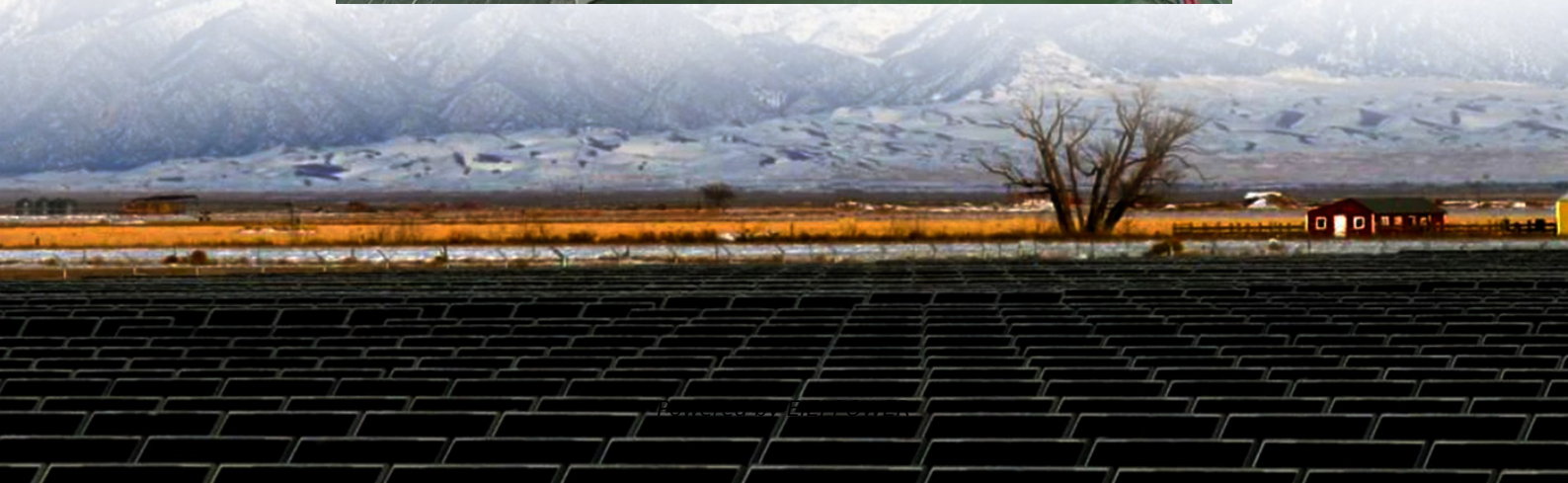


Calculation of power generation of container energy storage equipment





Overview

How do we estimate the power consumption and temperature fluctuations of reefers?

To estimate the power consumption and temperature fluctuations of reefers, we propose to apply agent-based simulation to simulate the stochastic operation process of reefers at the container terminal.

How did NREL calculate equipment energy consumption?

The equipment energy consumption profile was calculated using FleetREDI's analysis of the vehicle miles traveled along with second-by-second data from NREL's Fleet DNA data clearinghouse. NREL also collaborated with a container port, Port of Honolulu, that provided data for an electric ship-to-shore crane, personnel vehicles, and reach stackers.

How much energy does a port use per year?

We then applied these adoption rates to the annual energy consumption calculated for the top-25 U.S. ports. In a 100% electrification scenario in 2035, the annual energy consumption for all top-25 ports ranges from 1.61 to 2.03 TWh.

How much energy does an EV use in 2035?

In a 100% electrification scenario in 2035, the annual energy consumption for all top-25 ports ranges from 1.61 to 2.03 TWh. This project developed a model to understand energy demand at each EV equipment level that is easily scalable to container demand and EV adoption rate projections.



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