Amped 2021: How State Government is Supporting More Electric Vehicle Use in Pennsylvania

Noon – 1:00 PM

Monday, September 27, 2021

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What We Will Cover

- Introduction to Electric Vehicles
- Electric Vehicle Benefits
- Increasing Sales of Electric Vehicles
- Electric Vehicle Commitments
- DEP and PennDOT EV Programs
- Questions and Answers

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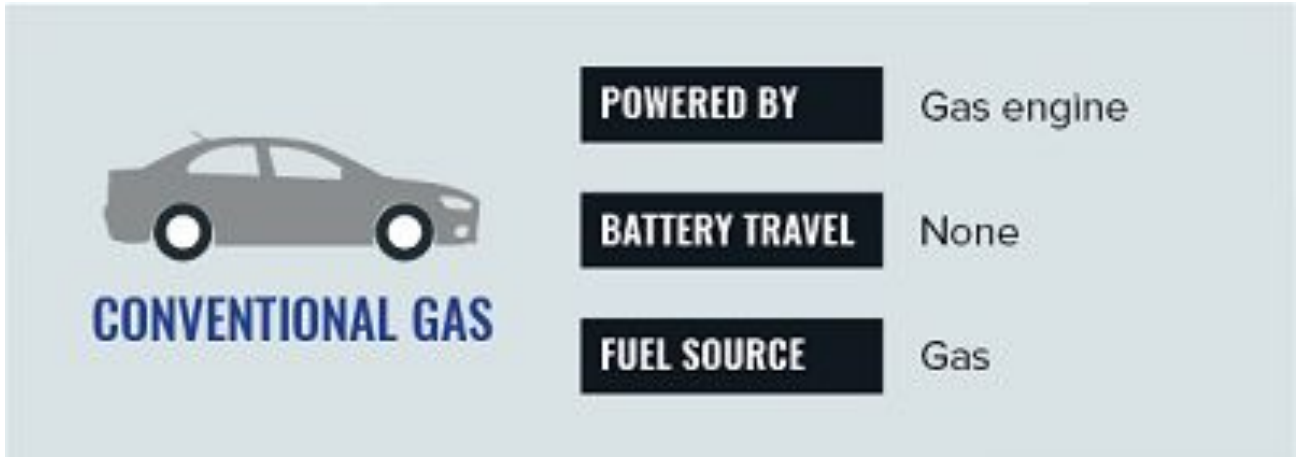
Vehicle Types - Gas



- Gas:
  - Internal combustion engine, transmission
- Hybrid:
  - Adds battery, electric motor, and battery
  - Improved efficiency
  - Brake re-generation

Image source: nyserda.ny.gov

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Vehicle Types - Electric

- Plug-In Hybrid
  - Larger battery than regular hybrid
  - Plugs in for electric mode
  - Long range

- Electric
  - Largest batteries
  - No gas engine
  - No tailpipe
  - High torque

Image source: nyserda.ny.gov

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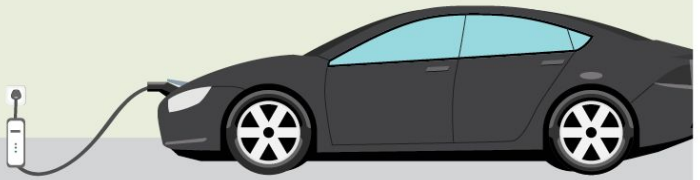
Charging

KNOW YOUR EV CHARGING STATIONS

AC Level One



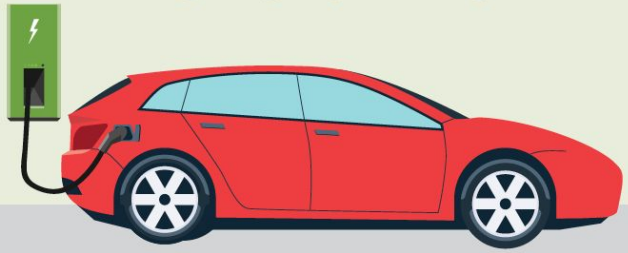
VOLTAGE
120v 1-Phase AC

AMPS
12–16 Amps

CHARGING LOADS
1.4 to 1.9 KW

CHARGE TIME FOR VEHICLE
3–5 Miles of Range Per Hour

AC Level Two



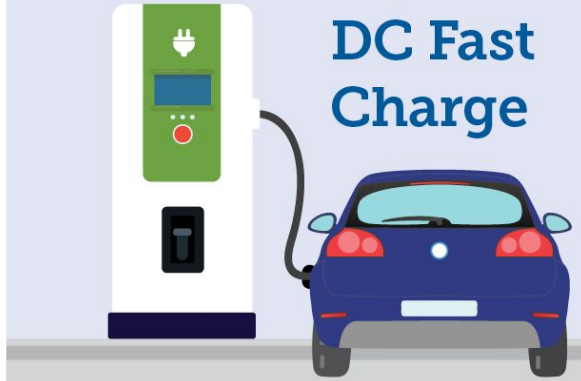
VOLTAGE
208V or 240V 1-Phase AC

AMPS
12–80 Amps (Typ. 32 Amps)

CHARGING LOADS
2.5 to 19.2 kW (Typ. 7 kW)

CHARGE TIME FOR VEHICLE
10–20 Miles of Range Per Hour

DC Fast Charge



VOLTAGE
208V or 480V 3-Phase AC

AMPS
<125 Amps (Typ. 60 Amps)

CHARGING LOADS
<90 kW (Typ. 50 kW)

CHARGE TIME FOR VEHICLE
80% Charge in 20–30 Minutes

Image source: pnm.com

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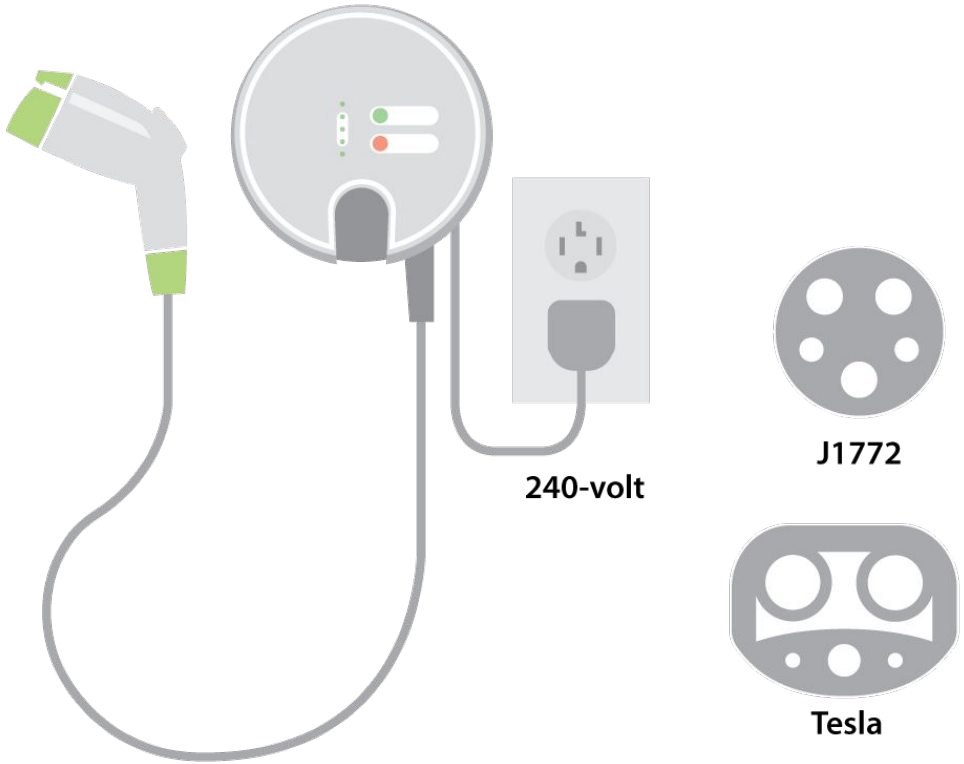
Charging Plugs

Level 1 and 2 AC Charging



- All electric vehicles can use a regular outlet for level 1 charging
- All electric vehicles can use level 2 J1772 plugs (Tesla requires an adapter)
- Only Tesla can use Tesla plugs

Image source: CleanVehicleRebate.org

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Charging Plugs

- Many DC fast charging stations have CCS and CHAdeMO plugs
- All electric vehicles can use one of these plugs (Tesla uses an adapter for CHAdeMO)
- Only Tesla can use Tesla plugs

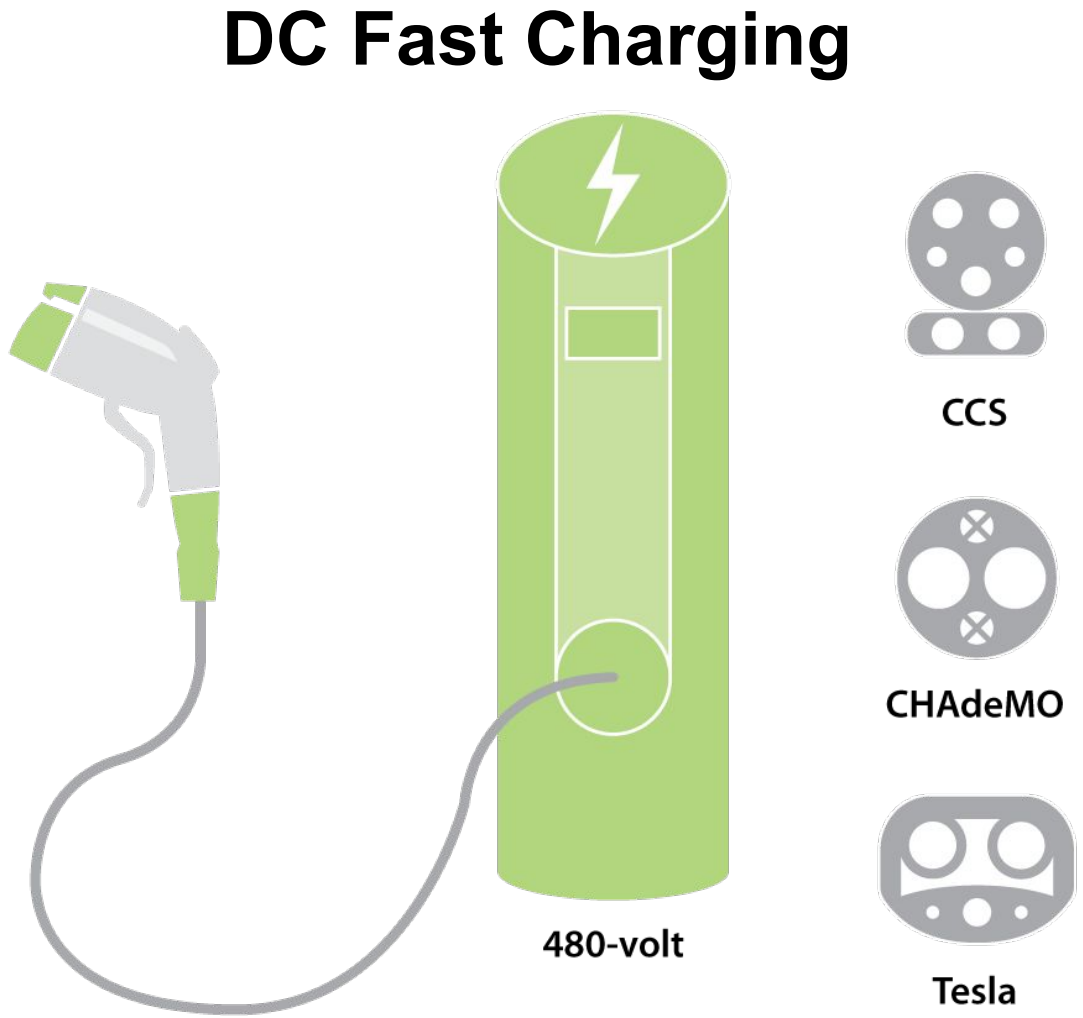

Image source: CleanVehicleRebate.org

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How to Find Charging Stations

- Websites
- Apps
- Trip Planners
- Resources:
  - Alternative Fuel Data Center (AFDC)
  - PlugShare
  - ChargeHub
  - In-car support

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Electric Vehicle Benefits

Electric vehicles **slash** oil consumption and cost thousands of dollars **less** to fuel compared with gasoline vehicles.

electric vehicle operating costs

50%-70% less than gasoline-powered vehicles

Image source: ElectrifyHeartland.org

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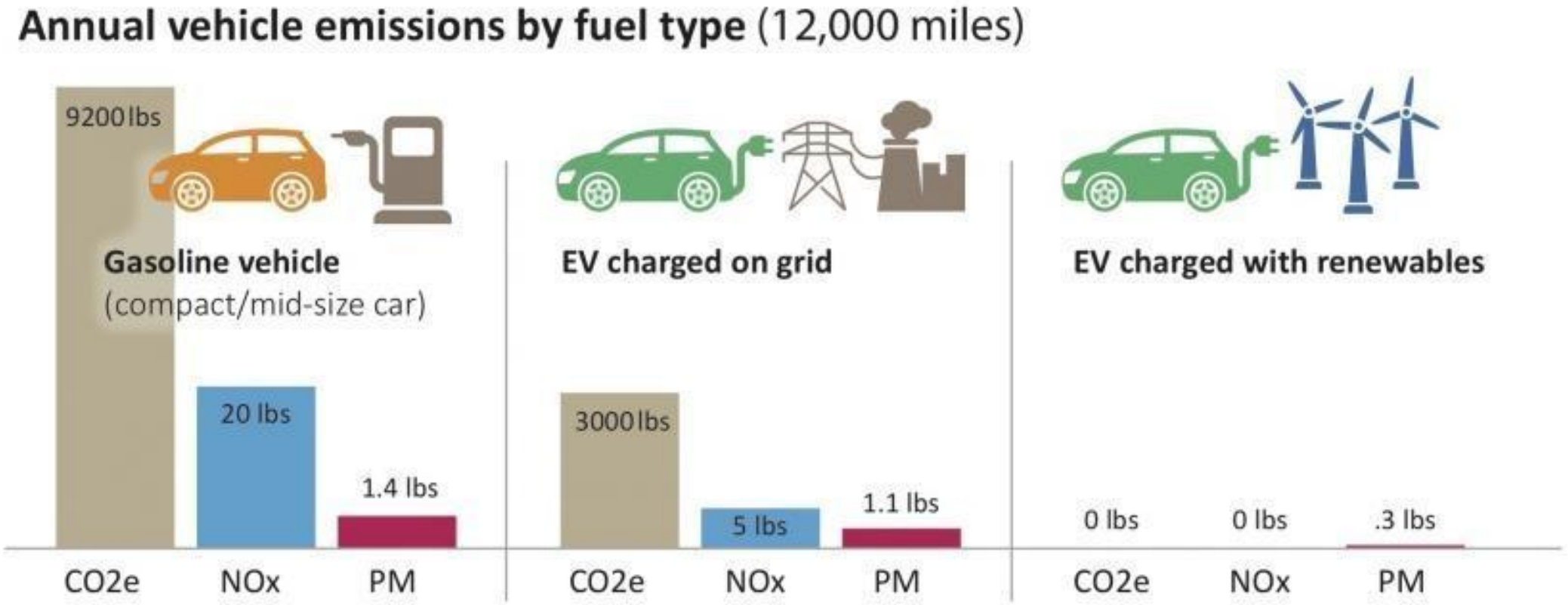
Electric Vehicle Benefits



Fewer Emissions □ Cleaner Air □ Better Health

Image source: pca.state.mn.us

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Electric Vehicle Benefits

PA will receive net job increases from electric transportation

Image source: SierraClub.com

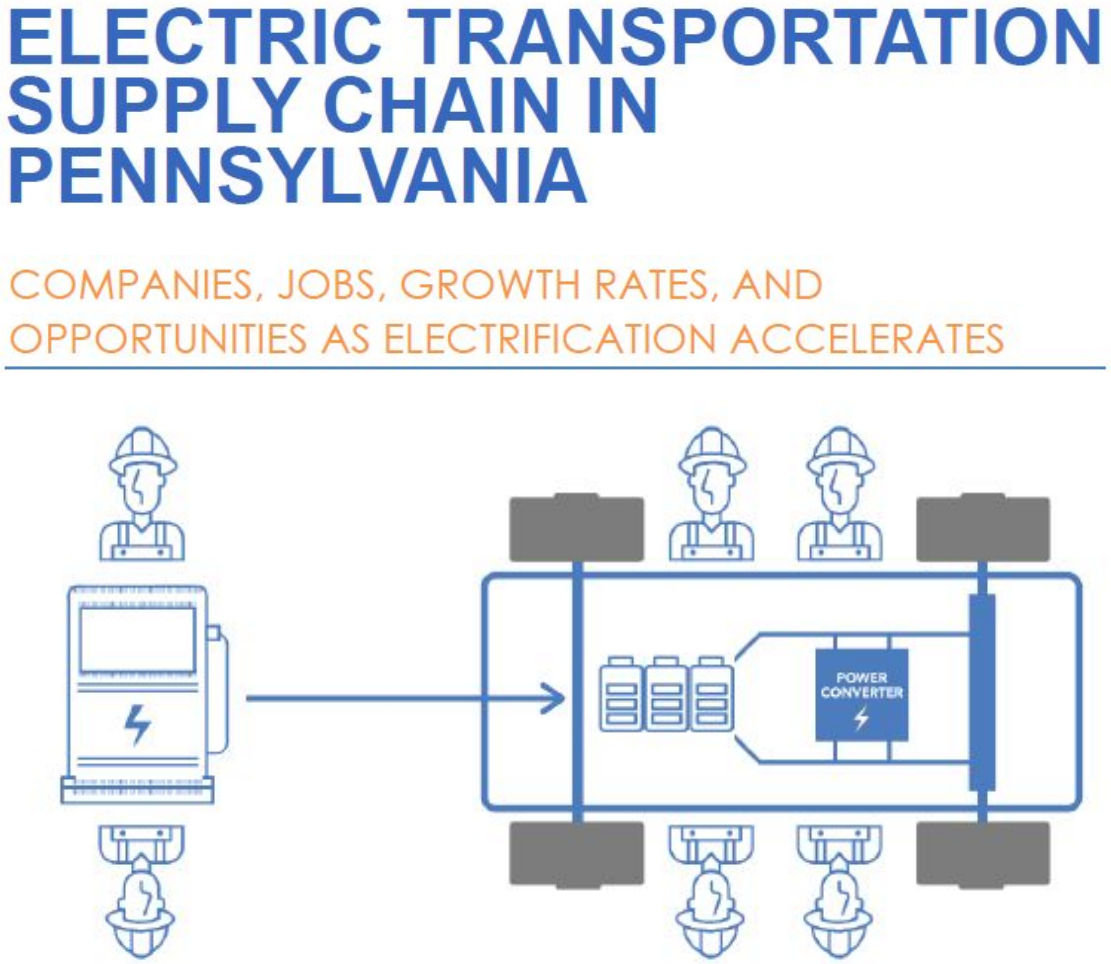

Image source: Advanced Energy Economy

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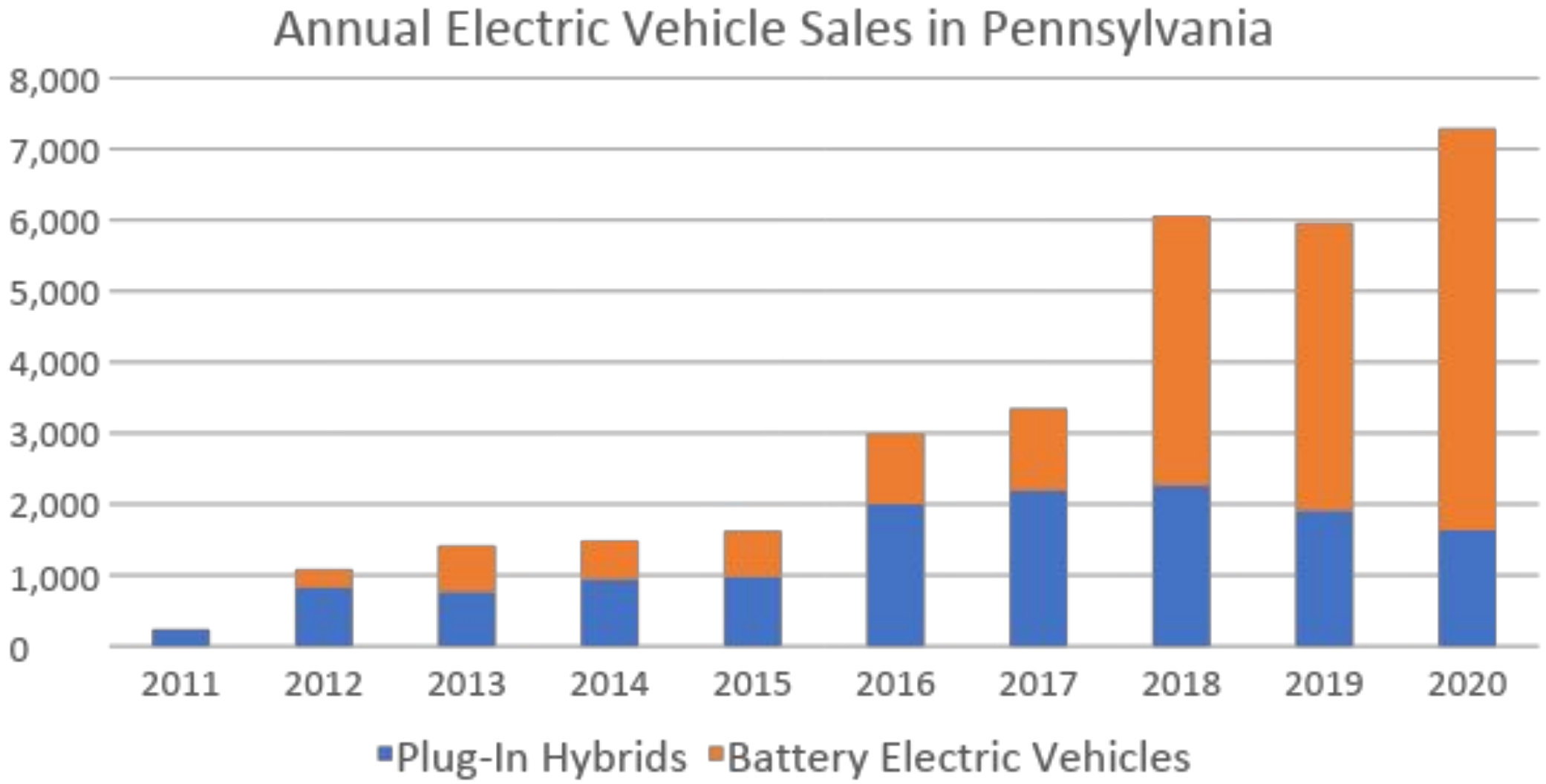
Electric Vehicle Sales



Source: Atlas EV Hub

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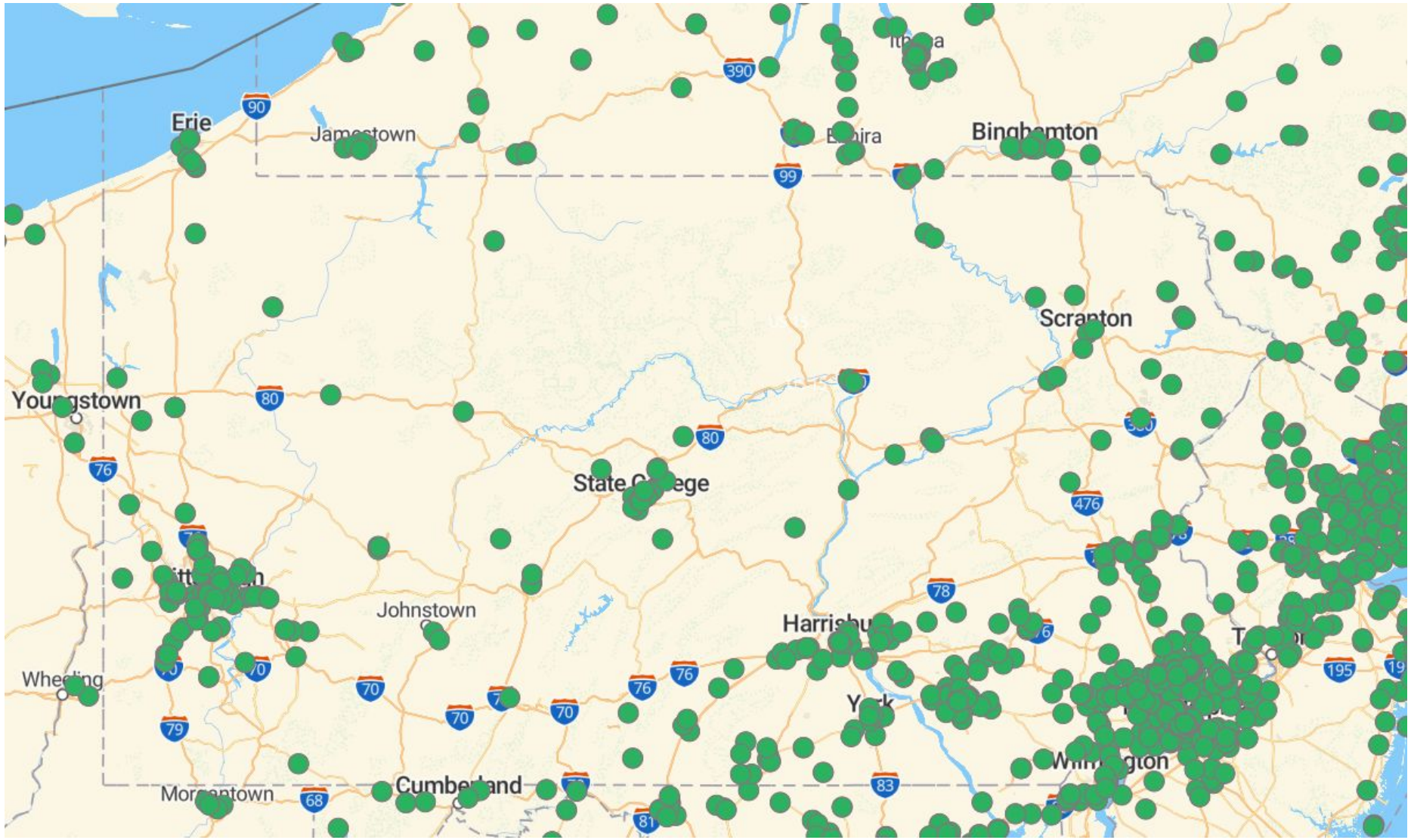
Public Charging Locations



Over 2,400 public plugs at over 1,000 locations

- *600 more plugs than this time last year*

● Charging station

Source: [Alternative Fuel Data Center]

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Automaker Electric Vehicle Commitments

The auto industry has committed $225 billion toward electrification.

Ford: 40 models by 2022

Chrysler: 12 models by 2022

Volkswagen: 50 percent of models by 2030

Honda: All models w/ option by 2022

Volvo: All models by 2030

GM: All models by 2035

BMW: 15-25 percent of sales by 2025

Toyota: 50 percent of sales by 2025

Source: Business Insider - Electric cars: What to expect between 2020 and 2030

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State Electric Vehicle Commitments

Executive Order: 2019-01 – Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance

January 08, 2019

Sets statewide goal to reduce greenhouse gas emissions:

- 26 percent by 2025
- 80 percent by 2050

Leading by example:

- Replace 25 percent of state passenger cars with electric cars by 2025

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State Electric Vehicle Commitments

MULTI-STATE MEDIUM- AND HEAVY-DUTY ZERO EMISSION VEHICLE

MEMORANDUM OF UNDERSTANDING

- 15 states and Washington D.C. signed
- 30% of new medium and heavy-duty vehicles zero emission by 2030
- 100% of new medium and heavy-duty vehicles zero emission by 2050

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Alternative Fuels Tax

- Paid by the kilowatt hour (kWh) to the Department of Revenue
- Funds go towards the Motor License Fund for the maintenance of roads and bridges
- EV users should help pay for the roadway system they are using

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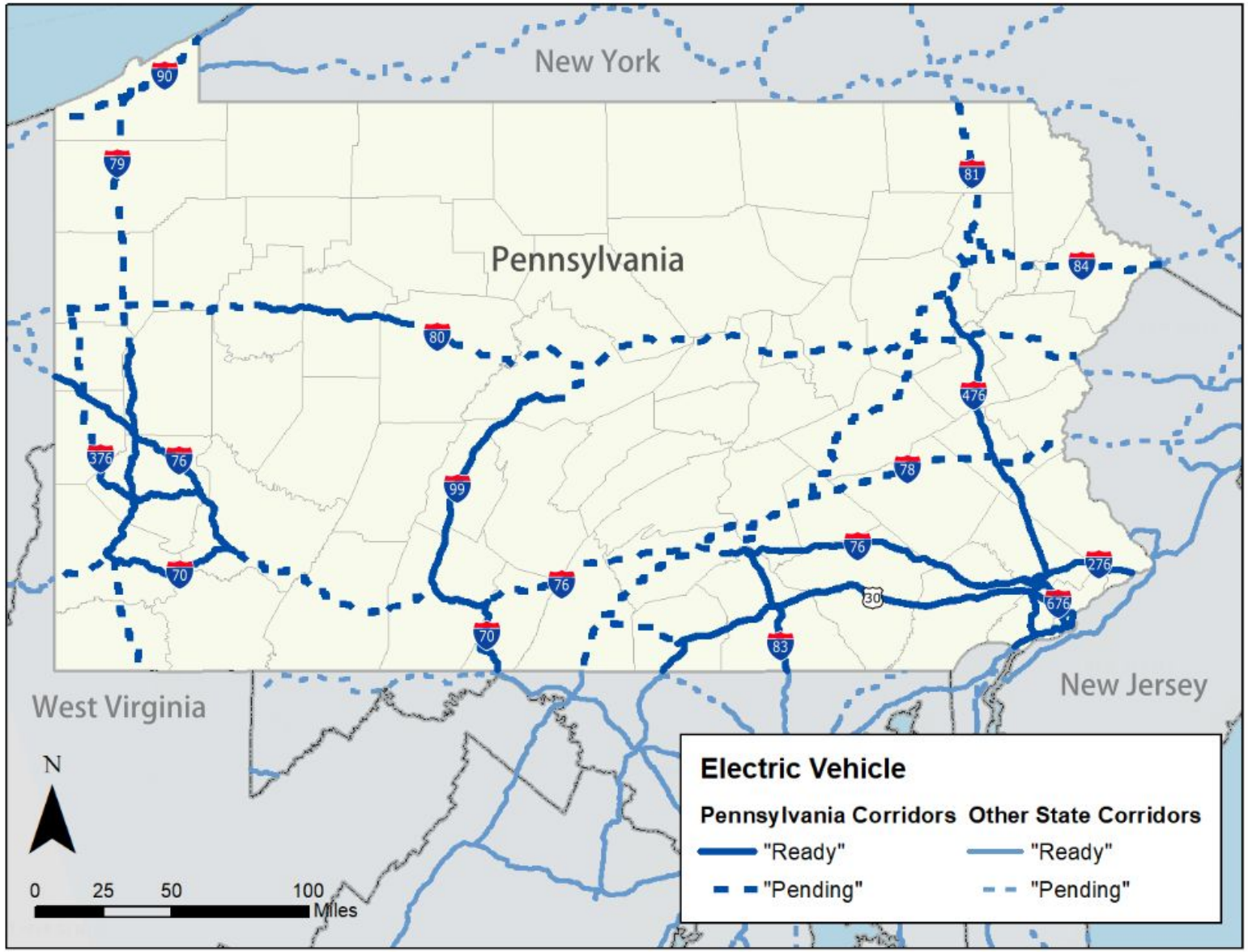
Alternative Fuel Corridors



Pennsylvania's Electric Vehicle Corridors currently have:

- 692 Interstate Miles in <u>Ready</u> Status
- 1,051 Interstate Miles in <u>Pending</u> Status

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PennDOT Support for EVs

- Alternative fuel corridor deployment plan (I-78/I-81 & I-80)
- Mobility Plan
- PennDOT Internal Working Group

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DEP Support for Electric Vehicles

- Consumer EV rebate
- Charging equipment incentives for businesses, non-profit, and local government
- Grant program for alternative fuel fleet vehicles
- Drive Electric PA Coalition
- EV corridor funding
- Electricity rate design study for electric vehicle charging
- Stakeholder and public education

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EV Roadmap

Pennsylvania Electric Vehicle Roadmap:

- 13 recommended actions to increase electric vehicle use

EV Roadmap 2021 Update:

- Booklet with updated information

https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/State-Energy-Plan/Pages/Drive-Electric-PA-Coalition.aspx

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DEP EV Rebate

Alternative Fuel Vehicle Rebate for Individuals:

- $750 for new or used electric vehicle
- $500 for new or used plug-in hybrid or electric motorcycle
- Additional $1,000 for applicants with low income

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State Incentives

- Pennsylvania has provided funding for over 1,200 charging plugs!
- Other projects including electric fleet vehicles and public DC fast charging stations.
- Funding is available for businesses, non-profits, and local governments. Contact us for details!
- Driving PA Forward

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Federal Incentives

Up to $7,500 federal income tax credit for new electric vehicle

- Not available for GM or Tesla

Up to 30% or $1,000 to install home charging equipment

- Install by December 31, 2021

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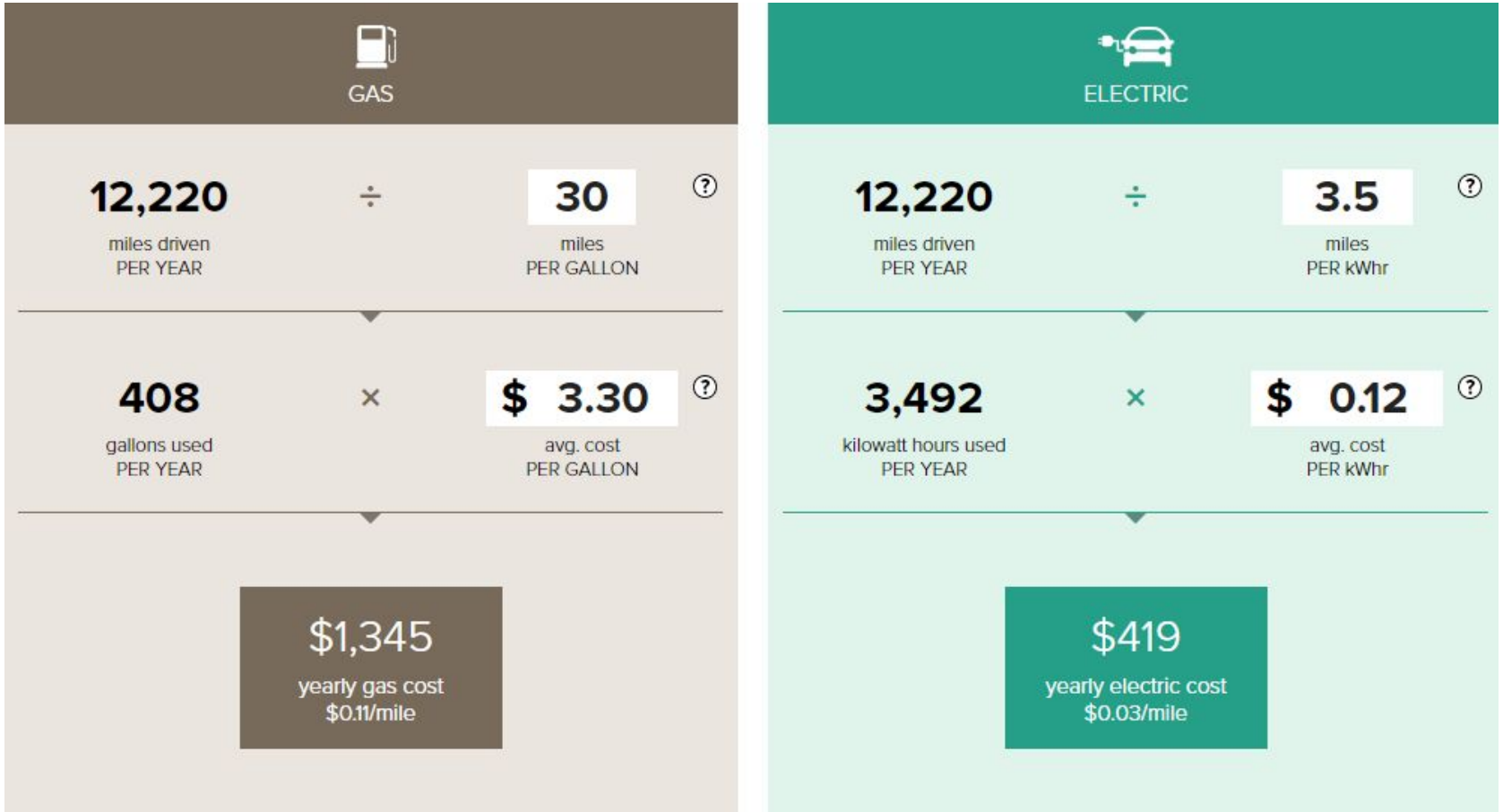
Electric Vehicle Affordability



- Higher up-front cost, but…
- Lower fuel and maintenance costs can negate a higher car payment

Fuel Savings of $75 per month!

Source: ChargEVC.org

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Electric Vehicle Range

- Range is the most common concern of potential EV owners
- Owning an electric vehicle is often the cure!
- 77% of electric vehicle owners report their range concerns decreased or went away after their purchase (AAA survey, 2020)

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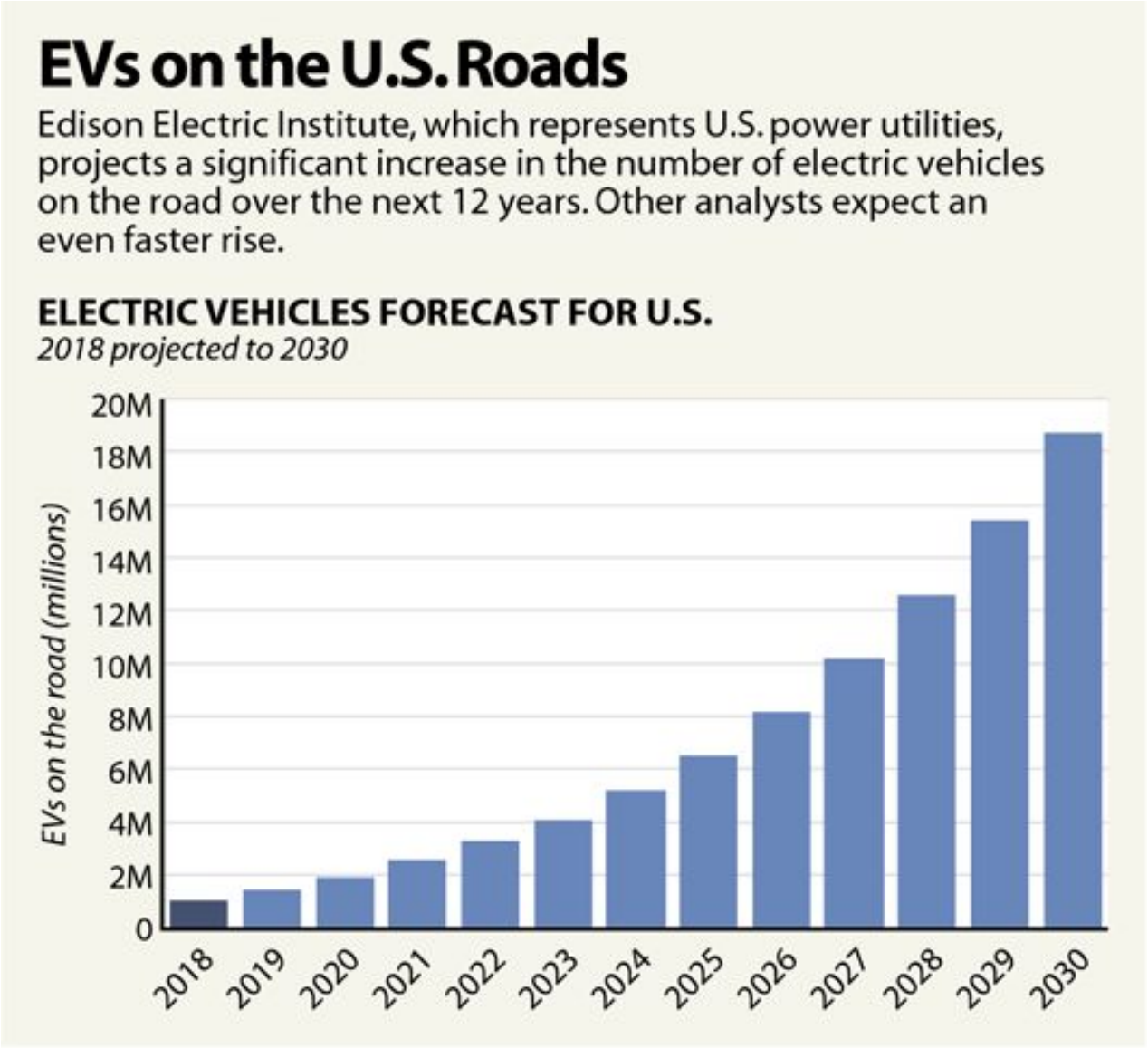
Near Future of Electric Vehicles



- Sales increasing
- More models becoming available
- More charging stations being installed
- Most forecasts anticipate at least 25% EV sales by 2030

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Questions?

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