

DOCKETED

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Reframing EVs as DER

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V2G World Overview: Markets developing

- Interest in bi-directional EVs around the world
 - EV markets
 - High DER penetration
 - Islands
- UK, France, Denmark, Japan:
 - TSOs including EVs as DER in forecasts and scenarios
 - TSO designing wholesale markets to include EVs
 - DSOs including EVs and V2G in localized flexibility markets
 - Energy management of EVSEs allowed and planned for
- Investment interest in USA
 - Infrastructure companies
 - VCs with longer investment horizons



 V2G Operations

Acronyms

DER – Distributed Energy Resource

TSO – Transmission System Operator

DSO – Distribution System Operator

EVSE – Electric Vehicle Service Equipment

The logo for NUVVE, featuring the letters 'NUVVE' in a stylized, green, sans-serif font. The 'U' and 'V' are connected, and the 'E' has a unique shape with a horizontal bar.

EVs are Distributed Energy Resources

- There is a disconnect in policies and regulations: EV vs DER
 - EV-specific rates may not be necessary, it is about energy usage
- EVs are extraordinarily flexible
- NOTE: Anchor rate for MD/HD is based on the least flexible use case!
 - Need to assume MOST flexibility in charge times, charge rates, discharge capability, and coordination with other loads and resources for policy, regulatory, and rate design purposes

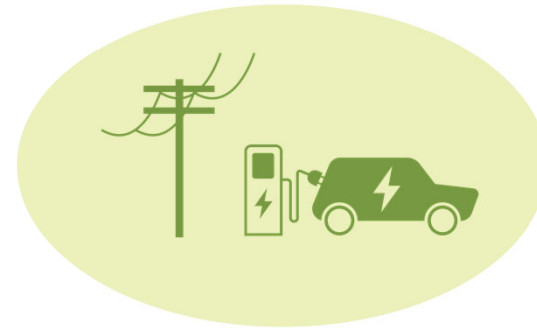
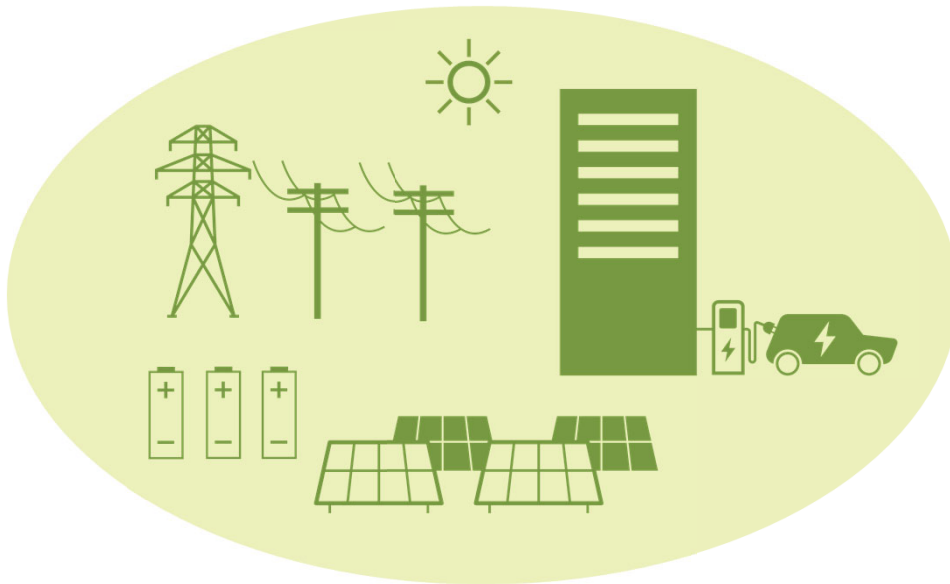
Use case: Private investment vs MD/HD

Value streams are accessible if EV is connected to loads and DER:

- Allows private investment to finance infrastructure
- Allows integration + balancing with other DER and loads
- Opens Demand Response opportunities

MD/HD funding is discouraging VGI:

- EV is “added” not “integrated”
- EV rate imported from another use case
- No export compensation
- No Demand Response (baselining issue)
- No other loads to balance
- ONLY price signal is TOU
- WDAT could work, not funded



Acronyms

DER – Distributed Energy Resource

WDAT – Wholesale Distribution Access Tariff

TOU – Time of use

NUVE

Suggestions

- Customers need to be allowed to elect to use energy management technologies to avoid primary and secondary upgrades.
- For EVs, this mean not being stuck on a constraining rate
- Stop planning distribution for the worst hour of the worst day with no control of resources
 - **Decrease complexity of distribution planning and rate design**
 - **All rate payers benefit**
- IOU involvement should end at the Point of Common Coupling

Thank You

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