

Grid Planning for Vehicle Electrification

13 June 2023

**ESIG DER Working
Group Task Force**

Facilitated by Telos Energy



Grid Planning for Vehicle Electrification

an ESIG DER Working Group Task Force made possible by US DOE



Project Objective

Develop, evolve, and standardize best practices and next steps for power system planning with respect to vehicle electrification. Emphasis on distribution planning, while considering the bulk power system & operational impacts.

Task Force Members

Consortium of grid planners, utilities, researchers, vehicle manufacturers, charging operators, fleet owners, etc.

Outcomes & Key Questions

1. Forecasting Electrified Future

- Adoption rates, fleets impact, pace of change in electrification and T&D investments

2. Locational Aspects

- Where should EV charging take place? Gas Station model?
- “No Regrets” approaches to electrification that also ensure asset utilization

3. Temporal Aspects

- Integrating charging timing and flexibility of EV’s into planning
- Planning on the influence of price signals, software, and hardware controls

4. Prioritized Industry Needs within a Holistic Electrification Framework

- Reference Framework for the broad electrification planning considerations
- What gaps do we need to fill today? Are there blind spots likely to cause problems?

Project Timeline & Deliverables

Special task force sessions scheduled from November 2022 – September 2023 concluding with whitepaper and webinar of key insights

Find out More

<https://www.esig.energy/distributed-energy-resources-der-working-group/>

Contact: sean.morash@telos.energy

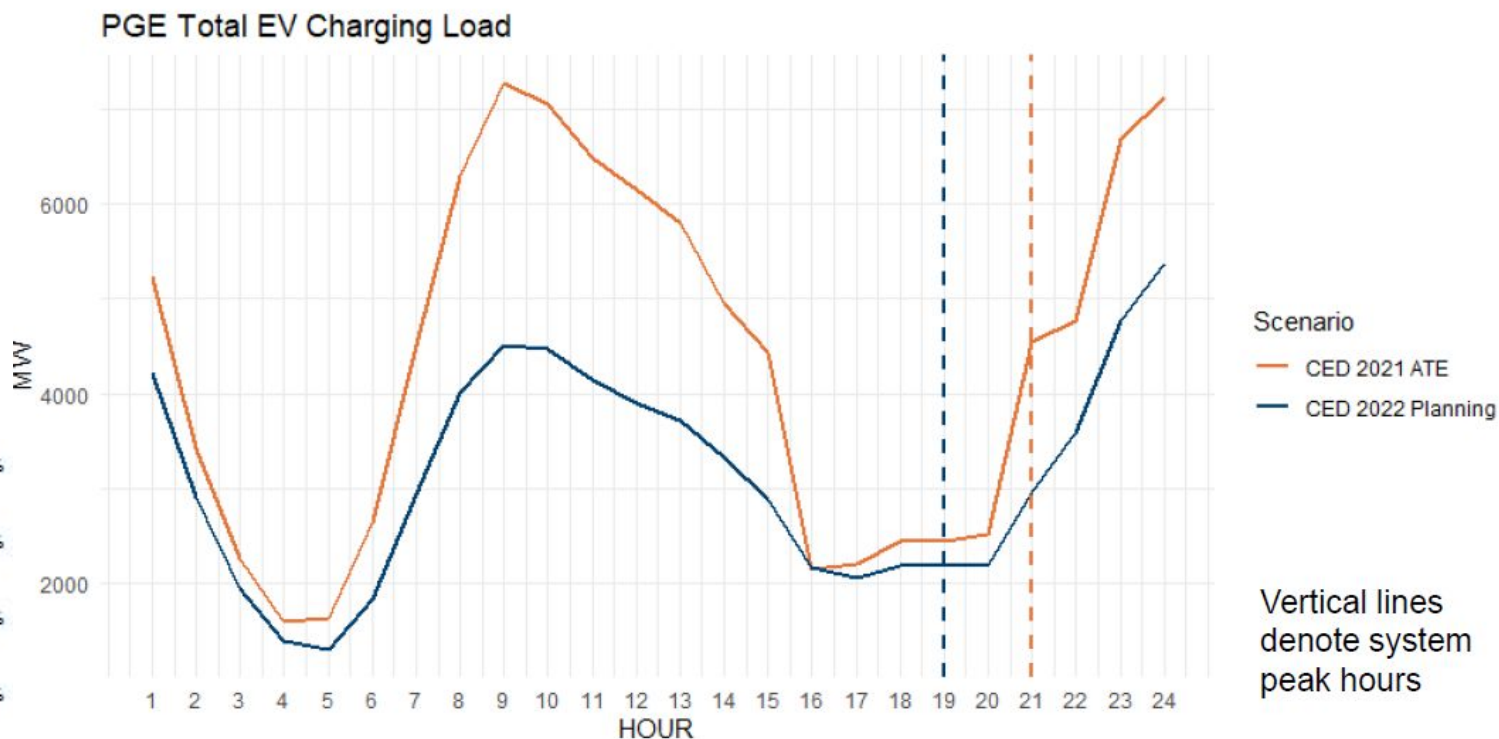
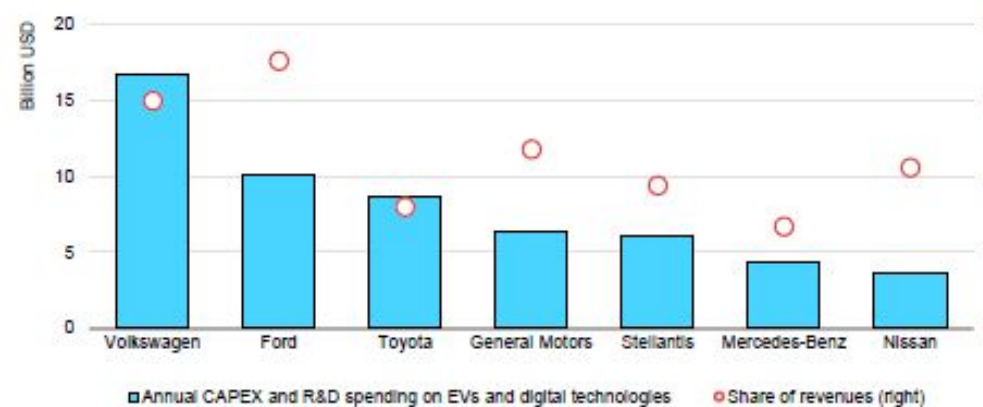
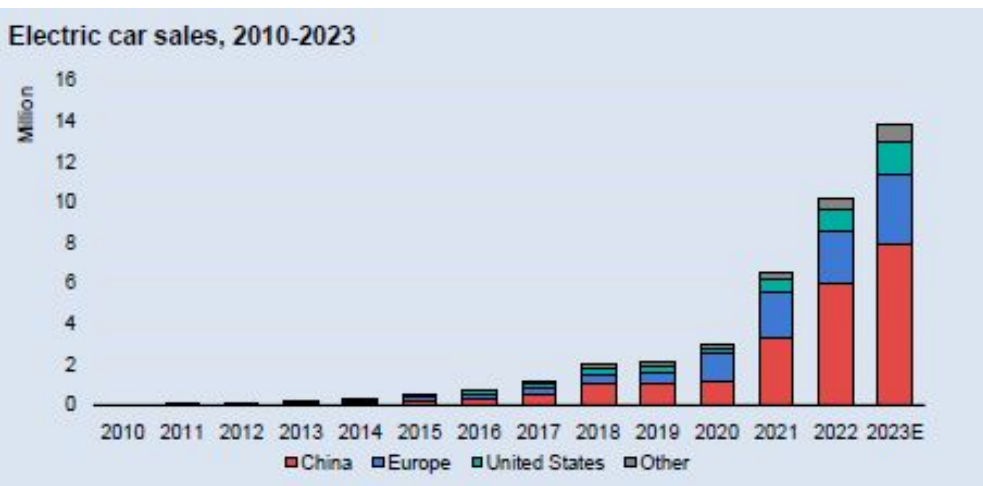
Key Messages from the EV Task Force

Whitepaper expected in September



- EV's represent the **largest change in load in a generation** and will affect all layers of the power grid
 - There is tremendous **uncertainty** in the evolution of this technology, its use cases, and customer behavior. (Also uncertainty in adoption but that goes for any DER)
 - There is also the **potential** for tremendous benefits from this technology (emissions reduction in transportation, controllable loads, V2G)
- The power system industry needs to **start moving towards**:
 - **Proactive grid investment** approaches that can enable faster interconnections and reduce repeated upgrades to the same locations
 - **Load management** approaches that can utilize existing infrastructure more efficiently
 - **Better data** to better understand use cases, locational needs, and customer response to programs/pricing,
 - **Coordinated planning** approaches across all layers of the modern grid (G & T & D & premise & IT & policy & regulatory)

A Tidal Wave of Uncertain Shapes



Figures at left from IEA (2023) Global EV Outlook 2023
 Figure at right from CEC Energy Demand Forecast December 16, 2022 Workshop