

Compilation of CFTI Advanced Renewables Recommendations¹

High Priority

Recommendations to support offshore wind

Note: Most of the recommendations were initially focused on the Gulf of Mexico, but then expanded to all US offshore territories.

R&D:

[\$6B – Dominion’s 12MW/2 turbines demonstration project received \$50MM from DOE in 2020. We expected 4-10 more demonstration projects with 3-4 turbines each (sufficient for understanding wind farm layout and wake effect) in the next five years that will be \$2B in today’s money. Additional study funding for transmission configuration and offshore turbine design will be \$1B based on the 2022 DOE fundings. Expand to nationwide resulting in a total \$6B asking.]

- Funds to optimize offshore wind turbine design for lower average wind speeds.
- Funds for NREL to update its study of offshore wind economics to consider recently passed incentives (e.g., IRA, IIJA). The study should look beyond 2030.
Rationale: This is needed for utilities to make the case successfully to include offshore wind in resource plans.
- Funds to study transmission configurations for offshore wind.
Rationale: There is already an RWE/NREL offshore wind transmission study for Louisiana. Similar assessments are needed to evaluate transmission configurations for offshore wind over the broader GOM region (TX, MS, AL, FL) and in other parts of the country.
- Funds to develop design specifications for turbines, platforms, and transmission infrastructure capable of withstanding hurricanes (at least 150 mph winds for several hours).
Rationale: Certainty on infrastructure specifications will inform bidding decisions and successful OSW development; the current T rating is only good to 127 mph.

Planning – transmission and point of interconnection:

- State and federal regulatory agencies involved in OSW planning should increase staffing.
- Federal government, ISOs/RTOs, and industry stakeholders should support the creation and empowerment of multi-state decision-making entities that can facilitate planning and procuring of effective regional and interregional transmission solutions to integrate offshore wind.
- The IRS should provide guidance to confirm applicability of the ITC to offshore wind-related interconnection facilities owned by generators and/or third parties.

¹ This list does not include recommendations related to advanced geothermal energy, which are being developed separately.

- States, in collaboration with grid operators and transmission owners, should proactively identify feasible, cost-effective points of interconnection to the existing grid.
- HVDC-technology and operational “network ready” standards should be developed to ensure vendor compatibility in offshore wind transmission procurement to “future proof” the evolution of a connected offshore wind transmission network.
- FERC, ISOs/RTOs, and multi-state entities, in collaboration with market participants, should create effective regional and interregional transmission planning processes with requisite cost allocation agreements that can identify the needs and improve investment necessary to capture the benefits of expansive, planned offshore wind transmission.
- DOE, FERC, states, multi-state entities, and RTOs/ISOs, in collaboration with offshore wind generation and transmission developers, should develop offshore grid contracts and regulations to enable a transition from radial lines to be meshed radial lines to the eventual fully networked regional and interregional grid solutions.
- DOE, FERC, RTOs/ISOs, and transmission owners can develop recommendations for grid operations and wholesale market design modifications to support regional and interregional optimization of offshore wind transmission.

Other wind energy recommendations

Siting and permitting:

- More research and general efforts to standardize and streamline permitting at national and state levels.
- Hybridization option analysis
- Site development practice changes to focus on long-term (typical utility perspective) to 2050.
- “Repower-ready” sites and techno-economics thereof – what can be re-used and/or how to minimize what must be re-built?

Wildlife:

[\$10MM - Regional and species-specific studies, intended to avoid future development at high-risk regions and/or to prevent wildlife fatalities at existing wind sites.]

- Funds for more research on bat and avian behaviors.
- Funds to develop technologies and strategies for reducing wildlife fatalities while maintaining production.
- Funds to study impact to aquatic life.
- Continued focus in working with USFWS on general permits.

Recommendations to support solar energy

Agrivoltaics:

[\$15MM - Land use has become a barrier and the current study is in small scale. Propose conducting 20-30 regional studies across the nation.]

- Funds for more R&D for understanding if/how agrivoltaics can provide an approach for mitigating agricultural land conflicts (more of a socioeconomic R&D effort).
- Funds for more R&D for agrivoltaic-specific PV plant designs at large scales.

Rationale: Although still somewhat niche in the U.S., interest and deployment is growing significantly. Many, including DOE, see this as one possible solution to address land-use conflicts.

Medium Priority**Recommendations to support offshore wind****Bureau of Ocean Energy Management (BOEM) Leasing:**

- BOEM should clarify and modify BOEM transmission permitting and lease process coordination for third-party offshore cable routes between lease areas and points of interconnection.
- BOEM should continue to allow bid credit for a percentage of lease bids, such that a fixed percentage of a bid can be dedicated to domestic investment in workforce and supply chain.
- DOE, with BOEM, should explore—and evaluate for possible federal legislative action—more effective alternatives to the existing auction, lease, and permitting processes to align them better with state OSW generation procurements.

Other wind energy recommendations**R&D:**

[\$20MM – The proposed studies below will be a *joint effort between wind turbine operators/utilities, manufacturers, and labs that include material, labor, and software costs.*]

- **Wind resource modeling** -- Funds for studies and changes in wind resource modeling to better quantify risks around ambient operational regimes which match with times of projected peak load for utilities. *Considerations* include:
 - Low temperatures, high temperatures
 - Icing
 - *Durations* of low wind resource
 - Hybrid asset design optimization, controls – wind, solar, hydro/pumped storage hydropower, battery, storage
- R&D for repowering and/or extending operational timeframes.

Recommendations to support solar energy

Siting and permitting:

- Greater financial incentives (could be state level) to support development of non-traditional sites – brownfields, landfills, decommissioned coal plants.
- More R&D to evaluate floating PV, for use at hydro facilities and among offshore wind farms – also ties into hybrid plant design for hydro facilities. Optimization studies for FPV integrated into hydro facilities.
- More research and general efforts to standardize and streamline permitting at national and state levels.

Rationale: Competing land uses present a barrier to solar energy deployment. Siting solar in unconventional locations could reduce community resistance and speed deployment.

Design:

[\$10MM – Improve resilience such as storm prevention, flooding preparedness, and fire mitigation.]

- R&D for repowering and/or extending operational timeframes.
- Funds for R&D into design for climate change (e.g., to improve resilience to extreme weather events).
- Designing PV panels for longer use AND ease of recycling.

Low Priority

Recommendations to support offshore wind

Other considerations:

- Recommended DOE to conduct an assessment of whether Jones Act is working as part of their Offshore Wind Market report.

Rationale: More Jones Act compliant vessels will be needed to meet demand. Currently there is only one Jones Act compliant turbine installation vessel under construction.

Recommendations to support hydropower

R&D:

[\$100MM – WPTO announced [\\$32MM](#) hydropower funding in 2022 to support testing of innovative technologies, development approaches, or construction techniques. We proposed fundings to cover the following activities.]

- Funds to establish a U.S. hydropower research facility where new technologies and materials could be tested.
- Funds to increase R&D into the development of smart controls as the industry hybridizes to reduce wear and tear due to non-standard operating regimes.

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- Funds for additional research into in-situ repairs that do not require major overhauls (removal of entire powertrain).
 - Funds to develop frameworks that support industry to account for climate change impacts and resilience on major components.

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