

## DOCKETED

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Dear Mr. Patterson,

**Re: Request for Comments on the  
Draft Solicitation on Modeling Tools to Evaluate Distributed Energy Resources and  
Microgrids located behind the meter on California's Modern Distribution Systems**

**Docket # 16-EPIC-01(EPIC Idea Exchange)**

Arup appreciates the opportunity to submit the following comments in response to the California Energy Commission's Request for Comments on its draft solicitation on modeling tools to evaluate distributed energy resources and microgrids located behind the meter on California's modern distribution systems.

Arup is an independent employee-directed firm of 15,000 designers, planners, engineers, consultants, and technical specialists offering a broad range of professional services. Our 500 staff in San Francisco and Los Angeles have deep expertise across over 30 specialist disciplines. Arup's areas of expertise include microgrids, energy storage, energy efficiency and distributed energy resources. Additionally, Arup has an Applied Data Strategies group that focuses on the development of modeling tools. This combined substantive and modeling expertise leads to our interest in the topics addressed by this draft solicitation.

We offer the following comments on select questions raised in the Request for Comment:

- 1) (For all groups) Are the proposed funding amounts identified in this Request for Comments (RFC) appropriate for the work requested? Please explain the rationale behind the recommendations, and if applicable, what the appropriate level of funding should be to develop the products identified in this draft solicitation?*

While it is difficult to assess the required funding amounts from the level of detail available in the draft solicitation, all four topics represent significant efforts that, based on the descriptions provided, could likely each be \$2-3 million projects.

Absent further details or justification for the proposed split, we recommend an even split of the available \$9 million in funds between the four projects.

- 2) *(For all groups) What are specific recommendations you can provide to improve the group descriptions of the solicitation outlined in this RFC that would result in a better evaluation of the impacts of high concentrations of DER? Please explain the rationale behind the recommendations.*

We offer the following recommendations for Group 1, Validated and Transparent Microgrid Valuation and Optimization Tool:

- There are multiple existing modeling tools for the valuation and optimization of microgrid systems. A first step under this RFP should be to create a resource that evaluates and characterizes these available tools. To our knowledge, no such resource exists. A “handbook” describing existing tools and their capabilities would be incredibly useful both to designers of microgrid systems and in scoping the needs and gaps in the development of future tools under this RFP.
- The CEC should consider the capabilities and limitations of existing tools when considering the capabilities of the tools to be developed under this RFP. Examples of existing software for the design and analysis of microgrid systems include the DER-CAM and HOMER Pro tools. Additionally, some designers and analysts use microgrid control software, such as Geli<sup>1</sup> and Mathworks Simulink,<sup>2</sup> as a modeling method for design. Arup has found that existing tools have significant limitations as they are unable to model certain elements of microgrid systems. Examples of limitations include their inability to model thermal coupling for cogeneration systems and grid interconnections. Another limitation that Arup has come across is hosted software services where input data resides in an unsecure library. Any tool developed under this RFP should be built with data security in mind and be available for use in a way that keeps project data secure.
- In terms of the specific language of the Group 1 draft solicitation, we recommend that the CEC clarify what it means by a “validated” tool. The term “validated” carries significant weight and it is unclear from the current language how this will be measured and by whom. The RFP could clarify that the modeling tool will be validated by third-party project review from the Technical Advisory Committee and by testing the tool on a select number of implemented microgrid projects.
- We also recommend that the CEC clarify what metrics the tool should evaluate and optimize based on. The current language states that the “tool must identify and assess the greatest value for microgrids by geographic location and use case...” while also identifying whether these locations are in disadvantaged communities and the benefits to those communities. It is unclear from this description what is meant by “greatest value.”

<sup>1</sup> <https://geli.net/geli-platform/analyze-and-design/>

<sup>2</sup> <https://www.mathworks.com/help/physmod/sps/examples/simplified-model-of-a-small-scale-micro-grid.html?requestedDomain=www.mathworks.com>

Specifically, the tool could be built to optimize based on emissions reductions, first cost reduction, improved reliability, total cost of ownership, or other metrics. We think that the tool would be most useful if it analyzed a defined set of value metrics and allowed users to evaluate solutions based on different weightings of these value parameters.

We appreciate the opportunity to submit these comments and would welcome any questions on our responses.

Yours sincerely,

A handwritten signature in black ink, reading "Afaan Naqvi". The signature is fluid and cursive, with the first name "Afaan" and last name "Naqvi" clearly distinguishable.

Afaan Naqvi  
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