



QuEST: an Energy Storage Evaluation Application Suite

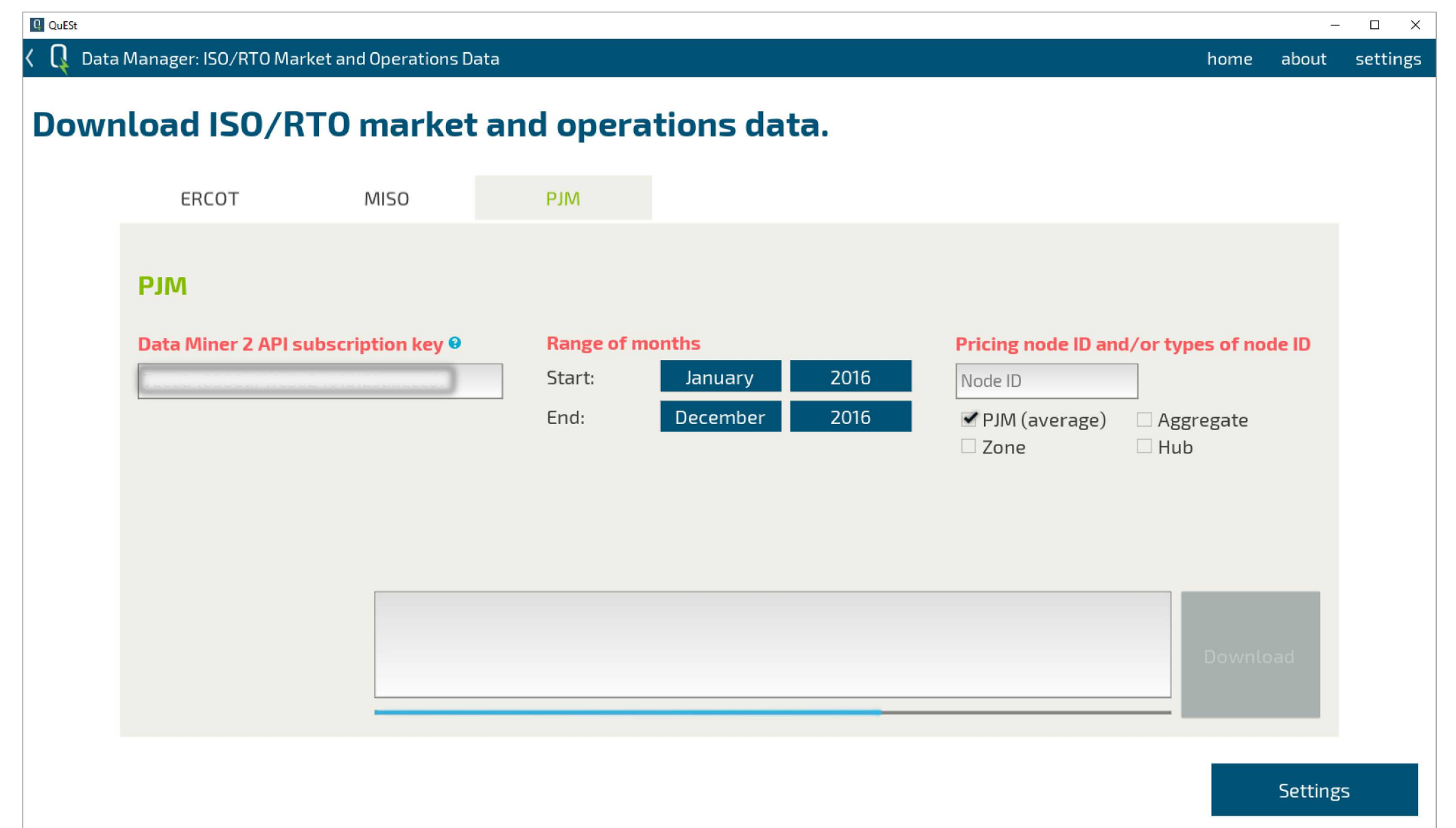
Ricky Concepcion, David Copp, Tu Nguyen, Felipe Wilches-Bernal

An open source, Python-based software application suite for energy storage simulation and analysis developed to bring Sandia energy storage analytics research tools to your desktop.

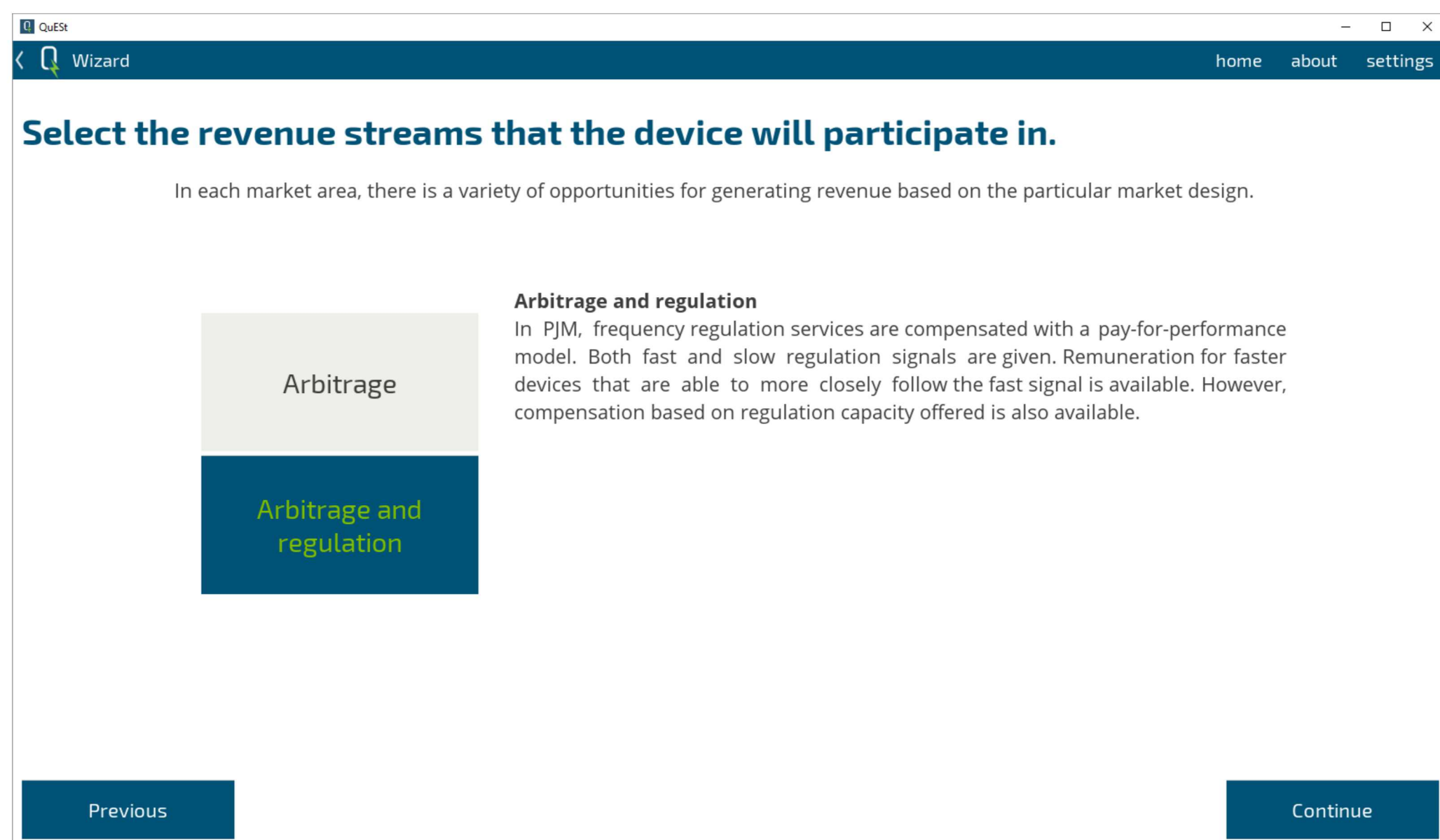
QuEST Data Manager

Download ISO/RTO data directly from their websites or APIs to use in other QuEST applications.

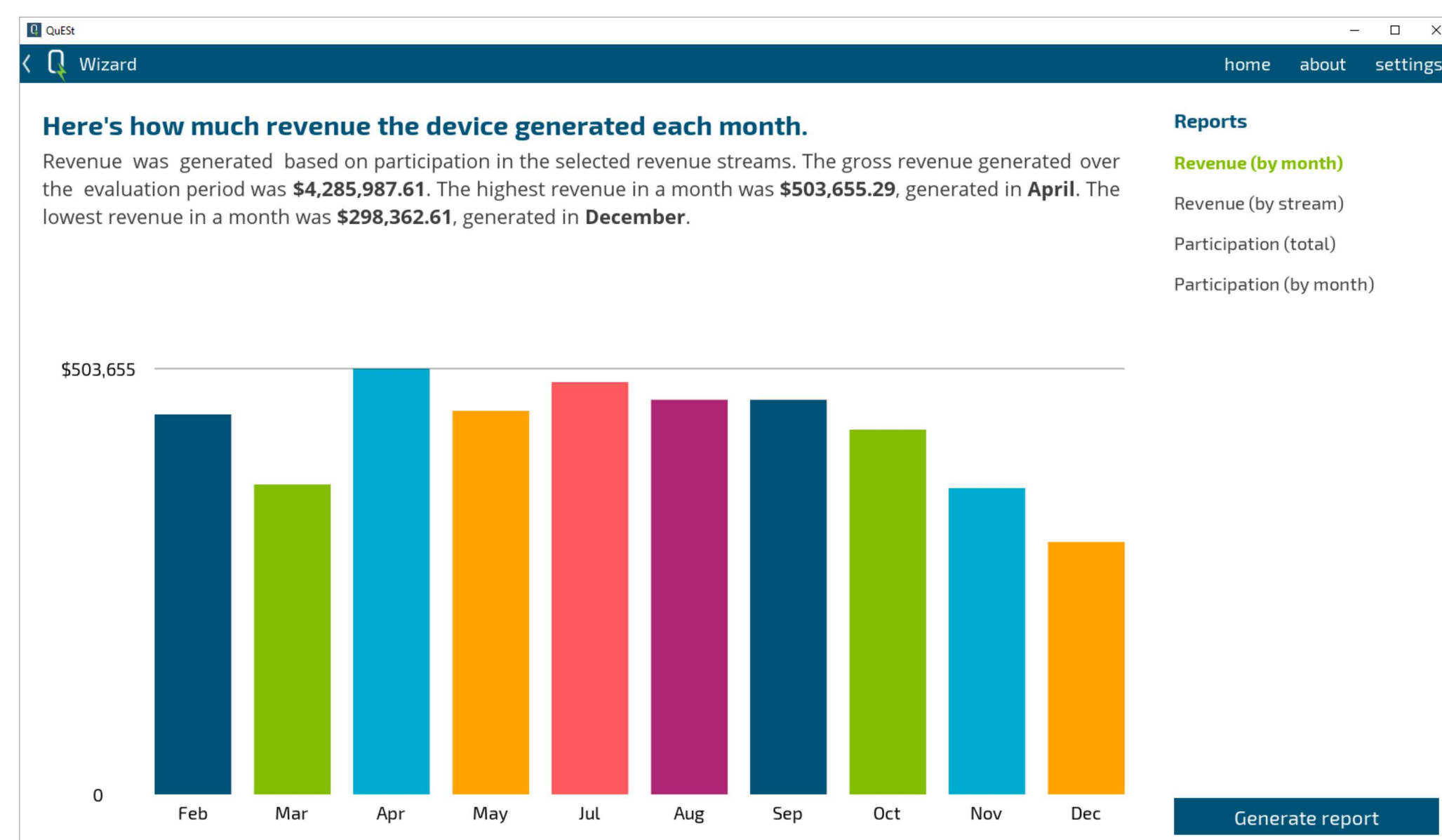
- Retrieves market and operations data such as LMP, regulation movement or capacity credit prices, and performance metrics
- Creates the API requests or web crawlers for you
- Formats retrieved data for seamless use in other QuEST applications



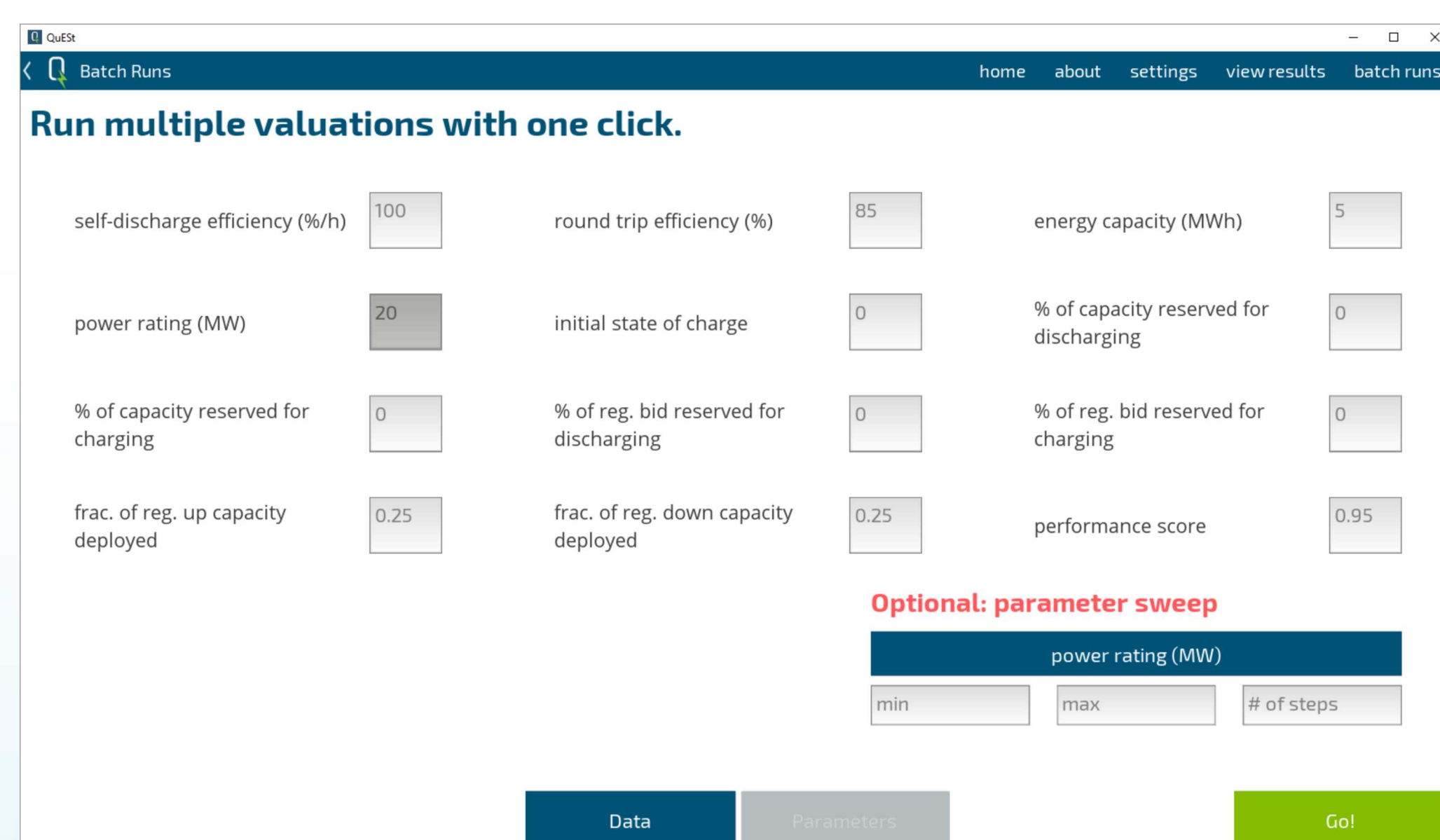
QuEST Data Manager downloads the data needed for QuEST Valuation, such as day ahead LMP.



The valuation wizard can help you quickly set up, solve, and analyze a set of valuation problems.



QuEST has a variety of utilities to help you analyze results, but you can also export the results to your tool of choice.



Other modes, such as the Batch Runs menu, let you specify even more parameters or perform sensitivity analysis.

QuEST Valuation

Estimate the maximum revenue for an energy storage system participating in energy arbitrage and/or providing ancillary services.

- A discrete-time, hourly time step, energy-based linear program model where the objective is to maximize gross revenue over a month
- Historical market data and market structure/rules are used to construct the model objectives and constraints
- Specify energy storage parameters such as energy capacity and power rating to model different technologies
- Wizard provides a streamlined experience with report generation while Single Run and Batch Runs modes offer more user flexibility and customization
- Use the built-in results viewer to quickly visualize results or export the data to comma-separated files
- Supports ERCOT, PJM, and MISO markets but support for all US markets is in development

What's next?

- Data Manager and Valuation for remaining US markets
- Other ancillary services as revenue streams
- Behind-the-meter valuation models
- Battery degradation modeling
- Cost data integration
- Other requested features or applications

