Pittsburgh Region Emerging EV Market & DLC's EV ChargeUp Pilot

Drive Electric PA Coalition Meeting | March 12, 2019

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2018 Highlights

DLC Customer EV Survey

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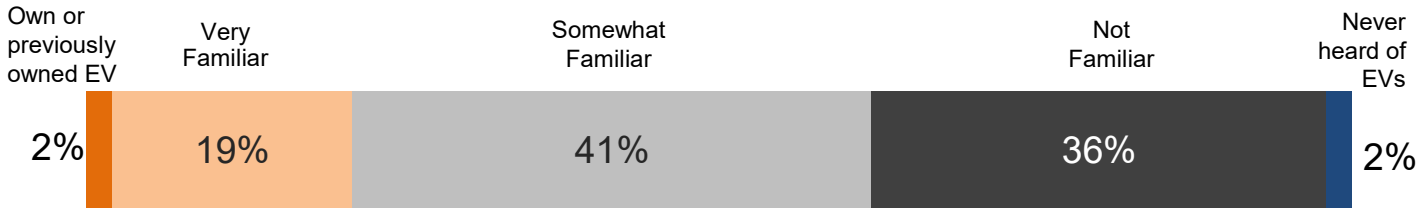
Most respondents are at least somewhat familiar with Electric vehicles (62%). 38% of respondents are not familiar or have never heard of EVs.

Electric Vehicle Awareness



Comments Among Past or Current EV Owners

Likes

"The increased efficiency and reduced fuel costs."

"Not buying gas and always having a full tank in the morning."

"Low energy cost without sacrificing performance."

"Amazing technology, easy to drive and quiet."

Dislikes

"Must plan trips to account for charging."

"Not enough places in my area to rapid charge."

"High cost of purchase."

"They are not as pretty or as affordable as gasoline vehicles."

Q1: Please rate your awareness of electric vehicles, prior to taking this survey. n=2,259
Q1a: What do you like about owning an electric vehicle? n=42
Q1b: What do you dislike about owning an electric vehicle? n=42

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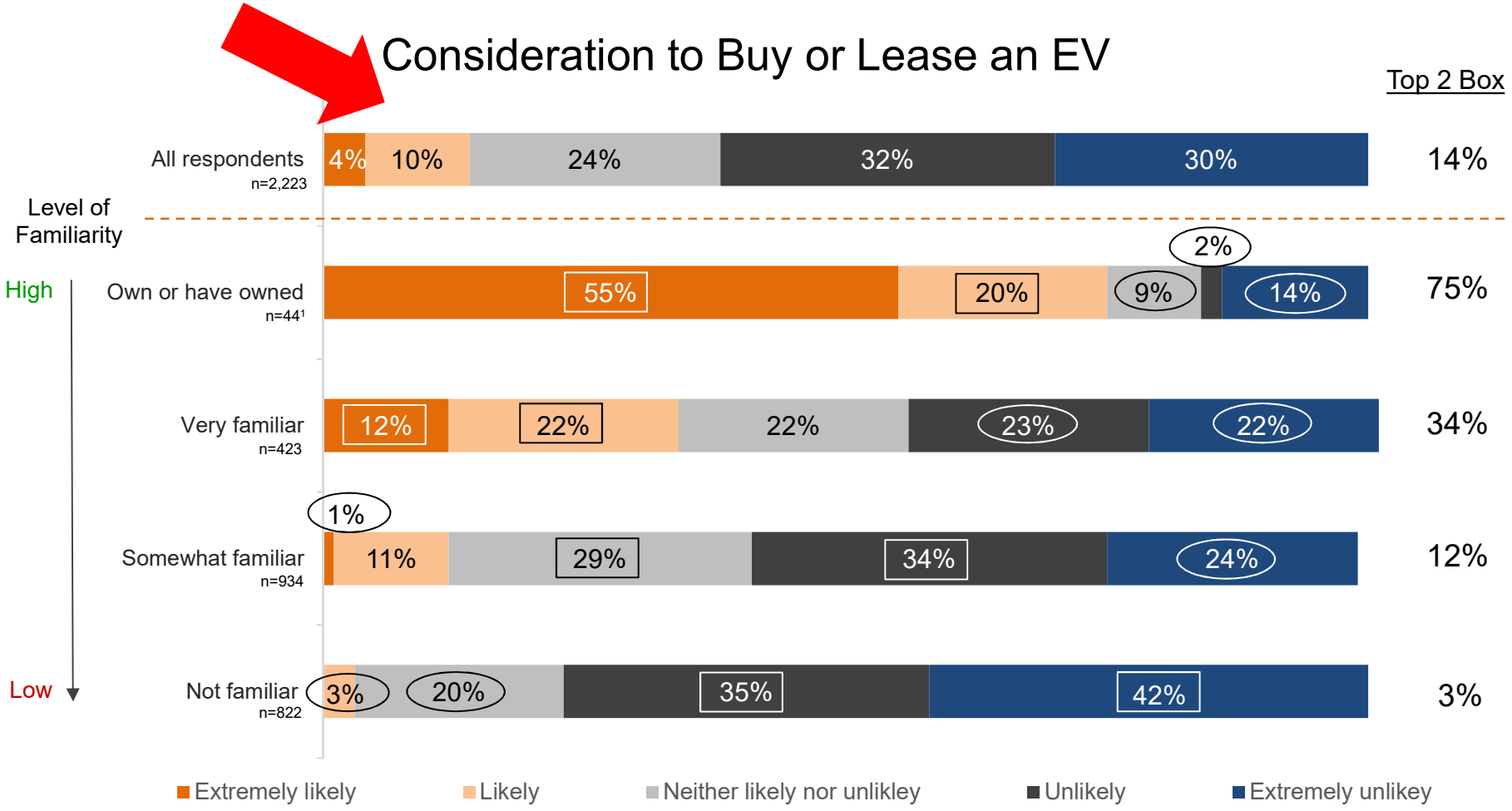
Consideration to buy or lease an electric vehicle is low among respondents with 62% unlikely or extremely unlikely. Consideration is significantly higher among owners and respondents who are very familiar with electric vehicles.



□ / ○ = Significantly higher/lower than all respondents.
Q2: Thinking about the next vehicle you will buy or lease, how likely are you to consider buying/leasing an electric vehicle?
Q1: Please rate your awareness of electric vehicles, prior to taking this survey.

[1]Caution small base size.

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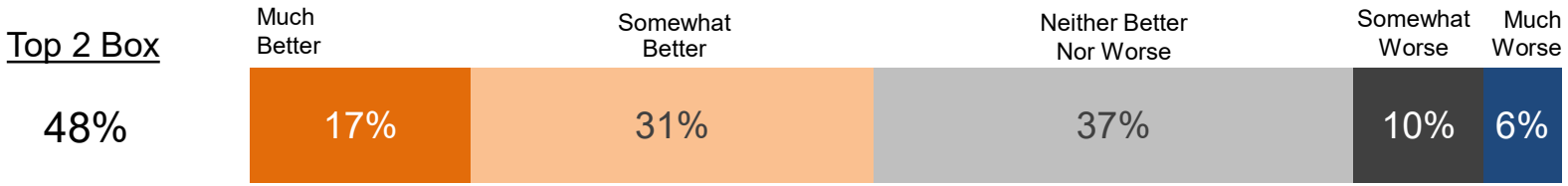
Almost half of respondents consider electric vehicles to overall be better than gasoline vehicles. Positive comments focus on a lower cost to operate and being better on the environment.

Overall Appeal Compared to Gasoline Vehicles



Better than Gasoline Vehicles

"Quiet, great for most uses, fuel is less expensive."

"Better on the environment."

"You save on fuel costs and the garage where I park for work has charging stations."

"Quiet and environmental friendly."

"Less emissions if the electric plant that provides the power is NOT coal fired."

"Less parts to wear out and break down, cheaper to operate, and a lower carbon footprint."

Worse than Gasoline Vehicles

"Too expensive to keep up. Old batteries are no better for the environment than using gasoline."

"If the grid goes down, you are screwed."

"Battery life is not sufficient for road trips. I have concerns about battery performance in extreme weather and about max number of charges before batteries need replacement."

"Too new at this point in time."

"Expensive for what you get."

Q3: Which statement best fits with your overall opinion of electric vehicles compared to gasoline vehicles? n=2,223
Q3a: Why do you say [better/worse]?n=2,040

Electric vehicles rate higher than gasoline vehicles in environmental impact and cost of everyday use but rank substantially lower than gasoline vehicles in the other features.

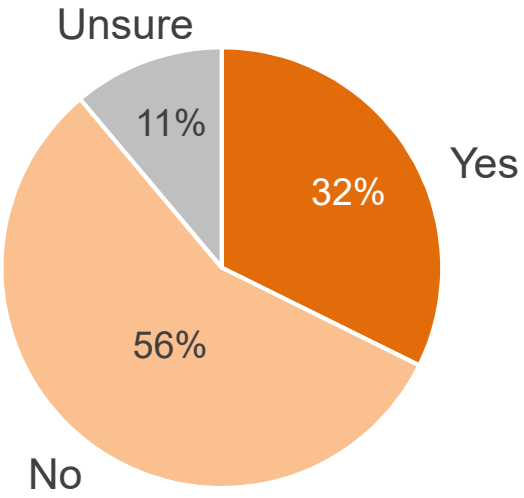
Features Compared to Gasoline Vehicles

Vehicle Features	Better than gasoline vehicles	The same as gasoline vehicles	Worse than gasoline vehicles
Environmental impact ✓	**77%**	19%	4%
Cost of everyday use ✓	**49%**	36%	15%
Driving range	9%	24%	**66%**
Convenience of refueling/recharging	6%	17%	**77%**
Vehicle options to choose from	5%	40%	**55%**
Purchase price	4%	27%	**69%**

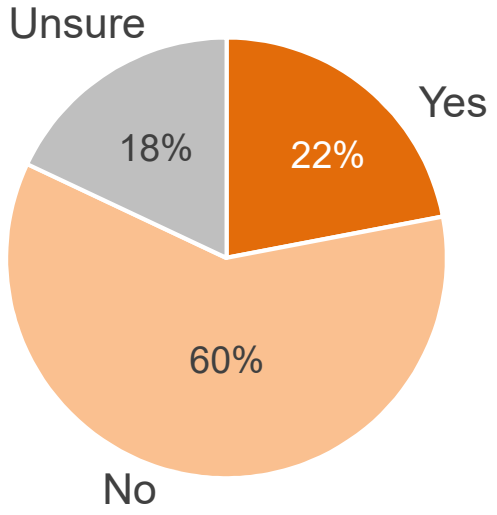
Q4: Thinking about the following features, please rate your opinion of electric vehicles compared to gasoline vehicles. n=2,223

Few respondents are aware of public charging stations or have access to home outlet.

Aware of Public Charging Stations



Access to Charging Outlet at Residence



Q6: Are you aware of any charging stations (where you can plug your vehicle into an outlet to charge it) along the routes you typically drive, such as on your way to work or by stores you typically frequent, that you could use if you drove or currently drive an electric vehicle? n=2,259
Q7: If you currently own or were to own or lease an electric vehicle, do you have an existing outlet at your current residence that you could access to charge it? n=2,259

Regional Infrastructure Planning

Pittsburgh Charging

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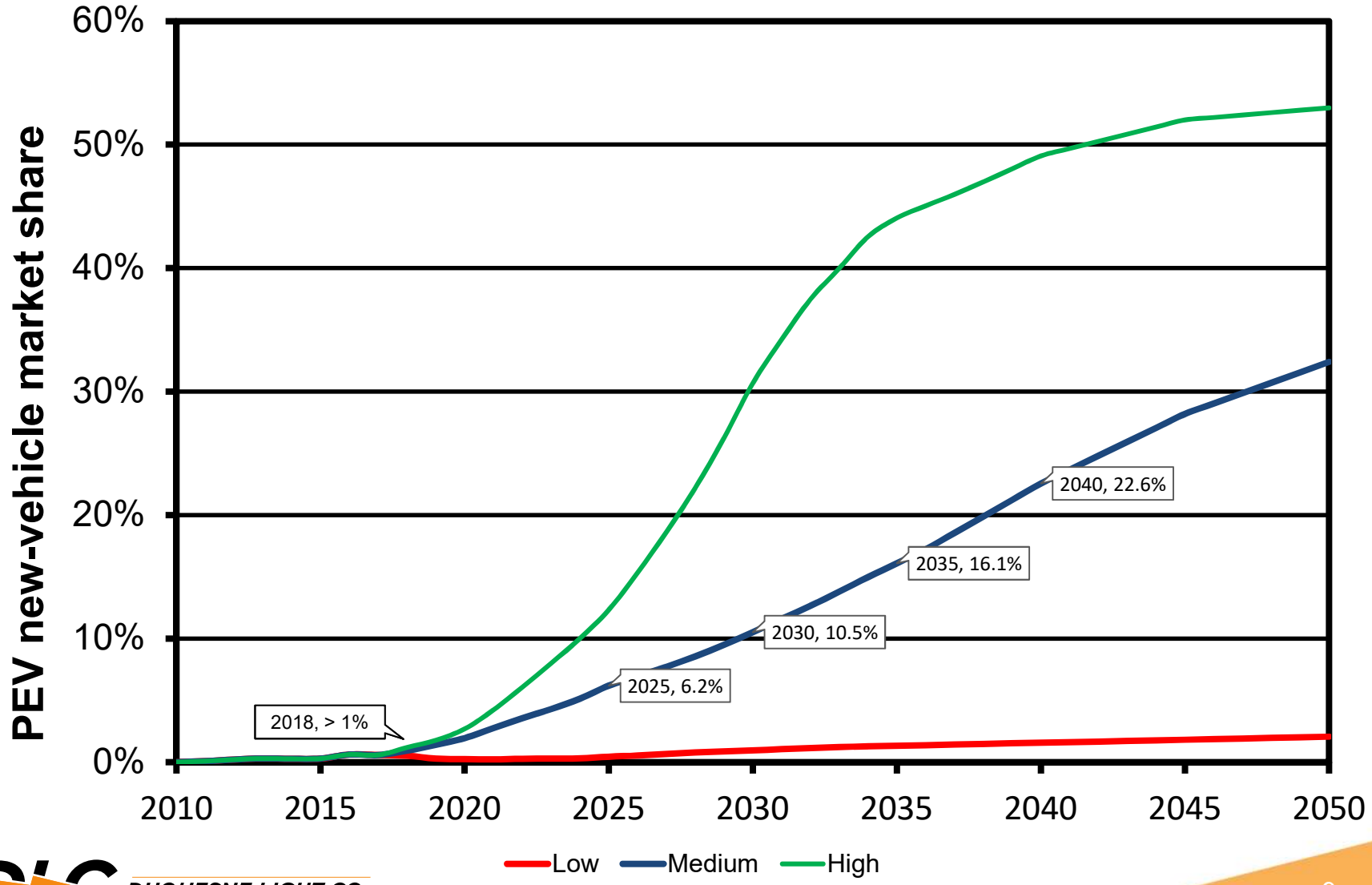
Strong EV growth projected near-term in Pittsburgh

Source: DLC Service Territory, EPRI, 2018



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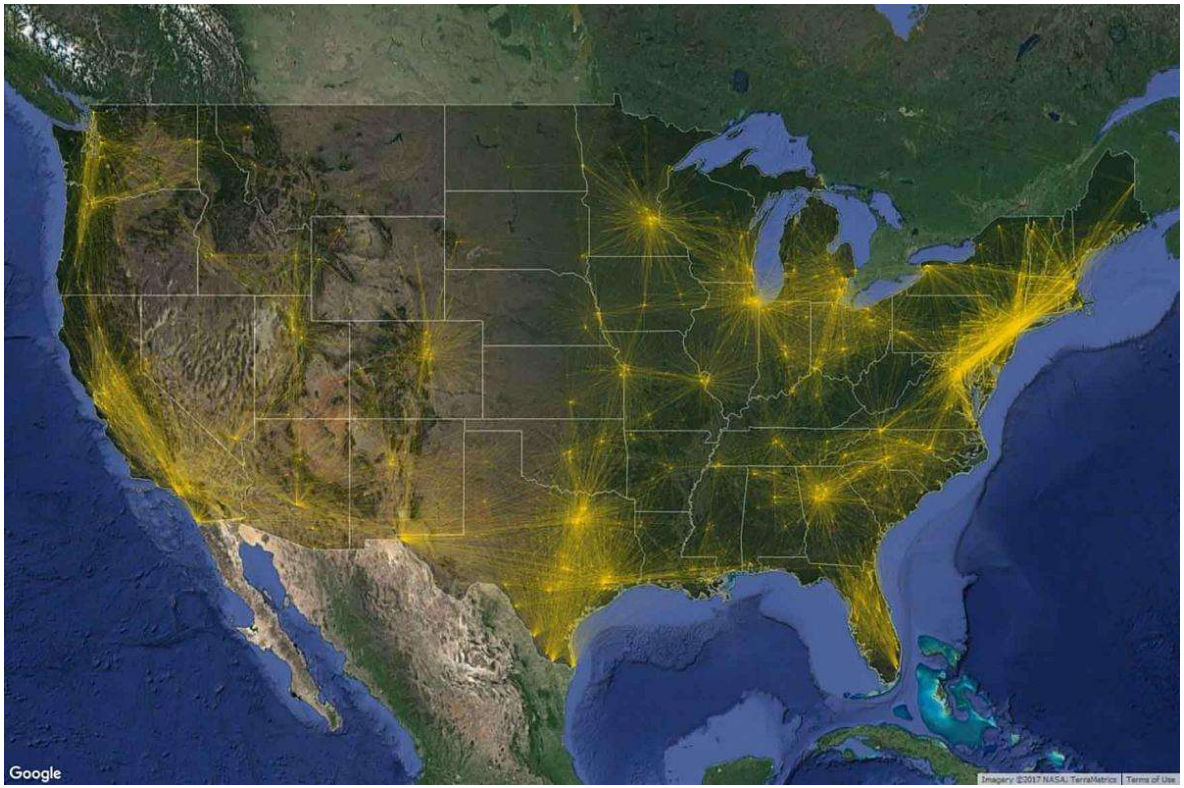
National Infrastructure Analysis

https://www.energy.gov/sites/prod/files/2017/09/f36/NationalPlugInElectricVehicleInfrastructureAnalysis_Sept2017.pdf

Analysis to support 15M EVs in 2030 (20% new LDV sales):

- 19,000 DCFC plugs city
- 4,000 DCFC plugs town
- 2,500 DCFC plugs corridor
- 600,000 L2 plugs workplace and public



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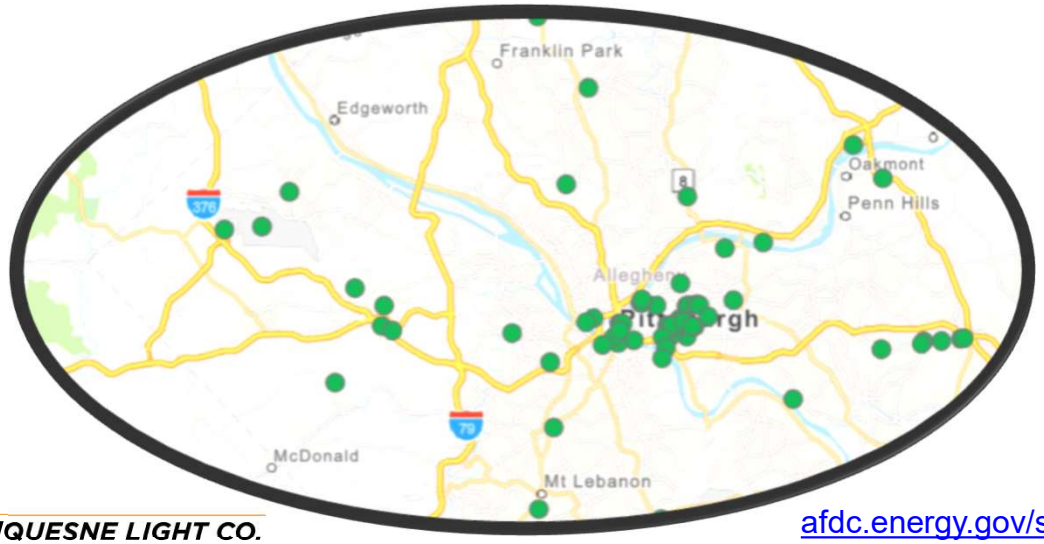
Pittsburgh needs more EV charging stations

Source: EPRI, 2018 | US DOE EVI-Pro Lite, 2019

	Pittsburgh Today	Pittsburgh 2025
Electric Vehicles	2,200	35,000
Workplace Level 2 Plugs	?	800
Public Level 2 Plugs	220	600
Public DCFC Plugs	50	110



DLC is working with our customers to meet this need

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afdc.energy.gov/stations

Where to put charging? Columbus Infrastructure Analysis

https://www.nrel.gov/docs/fy18osti/70367.pdf

Analysis to support 5,300 EVs by end of 2019:

- 400 L2 plugs at MUDs
- 350 L2 plugs at workplace and public
- Minimum level of DCFC across the city

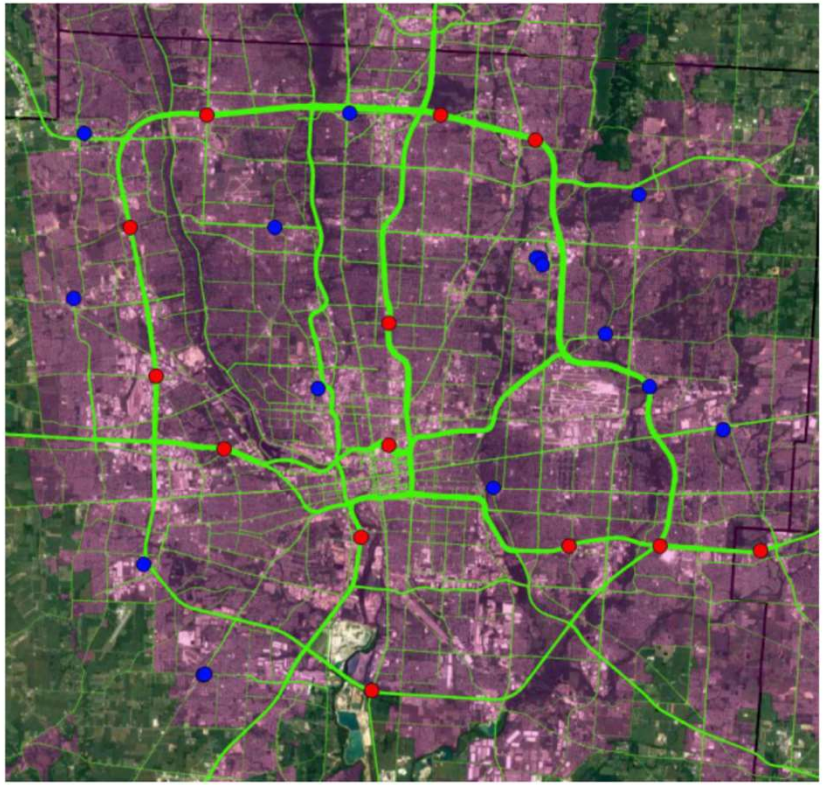

Figure 25. Sixteen existing DCFC station locations in Columbus as of August 2017 (blue dots) and 13 hypothetical future locations to improve DCFC coverage (red dots). Purple outline denotes Columbus urban area.

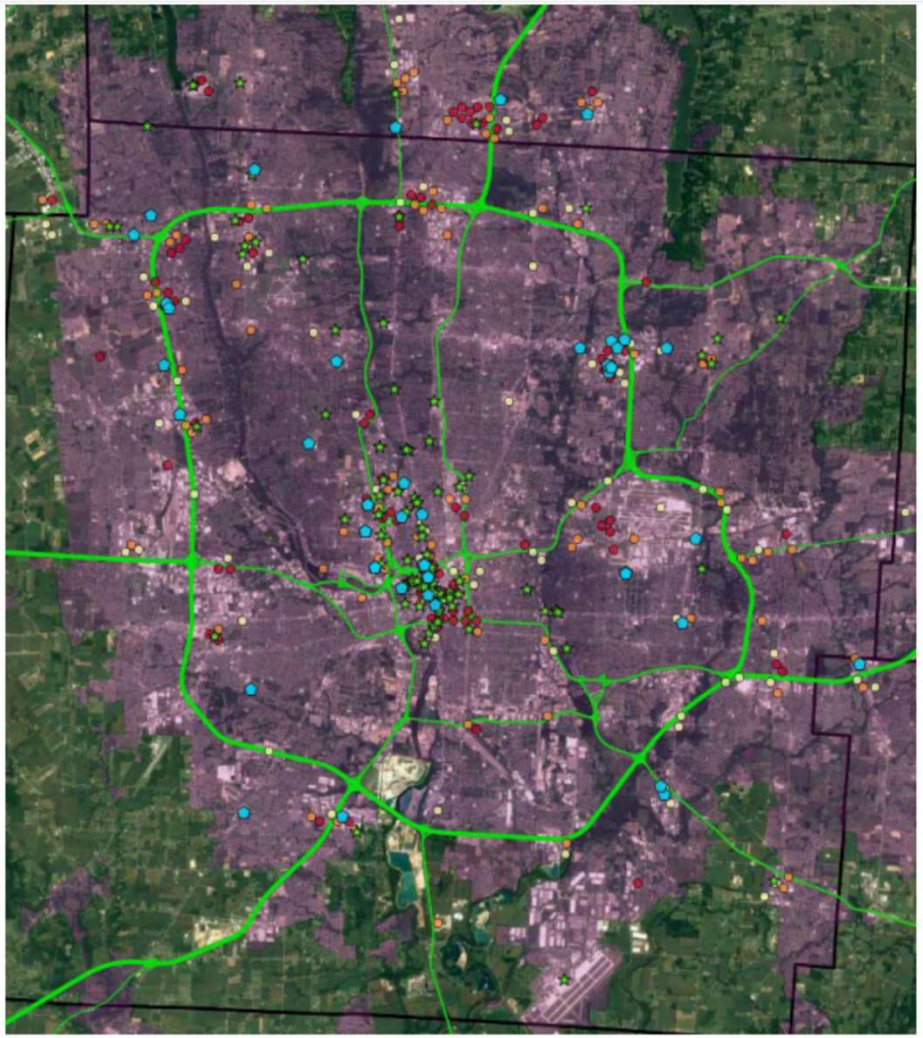

Figure 24. Simulated PEV charging "hot spots" for L2 public charging (0.3-mi diameter) color coded by tier (1st tier = red, 2nd tier = orange, 3rd tier = yellow), existing L2 EVSE (blue pentagons), and future sites under consideration by local planners (green stars). Purple outline denotes Columbus urban area.

EV ChargeUp Pilot

Education & Outreach

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39 EV models today; 138 models by 2023

Source: EPRI | Plug in America Feb 2019

Automakers are investing heavily for the future… example:

- Ford: 40% of models electric by 2022
- VW: 30 new all electric models by 2025
- GM: 20 new EVs by 2023

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Visit live tool at [ev.pge.com](ev.pge.com)

More EVs can go the distance than ever before. Find the EV that fits your daily driving needs.

Kia
Soul EV

Electric Range	111 miles
MSRP	$33,950

Audi
A3 e-tron

Electric Range	16 miles
Total Range	400 miles
MSRP	$39,500

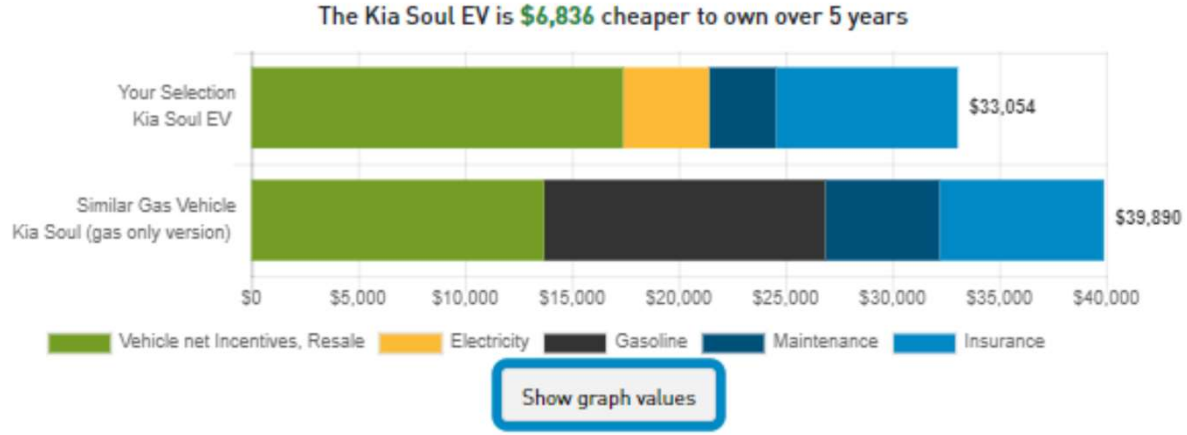
Chrysler
Pacifica

Electric Range	32 miles
Total Range	520 miles
MSRP	$39,995

Nissan
LEAF

Electric Range	150 miles
MSRP	$29,990

And compare the cost of your selection, such as the Kia Soul EV to a similar gas vehicle. An EV can save you money because it can be cheaper to own and maintain than a 100% gasoline-powered car.



EV ChargeUp Pilot

EV Bill Credit

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EV Registration Bill Credit

EV ChargeUp Pilot $70k annually, 1-time $60 bill credit

DLC collects customer data:

- Address
- Vehicle make/model
- Dealership
- Housing type
- Home charging type
- Charging time of day
- Access to workplace charging

DLC validates submissions and provides 1-time $60 bill credit

EV ChargeUp Pilot

Infrastructure Evaluation

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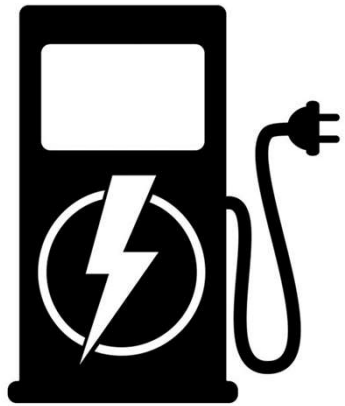
EV ChargeUp Rebate

Objective

- Increase the number of Level 2 charging stations in DLC's service territory by investing $1.3M in commercial customer projects
  - DLC provides Customer rebate for installation costs (up to $32k/project)
  - DLC funds upgrades between transformer and meter

Basic Eligibility

- Must be publicly accessible
- Minimum 8 plugs (4-dual port chargers)
- Select from DLC pre-approved vendor offerings
- Provide DLC data via vendor upload for 5 years



Key Considerations

- Funding available only through December 2019
- Leverage state Driving PA Forward Level 2 rebate!!

EV ChargeUp Rebate

Screening

ChargeUp Eligibility Checklist

- ✓ DLC & Customer review Rebate process & requirements

Onboarding

ChargeUp Commercial Service Request Form

- ✓ Customer selects charging station from ChargeUp Vendor List
- ✓ Customer works with electrical contractor to identify electrical service needs for site

Planning

ChargeUp Rebate Voucher Application

- ✓ Customer plans site & estimates cost for infrastructure from meter to charging station
- ✓ If cost & timeline are acceptable, Customer submits & DLC approves Application, reserving Rebate funds
- ✓ Customer signs Right of Way easement
- ✓ Customer procures charging stations within 30 days of Application approval

Executing

ChargeUp Rebate Request Form

- ✓ Customer completes installation & submits wiring inspection report
- ✓ DLC installs new metering equipment & electrifies site
- ✓ Customer submits final costs & DLC issues rebate
- ✓ DLC collects charging station data for 5 years

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Port Authority getting first electric buses, considering fleet for Downtown–Oakland rapid transit

ED BLAZINA
Pittsburgh Post-Gazette
eblazina@post-gazette.com

JAN 17, 2019 2:33 PM

Port Authority expects to have its first two electric buses by September and to begin testing them in anticipation of use on the proposed Bus Rapid Transit system between Downtown and Oakland.