Industry Host: Electric Research Power Institute (EPRI)

Title: Electric Vehicles: Battery - Revenue Model(s)

Challenge:
There are several issues impacting electric vehicle (EV) adoption, including but not limited to Battery Pack Maintenance and Replacement Costs (i.e. ~$5000 to replace pack). What are the opportunities to alleviate consumer/EV owner anxieties, and identify/capture revenue opportunities both the EV's life?

Background:
As electric vehicles are adopted there will be an increasing opportunity to leverage them as distributed energy resources. They will be available to offload excess(i.e. low-cost) energy from intermittent, non-dispatchable resources, as well as offer on-demand generation capacity to source short-term and transient peak grid loads.

Key influences on battery life are fairly well understood (e.g. # discharges, depth of discharge, temperature, etc...). The EV owner, however, is not well informed or positioned to understand the true value (or cost) of the energy within their batteries. Within the current vehicle ownership model, however, the owners are the ones responsible for the maintenance and replacement costs, as needed. These costs can be significant. Is there an opportunity to help the EV owner participate as an educated, distributed energy resource 'owner', de-risk their participation, drive valuable behaviors, and appropriately compensate him/her?

What are the value streams of a large, distributed battery pack? What is the model to unlock them? How to drive profit-maximizing behavior? These can be solved by a number of different models. Consider: Who owns the battery pack? Who is responsible for the maintenance/replacement? What are the right behaviors, and how to drive them?

Boundaries and Considerations:

- Pace of battery improvement (when will EV batteries last for as long as the life of the vehicle)
- Battery performance will be significantly impacted by regional conditions (i.e. operating temperatures)
- How are EV energy source/sink identified and measured