

## Alternative Fuels Are On the Move

Maybe you've never considered buying a Prius and perhaps you think a Tesla is out of your price range, but know this: the future of transportation is not by fossil fuels.

That's why General Motors is spending more than half its research and development investment on electric vehicles, why Tesla is the nation's sixth largest company with 15 times the value of Ford, and why Mack Trucks will begin production in Lower Macungie Township of the first fully electric refuse trucks in early 2021.

That future is playing out across Pennsylvania and the Lehigh Valley as state and local leaders prepare to build the infrastructure needed to handle the transition and offer incentives to get people to buy into it, state Department of Environmental Protection Energy Program Specialist Colton Brown said during two presentations before the LVPC's Freight Advisory and Environmental Planning committees.

Brown said at least 25% of Pennsylvania's 4,000-car fleet of light duty vehicles will be electric by 2025, but one need only look to the free market to see what's coming. Amazon unveiled its first all-electric delivery van in October, with plans to have a fleet of 10,000 making deliveries as early as 2022 and 100,000 by 2030. Other companies, from DHL to AT&T to IKEA have similar plans to power up quickly.

"By 2050, nearly 100% of new car sales are projected to be electric," Brown said. "The internal combustion vehicle has been in development for 100 years, and in just 10 years, the electric vehicle has nearly reached price parity. It's just a matter of time."

There is much work to be done to prepare, but efforts are underway in the Lehigh Valley and throughout the northeast region to bring about that time sooner. In the region, the Lehigh Valley Transportation Study, in partnership with the Pennsylvania Department of Transportation and Federal Highway Administration have designated Interstate 78 as an alternative fuels corridor, opening it to future federal grants and incentives to add fueling stations along one of the region's busiest highways.

Meanwhile, the 10-region Metropolitan Area Planning (MAP) Forum, of which the Lehigh Valley Planning Commission is a member, is creating an interactive map showing alternative fueling corridors and fueling stations throughout the four-state MAP Forum, essentially giving prospective alternative-fueled vehicle buyers a clear picture of where they'll be able to power up away from home. In addition, the MAP Forum's Resiliency Working Group is moving to expand the multi-region's vehicle electrification and fuel cell technology deployment to assist in its greenhouse gas mitigation efforts.

"Mapping out where alternative refueling locations is critical to the reality of our mobility, especially when you consider that half of our working population is traveling to New York, New

Jersey or some other location outside of the Lehigh Valley and our roll in freight movements increases,” said LVPC Executive Director Becky Bradley, who sits on the MAP Forum board.

The direction we’re heading is unmistakable, Brown told the LVPC committees. Nationwide, the 337,000 electric cars sold in 2019 was triple the number sold in 2015, and globally, the 4.8 million sold in 2019 was nearly seven times the number sold in 2015.

The Paris-based International Energy Agency projects that the current world ownership of 7.6 million electric vehicles will increase by as much as 36% a year, reaching 245 million electric vehicles by 2030. Those projections are based on an increased emphasis on reducing greenhouse gases.

While 90% of charging will be done at home, a robust public network of charging stations is necessary to alleviate the concerns of people worried they won’t be able to find a charging station while traveling longer distances. Pennsylvania now has more than 1,700 public charging outlets at more than 700 locations – more than doubling since 2018. Incentives remain in place to encourage continued growth, with \$3,500 to \$4,500 rebates being offered per plug – funding up to 70% of an installation project – per public access plugs added by individuals, businesses or government entities. The state Department of Environmental Protection is also offering \$3 million to \$6 million in grants to entities looking to replace their pre-2010 diesel trucks. People with questions about the programs can visit the Driving PA Forward webpage at <http://www.depgis.state.pa.us/DrivingPAForward/> or the Alternative Fuels Grant Program page at <https://www.dep.pa.gov/Citizens/GrantsLoansRebates/Alternative-Fuels-Incentive-Grant/Pages/default.aspx>

Or they can contact Brown at [coltbrown@pa.gov](mailto:coltbrown@pa.gov)

Electric isn’t the only alternative fuel that will play a role in reducing carbon emissions. Compressed Natural Gas has been around much longer. By February, 2021, all 84 Lehigh and Northampton Transportation Authority’s (LANTA) buses will be converted with 27 being hybrid diesel-electric buses and 57 compressed natural gas (CNG), said LANTA Senior Director of Capital Assets and Planning, Brendan Cotter.

Hydrogen fuel cell electric vehicles will also be part of the equation and are already being leased and driven in growing numbers in California. Unlike electric batteries that can take hours to charge, hydrogen fuel cell vehicles can be refueled in the time it takes to pump traditional gasoline vehicles. Air Products in Trexlertown is a worldwide leader in hydrogen fueling infrastructure. The company’s technology has been used in 10 million hydrogen fills to date, and Air Products has been involved more than 250 hydrogen fueling projects for cars, trucks, buses and other items in more than 20 countries.

“It will be a much more expensive version of electric fuel,” Brown said. “Because of the expense, it won’t be for the masses, but you may see it in long haul trucks. There will be a place for it, but only a fraction of what electric vehicles will become.”

Pennsylvania offers a \$750 grant for people buying a new electric vehicle and \$500 to anyone buying used, with an additional \$1,000 available to low-income buyers.

Federal grants offer up to \$7,500 tax credit for people buying electric, but those incentives have expired for Tesla and General Motors because both have reached the federal cap of 200,000 cars sold. The grants often fully offset the extra cost over a traditional car, Brown said.

The range of cars sold five years ago was roughly 100 miles, but the range of today's cars exceed 250 miles per charge, removing perhaps the biggest barrier holding sales back.

"As the infrastructure gets in place, the range grows and price parody gets closer, this will be an option for a lot more people," Brown said. "Right now, it's early adopters and businesses that want to look green, but sometime in the not-so-distant future, this will become much more commonplace."