DOCKETED

Docket Number:	17-EPIC-01
Project Title:	Development of the California Energy Commission Electric Program Investment Charge 2018 â€“ 2020 Triennial Investment Plan
TN #:	215782
Document Title:	Benjamin Ruttenberg Comments: Science and information needs to evaluate offshore renewable energy
Description:	N/A
Filer:	System
Organization:	Benjamin Ruttenberg
Submitter Role:	Public
Submission Date:	2/6/2017 4:01:38 PM
Docketed Date:	2/6/2017

Comment Received From: Benjamin Ruttenberg
Submitted On: 2/6/2017
Docket Number: 17-EPIC-01

Science and information needs to evaluate offshore renewable energy

Additional submitted attachment is included below.

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov

The Energy Commission is currently soliciting ideas and stakeholder input for the 2018 – 2020 EPIC Triennial Investment Plan. For those that would like to submit an idea for consideration in the 2018-2020 EPIC Triennial Plan, we ask that you complete the form below. Submittals are due by **5:00 p.m. on February 10, 2017.**

Part 1. Initiative Description and Purpose:

1. Please provide a brief description of the proposed initiative:

1. Habitat/environmental assessments to evaluate impacts of offshore renewable power facilities, including distribution of habitats, protected species, fishery resources, seabirds and marine mammals, spatial distribution of human uses, and other potential effects
2. Studies to quantify the full economic and social impacts of offshore renewable power (including potential pros and cons)
3. The potential to include desal in offshore renewable power planning
4. modeling to optimize spatial distribution and planning for offshore renewables, ideally including information from #1, above

2. What technical and/or market barriers would the proposed initiative help overcome? For scientific analysis and tools, what knowledge gaps would the proposed initiative help fill?

1. This information will be essential in conducting a full EIS, including potential environmental impacts (both positive and negative). Much of these data do not currently exist.
2. Economic impacts would help policy makers and industry better understand the full economics of offshore renewable power.
3. Desal could utilize excess renewable energy to generate water for the Central and Southern California coast, but little information exists on how to best include desal in California's power solutions.
4.Spatial planning optimization modeling would help determine placement for offshore renewable facilities that will maximize benefits and minimize user conflicts.

Part 2. Benefits and Impacts

3. If this initiative is successful, either fully or partially, what would be the expected impact? Who are the primary users and/or beneficiaries?

1. This information will allow more complete understanding of environmental costs and benefits, allowing policymakers and the public to best evaluate potential projects.
2. Related to #1, this information will allow us to understand tradeoffs between environmental impacts and economic benefits, since all projects have some tradeoffs.
3. Desal could benefit the electric grid (providing an outlet for excess power (e.g. springtime) and provide water for communities that will likely become drier as the climate changes.
4. Planners, policymakers and all stakeholders would benefit from understanding solutions that minimize conflict and maximize benefits to all.

4. Describe what quantitative or qualitative metrics or indicators would be used to evaluate the impacts of the proposed initiative:

1. Creation of appropriate habitat/environmental datasets (e.g. number, quality).
2. Model outputs of projected annual economic benefits and distribution of these benefits.
3. Potential freshwater generated.
4. Spatial model output and maps.

5. Please provide a list of peer-reviewed references that support the responses for questions 3 and 4. Proposed initiatives that include peer-reviewed references will be given stronger consideration.

Angelis-Dimakis A, M Biberacher, J Dominguez, G Fiorese, S Gadocha, E Gnansounou, G Guariso, A Kartalidis, L Panichelli, I Pinedo, M Robba. 2011. Methods and tools to evaluate the availability of renewable energy sources. Renewable and Sustainable Energy Reviews 15: 1182–1200.
Dhanju A, P Whitaker, W Kempton. 2008. Assessing offshore wind resources: an accessible methodology. Renewable Energy 33: 55-64. http://dx.doi.org/10.1016/j.renene.2007.03.006.
Dvorak MJ, BA Corcoran, JE Ten Hoeve, NG McIntyre, MZ Jacobson. 2013. US East Coast offshore wind energy resources and their relationship to peak-time electricity demand. Wind Energy 16: 977-997
Kittinger JN, JZ Koehn, E Le Cornu, NC Ban, M Gopnik, M Armsby, C Brooks, MH Carr, JE Cinner, A Cravens, M D'Iorio, A Erickson, EM Finkbeiner, MM Foley, R Fujita, S Gelcich, K St Martin, E Prahler, DR Reineman, J Shackeroff, C White, MR Caldwell, and LB Crowder. 2014. A practical approach for putting people in ecosystem-based ocean planning. Frontiers in Ecology and the Environment 12:448-456
Pimenta F, W Kempton, R Garvine 2008 Combining meteorological stations and satellite data to evaluate the offshore wind power resource of Southeastern Brazil Renewable Energy 33: 2375-2387 http://dxdoiorg/101016/jrenene200801012
Sheridan B, SD Baker, NS Pearre, J Firestone, W Kempton 2012 Calculating the offshore wind power resource: Robust assessment methods applied to the US Atlantic Coast, Renewable Energy 43: 224-233 http://dxdoiorg/101016/jrenene201111029
White C, BS Halpern, CV Kappel, 2012 Ecosystem service tradeoff analysis reveals the value of marine spatial planning for multiple ocean uses Proceeding of the National Academy of Sciences 109: 4696–4701 doi: 101073/pnas1114215109
White C, and C Costello. 2011. Matching spatial property rights fisheries with scales of fish dispersal. Ecological Applications 21:350-362.
Woods BK, T Nehrkorn, JM Henderson 2013 A Downscaled Wind Climatology on the Outer Continental Shelf Journal of Applied Meteorology and Climatology 52: 1878-1890

6. (For technologies only) What competitive advantages does the proposed technology solution have over current benchmark technologies? If the technology is beyond the prototype stage, what strategies do you suggest to bring to scale?

These projects are science- and information need-based.

Part 3. Connection to Energy Commission's EPIC Framework
Energy Commission staff have developed a draft strategic framework to guide the CEC's planning and implementation of EPIC across triennial investment cycles. One of the objectives of the draft strategic framework is to communicate a consistent set of priorities for organizing current and future EPIC investments.

7. Please indicate which of the following strategic framework themes you feel the proposed initiative best fits within:
    - Advance Technology Solutions for Deep Energy Savings in Building and Facilities
    - Accelerate Widespread Customer Adoption of Distributed Energy Resources
    - Increase System Flexibility from Low-Carbon Resources
    - Increase the Cost-Competiveness of Renewable Generation
    - Create a Statewide Ecosystem for Incubating New Energy Innovations
    - Maximize Synergies in the Water-Energy-Food Nexus
    - Develop Tools and Analysis to Inform Energy Policy and Planning Decisions
    - Catalyze Clean Energy Investments in California's Underrepresented and Disadvantaged Communities

If Other, Please Specify