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Magellan Wind Comments on Draft IEPR

Additional submitted attachment is included below.

BEFORE THE CALIFORNIA ENERGY COMMISSION

Comments of Magellan Wind LLC on the Draft 2015 Integrated Energy Policy Report	)))	Docket No. 15-IEPR-01

Magellan Wind LLC (Magellan) appreciates this opportunity to comment on the California Energy Commission's (CEC's) 2015 Draft Integrated Policy Report (2015 Draft IERP or draft report), document no. CEC-100-2015-001-CMD. Magellan is an offshore wind development company that is working to use recent advances in floating foundations for offshore wind turbines to harness the strong, steady winds that blow across deep waters off the California coast. The commercialization of floating offshore wind technology offers an important opportunity for California to advance its ambitious renewable energy and greenhouse gas (GHG) reduction goals by tapping an abundant new source of clean, cost-effective, in-State renewable energy.

Magellan's comments focus on two aspects of the 2015 Draft IEPR. We first describe the important contribution that offshore wind power could make to California's effort to meet its ambitious renewable energy and GHG reduction goals, with particular emphasis on how offshore wind development aligns with energy diversification and economic development objectives reinforced by Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015 (SB 350). Our comments make the case that the final version of the 2015 IEPR should recognize the potential for offshore wind to help California in its pursuit of these important goals.

The second section of these comments urges that the final version of the 2015 IEPR address SB 350's establishment of GHG reduction targets for the electricity sector. The draft report refers to Governor Brown's Executive Orders announcing GHG reduction policies for his Administration, but not to the GHG reduction provisions of SB 350. The statutory provisions, which carry the force of law as distinct from administration policy that could be altered unilaterally by a future Governor, should have significant implications for the State's renewable energy planning. Those implications should be addressed in the final version of the 2015 IEPR.

The Final Version of the 2015 IEPR Should Recognize Offshore Wind's Potential To Provide a Vital Addition to California's In-State Renewable Energy Generation

California's high-quality offshore wind resource has only recently begun to attract attention because the floating foundation technology needed to harness the strong, steady winds that blow across the State's deep coastal waters is only now being commercialized. The 2015 Draft IEPR contains two brief references to offshore wind, both in connection with a CEC-sponsored study academic study. 2015 Draft IEPR at 72, A-22. This cursory treatment of is inconsistent with offshore wind's potential to advance the State's renewable energy and GHG reduction goals. The final version of the 2015 IEPR should acknowledge this potential and the need for state

policy makers to give careful consideration to offshore wind in planning to optimize the State's future renewable energy mix.

California's high-quality offshore wind resource. The National Renewable Energy Laboratory (NREL) has estimated that California's offshore winds could produce 887,800 GW of power – more than ten times California's total in-State electrical generation capacity in 2014.[1] The NREL estimate includes all offshore acreage within 50 of the California coast with average wind speeds of at least 7 meters per second. Much of this area will not be considered for development due to factors such as environmental sensitivity, the protection of coastal views, extreme water depths and conflicts with shipping or other existing uses. Nevertheless, the available resource is, by any measure, enormous.

While the floating foundations needed to develop offshore wind power at deep water sites is only now becoming available, other key technologies have been through decades of refinement in shallow-water offshore wind farms. Marine-adapted turbines and power transmission systems, for example, have been through generations of innovation and testing and are continuing to improve steadily. By the end of 2014, more than 8,000 MW of offshore wind generating capacity had been installed in European waters, and that number is expected to exceed 23,000 by 2020.[2] Although the United States has trailed far behind Europe in offshore wind development, recent developments, including the installation of the first foundations in U.S. waters this fall (for a 30 MW project off the coast of Block Island) and awards of area, and federal lease sales for large areas off the coasts of Massachusetts and New Jersey, have accelerated the pace of development here. As with other renewable energy technologies, increases in the scale offshore wind deployments drives innovations in equipment and technique that reduce costs.[3] Experts predict prices in the $.11 per kwh range for European projects that begin construction in 2020.

Jurisdictions like California with high-quality deep water wind resources are well-positioned to benefit both from industry-wide trends, such as improvements in offshore turbine and

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[1] D. Elliott et al., *Assessment of Offshore Wind Energy Potential in the United States* (2011), at http://www.nrel.gov/docs/fy11osti/51332.pdf. CEC statistics indicate that total in-State electrical generating capacity for 2014 was 78,865 MW, with gas-fired plants accounting for 46,211 MW, or almost 60 percent of the total. CEC, *Electric Generation Capacity & Energy*, at http://energyalmanac.ca.gov/electricity/electric_generation_capacity.html.

[2] The European Wind Energy Association (EWEA) reports 8,045 MW of offshore wind generating capacity at the end of 2014, and projects an additional 11,000 to 19,000 MW by 2020. EWEA, *Wind Energy Scenarios for 2020* (July 2014), at http://www.ewea.org/fileadmin/files/library/publications/scenarios/EWEA-Wind-energy-scenarios-2020.pdf.

[3] For a recent story on the beginning of construction on the Block Island project, see A. Kuffner, Providence Journal, *First Foundation for Deepwater Wind Farm Installed off Block Island* (July 26, 2015), at http://www.providencejournal.com/article/20150726/NEWS/150729446. Information on lease auctions for offshore wind farm sites off the coasts of Massachusetts and New Jersey leases is available on the Bureau of Ocean Energy Management's (BOEM's) website at http://www.boem.gov/Renewable-Energy-State-Activities/.

transmission technology and in wind farm design and operation and maintenance practices, and from the emergence of cost-effective floating foundations. Norway-based Statoil, which has built on decades of experience as a North Sea oil and gas producer to become a leader in the design, construction and operation of offshore wind farms and a pioneer in the adaption of floating foundation technology to offshore wind, recently announced its decision to deploy an array of five 6 MW turbines off the coast of Scotland by the end of 2017.[4] This will be the world's linked array of turbines on floating foundations. Closer to home, the U.S. Department of Energy has awarded Principle Power a technology demonstration grant, good for up to $47 million in matching funds, to install turbines on the company's floating foundations off the Oregon coast near Coos Bay.[5] In Hawaii, two companies, Denmark-based Alpha Wind and Hawaii-based Progression Wind, have applied for federal leases to construct utility-scale offshore wind farms on floating foundations off the coast of Oahu.[6]

Offshore wind development fits with SB 350's emphasis on renewable energy diversification and economic development. As the draft report notes (e.g., 2015 Draft IEPR at 3-4, 77), diversification of California's renewable energy portfolio is critical to attainment of the State's renewable energy goals. Strategic transmission investments are needed to link our extensive renewable resources to load centers throughout the grid. Transmission planning processes will need to be streamlined and coordinated to ensure the siting, permitting, and construction of the most appropriate transmission projects takes proper consideration of renewable energy potential, land-use, and environmental factors.

SB 350 revises the Public Utilities Code to emphasize the importance of a diverse, balanced portfolio of energy resources.[7] The statutory language sets a goal of "optimal integration of renewable energy" subject to a cost-effectiveness condition, not minimization subject to an

[4] Statoil's announcement of its decision to move forward with its Hywind array off the Scottish coast is available at http://www.statoil.com/en/NewsAndMedia/News/2015/Pages/03Nov_HywindScotland_news_page.aspx.

[5] For a description of the Coos Bay floating wind project and DOE's award, see U.S. Department of Energy, Energy Efficency and Renewable Energy Division, *Offshore Wind Advanced Technology Demonstration Projects*, at http://energy.gov/eere/wind/offshore-wind-advanced-technology-demonstration-projects.

[6] For links to lease applications by Alpha Wind, which seeks to build utility-scale wind farms at two deep-water sites off the coast of Hawaii, see BOEM's Hawaii activities web page at http://www.boem.gov/Hawaii/.

[7] Section 26 of the enrolled bill directs the Commission to

> Identify a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy in a cost-effective manner.

SB 350 § 26 (adding Cal. Pub. Util. Code § 454.51(a)). All references to SB 350 in these comments pertain to the enrolled version of the bill.

adequate renewable energy integration condition. Diversification away from electrical power produced from fossil fuels has well known benefits in reducing price volatility and environmental harms. In addition, a diversified portfolio of renewable resources can allow California to attain higher levels of renewable power penetration with improved reliability and lower levels of curtailment and fossil fuel use.

SB 350 also directs the Commission to give preference to renewable energy sources and GHG reduction technologies that promote in-State employment and economic development.[8] Here again, SB 350 calls upon the Commission to generate renewable energy portfolios that advance a range of important policies. The objective is not simply to identify portfolios of renewable energy sources that meet RPS targets at the lowest monetary cost.

The 2015 Draft IEPR barely mentions offshore wind, referring to only in summaries of CEC research grants, which include a $150,000 grant to UCLA for an assessment, now completed, of offshore wind development effects on marine ecosystems. 2015 Draft IEPR at 77, A-22. Magellan does not suggest that the final version of the 2015 IEPR should analyze offshore wind's place in California's future renewable energy portfolio. This type of analysis will require detailed, properly vetted information on offshore wind costs and generation profiles (e.g., by time of day, time of year and location in relation to load), which should be available within the next year. For now, the final version of the 2015 IEPR should call attention to the potential for offshore wind to make an important contribution, providing notice to policy makers and other stakeholders of future issues. For example, Figure 47, which presents the CEC's projection of "Mid Demand Case Generation Fuel Sources 2015-2026" (Draft IEPR at 191), estimates electrical power production from nuclear, coal, gas, biomass, geothermal, solar and wind facilities, as well as for consumption avoided through "additional achievable energy efficiency" (AAEE). While estimates of power production from offshore wind across this period may be premature, the accompanying text should note that the emergence of floating foundation technology, with the potential to enable development of California's offshore wind resource, raises the real possibility that future projections will include offshore wind as a significant new in-State renewable energy resource.

The Final Version of the 2015 IEPR Should Discuss the Implications of SB 350's GHG Reduction Provisions

[8] Section 25 of the enrolled bill adds new language to the Cal. Pub. Util. Code directing the Commission and the CEC

> (e) To the extent feasible, give first priority to the manufacture and deployment of clean energy and pollution reduction technologies that create employment opportunities, including high wage, highly skilled employment opportunities, and increased investment in the state.

SB 350 § 25 (adding Cal. Pub. Util. Code § 400(e)).

The 2015 Draft IEPR should be revised to include a fuller treatment of SB 350's climate goals. Several passages in the draft report refer to the Act's establishment of a 50 percent RPS requirement for 2030. 2015 Draft IEPR at 1-2, 55. The draft report cites Governor Brown's April 2015 Executive Order, which sets a policy goal of reducing statewide greenhouse gas (GHG) emissions by 40 percent from 1990 levels by 2030.[9] However, the draft report does not address SB 350's provisions expressly concerned with GHG emissions reductions and the effect of those provisions on planning for renewable energy generation and transmission.

SB 350 requires the California Public Utilities Commission (CPUC) to ensure that load serving entities, in addition to meeting new RPS targets, achieve reductions in GHG emissions in the electricity sector commensurate with a statewide reduction of 40 percent from 1990 levels by 2030.[10] This ambitious GHG reduction target is clearly intended by the legislature to serve as a milestone on the road to a longer term goal – a statewide reduction "to 80 percent below 1990 levels by 2050"[11] – and the Act directs the CPUC to ensure that the 2030 milestone is met.[12]

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[9] 2015 Draft IEPR at 9, citing Executive Order B-30-15, http://gov.ca.gov/news.php?id=18938, S-3-05 http://gov.ca.gov/news.php?id=1861 and B-16-2012, http://gov.ca.gov/news.php?id=17472.

[10] Section 27 of the enrolled bill establishes a new requirement that the Commission, beginning in 2017, require load serving entities to file and implement integrated resource plans "that reflect the electricity sector's percentage in achieving the economywide greenhouse gas emissions reduction of 40 percent from 1990 levels by 2030." SB 350 § 27 (adding Cal. Pub. Util. Code § 454(a)(1)(A)). Additional references to the Commission's new responsibility for GHG reduction targets appear in sections 26 and 32 of the enrolled bill. SB 350 § 26 (adding Cal. Pub. Util. Code § 454.51(a)) (electrical generation portfolio chosen by the Commission must "achieve any statewide greenhouse gas emissions limit established pursuant to the California Global Warming Solutions Act of 2006"); *id.* §32 (adding Cal. Pub. Util. Code §§ 740.12(a)(1)(D), (b) (Commission's new responsibilities relating to promotion of vehicle electrification needed to meet GHG reduction targets).

[11] SB 350 § 32 (adding Cal. Pub. Util. Code § 740.12(a)(1)(D)) (stating Legislature's reasons for aggressive pursuit of vehicle electrification).

[12] Section 35 of the enrolled bill explicitly authorizes the Commission to use its authority over power procurement to promote the development of new sources of renewable energy that can contribute to long-term GHG reductions:

> The commission may approve procurement of resource types that will reduce overall greenhouse gas emissions from the electricity sector and meet the other goals specified in paragraph (1), but due to the nature of the technology or fuel source may not compete favorably in price against other resources over the time period of the integrated resource plan.

SB 350 sec. 35 (adding Cal. Pub. Util. Code sec. 454.32 (a) (2) (B)).

These new statutory GHG reduction provisions strengthen California's GHG reduction efforts in important ways. SB 350 sets out legally binding instructions to the CPUC that include a legal mechanism for achieving the next round of GHG reductions in the electricity sector – beyond AB 32's target of a statewide return to 1990 levels by 2020. In addition, SB 350 frames the electricity sector target, achieving sectoral reductions "commensurate with a statewide reduction of 40 percent," in a manner that appears to support CPUC action to require greater elimination of more than 40 percent of GHG emissions from this sector by 2030. Because emissions reductions are more difficult to achieve in other areas, such as transportation, GHG reduction strategies typically look for proportionately greater reductions from the electricity sector.

SB 350 was amended extensively in the weeks that preceded its enactment and was not signed into law was signed into law until October 7, 2015, less than a week before the 2015 Draft IEPR was released. The additional time before publication of the 2015 IEPR in final form, which is scheduled for January 2016, should allow the CEC to analyze and address the implications of

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Magellan appreciates this opportunity to comment on the 2015 IEPR in draft form and the CEC staff's thoughtful and professional work on this important report.

Respectfully submitted,

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