

EV Growth Generates Economic Benefits



A recent survey of Duquesne Light customers cited concerns about the range of EVs and the availability of charging infrastructure as the primary barriers to further EV adoption. The first barrier is being addressed by automakers. The second is a public policy issue addressed by proposed legislation that is currently under deliberation in Pennsylvania.

Pennsylvania currently has about 1,800 public EV Level 2 charging stations and 120 Public DC Fast charging stations that are available for all EV drivers.

Proposed legislation sets a target for expanding electrification infrastructure to 50% above the forecast for 2030. This means we need enough infrastructure for **1.8 million EVs** by 2030. To support this growth, the state will need nearly **180,000** public and private Level 2 charging ports and nearly **4,500** public DC Fast charging ports at a projected public-private investment of more than **\$1.1 billion**.

Purchases of EVs in Pennsylvania are already above the EPRI low scenario with no policy support; the market is proving the demand.²

Explore the potential for EV manufacturing, the growth of EV ownership and the existing charging infrastructure in Pennsylvania that supports the nearly **30,000 residents** that currently have EVs in Pennsylvania: [PA EV StoryMap](#).

EV Scenarios from the Electric Power Research Institute (EPRI):

EV low scenario assumes:

- Public EV charging speeds and costs are not accepted by consumers
- Regulations that drive EV sales are canceled
- Incentives are reduced

EV high scenario assumes:

- Conditions are highly favorable toward EV adoption
- Consumers quickly understand EV benefits and adopt based on lower long term ownership costs
- EV infrastructure is available everywhere drivers need it at low cost and with an excellent experience

Effective EV Infrastructure

Having a mix of both Level 2 and DC Fast chargers is necessary to meet EV drivers' needs, and creates the opportunity for those drivers to spend time in the community supporting local businesses.

Public DC Fast charging networks support long-distance travel and tourism and provide charging for drivers who lack home charging. The average DC Fast Charge user spends 30 minutes to charge their vehicle.

Public Level 2 chargers support the charging needs of EV drivers who plan to stay in one location for a few hours at a time - like at a sporting event, a local restaurant, a hotel or shopping center. The average Level 2 user spends 70 minutes to charge their vehicle.

¹ Data on charging stations was downloaded on March 24, 2021 from the [Alternative Fuels Data Center: Alternative Fueling Station Locator](#). Fourth Economy summarized the data on public charging stations as it was published and cannot verify the accuracy of the information reported. Data for individual stations have been updated between November 2020 and March 24, 2021.

² See Assumptions in the EPRI scenarios for more information about these scenarios. Additional information on the methodology for our analysis is available here: [EV Infrastructure - Methodology](#).

Growing EV Ownership Demands More Infrastructure



211 Million visitors to PA in 2019, that spent \$46B - supports 521,100 jobs in PA. Tourism spending has grown **45%** from 2009 to 2019.

75 Million overnight visitors - spending \$29.3B. Deploying EV infrastructure is critical to retaining and growing our share of the overnight tourism market.

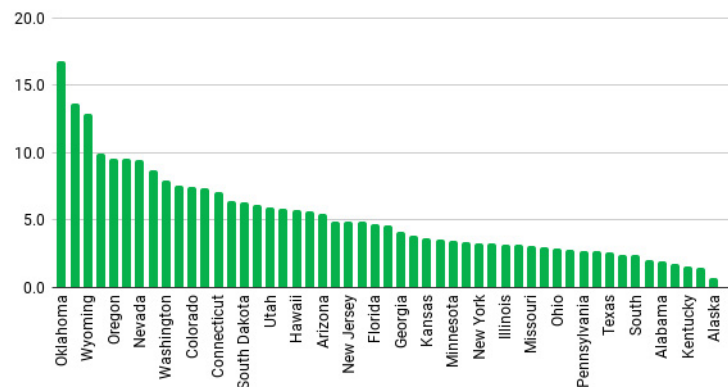
Overnight trips from out of state visitors are usually trips of more than 100 miles. As more consumers in PA and elsewhere adopt EVs, the lack of a robust charging infrastructure may **inhibit the growth of tourism** throughout the state.

In the states near Pennsylvania the average market share for EVs is 1.5% and it is growing at more than 70% annually.

State	EV Sales 2017	EV Sales 2018	2018-2017 Sales Increase
District of Columbia	398	761	91%
Massachusetts	4,632	8,990	94%
Connecticut	2,304	3,415	48%
Maryland	3,244	6,299	94%
Virginia	2,932	6,375	117%
New Jersey	5,033	9,230	83%
New York	10,090	15,752	56%
Delaware	401	627	56%
Pennsylvania	3,346	6,063	81%
Ohio	2,091	4,456	113%
Michigan	2,742	3,571	30%
West Virginia	113	218	93%

Source: [EV Market Share by State – EVAdoption](#)

DC Fast Charging Per 100,000 People



Unfortunately, PA Currently ranks **41st among all states** in DC Fast Charging stations per capita!

EV MANUFACTURING JOBS

Jobs in EV Manufacturing: **4,400 jobs in EV Manufacturing now - 5,500 by 2024 that pay +\$20/hour¹**

“[Electric Transportation Supply Chain in Pennsylvania](#),” prepared for AEE by BW Research Partnership, a global leader in workforce and economic development research, finds that, **in 2019 the EV Manufacturing supply chain in Pennsylvania supported nearly 4,400 jobs in 151 different companies** and accounted for more than \$430 million in gross state product - as many jobs as natural gas extraction and as much economic activity as sporting goods stores in the state.



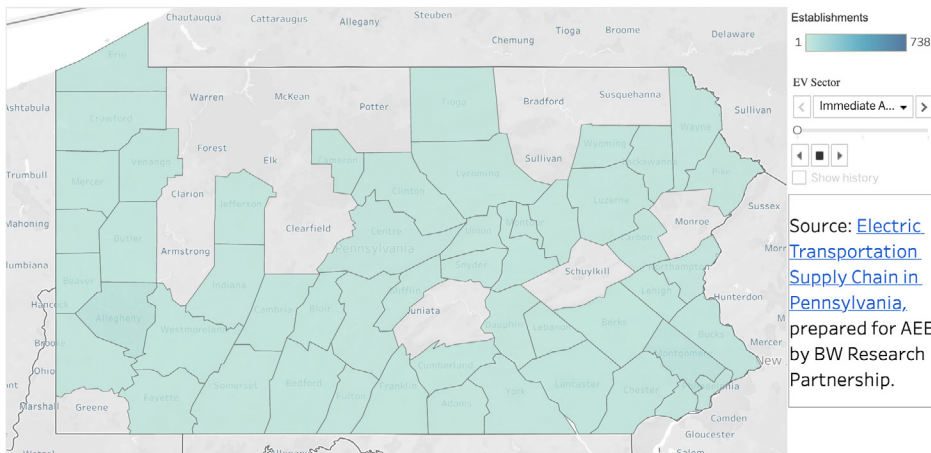
Workforce Benefits

EV INFRASTRUCTURE JOBS

Jobs from building EV infrastructure: **6,500 jobs to build the charging infrastructure to support 1.8 million vehicles by 2030**

¹ Weighted average of hourly pay for the occupations in Table 2: Key ET Occupations in “[Electric Transportation Supply Chain in Pennsylvania](#),” prepared for AEE by BW Research Partnership.

Map of Establishments in Industries that Support the EV Supply Chain



Jobs in the state's EV manufacturing were projected to grow **24% between 2019 and 2024**, compared with **3% growth across statewide employment** over the same timeframe. For the same period, consumer adoption of electric vehicles in Pennsylvania was projected to grow 400% between 2019 and 2024.

Growth for the future: + 350 companies could be immediately retooled and retrofitted to supply the ET market, and **190 firms** could transition to ET activity with slightly more time and investment.

Note: See more about the [EV Supply Chain](#).

Sample of Existing EV Manufacturing Suppliers Firms in PA

- ABB
- Accurate Control & Design Co.
- Burns Industrial Equipment
- C.H. Waltz Sons Inc.
- Choctaw Kaul
- Clipper Creek
- DURYEA Technologies
- Eaton
- Lion Electric Company
- LORD Corporation
- Mars Electric Inc.
- Mitsubishi Electric Power Products
- Momentum Dynamics
- Morgan Advanced Materials
- Siemens
- Vivint Solar

Source: "[Electric Transportation Supply Chain in Pennsylvania](#)," prepared for AEE by BW Research Partnership

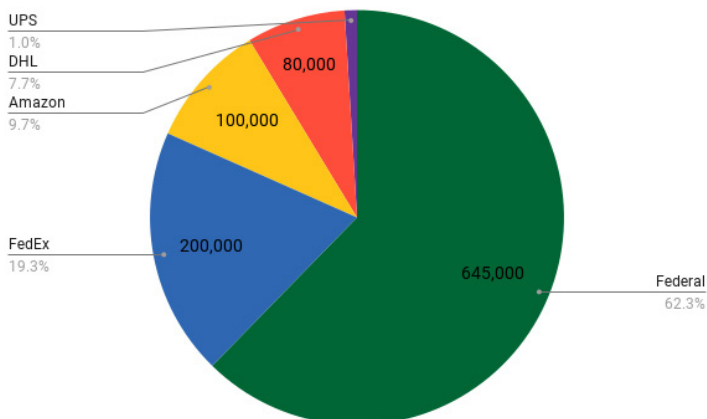
Freight and Logistics

Recent plans to electrify the federal fleet of **645,000** vehicles with American-made EVs has the potential to create **1 million** American auto worker jobs. This does not include announcements to electrify private fleets from Amazon, DHL, FedEx and UPS that will add another **355,000** EVs for a total of **1 million** new trucks with net-zero emissions.

These commitments present an opportunity for the **EV Manufacturing** sector in Pennsylvania. Furthermore, as more freight and logistics go electric, all Pennsylvania residents and businesses will need a robust EV infrastructure to remain connected to the larger economy. Ignoring new technologies that were changing the market devastated our manufacturing industry in the 1980s, Pennsylvania can't afford to ignore the innovations in alternative energy.

The Federal Government has also proposed investing **\$400 billion** over 10 years in clean energy research and innovation in an effort to create a stable source of demand and to accelerate the U.S. industrial capacity to produce clean vehicles and components.

EV Fleet Commitments



- [Biden Commits to Electrify Federal Fleet - Green Fleet](#)
- [From Amazon To FedEx, The Delivery Truck Is Going Electric](#): UPS has placed an order for 10,000 electric delivery vehicles and Amazon is buying 100,000 EV trucks from the start-up Rivian.
- By 2030, [DHL will have 80,000 e-vehicles](#) deployed for last-mile deliveries, resulting in 60% electrification of the fleet
- [FedEx Commits to Carbon-Neutral Operations by 2040](#): By 2040, the entire FedEx parcel pickup and delivery (PUD) fleet will be zero-emission electric vehicles. [FedEx has a fleet of more than 200,000 vehicles](#).