Technical Assistance Request Omega Grid for the American Made Solar Prize

The American Made network of companies would be helpful to Omega Grid (OG) in the following areas:

1) Reviewing OG pilot tests around scalability and cybersecurity.
2) Assessing Demand Response market disruption potential for overserved municipal and co-op customers
3) Assessing the EV flexibility go-to-market plan
4) Leveraging existing flexible EV or Building management technology for projects in Sacramento and Burlington, VT.

Please reach out to info@omegagrid.com if you can be of assistance. .

Background

Omega Grid is an ambitious Local Energy Market solution that seeks to enable an order of magnitude more solar, batteries, and electric vehicles than are traditionally allowed under the peak hour design paradigm. One of the most fundamentally challenging aspects of decentralized generation integration is business model innovation for local distribution companies.

To expand solar generation beyond the stated hosting capacity, we propose a Local Energy Market (LEM) system that eliminates the revenue risk of distributed generation for the utility and encourages investments by customers. A LEM from Omega Grid (OG) operates similarly to the established wholesale market ISO structure to incorporate grid constraint pricing at the distribution level. Our market system encourages the right equipment, to operate at the right time, in the right location on the grid.

Typical wholesale system dispatch occurs requires high-speed communication and reacts to changing bulk loads with a system of markets. OG takes that wholesale price and modulates it to account for local grid conditions. By calculating the real value of energy at the local level incorporating dynamic and static grid ‘traffic jams’, we can enable a significant change in how utilities interact with their customers.

In our process, market participants must provide a default bid and respond to market prices. We demonstrated the technical feasibility of calculating prices during our first Stone Edge Farm

pilot. The OG process avoids the administrative task of defining costs related to a traditional process.

Omega Grid can report the realized costs an infrastructure constraint or grid “traffic jam” is causing. The utility can justify an upgrade once this cost reaches a meaningful threshold. Regulators can review evidence instead of forecasts. Meanwhile, people in the community get paid for their part in reducing their electricity use and easing the traffic jam. Compare this approach with attempting to determine what a utility should pay people now based on the likelihood of deferring a hypothetical upgrade in the future.

An opt-in program allows the public and stakeholders to remain on a traditional flat-rate structure if they do not wish to participate. For instance, a solar panel owner could retain their existing feed-in-rate, while an electric vehicle charger nearby could opt to join the market.

Our solution leverages a patent-pending Decentralized Dispatch process to efficiently calculate local energy prices based on bids from flexible loads and dispatchable generation. Our approach includes a readily auditable log of market interactions, which provides transparency to a 3rd party in regulating potential self-dealing or market power when the local utility is entrusted to run a LEM.