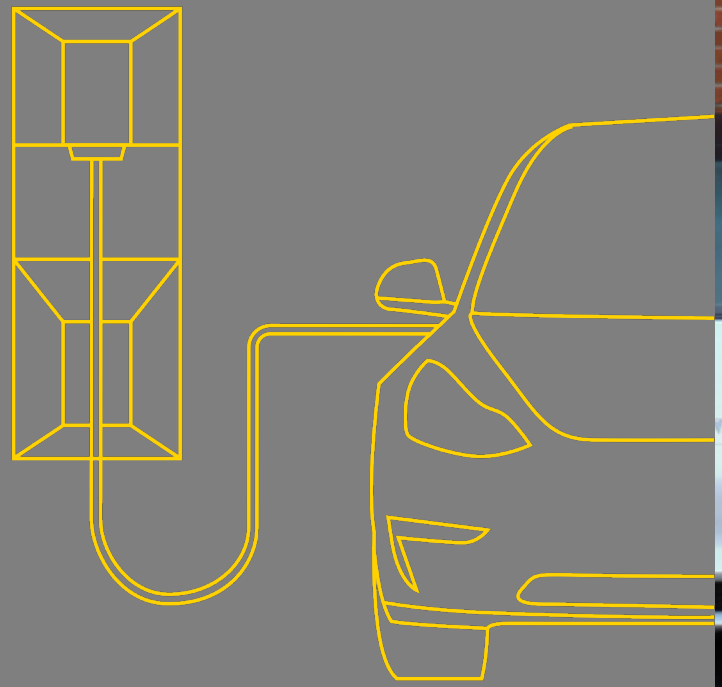
Managing DC Fast Charging

Challenges & Opportunities - EPC-16-055



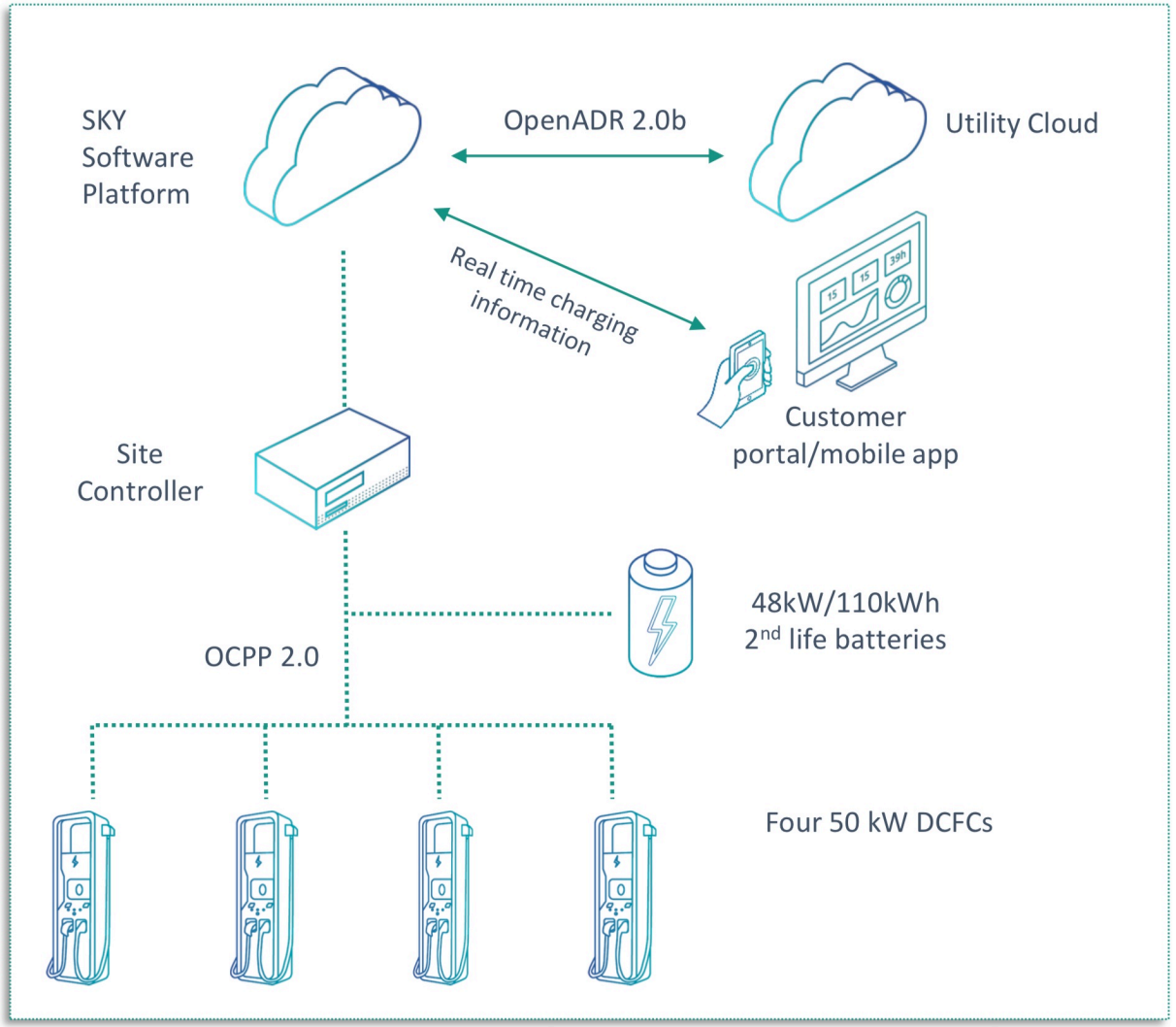
greenlots
A Member of the Shell Group

“Improving Commercial Viability of Fast Charging by Providing Renewable Integration and Grid Services with Integrated Multiple DC Fast Chargers”

Project Vision

Develop an integrated hardware and software platform to monitor and control multiple DCFC chargers and on-site storage to:

- Optimize charging to reduce 15-minute metered demand;
- Provide demand response capacity with EV charging load during system peak hours;
- Shift DCFC EV charging loads to mid-day to coincide with photovoltaic generation;
- Increase DCFC utilization with integrated public and private EV fleet scheduling; and
- Evaluate second-life EV battery effectiveness and capacity degradation rates for DCFC demand management



Project Deployment
Monterey Park

Opportunities to Leverage Managed Charging Systems

Existing barriers include:

- Program designs that limit utilities' ability to provide turnkey solutions and expert advice to program participants (no easy button for potential participants)
- Misunderstanding that utility ownership limits competition
- Decentralization of equipment and software decision-making
- Program requirements and existing line extension policy that commit customers to X amount of utilization
- Practice of requiring nameplate capacity to align with maximum possible (unmanaged) load
- General undervaluing of managed charging and focus on near term cost v. long term value

Some of these may be addressable via advice letter filings and process amendments, but most existing and approved programs would seem to require major changes.

Smart / Managed Charging is the Foundation for Maximizing System Benefits from Transportation Electrification

Managed EV charging ("V1G") is a powerful and flexible grid resource

- Utilizes controlled, dispatchable one-way flows of energy (as opposed to "V2G"), with or without added storage
- Provides demand response, demand charge mitigation, and load shifting/shaping
- Supports intermittent generation integration, distribution system upgrade deferrals, and system efficiency
- Can provide further distribution and transmission level grid services

Managed charging, with or without storage, enhances EV load management