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SLAC National Accelerator Laboratory Response To EPIC Request for comments: Modeling tools RFC

Additional submitted attachment is included below.

EPIC Request for Comments on Modeling tools RFC

Comments from the Grid Integration Systems and Mobility (GISMo) Group at SLAC National Accelerator Laboratory
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This document contains comments and suggestions collected among members of the GISMo group. We report each of the questions presented in the RFC, followed by our insights.

Q1. (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?

A1.

Group 2: We believe that the budget allocated for Group 2 may be low. The amount of work that goes into common data model/translation tools type of work is often underestimated. To create a common data model, the awarded team needs a comprehensive knowledge of each tool and a deep understanding of all the different use cases that want to be studied.

Q2. (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.

A2.

Group 3: We do not recommend limiting the solicitation to GPU computing or any other specific technology. Let the participants propose their own solutions to the problem. You will end up with a wider pool of different solutions to compare and choose from. Specifically, if the topic would allowed for cloud-based high performance computing, as well as more granular desktop HPC solutions, this would be more likely to draw in useful proposals. For example, as it is written now, it is highly unlikely that an effective and credible solution for GridLAB-D with short-term usefulness to the user-community would be received. GPU work for GridLAB-D has been done in the past, but it lacks generality. Whereas high-granularity multi-threading and mass parallelization for large-scale studies are much closer to user-readiness. They have a higher TRL than GPU approaches for agent-based simulation.

Q3. (For all groups) 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.

A3.

Group 1: GMLC efforts, 1.3.5 DER siting and optimization tool to enable large scale deployment of DER in California.

SLAC National Accelerator Laboratory's GISMo is part of the GMLC 1.3.5. effort where the

high level goal of this 18-month project is to deliver to the California Public Utilities Commission (CPUC), California Investor Owned Utilities (IOUs) and other relevant stakeholders, an integrated distributed resource planning and optimization platform, hosted online, able to identify meaningful behind-the- meter Distributed Energy Resources (DER) adoption patterns, potential microgrid sites and demand-side resources, and evaluate the impacts of high renewable penetration feeders on the distribution and transmission grid. The team is tasked to deliver a software solution to support statewide goals in California to integrate 15 GW of distributed energy resources, including 12 GW of renewable energy on distribution systems.
Group 3: GISMO efforts on the Visualization and Analytics of Distributed Energy Resources (VADER) project funded by Department of Energy's Sunshot Initiative One of the objectives with VADER is to create a tool that is adopted in the industry. This vision guides several design considerations in VADER implementation. Currently, VADER has fully automated infrastructure provisioning for Gridlab-D and analytics using Amazon Web Services cloud infrastructure. This allowed us to create participant sandbox environments without having to build and configure each server from scratch, and install VADER application on each sandbox.

Q4. (For groups 2,3 and 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.

A4.
All Groups: We strongly suggest that all the material developed in the different work groups would be hosted in a public open-source site and made available for the developers community. Past experience has proven that modeling\analysis tools need an active community of users and developers to success. An active community of users and current platforms to do version control makes it extremely easy to collaborate and build on the capabilities of tools over time.

Q5. (For all groups) 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.

A5.
Group 1: We believe that the final solicitation should clarify whether an addition to an existing tool is an acceptable solution. Besides that, we believe that a list of expected and recommended features would be helpful. From our perspective, the tool should take into consideration the topology of the microgrid, the relative displacement of loads, generation units and storage. Every user defined scenario should pass a feasibility assessment, taking into consideration both balancing and stability constraints. The tool should be able to leverage multiple value streams depending on the available markets (i.e. DR services, wholesale market arbitrage). A specific "custom market framework" module should be included to let the final user explore new market scenarios and business models.
Group 4: We would suggest to better define the characteristics of the requested desktop solution. A web-based UI that uses cloud computing could be considered desktop in the general sense.

The solicitation should clarify whether the focus is on desktop-only solutions or desktop accessible solutions, regardless of the computing platform (i.e. cloud computing). We also believe that the solicitation should address some specific deficiencies in GridLAB-D that today are important to California users, and the IOUs in particular. Specifically, the commercial building module lags the residential module and needs to be reworked to support expected IOU use-cases. A new transportation module that includes EV as well as other electric transportation modes (i.e. electric buses, electric trucks, light and heavy rail) should be designed. User definable tariff/evaluation module should be designed to support integration of wholesale markets like CAISO.