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EPIC Idea: Social Science Research Center on Renewables, Climate, Data

Additional submitted attachment is included below.

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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:

The Energy Institute at Haas at the University of California, Berkeley (Energy Institute) proposes that the California Energy Commission (CEC) fund a research center focused on developing new social science tools and strategies to move the state toward a more reliable and lower cost electricity sector that achieves the state's environmental objectives. The center could focus on four areas: (1) the integration of renewable energy, (2) climate change impacts on the energy system, (3) reducing petroleum use for transportation through electrification, and (4) data-driven energy analytics.

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?

California's wholesale electricity markets have been operating for nearly two decades. Yet, it is not well understood how these markets will perform as renewable energy and storage penetration increases. Proposals to integrate with other western markets also raise important questions. The connections between the state's greenhouse gas policies and local air pollution also remain highly contested, especially in relation to environmental justice concerns. On the distribution grid, important questions remain related to the value of distributed energy resources, the impact of increasing numbers of electric vehicles, and how to best design retail prices. How the costs and benefits of technologies and regulations are shared across California's diverse populations is also poorly understood. The proposed center would examine these issues and others. The center would also help fill an important analytical gap by demonstrating approaches that take advantage of data that are becoming available from smart meters and other sources.

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?

If successful, the center's research will help policymakers identify more cost effective approaches to harness markets and consumer behavior to reduce greenhouse gas emissions and address air pollution. Industry and non-governmental organizations will also learn how to apply new analytical tools to program development and evaluation.

Graduate students who have an opportunity to work at the center will also be direct beneficiaries via the training they receive. The training of future generations of researchers will strengthen California's intellectual leadership on energy policy.

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

Quantitative measures include the number of journal articles published, the number of presentations at conference and workshops, the number of conferences hosted and attendance at the conferences and the number of webpage views of project reports. Estimates could also be developed of potentially lower costs or better policy outcomes identified by the research.

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.

The following references are recent examples of research that the center would build upon.

Anderson, Soren T. and James Sallee, “Designing Policies to Make Cars Greener: A Review of the Literature,” Annual Review of Resource Economics, Forthcoming.

Auffhammer, Maximilian, Patrick Baylis, and Catherine Hausman, "Climate Change is Projected to Have Severe Impacts on the Frequency and Intensity of Peak Electricity Demand across the United States," Proceedings of the National Academy of Sciences, 2017.

Borenstein , Severin and James Bushnell, “The U.S. Electricity Industry After 20 Years of Restructuring,” Annual Review of Economics, 2015, 7.

Davis, Lucas and Catherine Hausman, “Market Impacts of a Nuclear Power Plant Closure,” American Economic Journal: Applied Economics, 2016, 8(2), 92-122.

Davis, Lucas and Gilbert Metcalf, “Does Better Information Lead to Better Choices? Evidence from Energy-Efficiency Labels,” Journal of the Association of Environmental and Resource Economists, 2016, 3(3), 589-625.

Fowlie, Meredith, Michael Greenstone, and Catherine Wolfram, “Are the Non-Monetary Costs of Energy Efficiency Investments Large? Understanding Low Take-up of a Free Energy Efficiency Program,” American Economic Review Papers and Proceedings, 2015, 105, 201-204.

Gandhi, Raina, Christopher R. Knittel, Paula Pedro, and Catherine Wolfram, “Running Randomized Field Experiments for Energy Efficiency Programs: A Practitioner’s Guide,” Economics of Energy & Environmental Policy, 2016, 5 (2), 7-23.

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?

Not applicable.

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

Develop Tools and Analysis to Inform Energy Policy and Planning Decisions

If Other, Please Specify