



Sustainability Speaker Series

Want to learn more about sustainability?

[Our presentations](#) are designed to be read online or to be presented by our staff at your event or group meeting.

Contact sustainability@cityoftacoma.org or call (253) 591- 5172 to book!

Sep 2018



Office of
Environmental Policy
and Sustainability



Electric Cars

Save Money, Have Fun,
Protect the Environment
& Human Health

May 2018



Office of
Environmental Policy
and Sustainability

Gas Cars

- Expensive and Inefficient
- Pollute Water
- Create Global carbon pollution
- Create local fine particle air pollution



The True Costs of Fuel

- International Monetary Fund 2015 report says global fossil fuel costs taxpayers and consumers \$5.3 trillion a year.
- \$10 - \$15/gallon



Center for Investigative Reporting

There are Alternatives & No Compromises Necessary

- Gas prices high and oil market volatile
- EV travel distances increasing
- More public charging stations
- Many EVs American made
- Help protect our environment
- Reduce reliance on oil
- Almost no maintenance
- EVs meet or exceed all safety standards



Electric Vehicles (EVs) are the solution!

Plug-In Vehicle Glossary

EVs or BEVs – Electric Vehicles or Battery Electric Vehicles

- Stored batteries propel the vehicle
- Charged through electricity
- Like hybrids, some energy recovered when using the brakes
- NO option to run on gasoline

PHEVs & EREVs – Plug-in Hybrids and Extended-Range EVs

- PHEV - Combination of electricity and gasoline to propel the vehicle. Small gasoline engine assists wheels and generate electricity
- EREV – Gasoline engine only generates electricity
- Both can be charged



Expansion of the EV Market

Where Are EVs Taking Off?

While California remains the country's largest EV market in terms of cars on the road, it is no longer the fastest-growing. More states are encouraging EV driving by offering incentives such as tax credits, HOV lane access, utility rebates and special rate plans for EV charging.

Top 10 States

■ Total EVs in Operation

1. California
2. Georgia
3. Washington
4. Florida
5. Texas
6. New York
7. Michigan
8. Illinois
9. Oregon
10. New Jersey

■ EV Growth

1. Utah
2. Nevada
3. North Carolina
4. Colorado
5. Kansas
6. New Hampshire
7. Pennsylvania
8. Virginia
9. Florida
10. Arizona

Top 10 Metro Areas

● Total EVs in Operation

1. Los Angeles
2. Bay Area
3. New York Metro
4. Atlanta
5. San Diego
6. Seattle
7. Chicago
8. Washington, D.C.
9. Detroit
10. Portland

● EV Growth

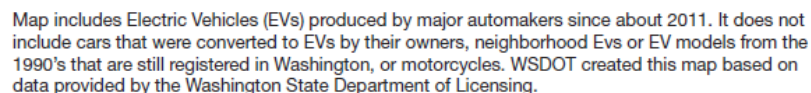
1. Las Vegas
2. Kansas City
3. Raleigh/Durham
4. Denver
5. Miami
6. Phoenix
7. Philadelphia
8. Portland
9. San Diego
10. Los Angeles



- Top 10 states for total EVs in operation
- Top 10 states for EV growth
- Top 10 metro areas for total EVs in operation
- Top 10 metro areas for EV growth

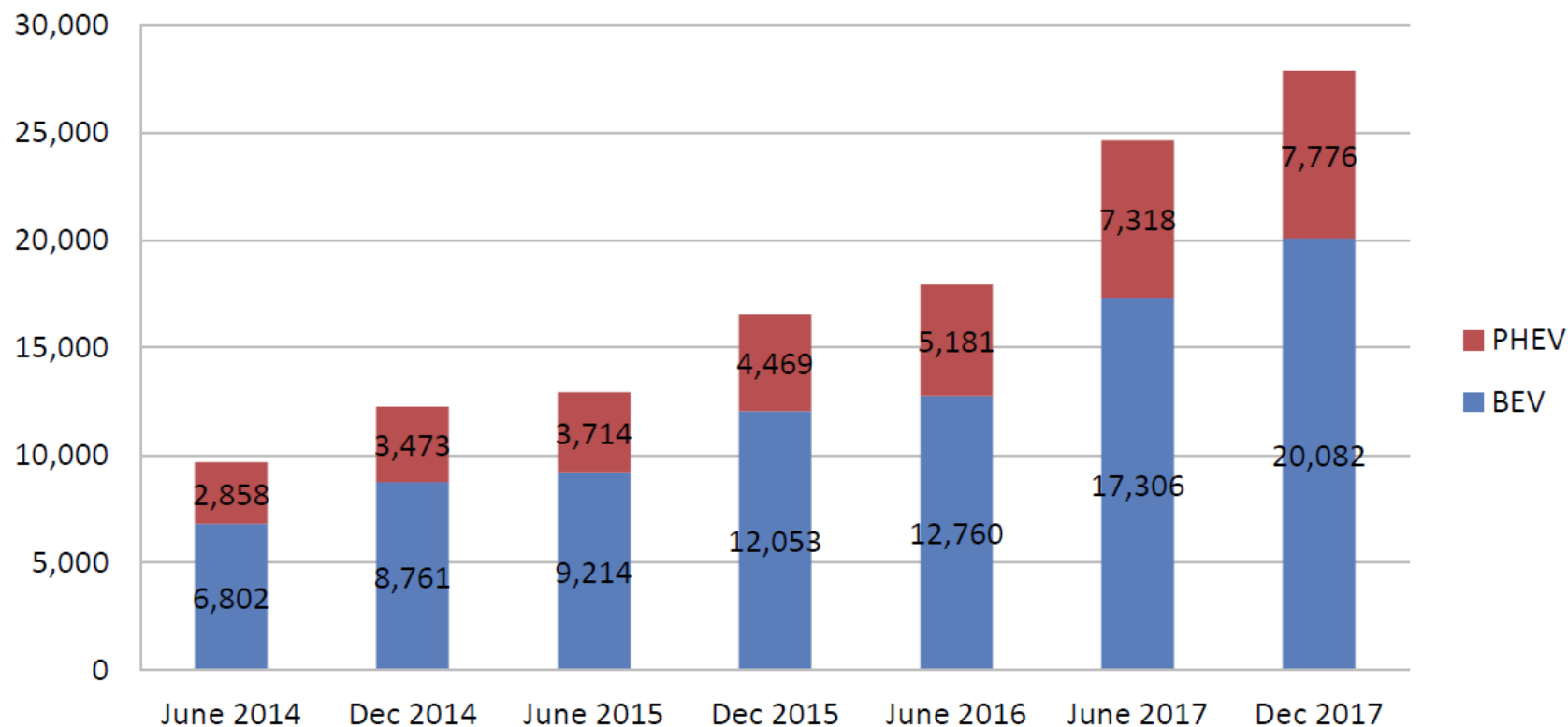
As of December 31, 2017

As of December 31, 2017



EV Ownership Growth in WA State

Total Plug-in Electric Vehicle Registrations



EV Goals

- Washington State goal of 50,000 by 2020



- City of Tacoma goal

Register 2,000 electric vehicles by 2020.

2020 Goal: 2,000 registered

2017: 583 registered

2016: Data not available

2015 Baseline: 383 registered



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Save Money

Save Money on “Fuel”

Electric

2 – 3 cents per mile



~\$200 per year

Gasoline

15 – 30 cents per mile



~\$2,200 per year



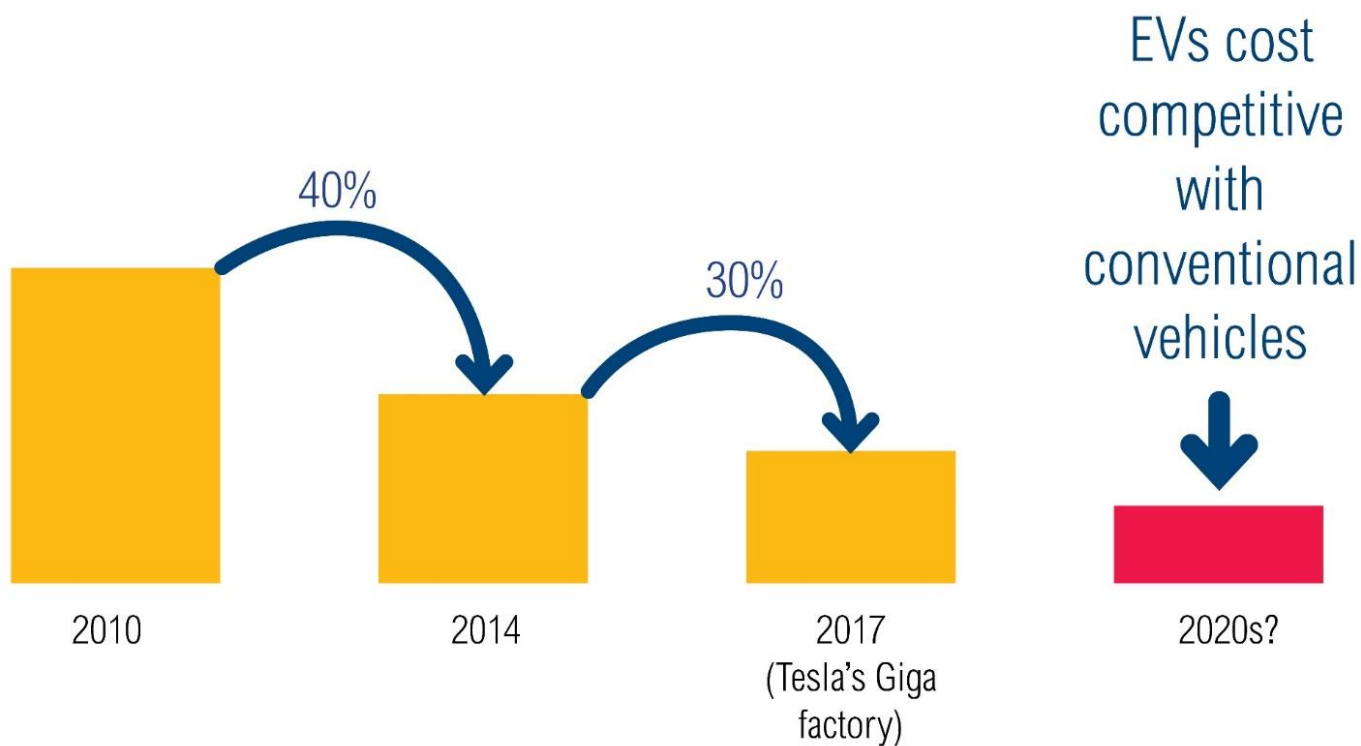
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Maintenance Comparison

Compact Gasoline Car	Electric Vehicle
Tire replacements	Tire replacements
Brake servicing	Brake servicing
Shocks	Shocks
Multiple air filter replacements	Annual battery test
Multiple cooling system flushes	
Transmission service	
Valve timing + timing belt replacement	
Multiple accessory belt replacements	
O2 sensor replacement	



ELECTRIC VEHICLE BATTERY PRICES ARE FALLING



Save Money: Federal Incentives

Earn up to \$7,500 income tax credit on purchase, depending on battery size, manufacturer's expiration and tax owed.

For example:

- Plug-in Hybrid EV (PHEV):
\$3,793 on a BMWi8
\$7,500 on a Chevy Volt
- Battery EV (BEV): All at \$7,500 because of larger battery sizes

Some restrictions include:

- If you only owe \$5,000 in tax, get credit for \$5,000, not \$7,500
- The \$7,500 goes to the dealer/finance company initially
- The credit cannot be passed on to subsequent buyers
- Converted vehicles do not qualify
- Manufacturers no longer eligible after selling over 200,000 EVs

Save Money: WA Sales Tax Exemptions

Benefit requirements for purchase or lease of a new passenger car, light duty truck, and medium duty passenger vehicle:

- Powered exclusively by clean alternative fuels, or
- A plug-in hybrid EV capable of traveling 30+ miles using only battery power, and
- Has a MSRP of $\leq \$42,500$ for the lowest base model, and
- Is on the list of qualifying vehicles as determined by DOL

Benefit expires when the total number of qualifying vehicles titled in Washington reaches 7,500 vehicles, or July 1, 2019.

Expires June 1, 2018!

Cost of EV Ownership

- No oil changes and only about \$20/month in “electric fuel”
- No gas tax, only an usage fee
 - EVs in WA pay \$150/year road usage tax to offset lost fuel taxes
 - These fees fund grant projects like Green Highway Fast Chargers
- The bottom line is these vehicles cost about \$1,500 less a year to fuel and maintain



The Savings Continue Over Time

5 Year Cost of Ownership
according to [Edmunds.com](https://www.edmunds.com):

- Ford F-150 SuperCab – \$48,745
- Ford Escape SUV – \$38,762
- Toyota Prius – \$34,721
- Nissan Leaf – \$27,082



EVs are Great to Drive

- EV engines are roughly 75% efficient as compared to 20% for gas vehicles
- Instant torque; peppy
- Great handling
- Quiet, smooth
- No oil or tailpipe



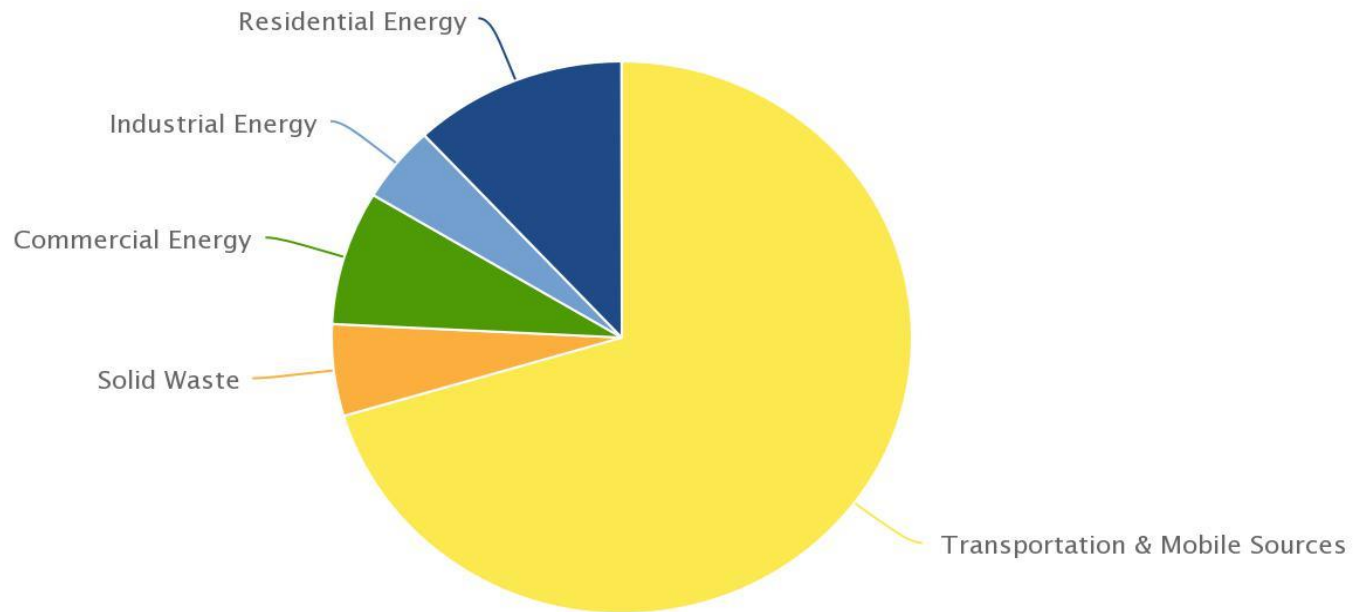


Protect the Environment



Tacoma's 2016 GHG Emissions

CO₂e across all categories for current inventory



Eliminate Air Pollution

No global pollution: Thankfully, Tacoma Power is 96% carbon free due to their hydroelectricity.

No local pollution: The City of Tacoma understands that there is no safe amount of air pollution for humans. No particulates, NOx or sulfur fumes from EVs.

You can help!



Carbon Pollution Comparison

Mytpu.chooseev.com

How many miles do you drive per year?

10000

A year of CO2 emissions.

Utilities generate electricity from a variety of sources, including hydroelectric, coal, nuclear, natural gas and a variety of renewable methods, such as solar and wind. Tacoma Power gets 97% of its power from carbon-free sources. Individual results may vary. Tacoma Power cannot guarantee similar individual carbon emission reductions."

Switch to EV and reduce your carbon emissions by an estimated:

7781 LBS

Gas **7893** LBS CO2/yr

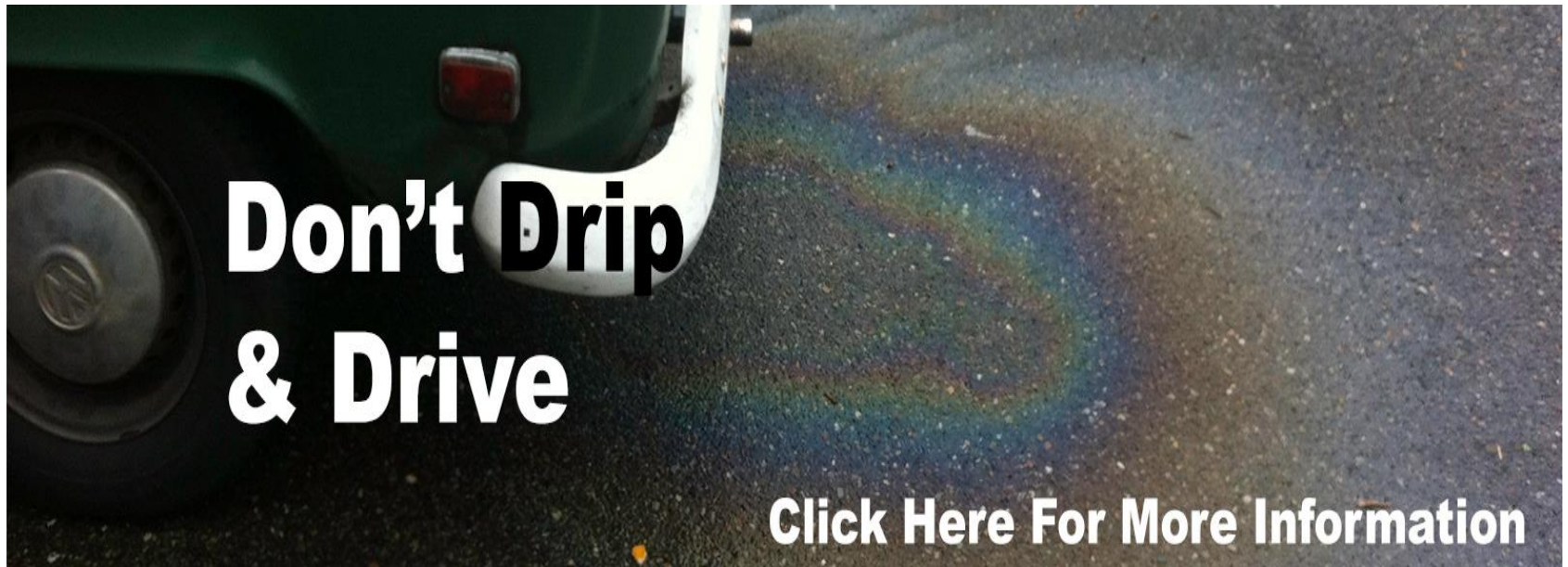


EV **111** LBS CO2/yr



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Reduce Water Pollution





Charging is Simple

Home Charging

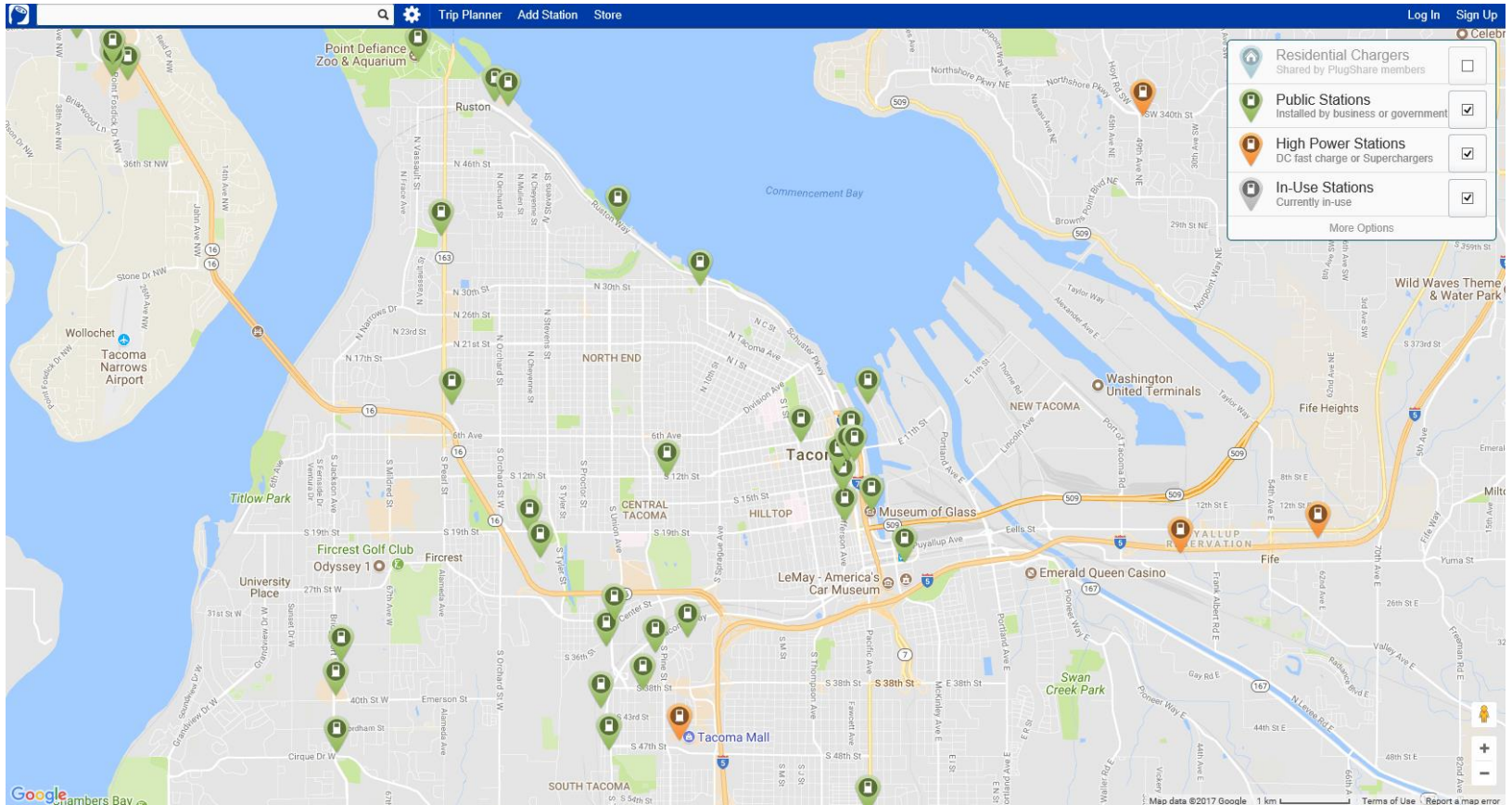
	Level 1	Level 2	DC fast charge
Equipment	Mobile cord comes with the car; plugs into any 100V socket	Must be purchased (or bundled with car)	Not suitable for home application
Cost	Included with vehicle	\$500 - \$2,000	\$30,000
Installation	No installation required	Electrical circuit installation required for majority of consumers	Located on thoroughfares and select gas stations
Range per hour of charge	2 -5 miles per hour	12 – 23 per hour	60 – 80 miles per 20 minutes
Time required to recharge an empty Nissan LEAF battery	17 hours	4 – 7 hours	80% in 15 minutes

Public EV Charging

- L1: AC 120 volt outlet, “trickle” charge outlet at business
- L2: AC 240 volt outlet, most common public charger
- L3: DC fast charge, vehicle must have capability
- Several providers, each with own access cards:
[ChargePoint](#), [Blink](#),
[SemaConnect](#), [EVgo](#)



PlugShare App



DC Fast Charging in Washington

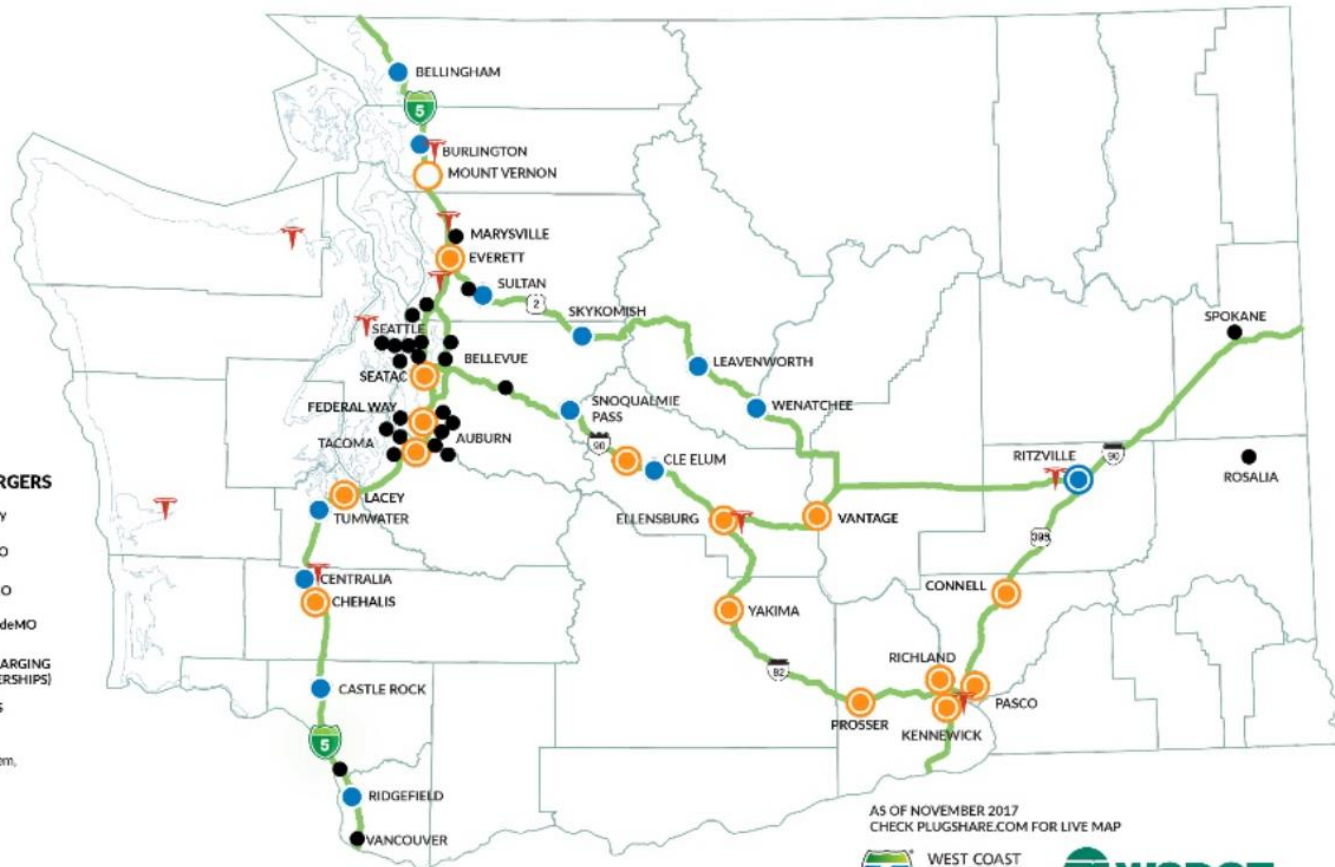


WEST COAST
ELECTRIC
HIGHWAY

TYPES OF FAST CHARGERS

- EXISTING CHAdeMO only
- EXISTING CCS/CHAdeMO
- PLANNED CCS/CHAdeMO
- PROVISIONAL CCS/CHAdeMO
- OTHER PUBLIC FAST CHARGING (NOT INCLUDING DEALERSHIPS)
- T TESLA SUPERCHARGERS

CCS = combined charging system,
also known as "SAE Combo."



AS OF NOVEMBER 2017
CHECK PLUGSHARE.COM FOR LIVE MAP



WEST COAST
ELECTRIC
HIGHWAY





The Choice is Easy

More and More Choices Every Year!

GM to launch two new EVs
within 18 months, 20 by 2023

2018 Kia Niro Plug-in
Hybrid to launch in U.S.
at end of year

All cars with engines to be off Dutch
roads by 2030, following 2025 sales ban

China electric car rules to start in 2019,
aggressive totals are world's highest

39 models available right now!

Volvo's new Polestar electric
car brand to launch 600-hp
model in 2019

Nissan IMx Concept electric SUV
debuts at Tokyo Motor Show

Paris to phase out internal-
combustion engines by 2030

Honda's second
electric car concept
is Sports EV coupe

Bill could ban gasoline -
car sales in CA by 2040

Chrysler Pacifica Minivan PHEV

33 mile EV range, over 560 miles with generator



Chevy Volt V2 PHEV

53 mile EV range, over 400 with gas generator



Chevy Bolt BEV

238 mile EV range



Examples of Deals on EVs

- Used Chevy Volt 2012-15:
\$10,000 - \$18,000
- Used Nissan Leaf 2011-15:
\$6,000 - \$16,000
- Lease 2017 Pacifica @
\$331/42 months
- Lease 2017 Chevy Volt @
\$299/39 months
- Lease 2016 Nissan Leaf @
\$199/36 months

FOR SALE

*** As of 2/22/17, varies by dealer,
model, options and more**

Volkswagen Settlement

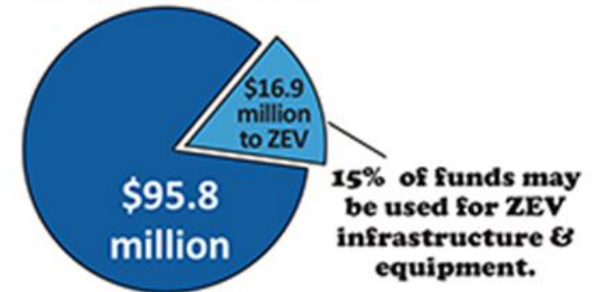
VW violated the [federal Clean Air Act](#) by manufacturing diesel vehicles with software installed that cheated emissions tests by only turning on the vehicle's emission control systems when the car was being tested.

Funds become available the first half of 2018.

\$2 billion nationally for Zero Emission Vehicle (ZEV) infrastructure.

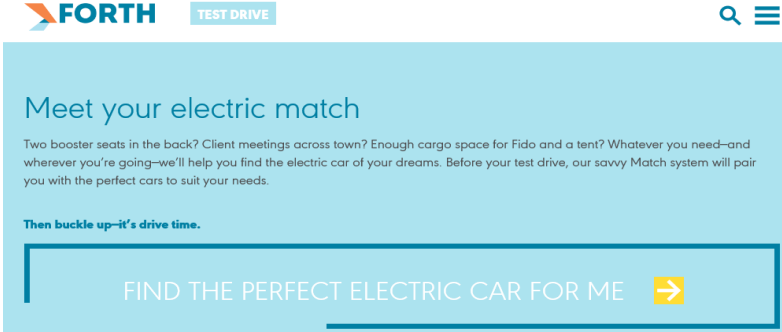
- Puget Sound is one of 11 metros selected for Cycle 1 funding

**Washington Mitigation Funds
\$112.7 million total**



Great Resources

- [Plug In America](#) – See all Vehicles
- [Electric Drive Washington](#) – Dept. of Commerce
- [Tacoma Power](#) – Save Money & Power, Electric Vehicles
- [West Coast Electric Highway](#)



The screenshot shows the FORTH website header with the logo and a 'TEST DRIVE' button. Below the header, there is a section titled 'Meet your electric match' with a paragraph of text. At the bottom of this section, there is a button that says 'FIND THE PERFECT ELECTRIC CAR FOR ME' with a right arrow icon.

FORTH TEST DRIVE

Meet your electric match

Two booster seats in the back? Client meetings across town? Enough cargo space for Fido and a tent? Whatever you need—and wherever you're going—we'll help you find the electric car of your dreams. Before your test drive, our savvy Match system will pair you with the perfect cars to suit your needs.

Then buckle up—it's drive time.

FIND THE PERFECT ELECTRIC CAR FOR ME →

Stay Tuned for EV Ride and Drives!



June 23 & September 15th

Electric Vehicle Discount Program

Here in Tacoma, sign up for a special discount on electric vehicles at several dealerships around town including:

- Old Town Bikes
- BMW Northwest
- Tacoma Nissan
- Northwest MINI
- Titus-Will Tacoma and more!



Electric Vehicle Discount Program

The program starts Sep. 15th and runs through Nov. 30th. Visit our website, cityoftacoma.org/electricvehicles for more information on participating dealerships, models available, and pricing.



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