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Abstract Title: Paving a path to smart charging: PG&E and BMW explore how managed charging and second life batteries can support the grid while reducing the cost of electric vehicles
Abstract Text:
What if we could increase the adoption of electric vehicles while supporting the integration of renewable energy and providing a more robust utility grid at the same time? PG&E and BMW are attempting to accomplish this effort as part of the Demand Response Plug-in Electric Vehicle Pilot (DR PEV Pilot). The DR PEV Pilot is designed to demonstrate how managed electric vehicle charging combined with the use of "second life" used electric vehicle batteries can contribute to greater grid efficiencies and lower electric vehicle total cost of ownership. As part of this Pilot, BMW is working with PG&E to provide a minimum of 100 kilowatts (kW) of capacity at any given time, regardless of how many vehicles are charging. When there is a need to reduce demand, PG&E will initiate a DR event to BMW by sending a signal via a standard communication protocol similar to how PG&E communicates with other DR providers. Once the event has been triggered, BMW's aggregation software will determine how the 100 kW load drop will be met by a combination of two methods—managed charging of up to 100 BMW i3 drivers or by exporting power from a stationary storage asset made up of eight used MINI E batteries. In addition to testing the technical capabilities inherent in this project, a key focus is understanding customer behavior. Specifically evaluating the type and impact of incentives (e.g. upfront vs. ongoing) as well as opt-out rates under various scenarios for customers participating in managed charging programs.