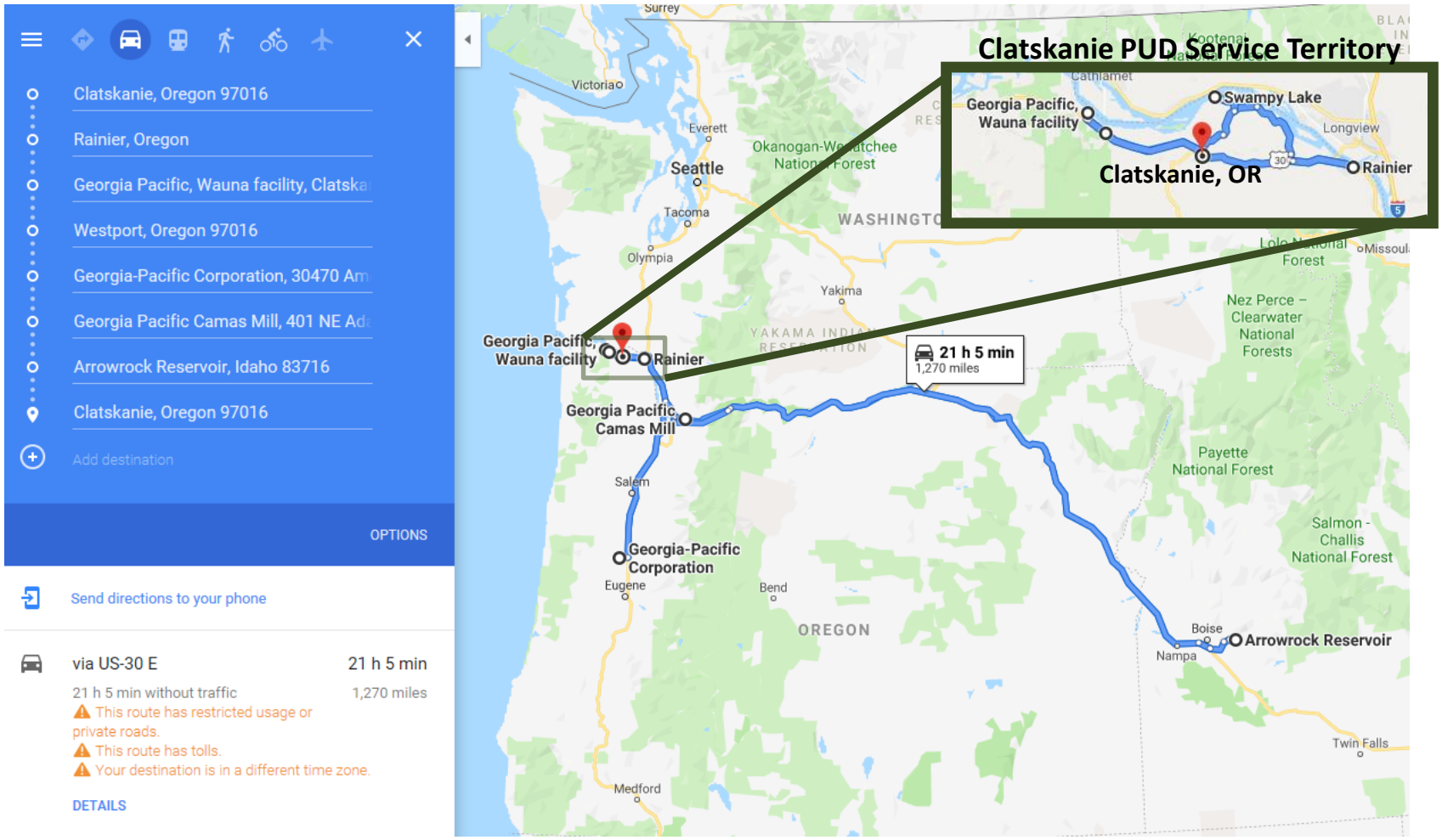
CLATSKANIE
PEOPLE'S UTILITY DISTRICT
Owned by the People We Serve

Electric Vehicle Public Charging Rates

Paul Dockery, Power Manager

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

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

COST OF SERVICE BASED

EV Charging Program Principles

VALUE ADDED SERVICE

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

LOCAL CONTROL

"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

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

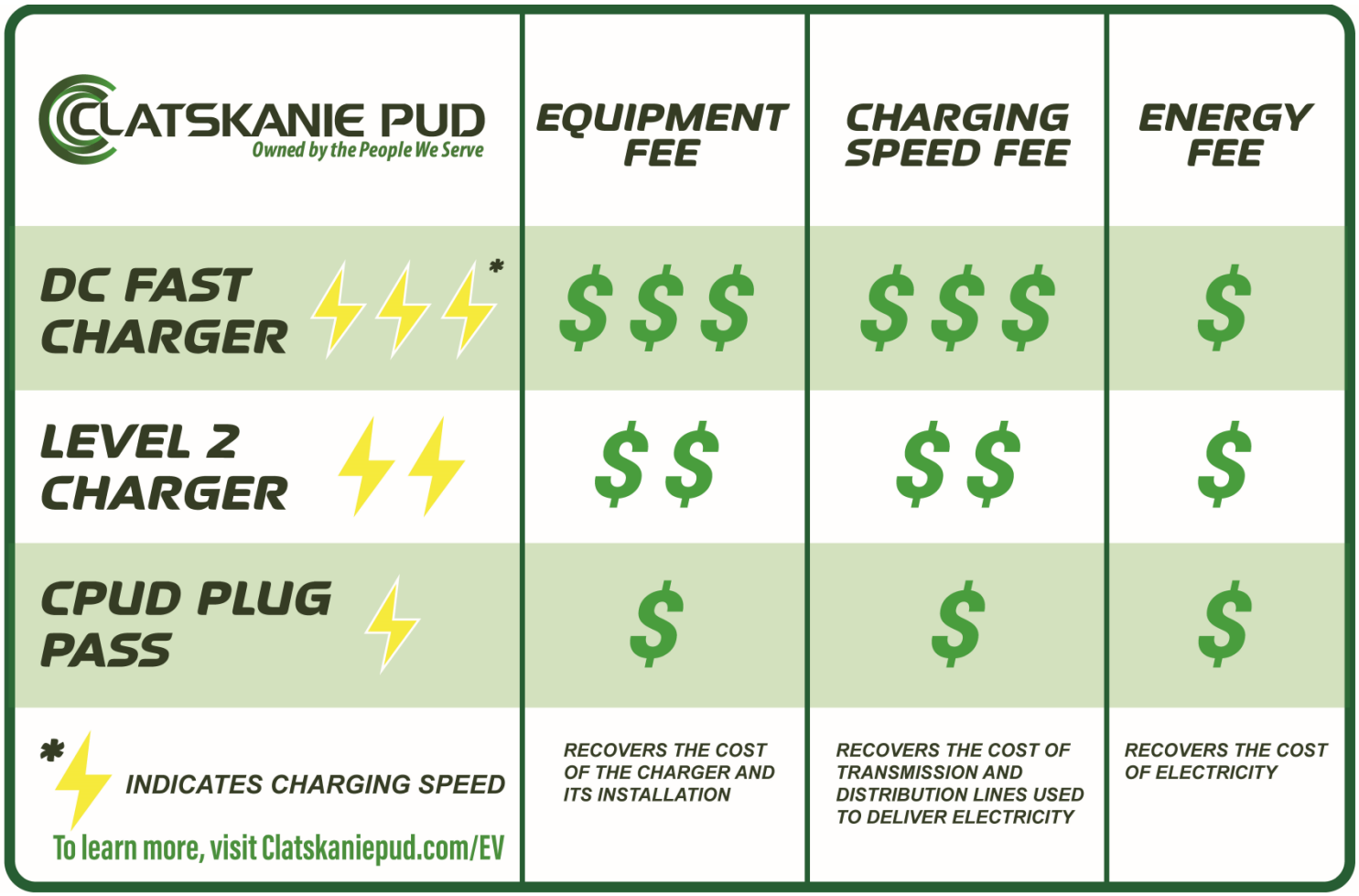
- Own EV public charging equipment
- Set rates for end-users of our (owned) public charging equipment that sends price signals which reflect equipment and system costs

Our Program Offerings:
EV Public Charging Services

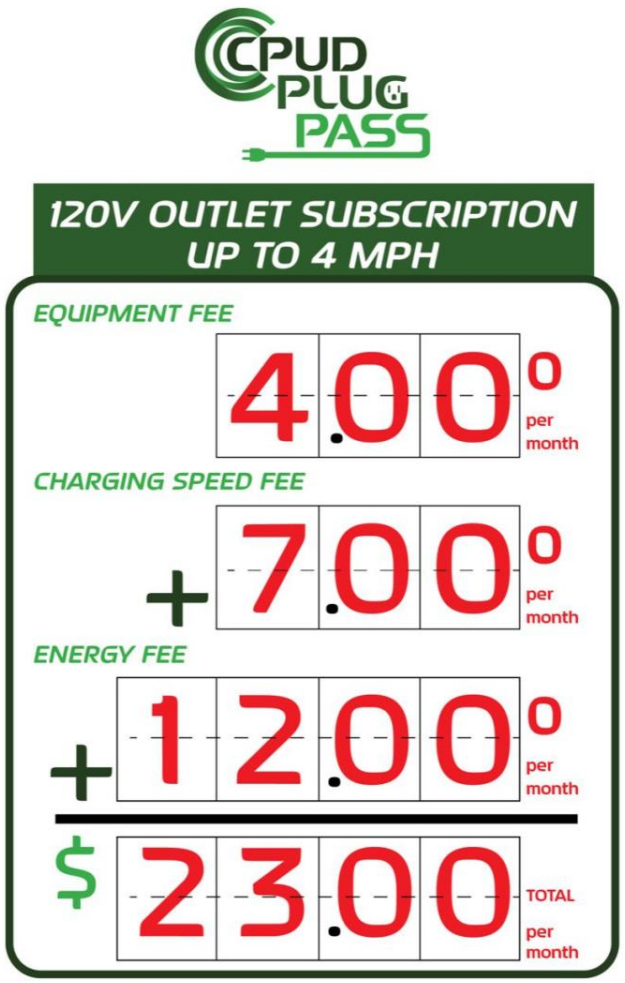
Point-of-sale service

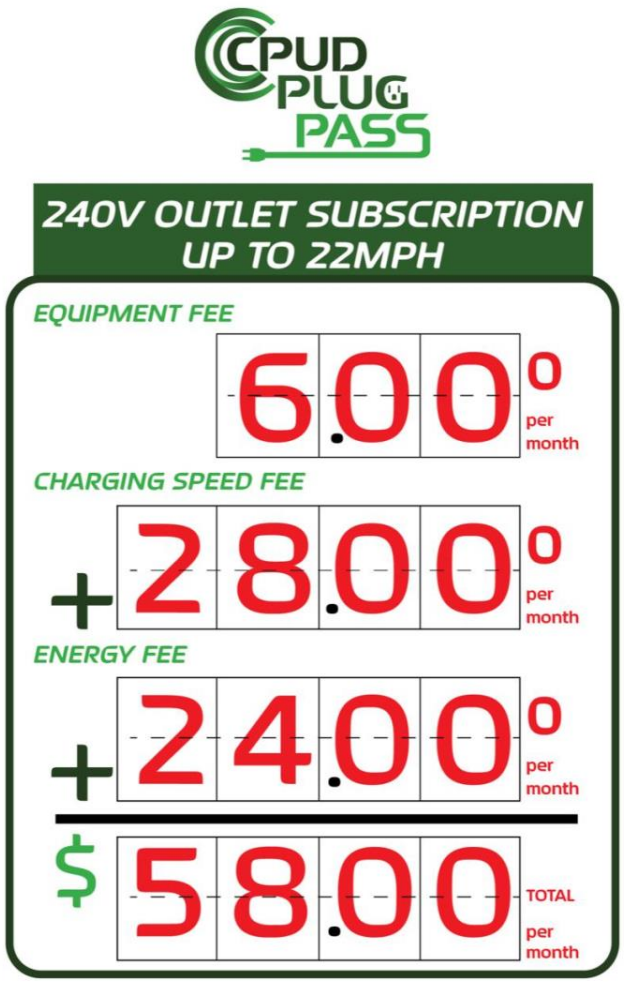
Unmetered outlet subscription service

Public Charging Service Infographic:
Communicating the price of speed

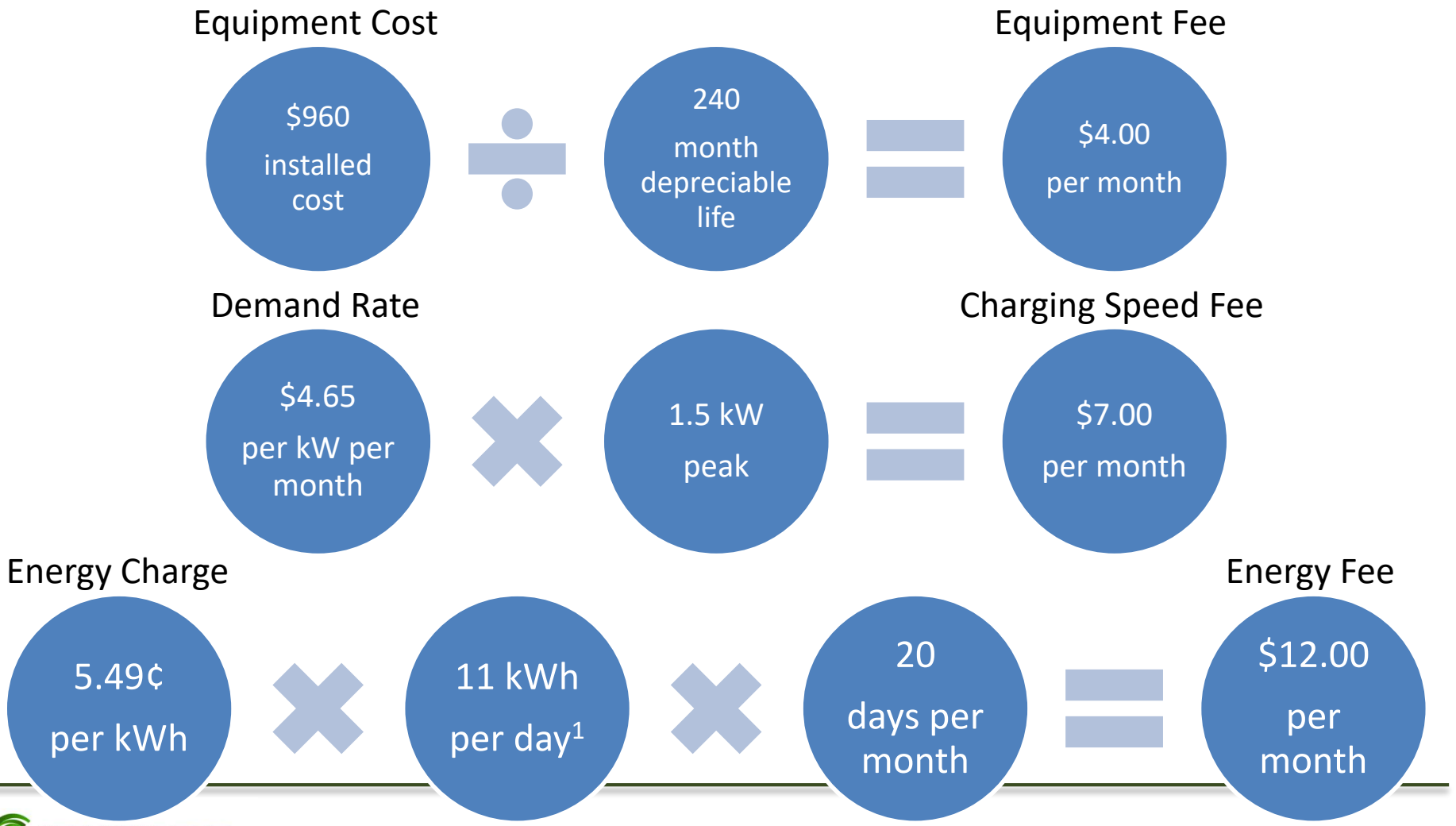


Public Charging Rates
Unmetered Outlet Subscription Service





Unmetered Outlet Subscription Service: *120V Outlet Rate Calculation*



[1]: Based on average one-way commute to work for our service territory as published by 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

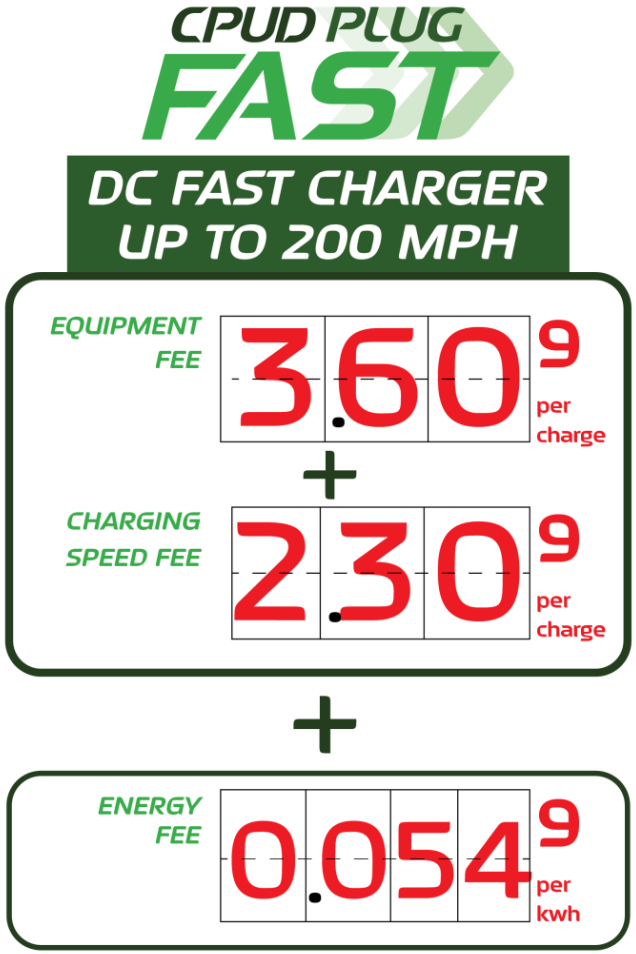
$0 upfront + $35/month

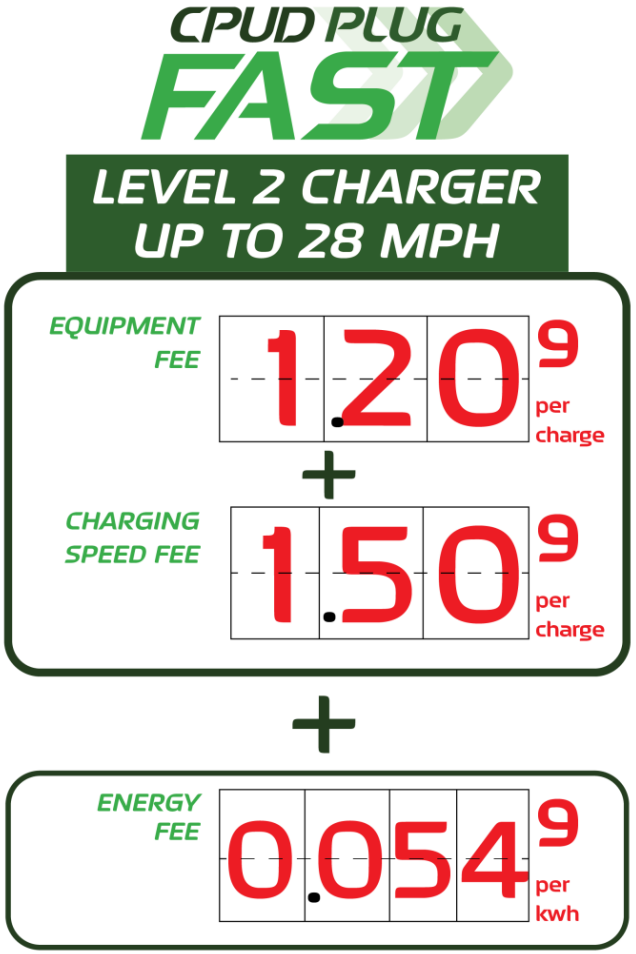
Level 2 *in-home* charger

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

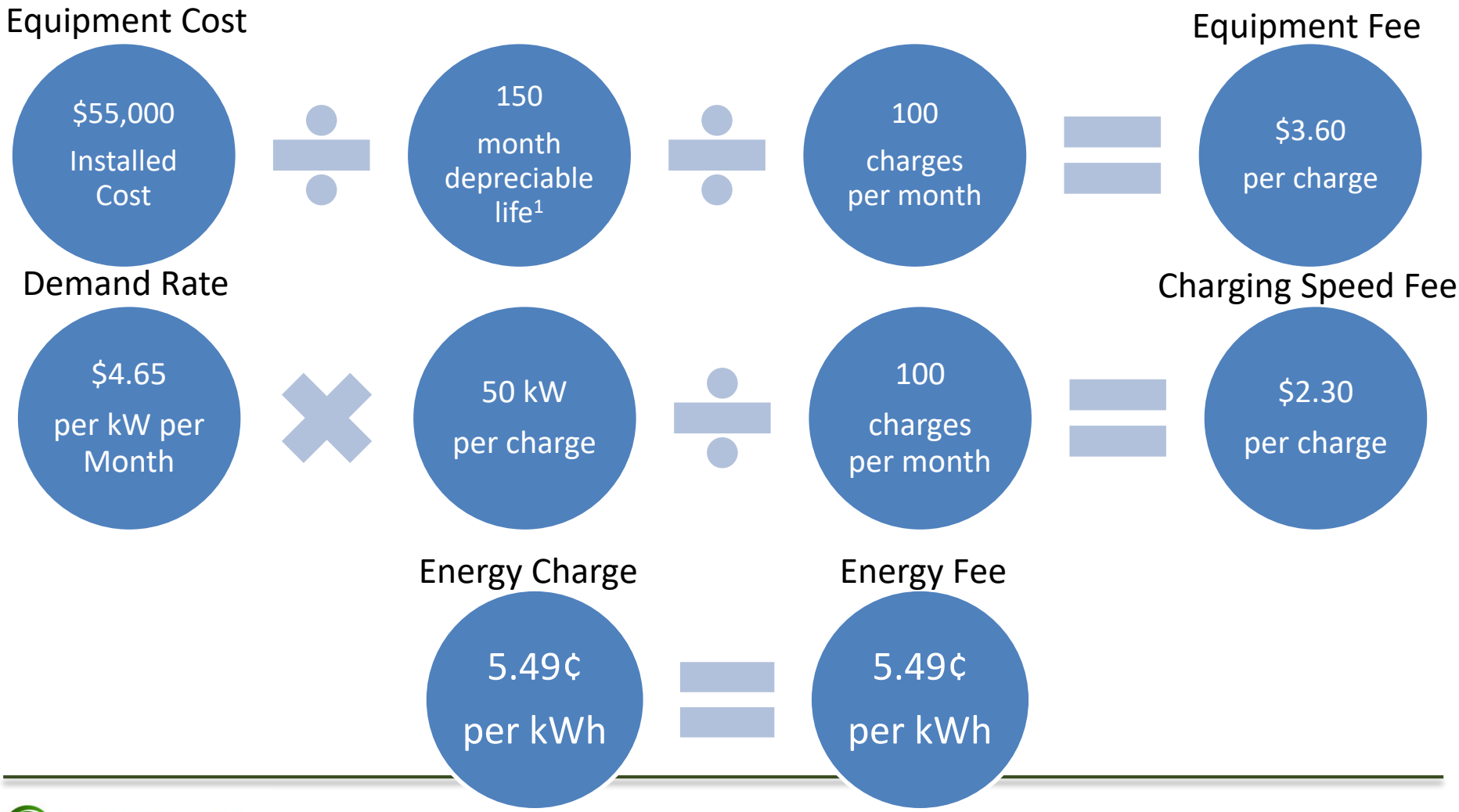
$2,000 upfront + $24/month

Public Charging Rates
Point-of-Sale Service



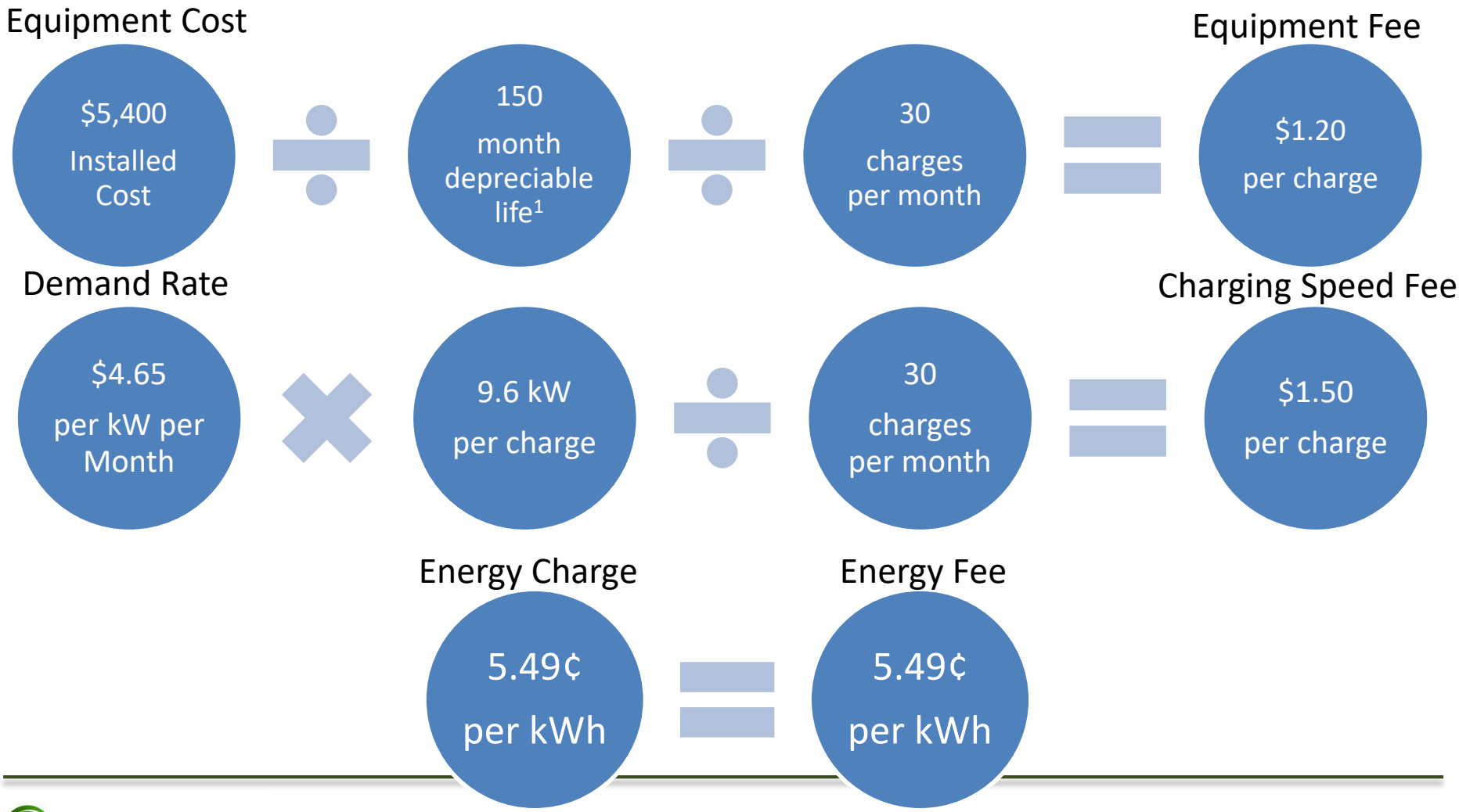


Point-of-Sale Service:
DC Fast Charger Rate Calculation



[1]: DC fast charger depreciated over a 10 year period and line extensions depreciated over 20 years

Point-of-Sale Service:
Level 2 Charger Rate Calculation



[1]: Level 2 charger depreciated over a 10 year period and line extensions depreciated over 20 years

Comparing Workplace EV Public Charging Service Strategies

240V Outlet Charging

- Costs commuter $58/month
- Costs District an estimated $515k[1] 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[2]
- Costs District an estimated $3.3 million[1] to offer program
  - 8.1% return on investment
- Charging is subject to availability
- Employees need to coordinate swapping vehicles

[1]: includes line extensions, DC fast chargers, level 2 chargers, outlets, maintenance, administrative and promotional costs over 25 year program period

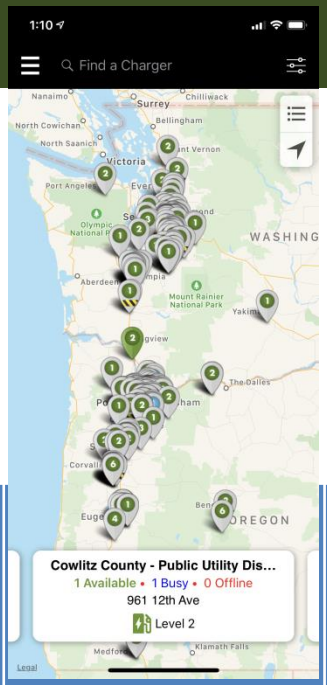
[2]: based on same energy consumption as embedded in 240V subscription

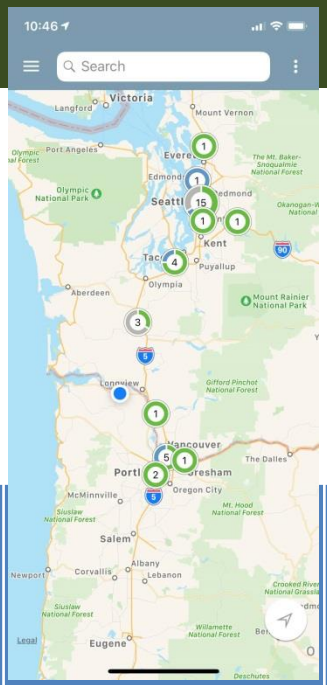
Four arguments for outlets

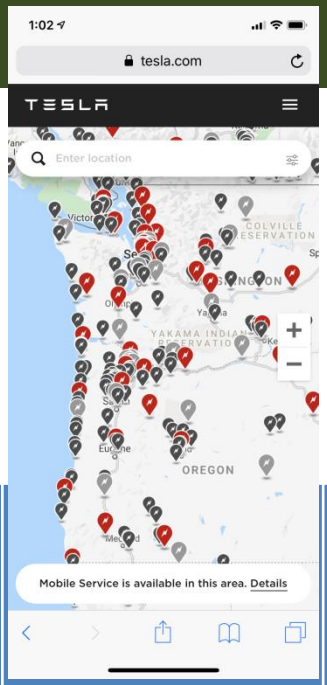
1. An outlet meets the needs of most commuters
   - EVs charge at ~4 miles per hour on a 20 amp, 120V outlet; a commuter plugged into an outlet while parked at home and work for 16 total hours per day would capture ***~64 miles*** worth of energy
   - The average daily commute in our (rural) service 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[1] highlights that increased workplace charging may have a beneficial impact on evening peaks as well

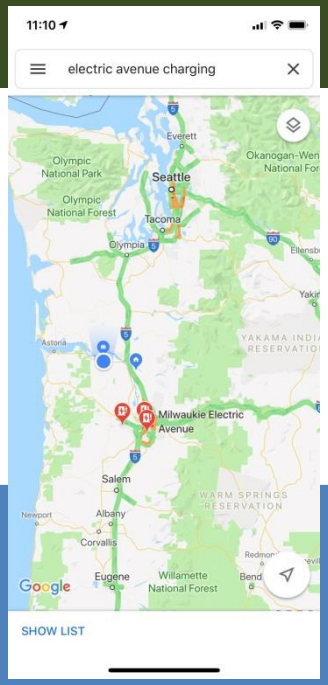
1. Report titled A Discussion on Electrifying Light Duty Vehicles and Natural Gas Heating in the Northwest https://www.pnucc.org/sites/default/files/PNUCC_NWGA%20Electrification%20Paper_1.pdf

Competitive Scan: EV Rate Design









	Blink	EVgo	Tesla	PGE	
DC Fast Charger	$0.49 per kWh	$0.29 per Minute	0.28 per kWh	$5 per Session	$25 per Month (Subscription)
Level 2 Charger	$0.39 per kWh	$0.03 per Minute	free	$3 per Session	

Competitive Scan: *Public Charging Services*

	$ per eGallon[1]				
	Clatskanie PUD[2]	Blink	EVgo	Tesla	PGE[2]
DC Fast Charger	$2.11	$4.46	$3.17	$2.55	$1.36
Level 2 Charger	$1.23	$3.55	$2.27	free	$0.82
240V Workplace Outlet	$1.05	not offered			
120V Workplace Outlet	$0.83				

CLATSKANIE PUD
Owned by the People We Serve

[1]: www.energy.gov/eGallon

[2] : Calculations for DCFC and Level 2 charger estimated the energy to be 33kWh for comparison purposes, which is the amount of energy necessary to go approximately 100 miles for most EVs

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*** may be a good way to normalize the idea of charging for peak demand to recover use of transmission and distribution system
- The **terms of service** for an EV public charging service rate schedule are different than traditional offerings

Other Resources

We're open source!

All our resources (including this presentation) are available, and updated on

GitHub: https://github.com/pdockery/Plug-Pass