DOCKETED	
Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	237214
Document Title:	California Center for Sustainable Communities at UCLA Comments - Comments on Forthcoming Solicitation - Research to Support a Climate-Resilient Transition to a Clean Electric System
Description:	N/A
Filer:	System
Organization:	California Center for Sustainable Communities at UCLA
Submitter Role:	Public
Submission Date:	3/18/2021 6:32:46 PM
Docketed Date:	3/19/2021

Comment Received From: California Center for Sustainable Communities at UCLA
Submitted On: 3/18/2021
Docket Number: 19-ERDD-01

Comments on Forthcoming Solicitation - Research to Support a Climate-Resilient Transition to a Clean Electric System

Additional submitted attachment is included below.

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March 18, 2021

RE: **Comments of the California Center for Sustainable Communities (CCSC) at UCLA on the California Energy Commission (CEC) Workshop on Research to Support a Climate-Resilient Transition to a Clean Electric System - Forthcoming Solicitation**

The California Center for Sustainable Communities (CCSC) at UCLA's Institute for the Environment and Sustainability studies the evolution of urban infrastructural systems in California, and the social and environmental impacts of their operation, with special focus on those that deliver energy and water. Accordingly, we welcome the opportunity to comment on the CEC's forthcoming solicitation on Research to Support a Climate-Resilient Transition to a Clean Electric System.

After participating in the March 5th presentation, we have the following comments and recommendations, elaborating on verbal comments made during the workshop:

1. **Overarching comment: The GFO should provide the opportunity for multiple smaller research efforts, rather than just 1 or 2 large studies. Furthermore, the GFO appears solely focused on engineering / modeling products, with no room for social or policy analyses.**

The primary proposed activities under both Efforts 1 and 2 describe extremely complex, grid-scale modeling efforts– a level of research only feasible for a very small number of organizations. This significantly limits the diversity of thinking around the motivating questions, as well as the range of analytical methods and perspectives that will be brought to bear on the challenges at hand.

The current framing excludes regional assessments and/or focused analyses that draw upon more granular and empirical data; it also excludes policy studies and program evaluations that incorporate equity considerations in an actionable way.

We recommend including a funding tract for these types of essential research approaches. Qualitative social and policy studies are essential for understanding and furthering the climate resilience of an electricity system that is currently in transition; specific examples are

described in subsequent comments. We urge additional funds be included in the total award amounts available under this GFO.

2. **The scope of the GFO should include consideration of grid resilience at the community scale (including household) and associated equity issues.**

Given the inevitability of widespread wildfires and extreme heat days, some number of grid outages will likely always be unavoidable. There is thus an urgent need to plan for the deployment of residential backup technology in a range of locations, particularly, but not limited to: urban areas that are predicted to experience large increases in numbers of high heat days; rural areas where energy access is essential for water pumping and treatment; households with occupants who depend upon grid-supplied energy to power life-sustaining medical equipment.

We recommend this GFO solicit research that addresses:

- How can communities maintain resilience in light of these threats to reliable grid operation?
- How effective are the current electricity utility programs in supporting community resilience in light of climate change?

3. **The GFO should recognize the current gaps in understanding regarding the opportunities, limitations, benefits, and downsides of local, distributed generation versus utility scale generation in areas far distant from demand.**

How will climate change affect the risks and costs associated with different approaches to siting renewable generation to meet future energy demand? We suggest this GFO solicit research into how climate change projections should be incorporated into decision-making around the location of new renewable electricity generation. There is a still a great deal to be learned about the relative costs and benefits of distributed versus centralized renewable generation. Determining an economically optimal scale of renewable generation becomes even more challenging when possible climate stress on the grid, from high heat and other phenomena, are included. We strongly suggest the language of the GFO should reflect these gaps in understanding.

4. **The scope of the GFO should include energy storage planning as it relates to grid resilience.**

We suggest this GFO solicit research into how climate change projections will affect the power and duration of energy storage needs.

5. **The scope of the GFO should include energy demand planning as it relates to grid resilience.**

We suggest this GFO solicit research into how climate change will alter energy demand, including the spatial and socio-demographic and equity dimensions of these changes.

6. **Overarching comment: Planning for resilience and community needs as a result of high heat days should be considered on equal footing with wildfire resilience planning.**

While we recognize that wildfire is a major factor in grid resilience assessments, we urge equal consideration of high heat days, which dramatically increase short-term (and long-term) cooling loads while simultaneously decreasing the grid's physical capacity to deliver energy[1]. High heat is to urban areas what wildfire is to suburban and exurban areas, a persistent seasonal threat to health, safety, and grid operation that promises to increase in severity as the California's climate warms. Resilience planning that neglects high heat puts the interests of suburban and exurban communities ahead of those in cities.

7. **Overarching comment: Utility planning frameworks should be more transparent, with modeling scenarios and key input parameters made publicly available for 3rd party comment and evaluation wherever possible.**

Many utilities license proprietary software systems to model grid operations under various demand scenarios and optimize future asset utilization and procurement decisions. Climate change projections are likely to play an increasingly prominent role in determining the optimal solutions to these types of problems. The choice of assumptions and design of scenarios that are used by utilities as part of these decision-making processes should better seek to leverage the expertise within the climate research community. New modes of interaction should be considered which formalize the process of soliciting feedback from third party experts as utilities attempt to parse the probable from the possible relative to future extreme weather events.

[1] Burillo D., Chester M.V., Pincetl S., Fournier E. 2019. Electricity infrastructure vulnerabilities due to long-term growth and extreme heat from climate change in Los Angeles County. Energy Policy 128:934-953.