



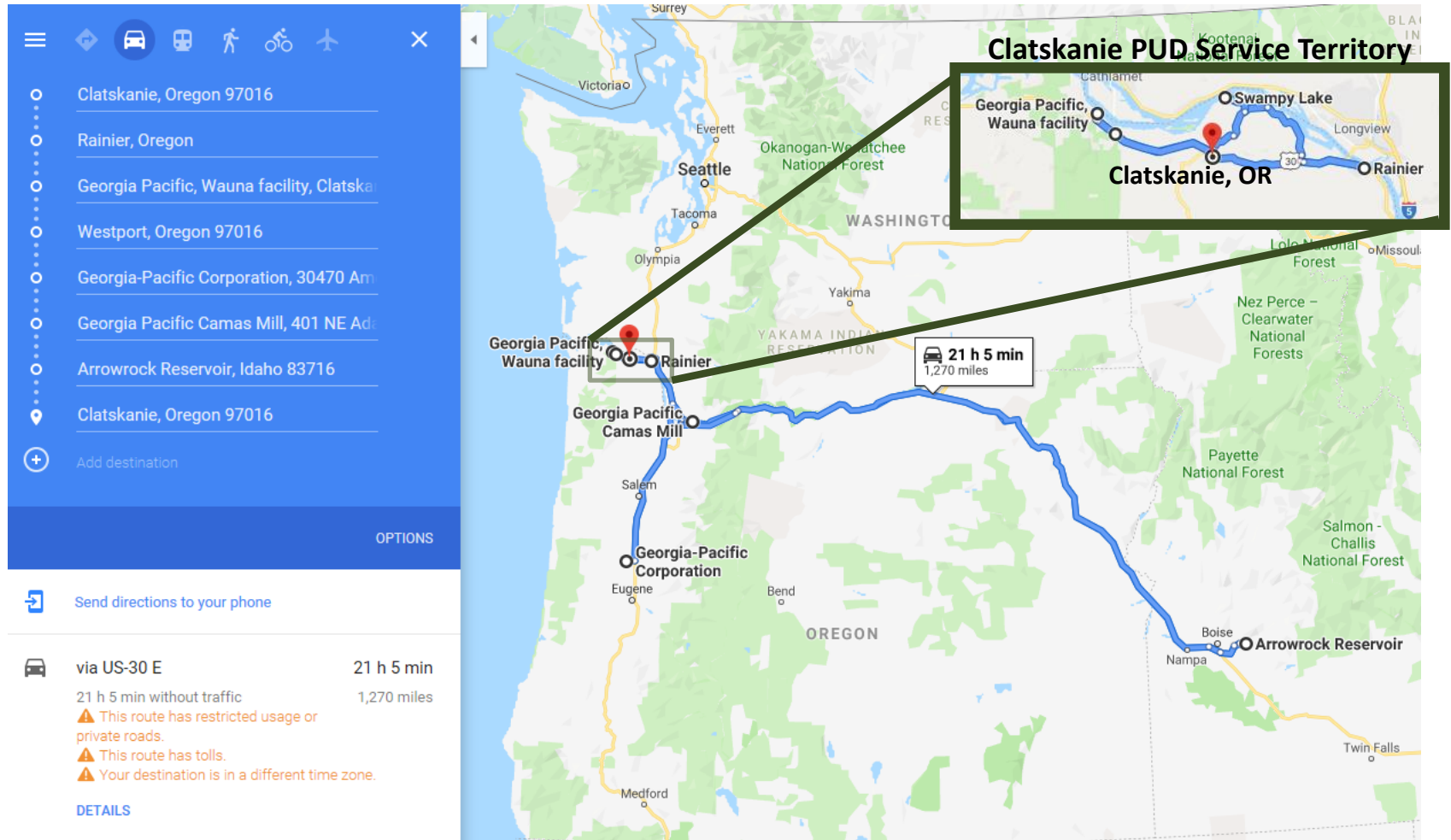
# Electric Vehicle Public Charging Program Overview

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# Clatskanie People's Utility District



# Program Principles

The District's mission is to create economic advantage for our communities by providing the best energy value for our customers



VALUE ADDED  
SERVICE



COST OF SERVICE  
BASED

Our rates should reflect cost-causation so customers have clear price signals

EV Charging  
Program  
Principles



LOCAL CONTROL

Maintain public power's role in providing end-users their electric service

# “Theory of the Case” for a rural utility EV Charging program

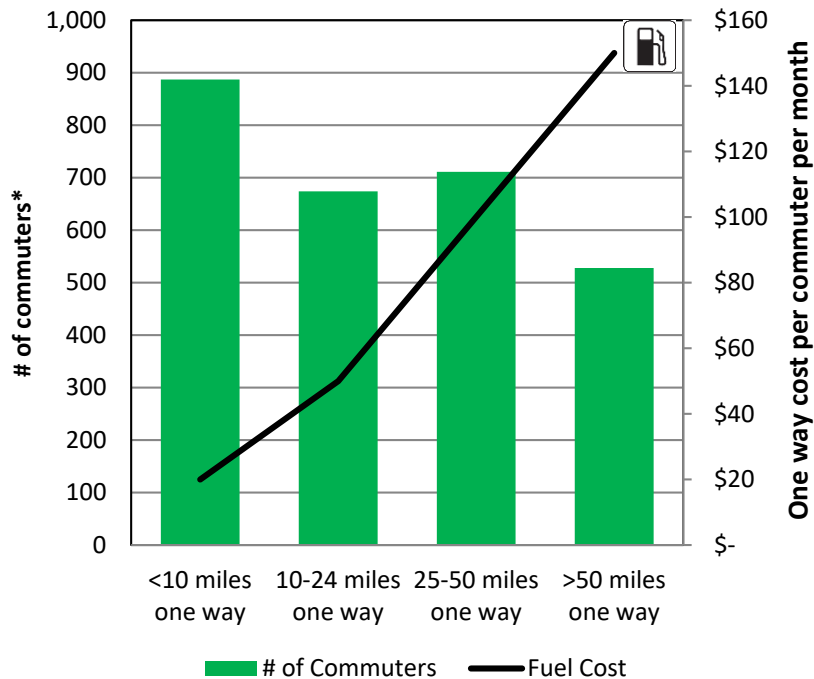
Our (Clatskanie People’s Utility District) underlying hypotheses:

1. The most prevalent use-case for electric vehicle (“EV”) adoption in the communities we (the “District”) serve will be by **commuters**
  - ✓ Commuters: Most of our customers (70%) commute for work
  - x Not fleets: School buses are the only large scale “public transportation” system, and the only meaningful fleet
  - x Not travelers: Our service territory isn’t a hub for long-haul trucking or a major thoroughfare for travelers
  - x Not errands: We don’t have many shopping destinations in our service territory that would lend themselves to EV motorists using public chargers during errands
2. **In-home** will be the primary location for EV charging as range continues to improve (we don’t want to over-invest in public charging infrastructure)
3. High penetration rates of EVs in our service territory increases the District’s **peak demand risk**, unless charging is done in a smart™ way
4. The consumer-owned utility business model is well suited for providing **low-cost electric service** to EVs, including public charging services

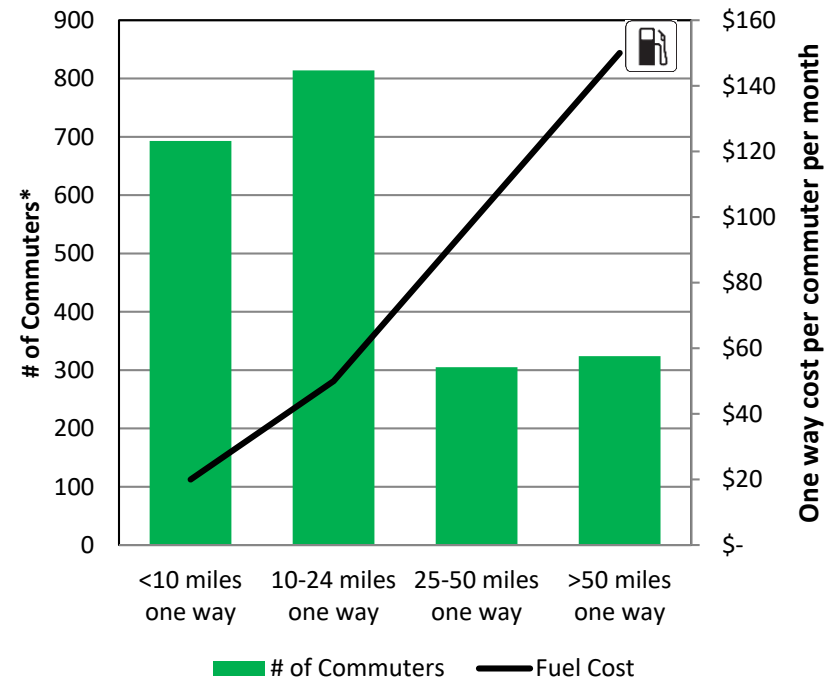
# “Theory of the Case” for a rural utility EV Charging program

The market we’re targeting is the ~\$4.7 million of annual fuel cost paid by the more than 2,800 motorists who ***commute to or from*** our service territory to work

## Commuters Living in District



## Commuters Working in District



\*Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

# Business Plan Components

## In-Home Charging

*Treat it like any other appliance*

- In-home charging should be the most cost-effective way for motorists who live in our service territory to re-charge their vehicle
- Our residential rate structure is indifferent to end-use, and greater penetration of EVs improves our financial metrics

## Public Charging

*Reduce barriers to adoption and provide competitive services*

- Own EV public charging equipment
- Set rates for end-users of our (owned) public charging equipment that sends price signals which reflect equipment and system costs

# Public Charging Services

Point-of-sale service



Unmetered outlet subscription service



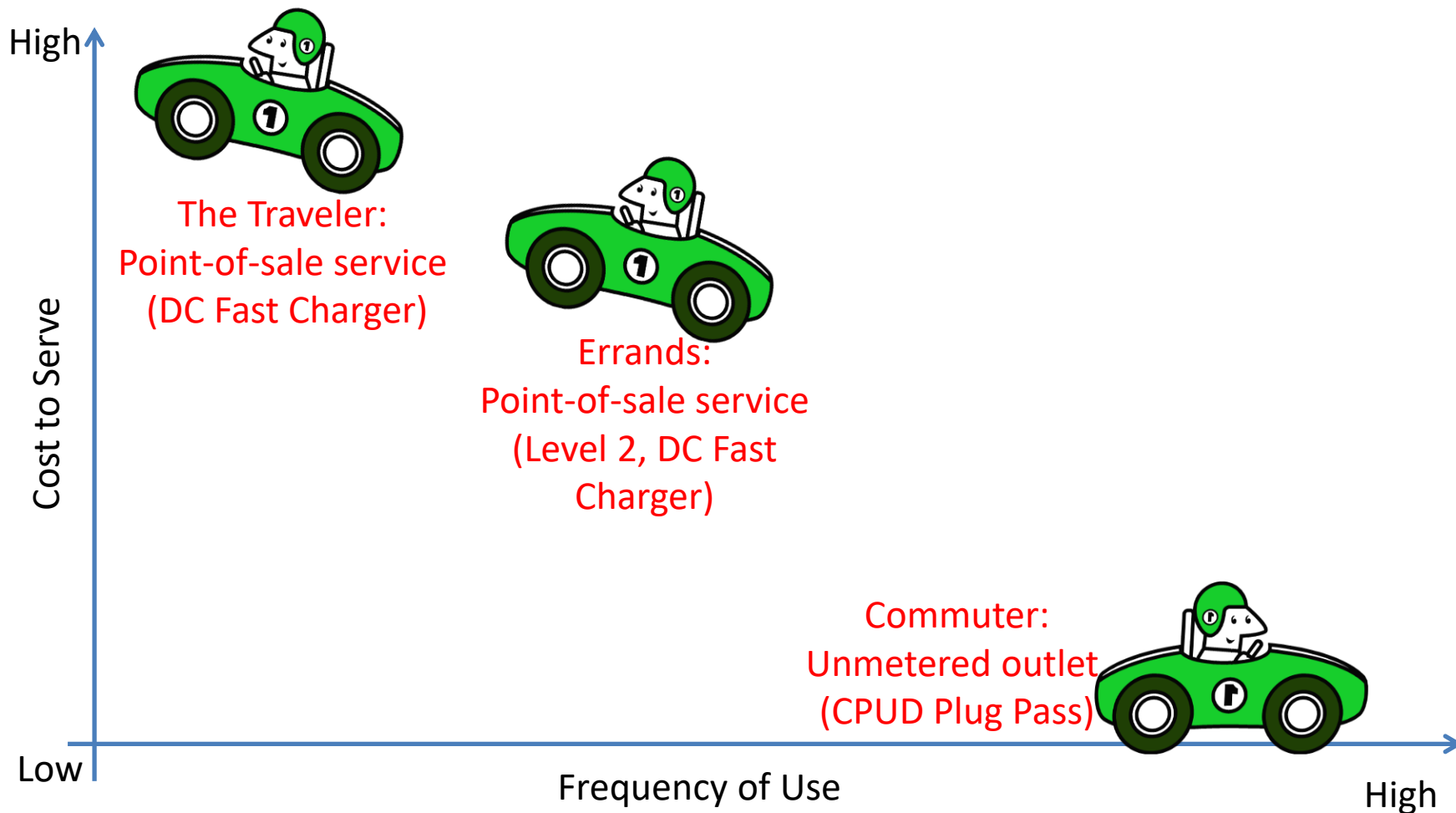


# Unmetered Outlet Subscription Service

- 120V or 240V outlet installed at commuter parking spots for a fixed monthly fee (we're branding it "CPUD Plug Pass")
  - The employer provides the parking spot
  - The District installs the line extension and outlet (at District expense)
  - The District bills the subscribers a fixed monthly fee
  - Subscribers provide their own charging cable and pay a fixed monthly fee
- Commuters can top off with their own charging cord using a least-cost-service without having to move their vehicle during the day
- Employers don't have to subsidize EV charging for their employees
- The District increases its customer base and energy sales; billing for the subscriptions are processed using our existing software just like any other customer bill, even if they don't live in the service territory








# Use Cases and Public Charging Services



# Public Charging Service Infographic:

## *Communicating price signals*

 <b>CLATSKANIE PUD</b> <small><i>Owned by the People We Serve</i></small>	<b>EQUIPMENT FEE</b>	<b>CHARGING SPEED FEE</b>	<b>ENERGY FEE</b>
<b>DC FAST CHARGER</b> 	\$ \$ \$	\$ \$ \$	\$
<b>LEVEL 2 CHARGER</b> 	\$ \$	\$ \$	\$
<b>CPUD PLUG PASS</b> 	\$	\$	\$
 <b>INDICATES CHARGING SPEED</b> To learn more, visit <a href="https://clatskaniepud.com/ev">Clatskaniepud.com/EV</a>	RECOVERS THE COST OF THE CHARGER AND ITS INSTALLATION	RECOVERS THE COST OF TRANSMISSION AND DISTRIBUTION LINES USED TO DELIVER ELECTRICITY	RECOVERS THE COST OF ELECTRICITY

# Public Charging Rates

## *Unmetered Outlet Subscription Service*



### 120V OUTLET SUBSCRIPTION UP TO 4 MPH

EQUIPMENT FEE

4.00<sup>0</sup> per month

CHARGING SPEED FEE

+ 7.00<sup>0</sup> per month

ENERGY FEE

+ 12.00<sup>0</sup> per month

\$ 23.00<sup>0</sup> TOTAL per month



### 240V OUTLET SUBSCRIPTION UP TO 22MPH

EQUIPMENT FEE

6.00<sup>0</sup> per month

CHARGING SPEED FEE

+ 28.00<sup>0</sup> per month

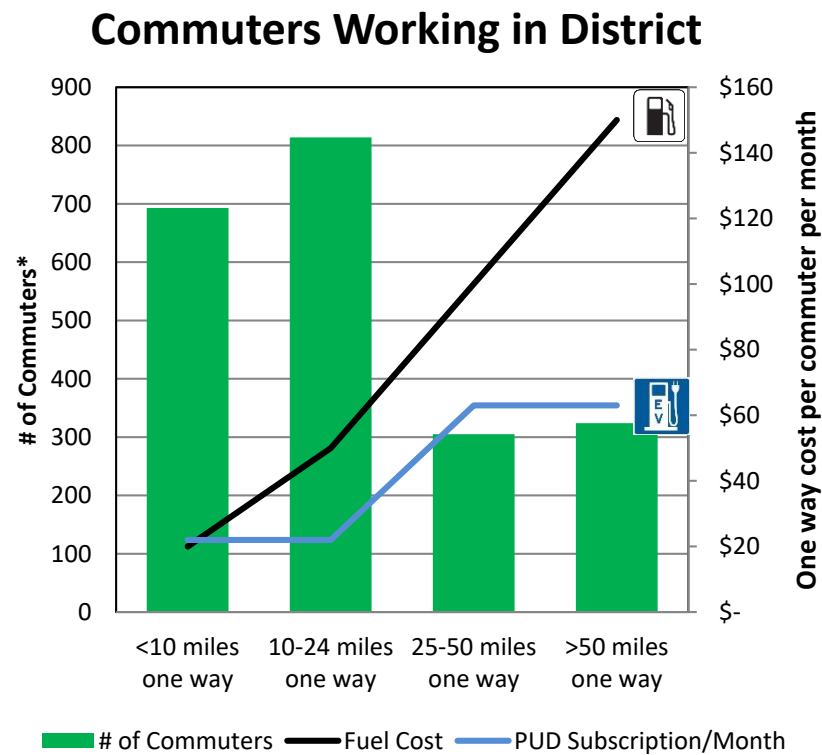
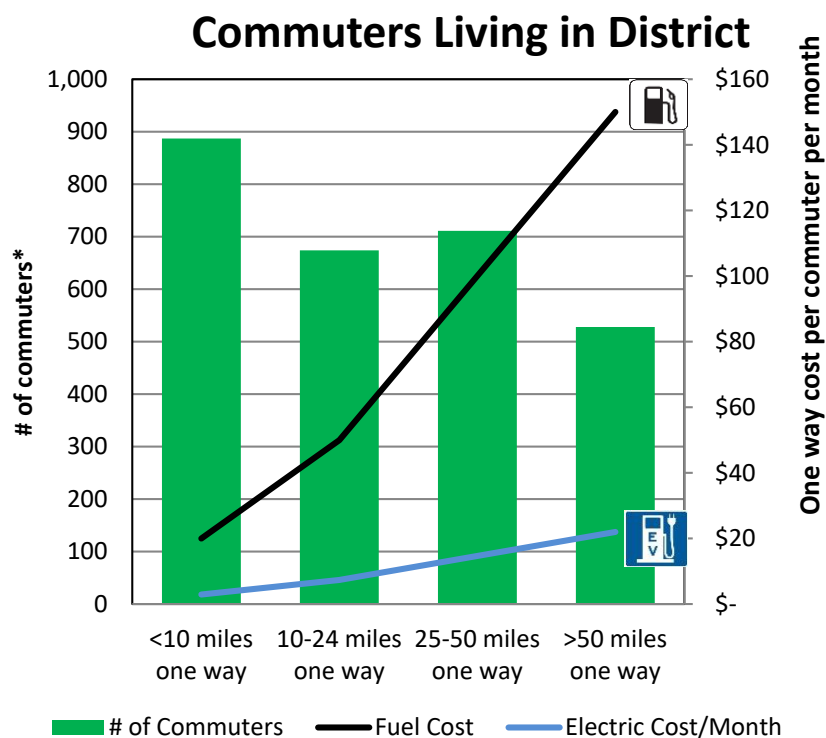
ENERGY FEE

+ 24.00<sup>0</sup> per month

\$ 58.00<sup>0</sup> TOTAL per month

# Value Proposition

**The District** increases energy sales and mitigates peak demand risk. **Commuters** save on fuel cost; the average commuter in our service territory drives 28 miles one-way and would save ~\$1,355/year in fuel costs (88% savings on fuel) with an electric vehicle.



\*Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics

# Comparing Commuter Strategies

## *costs incurred by an average commuter*

### 120V Outlet at Work & Home

- Equipment costs: \$0
- Installation costs: \$0
- Subscription cost: \$23/month
- Home energy cost: \$12/month
- Home demand @ Cost-of-Service: \$7.00/month

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\$0 upfront + \$35/month

### Level 2 *in-home* charger

- Equipment costs: \$500
- Installation costs: \$1,500
- Subscription cost: \$0
- Home energy cost: \$24/month
- Home demand @ Cost-of-Service: \$28.00/month

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\$2,000 upfront + \$24/month

# Public Charging Rates

## Point-of-Sale Service

CPUD PLUG  
**FAST**

**DC FAST CHARGER  
UP TO 200 MPH**

EQUIPMENT  
FEE

3.60<sup>9</sup>  
per charge

+

CHARGING  
SPEED FEE

2.30<sup>9</sup>  
per charge

+

ENERGY  
FEE

0.054<sup>9</sup>  
per kwh

CPUD PLUG  
**FAST**

**LEVEL 2 CHARGER  
UP TO 28 MPH**

EQUIPMENT  
FEE

1.20<sup>9</sup>  
per charge

+

CHARGING  
SPEED FEE

1.50<sup>9</sup>  
per charge

+

ENERGY  
FEE

0.054<sup>9</sup>  
per kwh

# Comparing Workplace EV Public Charging Service Strategies

## 240V Outlet Charging

- Costs commuter \$58/month
- Costs District an estimated \$515k<sup>1</sup> to offer program
  - 16.7% return on investment
- Commuter has a reserved parking spot with outlet
- Commuter doesn't need to move car during the day

## Level 2 Charging

- Costs commuter ~\$78/month<sup>2</sup>
- Costs District an estimated \$3.3 million<sup>1</sup> to offer program
  - 8.1% return on investment
- Charging is subject to availability
- Employees need to coordinate swapping vehicles

<sup>1</sup>: includes line extensions, DC fast chargers, level 2 chargers, outlets, maintenance, administrative and promotional costs over 25 year program period

<sup>2</sup>: based on same energy consumption as embedded in 240V subscription



# Four arguments for outlets

1. An outlet meets the needs of most commuters
  - EVs charge at ~4 miles per hour on a 20 amp, 120V outlet; a commuter plugged into an outlet while parked at home and work for 16 total hours per day would capture **~64 miles** worth of energy
  - The average daily commute in our (rural) service territory is **~56 miles**
2. Level 2 chargers are payment kiosks with an extension cord
  - Installing an unmetered outlet instead of a level 2 charger removes the cost of the payment kiosk and extension cord; and simple, low-cost ways to restrict access can be priced into subscriptions
3. Outlets are technology indifferent and less expensive to install
  - The low-upfront cost mitigates the risk of slower-than-expect adoption curves
4. Increasing the load-factor of EV charging by spreading charging over more hours at a lower speed makes more efficient use of our distribution system
  - PNUCC's June 2019 report on Electrification<sup>1</sup> highlights that increased workplace charging may have a beneficial impact on evening peaks as well

# Closing Thoughts

- Public power utilities can **add value through** the **design** of the products and services we offer that others can't or won't
- Calculating EV public charging fees for end-use-motorists can be simple, the hard part is ***educating*** customers ***on cost-causation***
- A ***Charging Speed Fee*** normalizes charging for peak demand to recover use of transmission and distribution system, and enhances future implementation of Demand Response solutions
- Innovative expansion of ***low-cost, outlet-based, subscription charging*** increases access to electric vehicles for low-income groups and increases the feasibility of equitable adoption of Zero Emission Vehicles