8	7.5
6	EPIC Funds Spent in California	15	12	12	12	12	12
7	Ratio of Direct Labor and Fringe Benefit Rates to Loaded Labor Rates	5	3.45	3.45	3.45	3.45	3.45
8	Match Funding ( <i>amount relative to EPIC funds requested</i> )	5	1.2	1.2	1.2	1.2	1.2
8	Match Funding ( <i>commitment, justification, etc.</i> )	5	3.5	3	3	3	3.125
9	Disadvantaged Communities (Optional)	5					
Scores for Criteria 1 to 4*			46	48	44	48	46.5
Scores for Criteria 1 to 7**			69.45	70.45	66.45	71.45	69.45
Scores for Criteria 1 to 10			74.15	74.65	70.65	75.65	73.775
<b>TOTAL SCORES</b>			<b>46</b>	<b>48</b>	<b>44</b>	<b>48</b>	<b>46.5</b>
*Proposals need to score at least 49 points for Criteria 1 to 4 in ord Average, C1 to C4					46.5	FAIL	
*Proposals need to score at least 70 points for Criteria 1 to 7 in ord Average, C1 to C7						FAIL	
Final Score					46.50	FAIL	