



ENVIRONMENTAL
FINANCE CENTER

- **Sustainable Maryland**, established in 2011, is a free and voluntary program for municipalities that want to go green and save green
- **The program helps municipalities to:**
 - Choose a direction for their sustainability efforts
 - Improve access to resources
 - Measure their progress
 - Share success with other municipalities
- **Takoma Park has participated since 2014; and received Bronze certification**
- **89** communities registered (*57% of 157 MD municipalities*)
- **New Actions, Silver Tier** in January 2022

Certification Requirements:



A **Resolution** indicating municipality intends to pursue SM certification
(COMPLETE)

2 Mandatory Actions (COMPLETE)
Create a **Green Team**,
Create an **Action Plan**

2/4 of 8 Priority Actions
Community Garden, Renewable Energy, Municipal Energy Audit, Green Purchasing Policy, Municipal Carbon Footprint, Watershed Plan, Stormwater Management, Complete Streets Policy

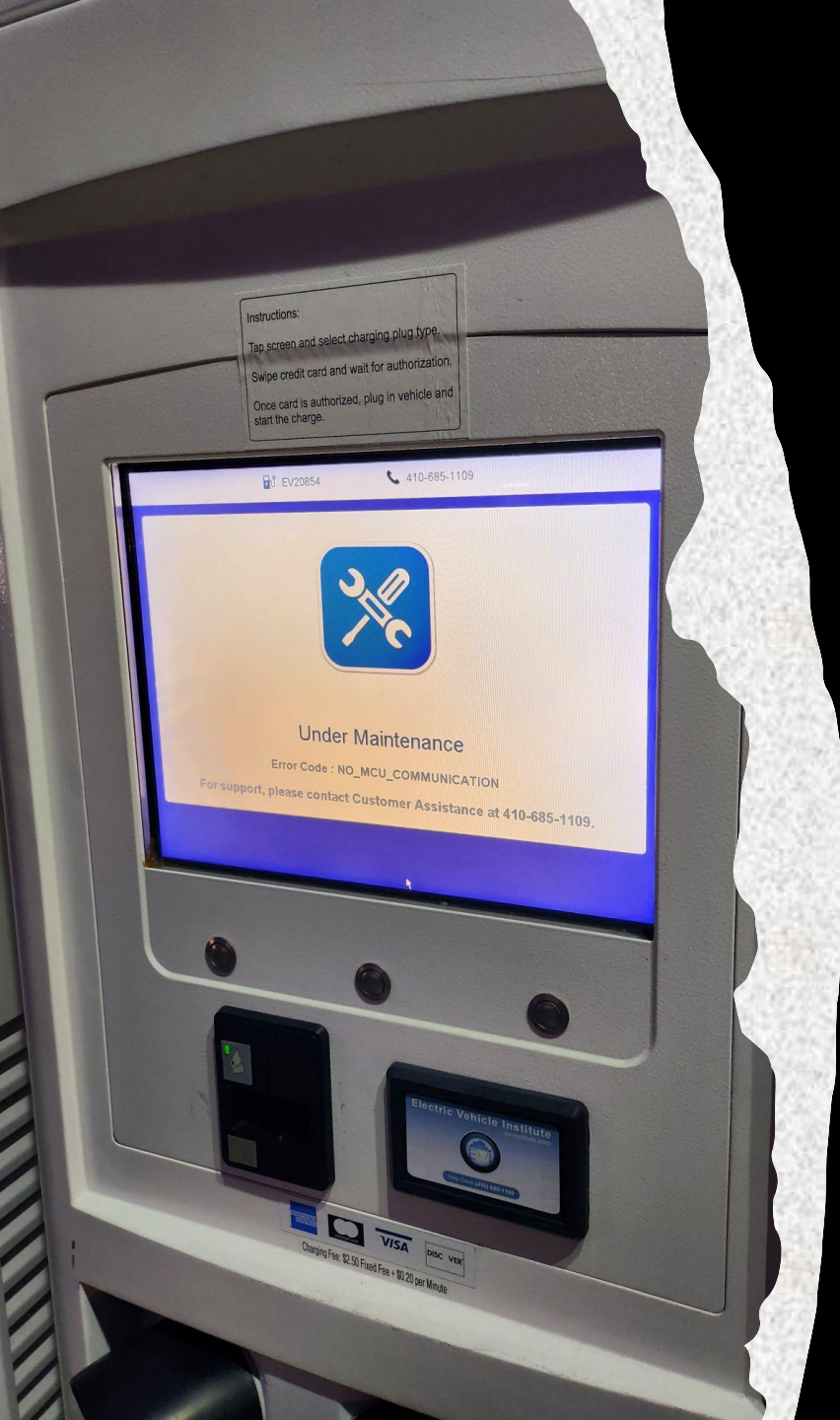
Total of 150 (Bronze) or 400 (Silver) points to receive certification

An assessment conducted in October 2023 indicated **Takoma Park's past actions were above the 400-point threshold for Silver certification**

The Sustainable Maryland Committee (Green Team) will assist the Sustainability Manager in the application process. □ **DEADLINE is June 30, 2024**

Improving and Expanding EV Infrastructure in Takoma Park

By the Sustainable Maryland
Committee – February 7,
2024



Vehicle and Infrastructure Options

Vehicles Types

ZEV = Zero-Emission Vehicles;

EVs = Electric Vehicles:

Plug-in hybrid vehicles combine a conventional gasoline-powered engine with a battery that can be recharged from the electrical grid.

Battery electric vehicles run entirely on electricity and can be recharged from the electricity grid.

Hydrogen fuel cell vehicles run on electricity produced from an onboard fuel cell using hydrogen.

<https://www.ucsus.org/resources/what-zev>

“Fueling” Infrastructure



Level One	Level Two	DC Fast Charge
120V Electrical source from a regular home outlet.	240V Electrical source from a regular home dryer outlet, home hardwire, or public station.	400 to 1000V DC Electrical source usually from a public station.
Charge Time* Approximately 5 miles of range per 1 hour of charging.	Charge Time** Approximately 25 miles of range per 1 hour of charging.	Charge Time*** Approximately 100-200+ miles of range per 30 minutes of charging.*

* Assumes 1.9 kW charging power.

** A Level 2 unit can range from 2.9 to 19.2 kW power output.

*** A DC fast charging unit can range from 25 to 350 kW. Charging power varies by vehicle and battery state of charge.

<https://marylandev.org/charging/>

The Challenge

While innovative in its introduction, electric vehicle charging in Takoma Park does not meet the needs of current and potential EV drivers

Few fast chargers, and none outside of Ward 1

Lack of charger access for renters and for homeowners without on-property parking

Potential grant funding available, not yet utilized by the city

Need to improve charging infrastructure as EV adoption is projected to continue to increase

The Ask:
Staff, supported by the Committee, develop **goals** and **policies** for deploying charging infrastructure, with the city providing funding support

Big Picture Considerations

Buildout of public transportation infrastructure is critical, but does not negate push for EV expansion



Support expansion and increase reliability and access of bus and rail service



Expand sidewalk and bike lane construction and bike share programs to reduce need for car trips (non-vehicular travel)



Walkable city: Increase density of Takoma Park to attract businesses to avoid car trips – “15-minute city” concept

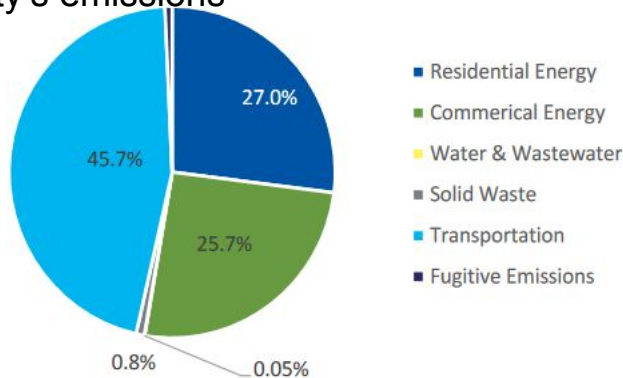


Traffic enforcement, traffic calming and road diets critical to enable safer use of roads

Existing Policy Framework

City of Takoma Park | 2019 Sustainability and Climate Action Plan

- Two of the 18 actions from the 2019 Sustainability and Climate Action Plan were proposed:
 - EV Charger-Ready Parking Requirements
 - EV Charging Station Expansion
- Transportation-related emissions amount to **~59,000** tons of CO₂e GHG emissions, transportation is the largest contributor to the city's emissions



2017 Greenhouse Gas Emissions Summary by Source

<https://documents.takomaparkmd.gov/government/city-council/agendas/2019/Documents/SCAP-Opportunities-for-Action-Report.pdf>

2020 Climate Emergency Response Framework - Resolution 2020-6

Section 2. Transportation.

a. Identify new transportation strategies and prioritize the below actions and others suggested, with a focus on de-carbonizing transportation in Takoma Park, implementing changes in transportation infrastructure, reducing use of personal vehicles, and encouraging alternative modes of transportation as well as improved walkability and bikeability, through a robust community discussion on policies and strategies and/or possible collaboration with an outside consultant.

b. **Facilitating greater use of zero-emission vehicles** by measures such as:

- i. amending the city right-of-way permit process to **allow installation of curbside charging equipment**;
- ii. in all multifamily residential buildings with parking lots over a certain size, **installing accessible outlets for charging** by a certain date to be determined, and requiring installation of such outlets in **new multifamily construction**; and
- iii. **adopting a policy of purchasing or leasing zero-emission vehicles** for the city fleet. [...]

<https://documents.takomaparkmd.gov/government/city-council/resolutions/2020/resolution-2020-06.pdf>

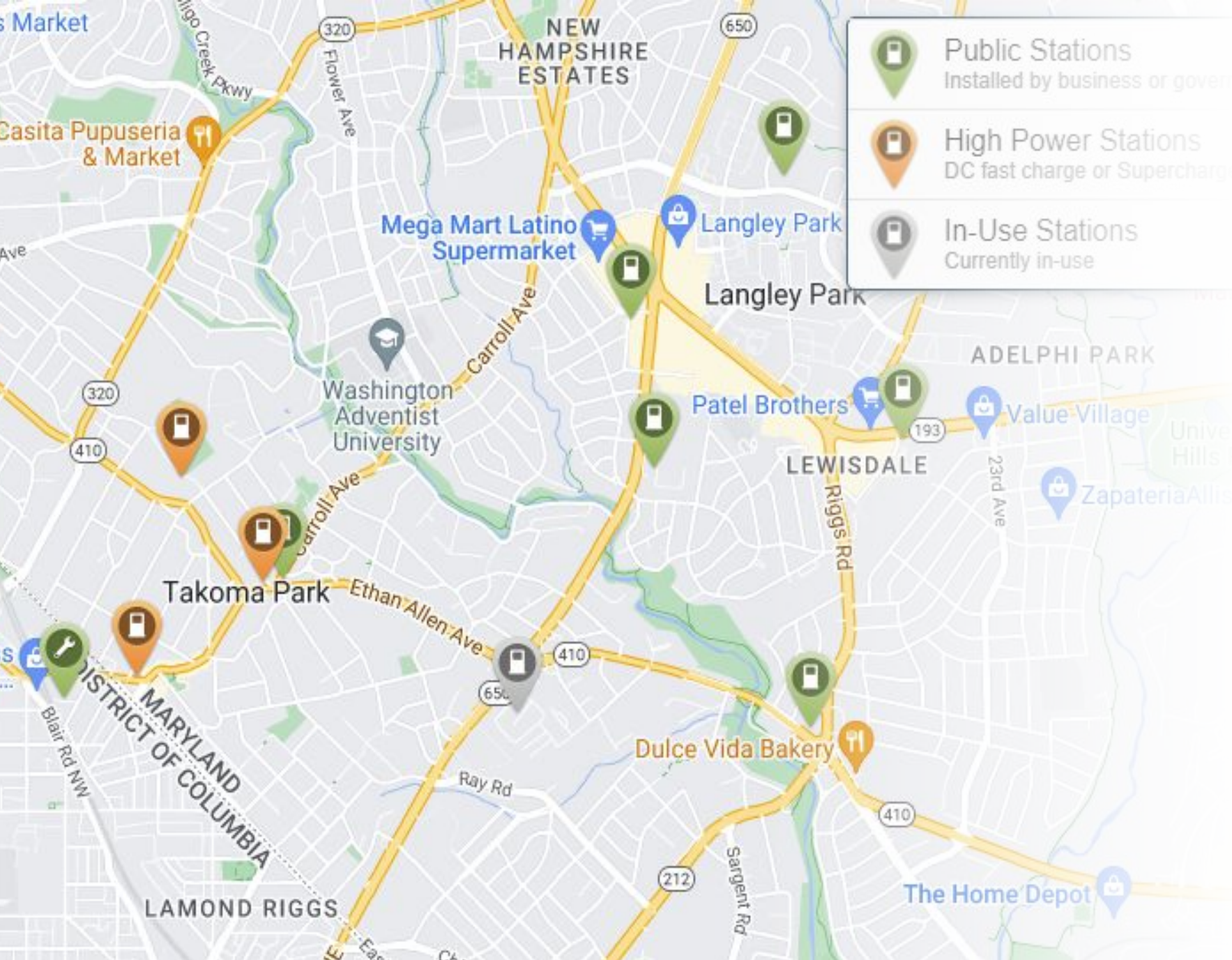
City Council 2024 Priorities

3. Environmentally Sustainable Community

Climate Change Mitigation: Work towards **net-zero greenhouse gas emissions** goal by 2035.

ZEVs do not emit tailpipe emissions (no GHGs, NO_x, SO_x, or PM). The only emissions are from the production of the vehicle and the fuel generation (electricity from the PJM grid mix, expected to become cleaner over time).

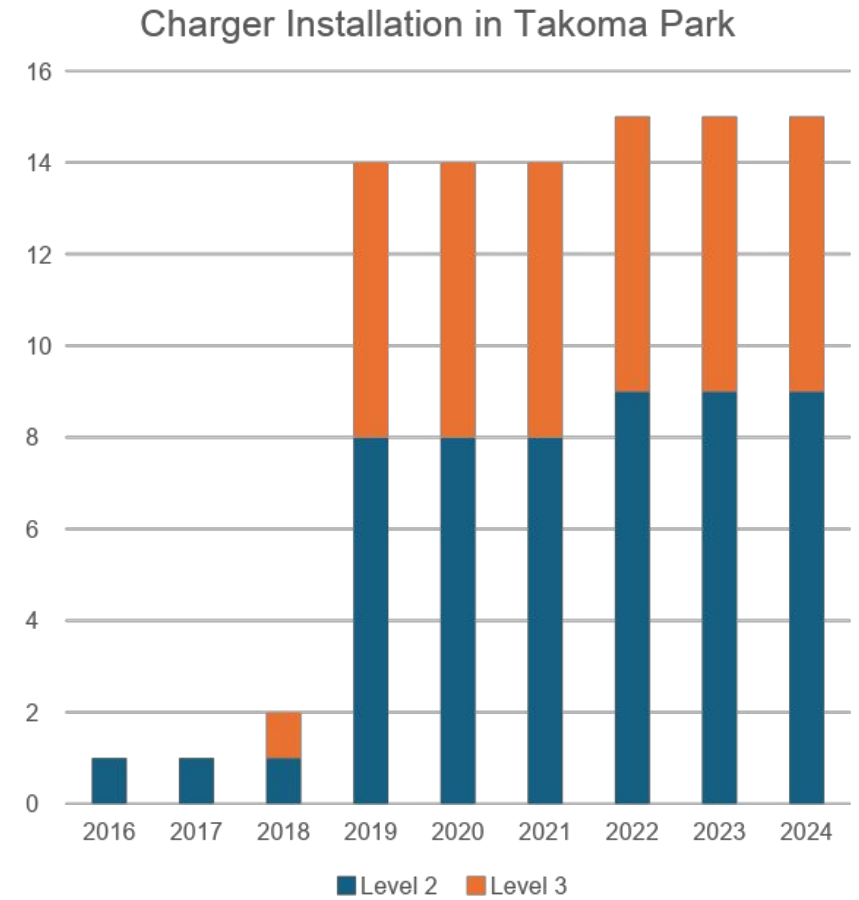
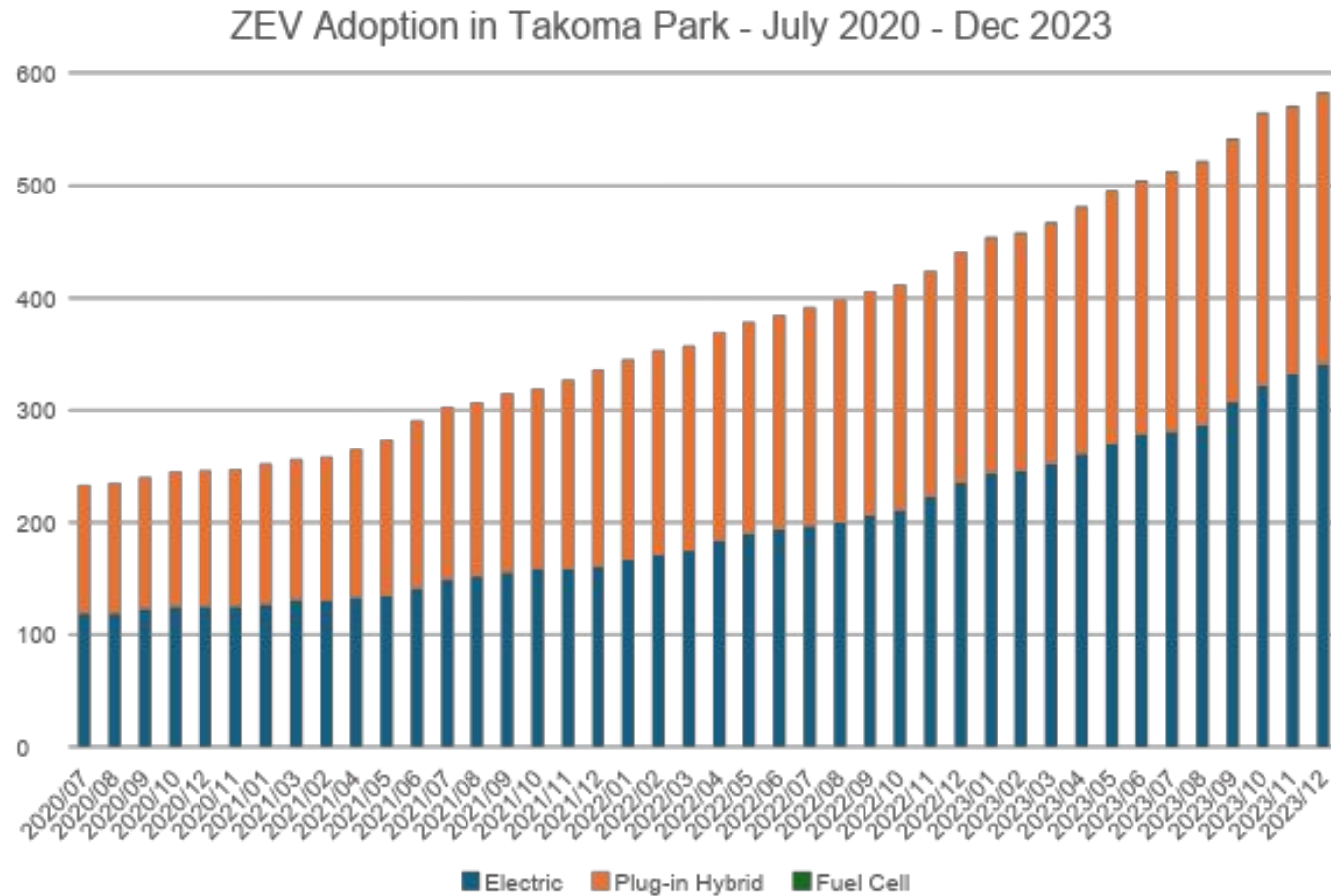
300 EVs displacing 300 fossil fuel vehicles saves approx. **1,400 MTCO₂** / year, or about **2.4%** of transportation-related emissions.



Current EV Charging Status

- 3 sites with 50kw Fast Chargers, 6 units total (orange), all in Ward 1, all by one company, 2 of the 6 are non-functional
- 5 sites with 9 Level 2 chargers (green) – 5 chargers in Ward 1, 2 in Ward 3, 2 in Ward 6
- 9 curbside charging permits were issued by the city - 5 in Ward 2, 3 in Ward 3, 1 in Ward 6

Zero Emission Vehicle Adoption in Takoma Park tripled in 3 years, new infrastructure lags behind

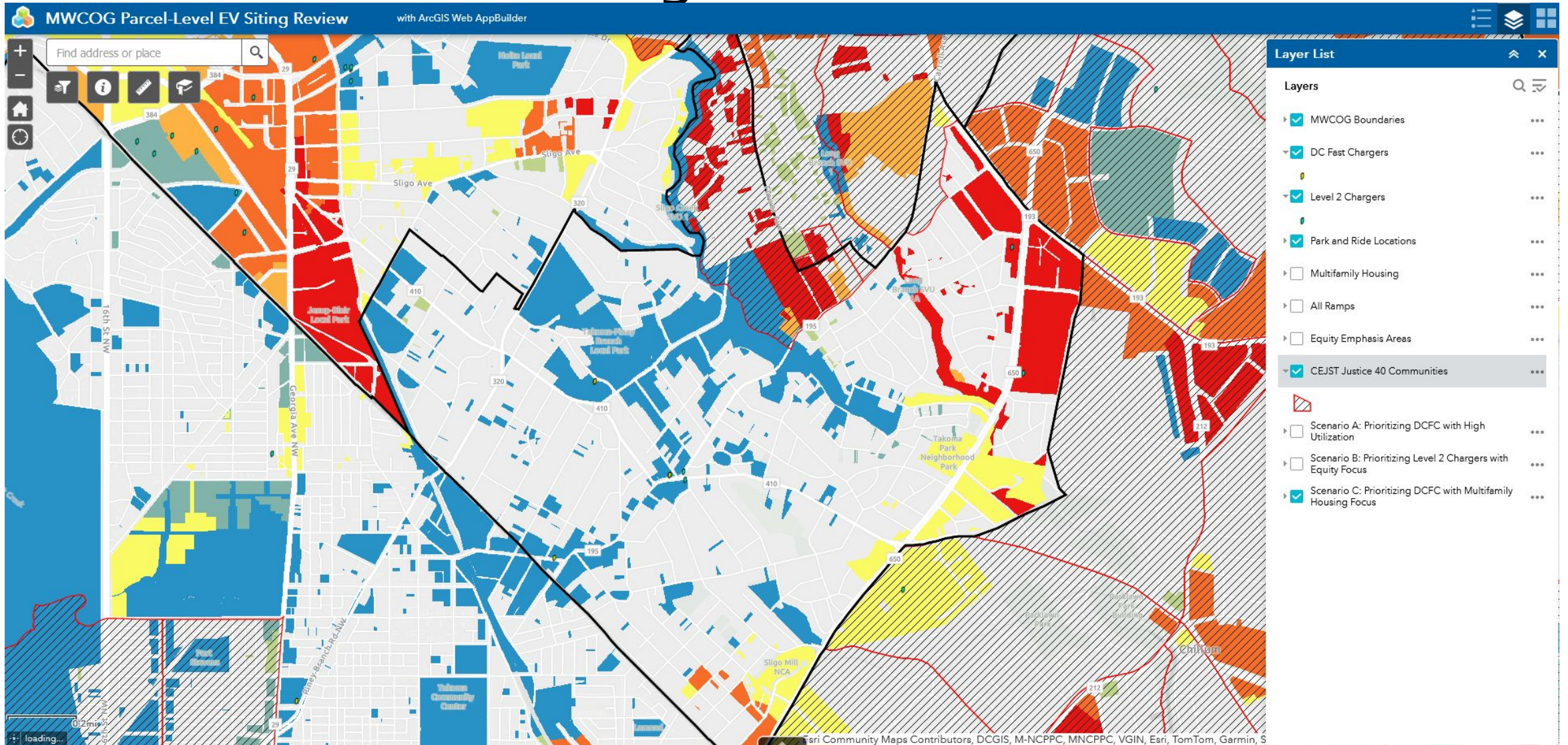


<https://opendata.maryland.gov/Transportation/MD-MDOT-MVA-Electric-and-Plug-in-Hybrid-Vehicle-Registration-Data>

Original Research based on PlugShare.com data

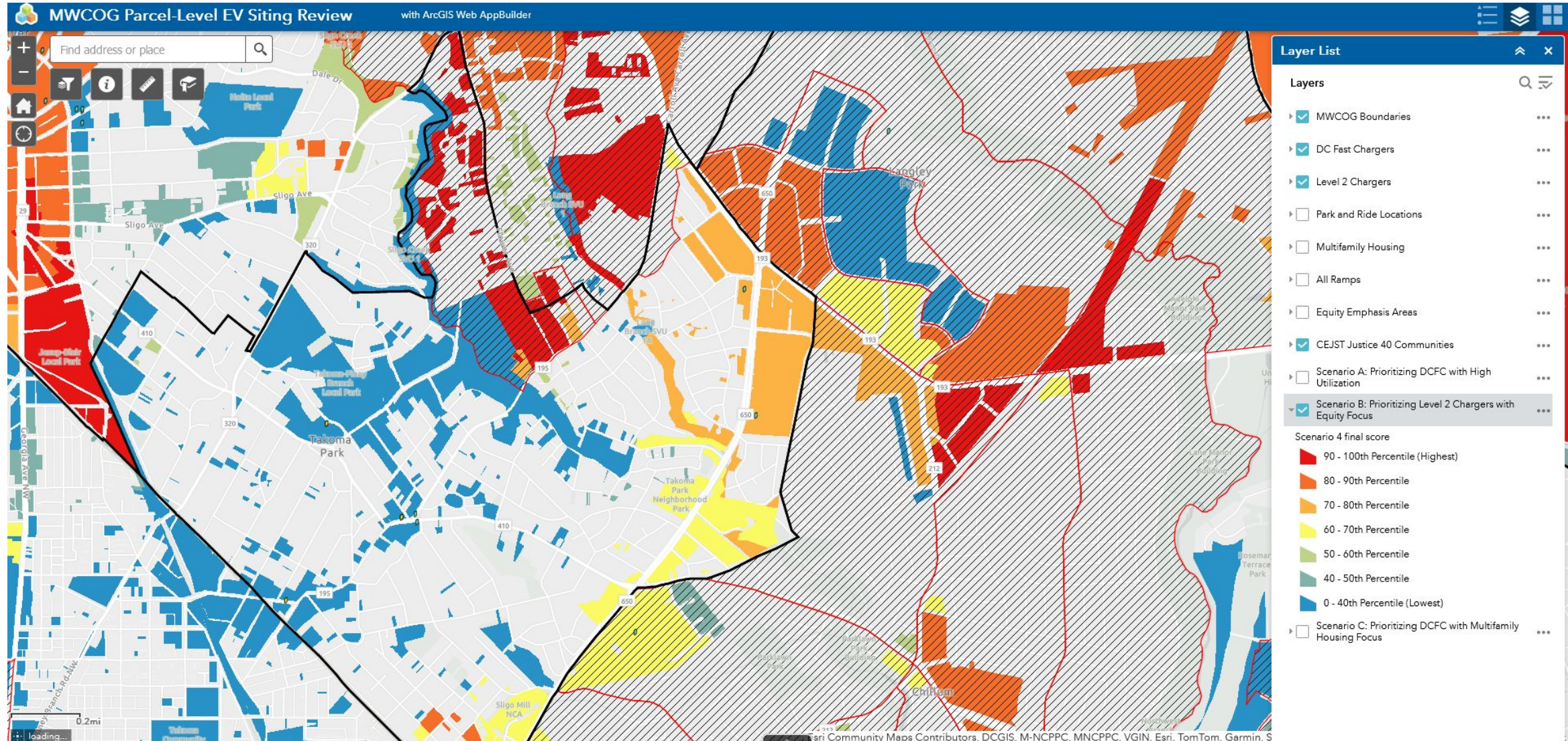


MWCOG – ICF Modeling – DCFC with MFH Focus



<https://icf-eandp.maps.arcgis.com/apps/webappviewer/index.html?id=8fd11c5995bf4e71aec85e89c063a53c>

MWCOG – ICF Modeling - Level 2 Equity Focus

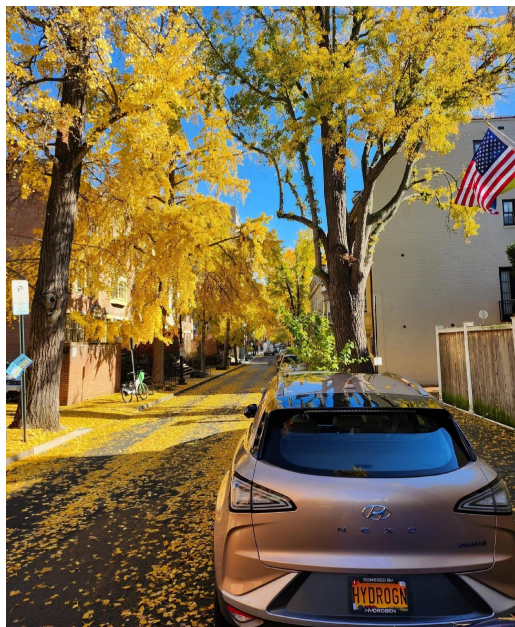


<https://icf-eandp.maps.arcgis.com/apps/webappviewer/index.html?id=8fd11c5995bf4e71aec85e89c063a53c>



Recommended Actions

- 1. Set aside \$50,000 in a funding program to match and leverage federal and state grants for both Level 2 chargers and DCFC chargers in the city**
- 2. Develop an education campaign on available grant programs for residents, MFH owners, and businesses**
- 3. City to develop goals, a roadmap and supportive policy to reduce GHG emissions from transportation via electrification**



Potential EV Adoption Strategies



Issue Request of Interest/Request for Information to **partner with charging operators** on applications for federal or state grants.



Prioritize grant funding for charging infrastructure at multifamily homes.



Conduct targeted **education and outreach** to multifamily housing owners to install charging and leverage state, MoCo, federal and utility programs.



Partner with gas station owners/operators to consider installation of public fast chargers and work with electric utilities on expanding charging infrastructure.



Identify potential sites in all underserved Wards and use MWCOG REVII tool for best locations, e.g., charging islands at business districts, and parking lots.



Set **city adoption goals** for EVs and charging and goals to decrease vehicle ownership in the city



Advocate and support MD bills (e.g., Del. Lewis' HB 64 – expands \$3,000 EV rebate to used EVs)



Collaborate with regional/state entities on grant applications to pilot **hydrogen** fuel infrastructure for medium/heavy duty trucks and light duty vehicle fueling

Addendum (Bonus Slides)

Cost Range Estimates for Owner/Operator

- Level 3 (Direct Current Fast Charger, DCFC) unit cost:
 - Networked 50kW DCFC – \$28,000
 - Networked 150kW DCFC – \$75,000
 - Networked 350kW DCFC – \$140,000
- Excludes labor and utility upgrades, which can be very significant
- Level 2 networked commercial chargers:
 - Equipment: \$1,500-\$3,000 per unit
 - Installation: bollard-mounted units cost between \$1,500 and \$3,500
- For a business to install 4 level 2 chargers costs could range between \$12,000 to \$26,000

Potential Example:

- Application for \$1,000,000 for EV infrastructure (mix of several level 2 and 2x new DCFC sites)
- Grant provides 80% - \$800,000
- City provides 5% - \$50,000
- Private Charging installer provides 15% - \$150,000

Tax credits, grants, and rebates may be available

Example Calculation



	All Electric	Base Price (USD) ¹	Net Price (USD) ²	Range (mi) ³	Batt. (kWh)	Power (hp) ⁴	0-60 (sec)	QC (kW) ⁵	MPG equiv ⁶	Fuel / Mo. ⁵	Bolt
Ocean	Chevy Bolt EV	\$26,500	\$19,000	259	66	201	6.5	55	120	\$50	
Mustang	Chevy Bolt EUV	\$27,800	\$20,300	247	66	201	7.0	50	115	\$50	
	Fisker Ocean [#]	\$37,499	\$37,499	250-350	80 ⁺	275-550	3.6-6.9	250 ⁺	---	---	
EV6	Ford Mustang Mach-E [†]	\$45,995	\$42,245	224-247	70	266	5.2-5.8	115	93-103	\$63 [†]	
	Ext. Range, GT [#]	\$63,995	\$60,245	260-306	91	290-480	3.5-6.1	150	82-101	\$63 [†]	
Niro	Hyundai Ioniq 5	\$41,450	\$41,450	220	58	167	7.4	230	110	\$54	
	Long [#]	\$45,500	\$45,500	256-303	77	225-320	5.2	230	98-114	\$54	
	Hyundai Ioniq 6	\$41,600	\$41,600	248 [†]	53	149	---	230	140 [†]	\$42 [†]	
	Long [#]	\$45,500	\$45,500	270-361	77	225-320	5.0 [†]	230	103-140	\$50	
Ariya	Hyundai Kona Elec.	\$33,500	\$33,500	258	64	201	7.9	75 [†]	120	\$50 [†]	
	Kia EV6 [#]	\$48,700	\$48,700	274-310	77	225-320	3.5-7.2	230	105-117	\$50 [†]	
	Kia Niro EV	\$39,550	\$39,550	253	64	201	6.7	77	113	\$50	
	Mazda MX-30	\$34,110	\$34,110	100	36	143	7.3	50	98	\$58	
	MINI Electric	\$33,900	\$33,900	114	33	181	6.9	50	110	\$54 [†]	
	Nissan Ariya [#]	\$43,190	\$43,190	285-304	66-91	238-389	4.8-7.2	130	98-103	\$58	
LEAF	Nissan LEAF s	\$28,040	\$28,040	149	40	147	7.4	50	111	\$54	
	SV Plus	\$36,040	\$36,040	212	62	214	6.5	100	109	\$54	
Subaru	Subaru Solterra	\$44,995	\$44,995	222-228	73	215	6.5	150	102	\$54 [†]	
	Tesla Model 3 RWD	\$39,990	\$36,240	272	60 [†]	283	5.8	170	132	\$46	
	AWD Performance	\$52,990	\$45,490	315	82 [†]	449	3.1	250	113	\$54	
e-tron	Tesla Model Y	\$46,990	\$39,490	279	67 [†]	384 [†]	5.0	250 [†]	123	\$50	
	Long Range	\$49,990	\$42,490	330	75 [†]	384	4.8	250	122	\$50	
i4	Toyota bZ4X [#]	\$42,000	\$42,000	222-252	71-73	201-214	6.7 [†]	150	102-119	\$54 [†]	
	VW ID.4	Std \$38,995	\$31,495	209	62	201	7.1	125	107	\$54	
	Pro [#]	\$47,795	\$40,295	255-275 [†]	82	201-295	5.4	170	99-107	\$54	
	Average U.S. Gasoline Car		\$48,000						25	\$200	
	Audi Q4 e-tron [#]	\$49,800	\$49,800	265	82	201	7.9	150	103	\$58	
	Audi e-tron	\$70,800	\$70,800	226	95	300	5.5	150	78	\$75	
	BMW i4 [#]	\$55,900	\$55,900	227-301	70.1	282	5.8	180	80-109	\$63 [†]	
	Cadillac Lyriq [#]	\$58,590	\$51,090	312	102	340	5.7	190	89	\$67 [†]	
EQE350	Genesis GV60	\$59,290	\$59,290	235-248	77	314-429	---	350	90-95	\$63 [†]	
	Genesis Elec. GV70	\$65,850	\$65,850	236	77	429	4.5 [†]	350	---	---	
	Genesis Elec. G80	\$79,825	\$79,825	282	87	365	4.1	350	97	\$58	
Polestar	Jaguar I-Pace	\$71,300	\$71,300	217-246	90	394	4.5	100	76-79	\$75	
	Lexus RZ 450e	\$59,650	\$59,650	220	71	308	5.6	150	95	\$54	
	Mercedes EQE350 [#]	\$74,900	\$74,900	305	91	288-402	6.2	170	97 [†]	\$58	
Model 3	Polestar 2	Single \$48,400	\$48,400	270	78	228	7.0	150	107	\$54	
	Dual	\$51,900	\$51,900	260	78	402	4.2	150	100	\$58	
	VinFast VF8 AWD [†]	\$57,000	\$57,000	191-207	82-87	348-402	5.5-5.9	150	80-87	\$71	
Model Y	Volvo C40 Recharge	\$55,300	\$55,300	226	78	402	4.7	150	87	\$67	
	Volvo XC40 Recharge	\$53,550	\$53,550	223	78	402	4.7	150	85	\$71	

Vehicle Cost – Higher upfront, lower maintenance*

- Battery EVs tend to cost more (but there are rebates [\$3,000 MD] and federal tax credits [up to \$7,500])
- Lower maintenance cost (generally)
- Lower fuel cost (if mostly using home chargers)

But:

- Higher insurance costs for EVs
- EVs depreciate faster than regular cars (thus are cheaper used)

Incentives

Federal Tax Credits
Vehicle: up to \$7500
EVSE: up to \$1000
Some vehicles, see irs.gov

Ask An EV Owner: First Wednesday of every month. See evadc.org/Ask

- DC: EV Supply Equipment (EVSE) Tax Credit - 50% of cost up to \$1000
Excise tax exemption. Reduced vehicle registration fee of \$36
- Maryland: Tax Credit, max \$3000 on EVs base price ≤\$50K starting 7/1/2023
EV Supply Equipment (EVSE) Tax Credit - 40% of cost, max \$700
- Virginia: Reduced personal property tax in Arlington and Loudon counties
Discounted electricity rates for off-peak residential EV charging

