Intelligent Energy Management

Cloud-based active energy management

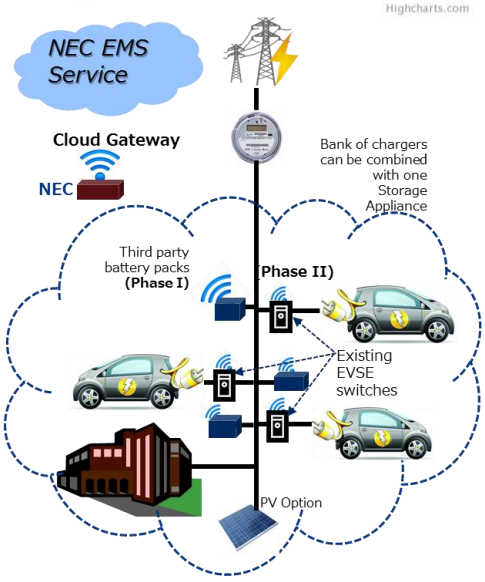
Intelligent Energy Management benefits everybody in value chain

Reduce the peak demand, extend the battery life and manage excess solar (PV) generation (if available) by

- ✓ modulating energy charging infrastructure and power consumption by intelligent dispatch of energy storage appliances
- ✓ throttling the charging infrastructure itself to manage its performance without any disruption to the power grid

Our research of storage management and forecasting demonstrated show

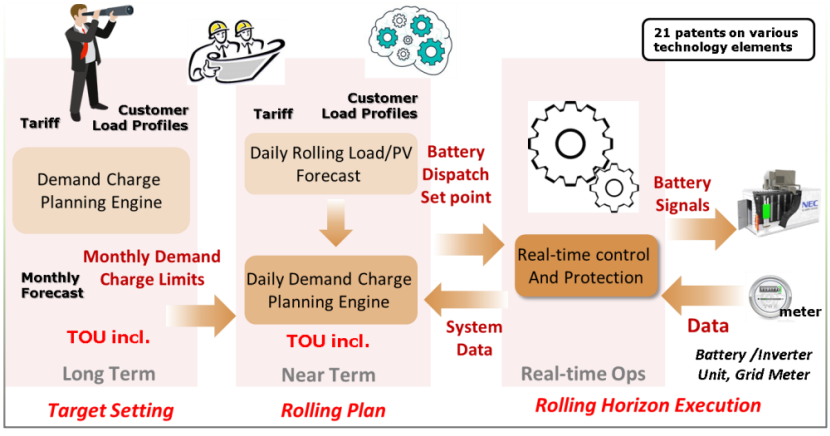
- ✓ **25%** of savings on demand charge + energy charge
- ✓ Revenue from Demand Response (DR) (other services)



Key Technologies

Algorithms: (21 Patents)

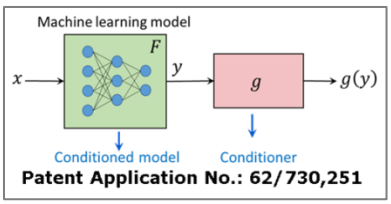
- Multi-objective bill Optimization (Demand Charge + Time of Use + DR + more…) (hardware vendor free)



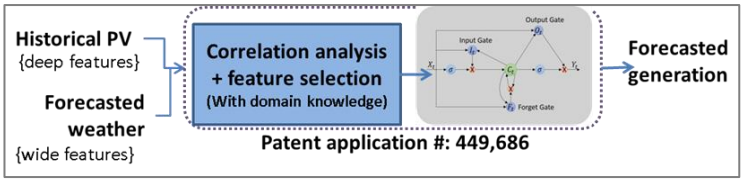
- Automatic utilization of Renewables for Tax Credits (one of a kind)

Contact: ratnesh@nec-labs.com

Deep learning:

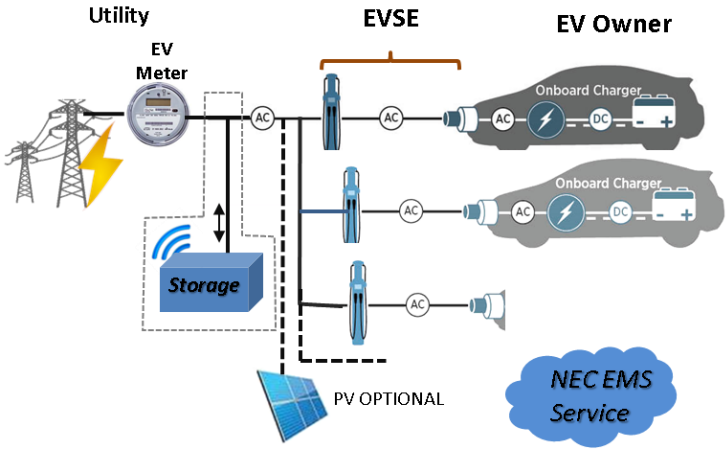


- First of its kind load forecasting with Infrastructure and User-defined knowledge input
- PV forecasting integrating National Oceanic and Atmospheric Administration (NOAA) climate model and local performance data



Use Case

Energy Management System (EMS) controls the charging and discharging rates of the 3rd party battery packs with the objective to: 1) minimize demand charge and energy charge, 2) improve PV utilization and 3) demand response events, considering battery degradation cost.



Later, additional control of the existing switching devices provided by Electric Vehicle Supply Equipment (EVSE) (Ehardware provided by 3rd party) can provide additional capability.

Operational data may be obtained from sensors or EVSE providers using OpenADR or other protocol, to take charge/discharge decisions based on tariff, prior deep learning insights and battery state. Weather and other ancillary data is obtained by the EMS to keep the decision models updated and functional. The energy management system provides benefits to all members of the value chain.

a. Facility Owners: Lower bill and higher revenue from grid services
b. EVSE providers: Competitive pricing and Queue management
c. EV Owners: Lower charging cost, lower carbon footprint
d. Utilities: lower load peaks, dispatchable resource and lower excess PV export.