

The Chargepoint logo, consisting of the word "chargepoint" in a lowercase, sans-serif font, with a registered trademark symbol (®) to its upper right. The logo is white and positioned in the upper right corner of the slide. The background of the slide is a blurred city street scene with a car in the foreground, suggesting motion and urban connectivity.

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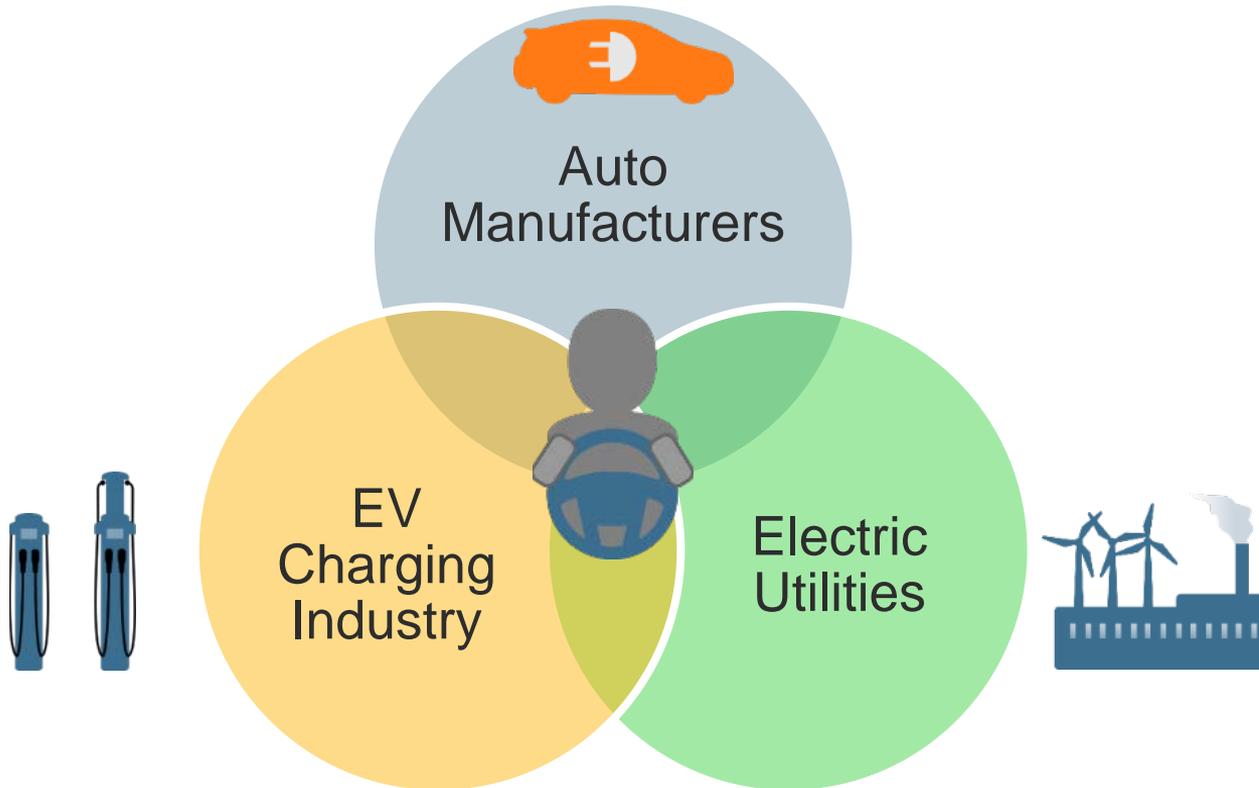
Electric Utilities: Opportunities to Support EV Charging

Mike Waters – Director, Utility Solutions

NJ BPU EV Working Group

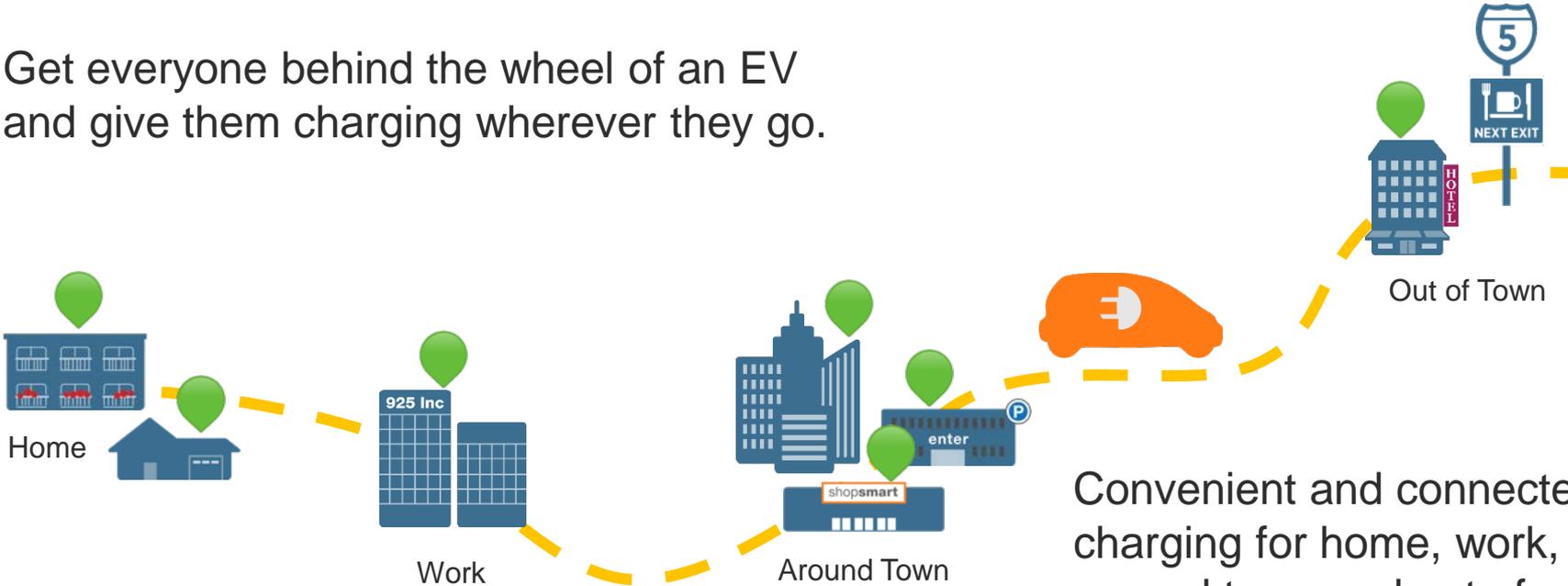
November 27, 2017

Three Sectors Meet Together to Support EV Drivers



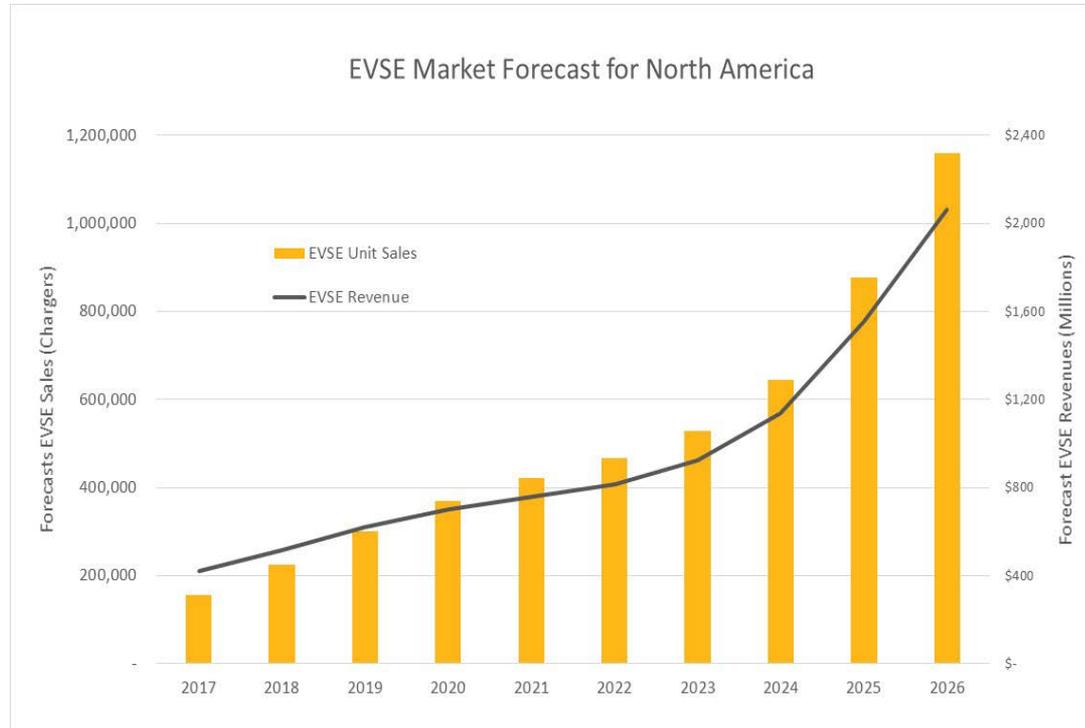
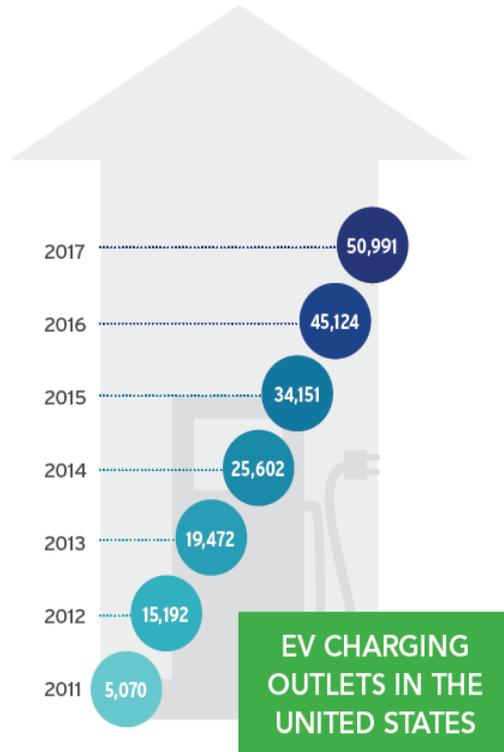
Our Mission: EV Charging, Everywhere

Get everyone behind the wheel of an EV and give them charging wherever they go.



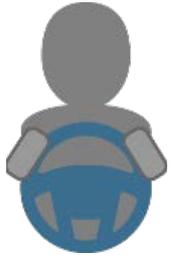
Convenient and connected charging for home, work, around town and out of town.

EV Charging Sector is Robust and Growing



Connected EV Charging – Value for All

EV Drivers



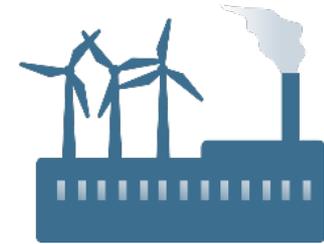
- Availability
- Information
- Convenience
- Seamless payment
- Consistent user experience

Site Hosts



- Maximize utilization
- Customizable tools
- Simple operation
- Limited administration
- Continuous upgrades
- Ensure uptime

Utilities



- Support EV adoption
- Visibility into load pockets
- Data for load forecasting
- Load Management
- Flexible “DER” lever
- Seamless integration

Why Utilities Are Proactively Supporting EVs

- + Overall load growth is flat to declining in many regions, putting upward pressure on rates
- + Transportation electrification is a rare win/win/win providing benefits for the utility, customers, and society
- + Opportunity for new products and services for customers
- + Greater customer satisfaction
- + EVs are a key element of the distributed energy future
- + Potential for partial investment in charging infrastructure, leading to improved data, planning and load management
- + Set smart charging habits today to support future wide scale adoption

EVs Can Provide a Beneficial Load for the Grid

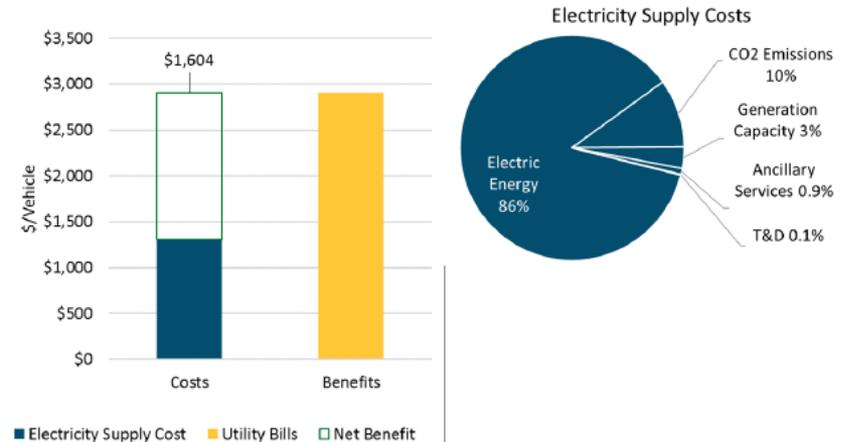
+ Smart EV load growth can provide many utility benefits including:

- Increased system utilization
- Flexible load
- Smart-grid/micro-grid enabler
- Support renewables integration
- New customer touch point
- Downward pressure on rates

+ As well as societal benefits:

- Improved air quality
- Reduced GHG emissions
- Support local economic development
- Improve energy security and resiliency

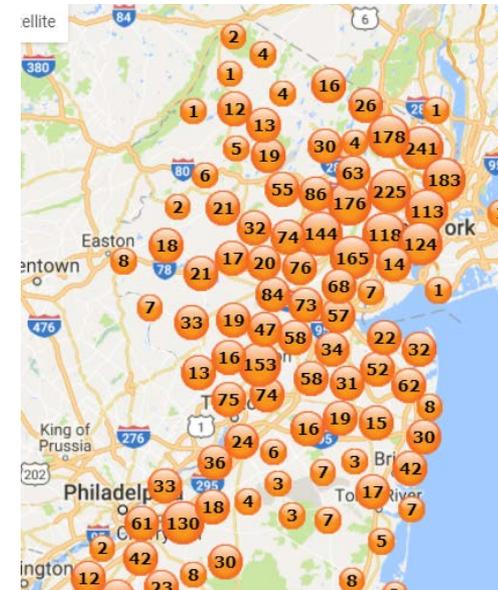
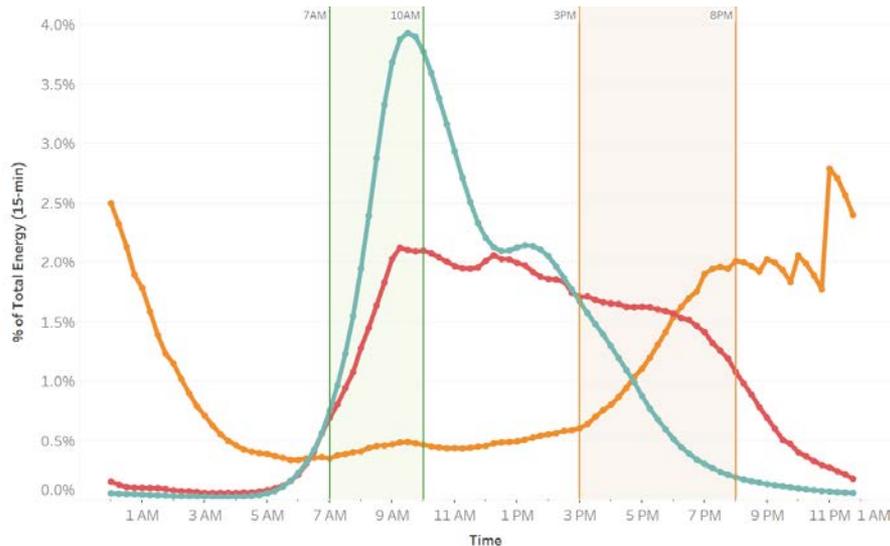
Figure 20. Ratepayer Perspective costs and benefits, per vehicle. Managed Charging scenario, High PEV Adoption case



Source: E3 (2017). "Cost-Benefit Analysis of Plug-in Electric Vehicle Adoption in the AEP Ohio Service Territory"

Core Utility Role: Grid Planning & Customer Support

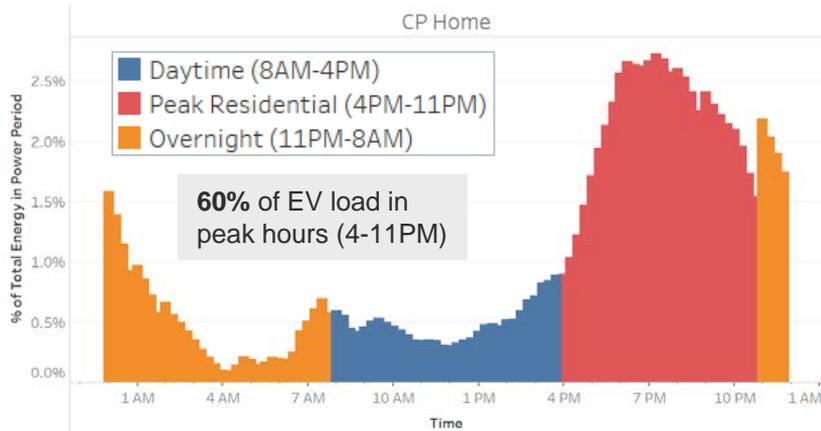
- + EV charging data from smart stations can allow utilities to better understand where load pockets are occurring and to improve load forecasting/distribution planning



Proactive Role: Load Management and Education

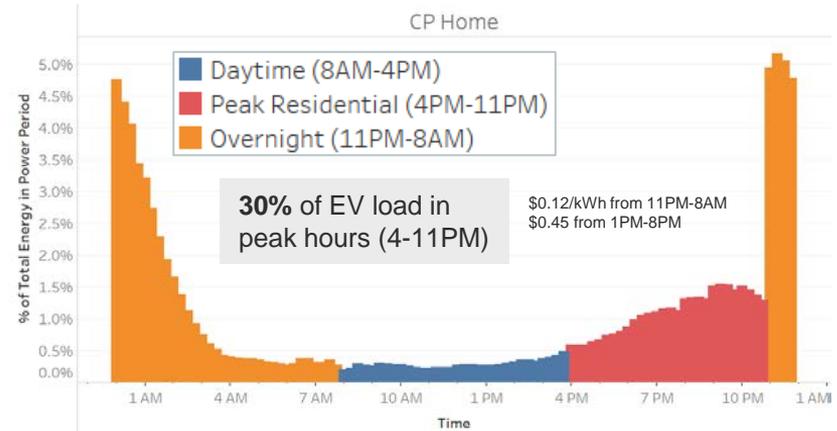
- + Utilizing EV TOU rates or DR capabilities in the home to encourage off peak charging
- + Evaluating commercial rates tailored to support DC fast charging applications

King County, WA



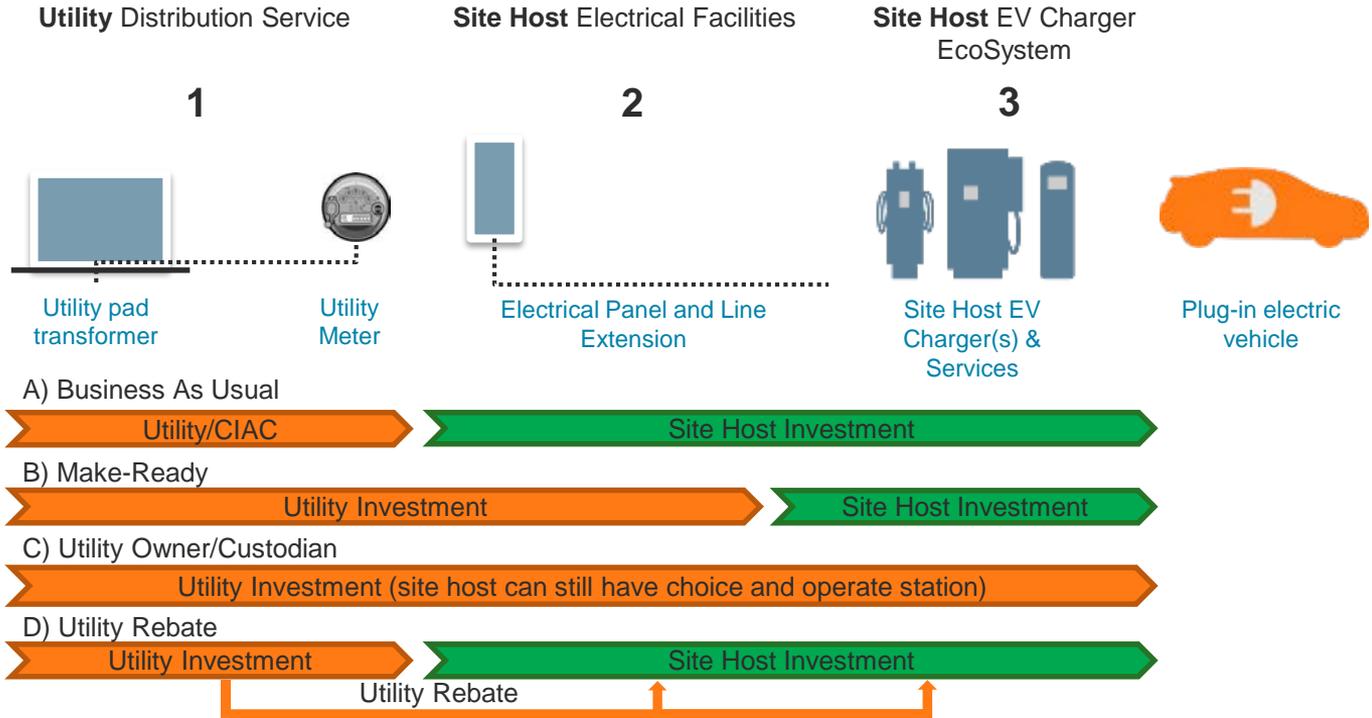
SCL and PSE customers charge when they get home. Peak charging at 6pm.

Santa Clara County, CA



PG&E EV TOU rates delay peak charging until 11pm.

Assertive Role: Accelerate EV Adoption and Charging Infrastructure Deployment



Data and Load Management Tools Exist in All Cases

SMART CHARGING

Provides 360° view of charger utilization

Interval Level Data

Manage load via demand response or power sharing

Automate load management and data retrieval via standards based interfaces



Potential Impacts of Regulated Utility Investment

What are the central challenges that utility investment may solve?

- + Lower barriers for EV charging station deployment
- + Greater visibility into associated EV load growth
- + Unlocking grid benefits associated with optimized EV charging
- + Rate design considerations
- + Including considerations for grid constraints and capacity

What are important considerations associated with utility investment?

- + EV charging industry is a competitive and dynamic market space
- + EV charging technology is rapidly evolving with ongoing innovation
- + Charging stations are consumer facing and transactional
- + Site hosts must be invested and have input on station operations
- + Driver experience extends to multiple use cases and beyond any one territory

Guidance for Utility Program Design

- + Enable **customer choice** in charging equipment and services
- + Allow for **continuing innovation** by avoiding a single RFP or customized utility requirements; provide for “rolling” vendor certification
- + **Leverage available private funding** and make sure site hosts have “skin in the game”
- + Support flexibility for **site host to control access and pricing** for charging services on their property
- + **Avoid island networks** or regulatory boundaries for EV drivers
- + Encourage **smart charging** behaviors and enable grid benefits

Additional Policy Opportunities to Support EVs

- + If not currently enabled, make regulatory exemption to allow station site hosts to charge EV drivers by any measure, including per kwh
- + Demand side management programs including TOU rates to site hosts/residential customers or load management programs
- + Investigating the ability to utilize energy meters embedded within home charging stations to support EV TOU rates
- + Exploring new electricity rates specifically designed to support transportation electrification, especially DC fast charging
- + Maximizing NOx mitigation funds to support EV charging infrastructure

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THANK YOU!

