WHERE ARE WE ON UTILITIES REGULATION? BEST PRACTICES ACROSS THE COUNTRY: TOU AND RATE IMPACTS

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DIFFERENT RATES FOR DIFFERENT USE-CASES

For Level 2 chargers (typically 7-19 kW), which are mainly used for residential and workplace charging over 8 hours or more, a conventional Time of Use (ToU) rate design to encourage managed charging is appropriate.

For DCFC (50-350+ kW), which are used briefly (< 1 hour) at random times, a more sophisticated rate design is needed, which minimizes the role of demand charges until the market matures.

- The load is “spiky” and unpredictable.
- The DCFC use-case is not conducive to managed charging.
MANAGED CHARGING

- Projected HECO demand with 23% EV penetration with uncontrolled EV charging

- Projected HECO demand with 23% EV penetration with managed EV charging
LEVEL 2 IS COMPETITIVE WITH GASOLINE; DCFC ISN’T
KEY ISSUES WITH DCFC RATE DESIGN

1. DC fast charging is mostly a market failure.

2. Public **DCFC are critical** parts of the network. We cannot achieve our transportation electrification aims without widespread public DCFC.

3. Conventional utility rates with **demand charges can kill the business case** and are not suitable:
   - Use punishing, non-coincident demand charges
   - Do not accurately reflect the true cost of service
   - Are not consistent across utilities

4. New, DCFC-specific rates are needed while the market is young and charger utilization rates are low.
On public DCFC with low utilization rates, demand charges can be as much as 80-90% of a monthly bill.
RATE DESIGN OBJECTIVES

• Charging should be **profitable** so that it is sustainable.
• Charging should always be **cheaper than gasoline** (typically $0.29/kWh, or ~$0.09/mile, or less).
• Level 2 charging should be considerably **cheaper than DC fast charging**.
• EV chargers should be on **dedicated tariffs** and on **separate meters**, preferably the meter built into the charging station.
• Tariffs should offer an opportunity to **earn credit for providing grid services** through **managed charging**.
• Ideally, utilities could leverage distributed energy resource management systems (DERMS) to **promote a more efficient use** of existing grid infrastructure by offering varying rates, or interconnection costs, or levels of cost sharing for make-ready by location.
DCFC RATE DESIGNS COMPARED

We compared:

• Three tariffs:
  ▪ Xcel Energy’s S-EV
  ▪ PG&E’s EV-Large S
  ▪ RMI’s DCFC

• Three load profiles:
  ▪ Public DCFC charging depot with two dual-port 50 kW chargers
  ▪ Public DCFC charging depot with two dual-port 150 kW chargers
  ▪ Transit bus depot with 25, 100-kW chargers

• Three utilization rates on public DCFCs: 5%, 10%, and 30%

Goal: Meet or beat gasoline parity at $0.09/mile.
DCFC RATE DESIGNS COMPARED

RMI’S PROPOSAL

- Charges scale *as a function of utilization rates*.
- Recovers the same revenue over 10 years as Xcel’s own rate.
- Fixed monthly charge: $34.40/mo.
- Two-tier ToU rate:
  - On-peak (9 am – 9 pm) Decreases from $0.068 to $0.007
  - Off-peak (9 pm – 9 am) Decreases from $0.022 to $0.002
- Demand charge: Increases from $0.677 to $17.622/kW
DCFC RATE DESIGNS COMPARED
PUBLIC 150 KW DCFC

RMI tariff produces the *most consistent cost per mile* and the cheapest cost at 5% and 10% utilizations.
Thank you!

Transforming global energy use to create a clean, prosperous, and secure low-carbon future.