Technical Assistance Request

We need the following technical assistance to realize our solution.

Engineering

We would like advice and technical support from companies, scientific institutions, and engineers to push our solution design through several MVP stages. In particular we would like support in the following technical areas:

- Device stability, e.g. how converter topology, component selection, PCB layout affect PID controller design, small and large signal analysis, open loop gain and closed loop stability.
- Advanced converter topology design: how to properly and safely develop resonant converters, interleaved converters, phase shedding converters, and what the tradeoffs are in terms of control scheme, complexity, device cost, etc.
- MPPT Algorithm design: we have a lot of prior work on MPPT algorithms and algorithm simulation, from simple hill climbing algorithms like Perturb and Observe, to heuristic stochastic algorithms like simulated annealing, to a complex multistage combination of both local and global algorithms meant to improve overall tracking efficiency. We would like to learn more about photovoltaic step responses and how these different algorithms may be more or less efficient compared to each other.
- We would also like to compare our custom converter design modeling software against existing models in LTSpice, Matlab, COMSOL, and others to validate our design simulations.

We would like validation support from national labs and institutions like Underwriter Labs and the FCC to understand the expected power and RF requirements of our system needed for safe certification. We would like to validate our device on golden standard test setups, potentially testing failure to understand our device limits and how it compares against our simulation models.

Business

We would like help from connector institutions, like Austin Technology Incubator, to help connect us to customers and facilitate work with market validation. We would like to leverage their networks to find partners who can help us build our supply chain and manufacturing process expertise, by identifying key components or processes that can be brought in house or best left to contract manufacturers. We would also like to identify local organizations or companies who can act as a test pilot demonstration partner to showcase the feasibility and usefulness of our solution, with a demonstrable benefit to their operations or to their communities.