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EPRI Response to EPIC Request for Comments: Modeling Tools RFC

EPRI Responses to Modeling Tools RFC

Additional submitted attachment is included below.

EPIC Request for Comments: Modeling Tools RFC

Electric Power Research Institute (EPRI) Responses
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Group 1: Validated and Transparent Microgrid Valuation and Optimization Tool

Proposed Group Funding Level: $2 million

1. 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?

Based on past experience with developing tools (e.g. StorageVET), EPRI believes that the CEC consider increasing the funding amount to $3M. The rationale for a potential increase in funding is the increased need to leverage multiple stakeholders, including the California Public Utilities Commission, customers, developers, and the Investor Owned Utilities to ensure maximized usage and ratepayer benefits. Features will be needed for enhancing the tool so it can be integrated with platforms like CalEnviroscreen, and adopt other features which may be relevant to existing modeling tools, including the approach for Group 2's "Open-Source Modeling Framework and Translation Tool".

In order to bridge this increase in funding, EPRI believes that considering cost share could help ensure a broader partnership with stakeholders such as software companies or even investors in complementary platforms emerging from other CEC awards, such as those from CalSEED.

2. 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.

EPRI believes that conducting geospatial analysis may help identify suitable microgrid locations, as well as the consideration of geographical layers including: 1) Renewable Map including geospatial analyses to capture existing and future capacity, 2) Zones including environmental and disadvantaged community considerations, 3) Critical facility, 4) Energy usage, and 5) reliability factors outlined by Investor Owned Utilities.

EPRI also believes that clearly defining the scope of the tool to conduct power flow analysis (i.e. integrated capacity analysis or ICA) may help assess the impacts of high concentrations of DER.

3. Are there existing efforts that complement the groups identified in this RFC? Are there specific changes to this proposed solicitation that you would suggest to better leverage these existing efforts? Please explain the rationale behind the recommendations and the expected value of your recommendations.

As mentioned in the Group 1, Question 1 response, StorageVET is a foundational example of a "Validated and Transparent Microgrid Valuation and Optimization Tool" for energy storage. StorageVET has the architecture and flexibility to expand to evaluate microgrids. Specifically,

StorageVET can be used to evaluate energy storage with combinations of solar PV and DR. The existing optimization, simulation, and valuation frameworks in StorageVET could be potentially expanded and further developed to assess multiple technologies within a microgrid system and address the needs of microgrid analyses as well.

Additionally, utilities are using StorageVET to integrate modeling from hosting capacity tools (e.g. DRIVE) and power flow analysis tools (e.g. OpenDSS) to evaluate the impact of DER on the distribution system. These current use efforts could be potentially leveraged in the specification and development of the "Validated and Transparent Microgrid Valuation and Optimization Tool" for Group 1.

5. Are there suggestions to better complement the needs associated with CPUC proceedings related to Modeling, distributed renewable generation, electric vehicles, the use of Smart Grid Technologies and Distribution Resource Planning? Please provide specific recommendations and rationale.

EPRI believes that complementing the CPUC's proceedings may potentially asses how reliability is achieved in order to operate microgrids in an islanded mode, seamlessly connected and disconnected from the grid, in both planned and unplanned manners. While the value of reliability has always been relatively clear around productive processes and economic activities that require electricity, it is rather unclear how to calculate reliability value on critical facilities such as hospitals, military facilities, and schools. Therefore, EPRI believes it may be potentially sound to rely on a software tool to calculate what reliability improvement is needed for a specific location. EPRI further believes an investigation is likely needed for the estimation of the value of reliability in many of these critical facilities, perhaps through future validation studies.

Group 2: Open-Source Modeling Framework and Translation Tool
Proposed Group Funding Level: $1 million

1. 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?

Similar to EPRI's response in Group 1, to make this solicitation offering most beneficial to ratepayers of the State of California, EPRI believes the CEC should consider increasing the funding from $1.0M to $1.5M through $0.5M in cost share. This is based on the consideration of possible participation from qualified software vendors who could potentially "contribute in-kind" value to the interface with this new CIM interface development, and maintain it through the first evaluation period required to gather all elements of the framework.

2. 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.

The group description states that this project should be an "initial study". EPRI believes that this project group's primary objective should principally focus on the initial study to produce recommendations for an "Open-Source Modeling Framework and Translation Tool" to fit within the expectations of the recommended budget. Additionally, the "initial study" recommendations

should potentially include a survey of vendor and utility interest in using the tools that require integration into a "distribution planning suite."

3. Are there existing efforts that complement the groups identified in this RFC? Are there specific changes to this proposed solicitation that you would suggest to better leverage these existing efforts? Please explain the rationale behind the recommendations and the expected value of your recommendations.

This is an extension of CIM for Distribution Automation that would push the technology along by conducting interoperability testing with vendors and their tools. (https://en.wikipedia.org/wiki/IEC_61968)

4. Should it be required that all source code generated as a result of this solicitation be hosted on a public open-source developers site such as GitHub? If not, describe how to ensure distributed version control and source code management functionality while making the open-source code available to the open-source developers' community.

EPRI has invested efforts into the transparency of many models and algorithms where code should be fully hosted publicly (e.g. Sourceforce, Grithub). Efforts which could complement this solicitation would be consideration for running the model in a web-hosted server (online) and/or as a MS Windows-based (local) version which is capable of employing different solvers both free and paid. This would allow users to access the model, at both basic and advanced levels. Versions could be created with extra security with proprietary information versus allowing other users the benefit of an open platform for free that contains publicly available solvers and use cases which remain in the public space. The rationale for these considerations permit such a tool to capture multiple stacked benefits (perhaps at varying interconnection points), and can also help consider multiple price models. An open source platform that displays the capabilities will quickly give users and communities the ability to share data and create libraries of options.

5. Are there suggestions to better complement the needs associated with CPUC proceedings related to Modeling, distributed renewable generation, electric vehicles, the use of Smart Grid Technologies and Distribution Resource Planning? Please provide specific recommendations and rationale.

EPRI suggests that in order to make this work, software vendors could potentially 'contribute in kind' cost share to an interface with any new CIM interface development and to maintain it so that other vendors can also support it in the long run. A collaborative of IOUs or investors in this process with cost share could possibly provide the value of support needed to show longer term commitment. This project, while still early in its development can provide critical values such as: a) updating use cases for data and associated future requirements; b) updating interface specifications; and c) providing interoperability testing events in the style of similar efforts like ENTSO-E in Europe.