Instructions

We want to know whether you are determined to deliver a good product. This take-home test is a way for you to show us. Take up to a week to develop a *Virtual Energy Trading App*, making independent decisions along the way.

You can send Josh Napoli your app by sharing a GitHub repo (public is easier). Take notes about your decisions and development process. CVector uses React, Arco Design, and FastAPI. These will be the easiest for us to read, but you can develop with other tools, if they will let you get a better result.

It is OK to use AI tools, copy code from other places (assuming the license permits you), and use powerful components. Depth is better than breadth: If you don't finish the entire trading platform, it's OK. We want to see completed features.

Virtual Energy Trading

Create a simulation platform for a virtual energy trader. The trader seeks to make money while helping to balance the energy markets by buying low and selling high.

Assume the trader can access two markets:

- The day ahead market: This market works in 1-hour increments. The trader may enter up to 10 bids to buy/sell energy per hour timeslot. Each bid has a price and quantity (MWh). The bids must be submitted before 11am. The grid operator determines the closing price and all bids whose limit meets the closing price are settled at the closing price.
- The real-time market: Every five minutes, the grid operator determines the closing price that balances supply and demand.

Allow the trader to acquire contracts on the day ahead market. The trader doesn't have any actual generator or demand, so the contract will be offset by the price on real-time market during each 5 minutes of the contract period.

Use a free API, such as gridstatus.io, to supply actual load actual market data to the trading platform. Provide useful visualizations of pricing and other information that you think would be helpful to the trader. Allow the trader to enter orders on the day ahead market. Simulate the trader's profit and loss. The simulation can assume that the trader is a small player and won't move the market.