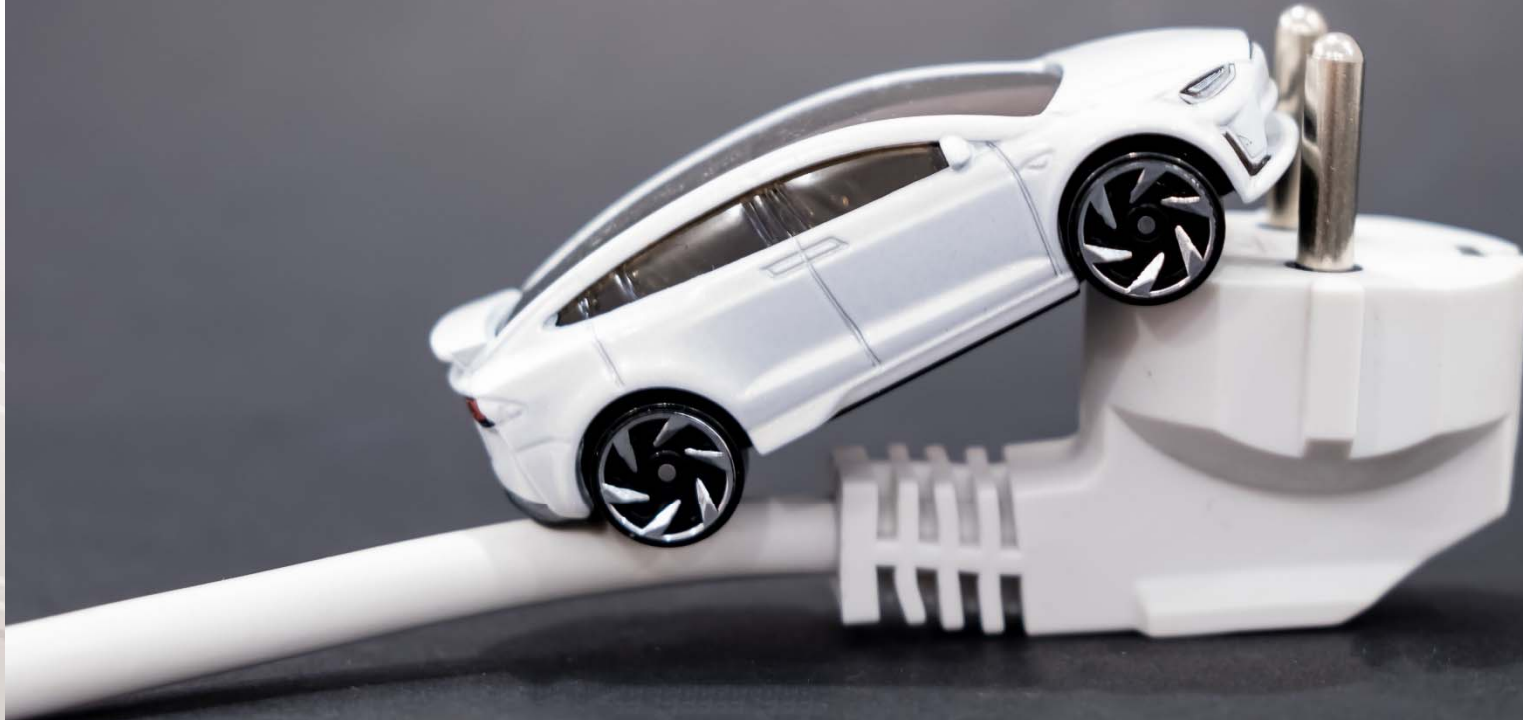


EV Strategy



OPPD Board Committee Presentation

May 2018

Aaron Smith, Director - Operations



Question

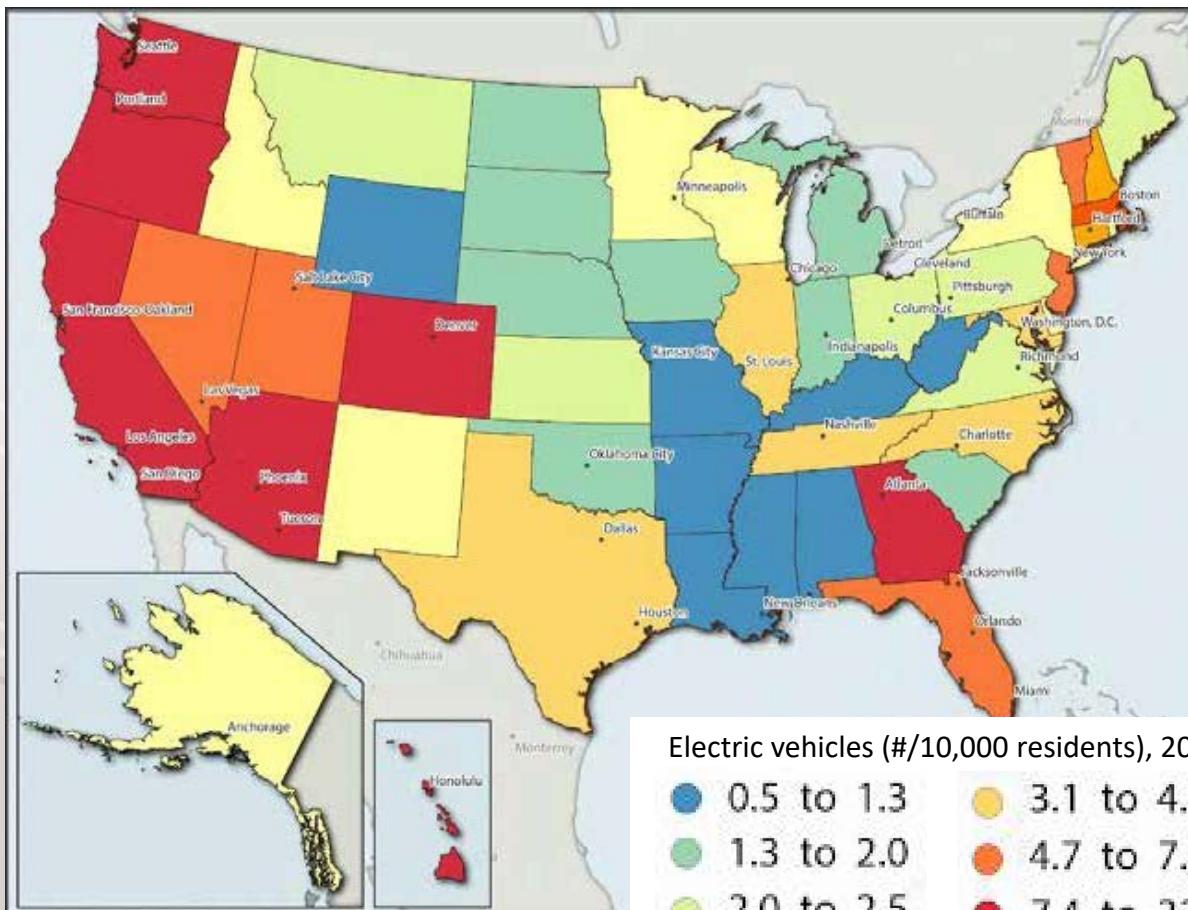
How does OPPD create a strategy for electric vehicles that supports customer needs/preferences and helps accelerate adoption in OPPD's territory?

EV marketplace

- **ElectrifyAmerica** will install a network of 150kW superchargers as a part of the VW settlement
- **Tesla** is building a network of fast-super chargers across the country
- **China** has committed to account for half of global EV sales by 2030
- **GM** has plans for 20 all-electric vehicle models by 2023
- **VW Group** investing \$84 billion in EV development and will offer 30 electric and hybrid models by 2030

EV penetration – U.S.

Nebraska



Electric vehicles (#/10,000 residents), 2016

● 0.5 to 1.3	● 3.1 to 4.7
● 1.3 to 2.0	● 4.7 to 7.4
● 2.0 to 2.5	● 7.4 to 32
● 2.5 to 3.1	

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Map Created by: Ted Kwasnik, July 2017.
This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.

- Nebraska has ~600 EVs out of 1.7M total registered vehicles
- OPPD territory has ~300 EVs



Early EV activity

- OPPD has made significant strides in electrification of its fleet, including passenger cars, forklifts, aerial and trouble trucks equipped with rechargeable battery packs
- OPPD is learning from its EV fleet and seeing positive operational gains as a result
- EV charging stations available at two OPPD facilities



Market research

OPPD utilized third-party survey and focus groups leveraging quantitative and qualitative research focusing on residential and commercial customers

Key themes

- Commercial: limited models, limited EV knowledge, limited range
- Residential: limited range, up front cost, limited public charging stations

Barriers to customer adoption

- Customer knowledge and interest
- Charging access
- Costs (upfront and operating)
- Vehicle performance and availability

Stakeholder outreach

Participants:

- Local planning groups, engineering firms, developers
- Policy groups
- Grant providers
- EV equipment providers
- EV advocacy

Findings:

- Numerous players with EV activity
- Little EV activity with residential builders; more with commercial builders
- Variety of EV related grants available
- Some EV manufacturers offer programs
- OPPD can leverage partnerships to address adoption barriers



Case studies



Nebraska Public Power District
Always there when you need us

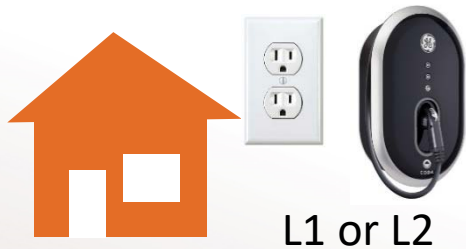


- Partnerships with EV manufacturers can help mitigate upfront cost
- EV adoption increased where utility addressed multiple barriers at the same time, but required significant investment with unclear payback
- Rate increases to support public charging can be negatively perceived by customers and regulators
- Time of Use (TOU) EV rate offerings have not seen wide adoption
- Some utilities are testing programs for home chargers that allow monitoring and/or control of EV charging
- User friendly websites can educate customers and promote the benefits and operational savings associated with EVs



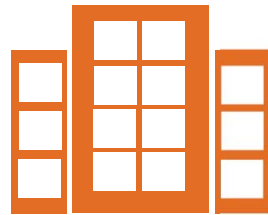
EV charging use and economics

Charging scenarios



L1 or L2

80-90% of charging is done at home



L2

10-20% of charging is done at work, malls, parking lot



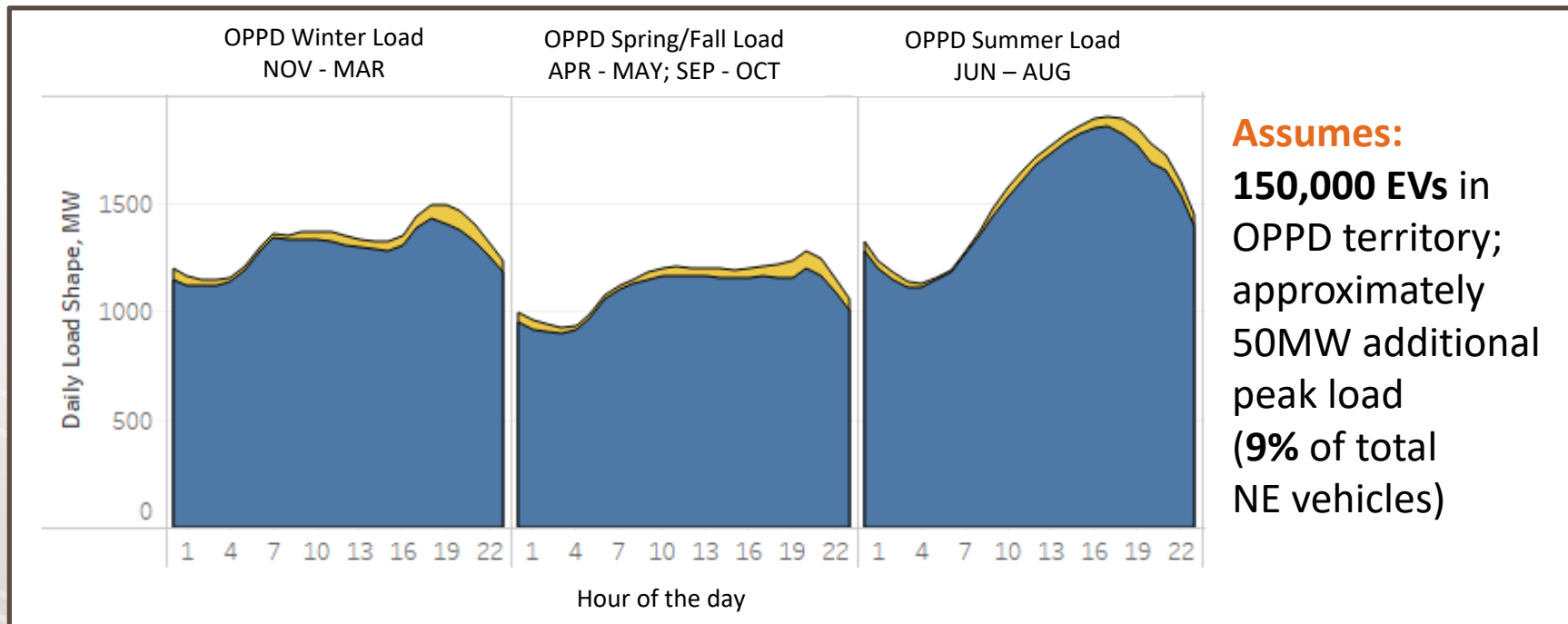
DC Fast Charger or L3

<5% of charging is done on major roadways

Economics

- EV annual revenue ranges from **\$600-\$1,000** per vehicle depending on miles driven and rate class
- At current utilization levels (**<3%**), public charger investment has a **30+ year payback**; if increased to **10%**, payback is still at **10+ years**
- The majority of existing L2 public charging stations in the territory have **no fee to charge**

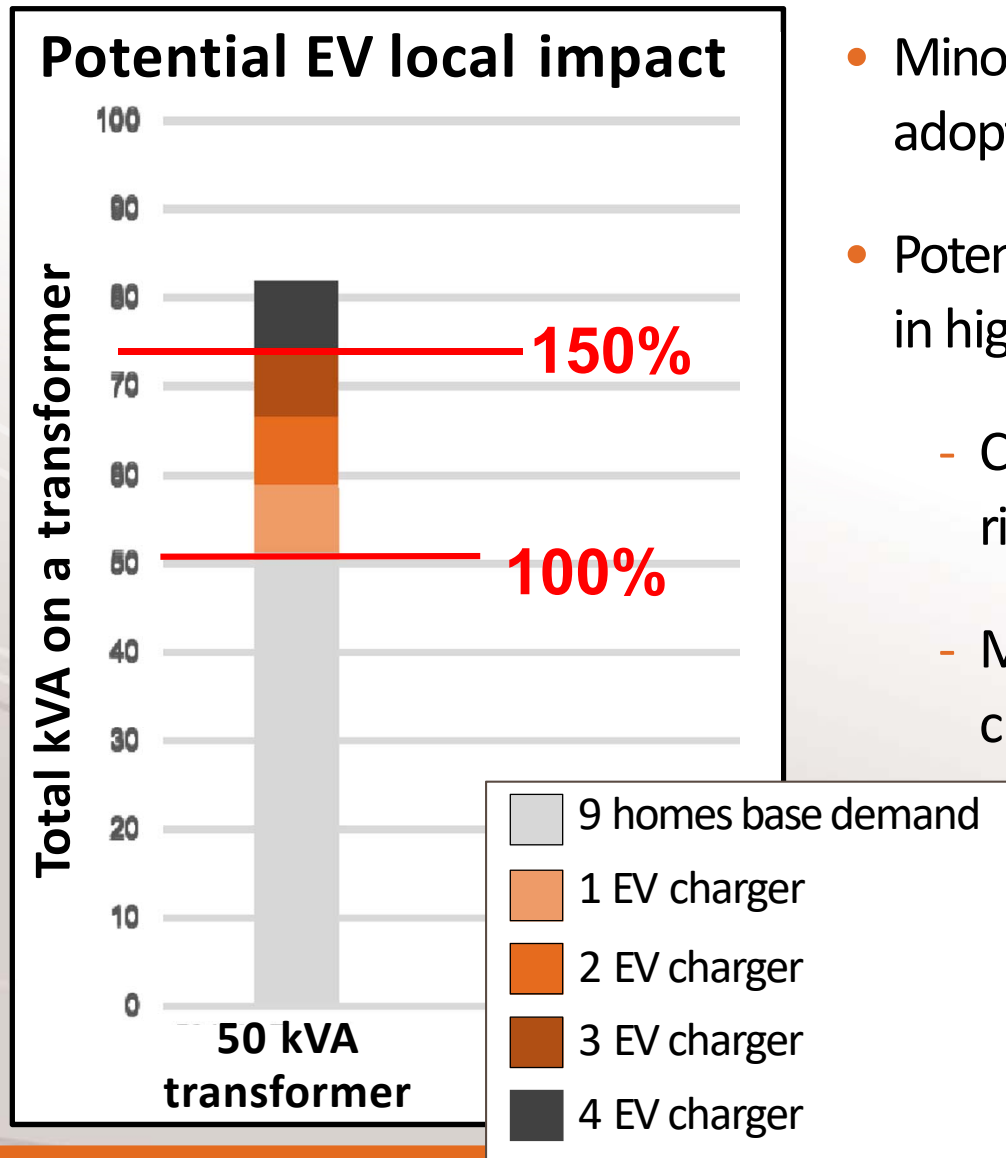
Impact on generation



Key takeaways:

- OPPD system-wide peak load sees minor impact until significantly higher adoption
- Residential EV charging is largely coincident with evening system peak

EV impact on distribution system



- Minor impact to peak load until adoption increases significantly
- Potential stress on secondary circuits in high-adoption neighborhoods
 - Coincidence of charging creates risk of transformer failure
 - Methods to encourage off-peak charging should be explored

Areas of focus

Customer knowledge & interest



Consumer education



Community partnerships



Access to EV information

Charging access



Partnerships for EV support equipment



Home charging

Cost (upfront, operating)



EV programs



Connect customers to federal/state/local incentives



Grants

Vehicle performance & availability



Availability through dealership networks



Barriers OPPD can impact



Barriers OPPD cannot directly influence

Action Items

- Develop customer education
- 2018 EV Pilot & partnerships
- Leverage EV grants
- Install L2 charger near Energy Plaza
- Assign OPPD lead role
- OPPD EV fleet evaluation
- Track & monitor distribution impacts
- Pilot charging control
- Evaluate commercial charging & fleet programs
- Monitor technology developments such as Vehicle-to-Grid (V2G)

2018 EV Pilot & Partnership
Heather Siebken
Director Product Development &
Marketing

Pilot objectives

The **Electric Vehicle (EV) rebate pilot** is another means of collecting research to make an informed decision about OPPD's future strategies and resourcing.

- Gather adequate data from residential EV charging to analyze the potential for localized stress on secondary circuits
- Understand residential charging behaviors and customers' palate for utility offered EV program(s)

In addition to the primary objective of the pilot, OPPD will:

- Provide awareness and education of electric vehicles and chargers
- Reduce customer anxiety around the costs associated with EV ownership
- Increase EV adoption in our community for a cleaner environment
- Collect residential EV ownership details for future outreach and consulting
- Build and leverage relationships in future discussions and partnerships
- Reinforce our dedication to environmental stewardship
- Increase customer satisfaction through another product offering

Pilot components

Live June 2018

Incentive for EV Charger

Provide a **\$500 rebate after the purchase of a home charger**. Customer must purchase a Charge Point charger through an affiliate link on OPPD.com and agree to share charging data with OPPD. The rebate is jointly funded by OPPD and a grant provided by Nebraska Community Energy Alliance (NCEA).

Connect to EV Savings

Inform OPPD customers in Douglas County about a **\$4,000 rebate after the purchase of a new electric vehicle**, funded through a grant provided by Nebraska Community Energy Alliance (NCEA).

Inform OPPD customers they are eligible to receive **\$3,000 off the purchase of a new Nissan Leaf** at authorized Nissan dealerships with proof of OPPD bill and assigned fleet code.

Educate customers to visit with their tax advisor regarding up to **\$7,500 in federal tax credits** for the purchase of a new electric vehicle.

Pilot marketing & communications

Social Media (unpaid)

OPPD.com

Email Campaign

Community Events

Dealership Co-Marketing

Drive & Learn Events

The Wire

Outlets

Targeted Digital Ads

Pop-up Displays

Grab & Go Postcards

Car Lot Windshield Decals