What Should Your County be Doing to Prepare for Electric Vehicles?

MAC Annual Conference – September 19, 2022 – Port Huron, MI

Erin Quetell, Chief Environmental Sustainability Officer, Oakland County

Agenda

- Introduction
- EV 101
- Federal Funding Opportunities
- Regional Planning Efforts
- Questions & Discussion

Introduction

EV 101

- **Definitions**
  - Vehicles
  - Electrical Engineering

EV 101 – Definitions

Vehicles	
ICE	Internal Combustion Engine (ex Chevy Silverado, F-150)
EV aka BEV aka ZEV	Electric Vehicle, Battery Electric Vehicle, Zero Emissions Vehicle – no tail pipe, powered by large battery systems (ex Ford Mustang Mach-E, Bolt EV)
EUV	Electric Utility Vehicle – SUV-style electric vehicle, still battery powered (ex Bolt EUV)
PHEV	Plug-In Hybrid Electric Vehicle – gas powered AND can be plugged in, typically a medium-sized battery (ex Ford Escape Plug-In hybrid, Chrysler Pacifica Plug-In Hybrid)
HEV	Hybrid Electric Vehicle – no plug, gas-powered cars with small battery (ex Ford Fusion, Toyota Camry)

EV 101 – Definitions

Electrical Engineering	
Amperage aka amps	Amount of electricity used by the charger
Voltage aka volts	Force of electricity
Watts = amps x volts	Unit of power, amount of energy needed to function
kWh	1,000 watts used for one hour = Kilo-watt hour, energy measurement, what energy prices are based on
Alternate Current aka AC	Electric grid power, EVs convert AC to DC power to store in battery
Direct Current aka DC	Electric power straight to battery, no conversion needed

EV 101

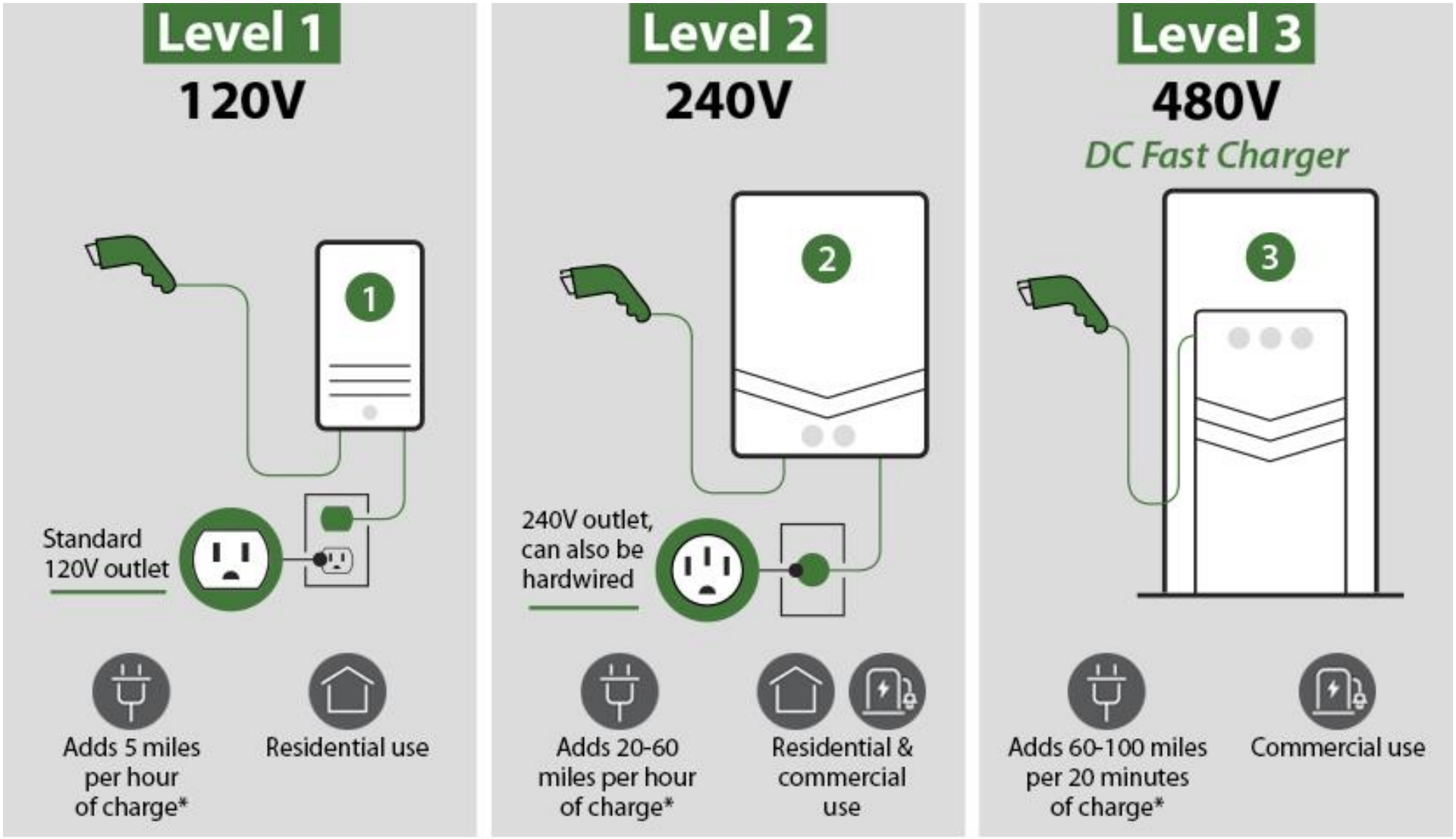
- **Charging Infrastructure & Capacity**
  - Level 1
  - Level 2
  - Level 3

EV 101 – Charging Infrastructure & Capacity

Charging Infrastructure	
Level 1 Charger	Plugs directly into regular electrical outlet (AC power), uses 120-volt outlet, 12-16 amps, slow charge (“trickle charge”), ~ 3.5-6.5 miles of range per hour, Residential
Level 2 Charger	Uses a special 240-volt plug, can be a 240-volt outlet OR charging station (the difference is how the energy is managed), 30-50 amps, faster charging, ~18-28 miles of range per hour, Residential or Commercial
Level 3 Charger aka DCFC aka DC Fast	Direct Current Fast Charging*, fastest charging option to date, not suitable for home charging, come in a few different energy capacities and vary by site, 100+ amps, 80% battery charge in 15-45 mins, Commercial

*Standard in current National Electric Vehicle Infrastructure (NEVI) Requirements for Public Infrastructure

EV 101 – Charging Infrastructure & Capacity



** Estimated. Actual charge times may vary.*

Central Hudson Gas & Electric Corp.

EV 101

- **Siting & Accessibility**
  - Location
  - Site Requirements
  - Access

Siting & Accessibility

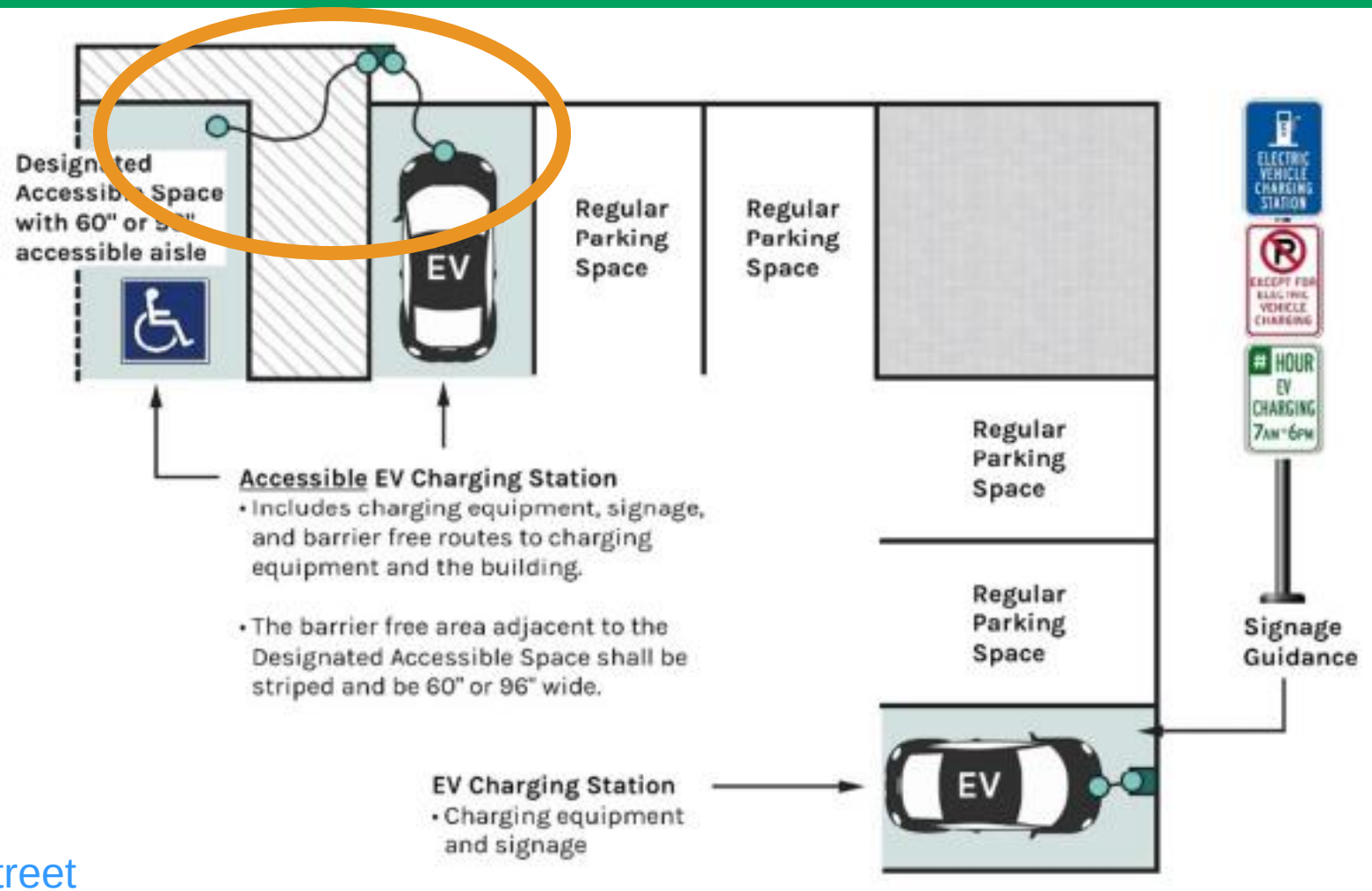
- **Zoning Ordinances & Policy**
  - Parking Requirements
  - Site Plan Requirements
  - Public Charging Infrastructure
- **Site Design**
  - Building Energy Capacity
  - # of Chargers per Site
- **Parking Design**
  - Proximity to Entrances/Point of Interest
  - ADA vs. Conventional Parking Spaces

PHEV Dodge Ram Truck at Auburn Hills City Campus Charging Station

Mlive.com

Example - City of Ferndale EV Ordinance

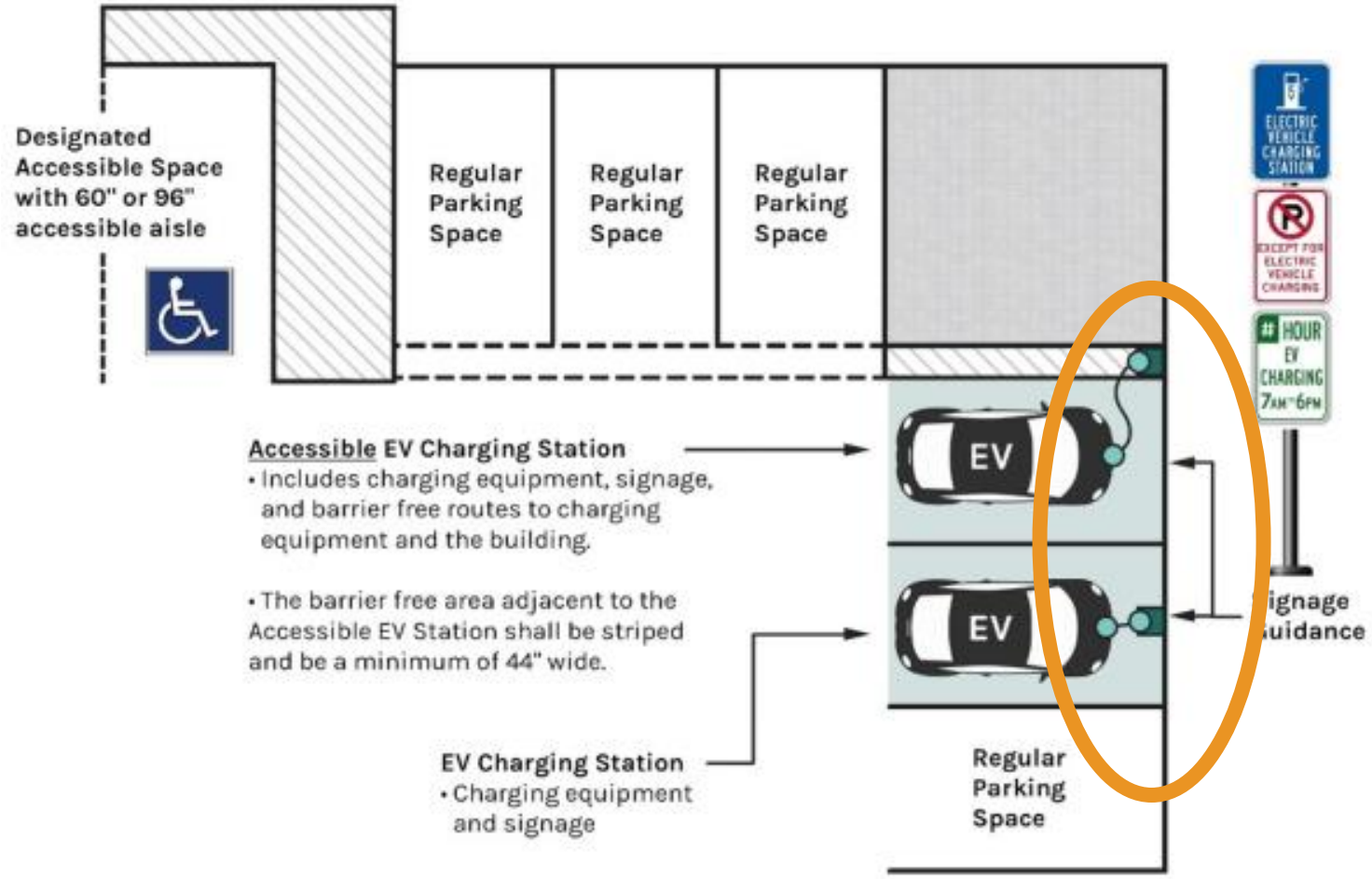
Option 1



[Sec 24-223 Off-Street Parking Requirements]

Example - City of Ferndale EV Ordinance

Option 2



[Sec 24-223 Off-Street Parking Requirements]

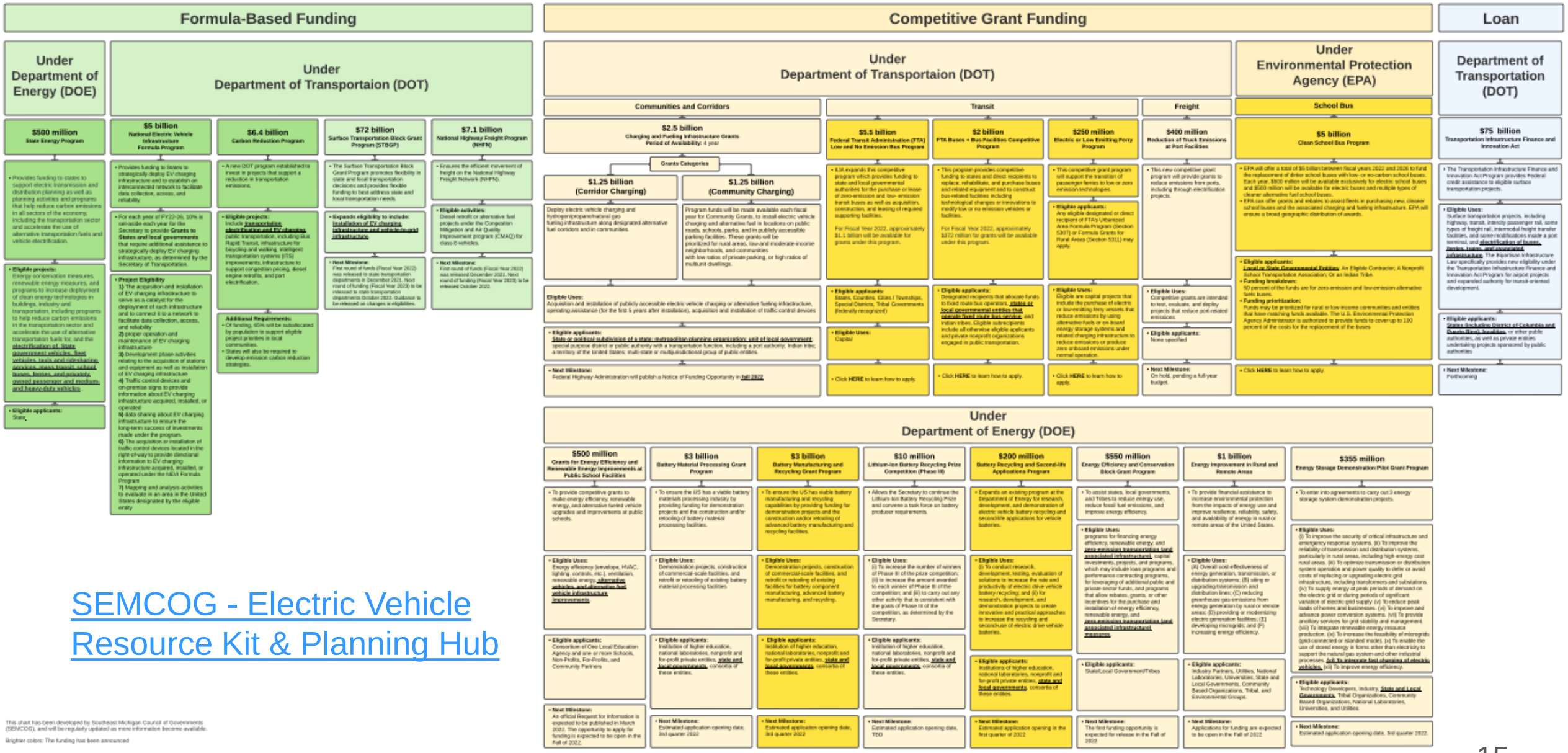
Federal Funding Opportunities

- National Electric Vehicle Infrastructure Formula Program (NEVI)
- Communities & Corridors – Competitive Grant Funding*
  - Corridor Charging
  - Community Charging

*More info expected soon – Fall 2022

Bipartisan Infrastructure Law

Electrification, Electric Vehicles, Electric Vehicle Charging Funding



[SEMCOG - Electric Vehicle Resource Kit & Planning Hub]

This chart has been developed by Southeast Michigan Council of Governments (SEMCOG), and will be regularly updated as more information become available.

Brighter colors: The funding has been announced

NEVI Criteria

From The Michigan State Plan for Electric Vehicle Infrastructure Deployment by HNTB – June 2022

charging infrastructure every **50** miles along the Interstate

within **1** travel mile of an Interstate exit

Charging infrastructure installed every 50 miles along the State's portions of the Interstate Highway System and within one travel mile of the Interstate exit.

at least **4** DC fast chargers

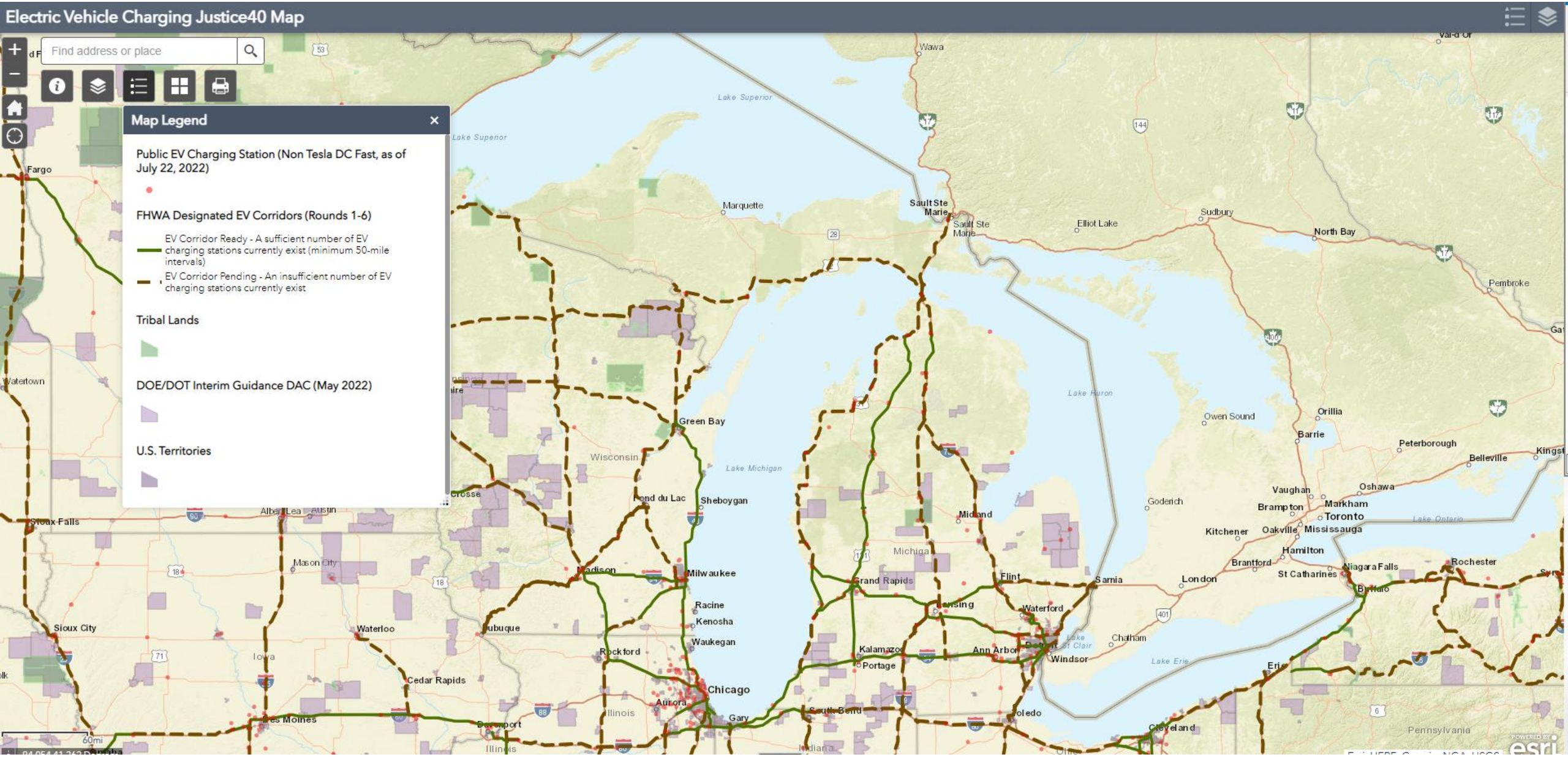
charging **4** DC EVs simultaneously

At least four 150kW DC Fast Chargers with Combined Charging System (CCS) ports capable of simultaneously DC charging four EVs.

at least **150** kW per port

minimum **600** kW station power

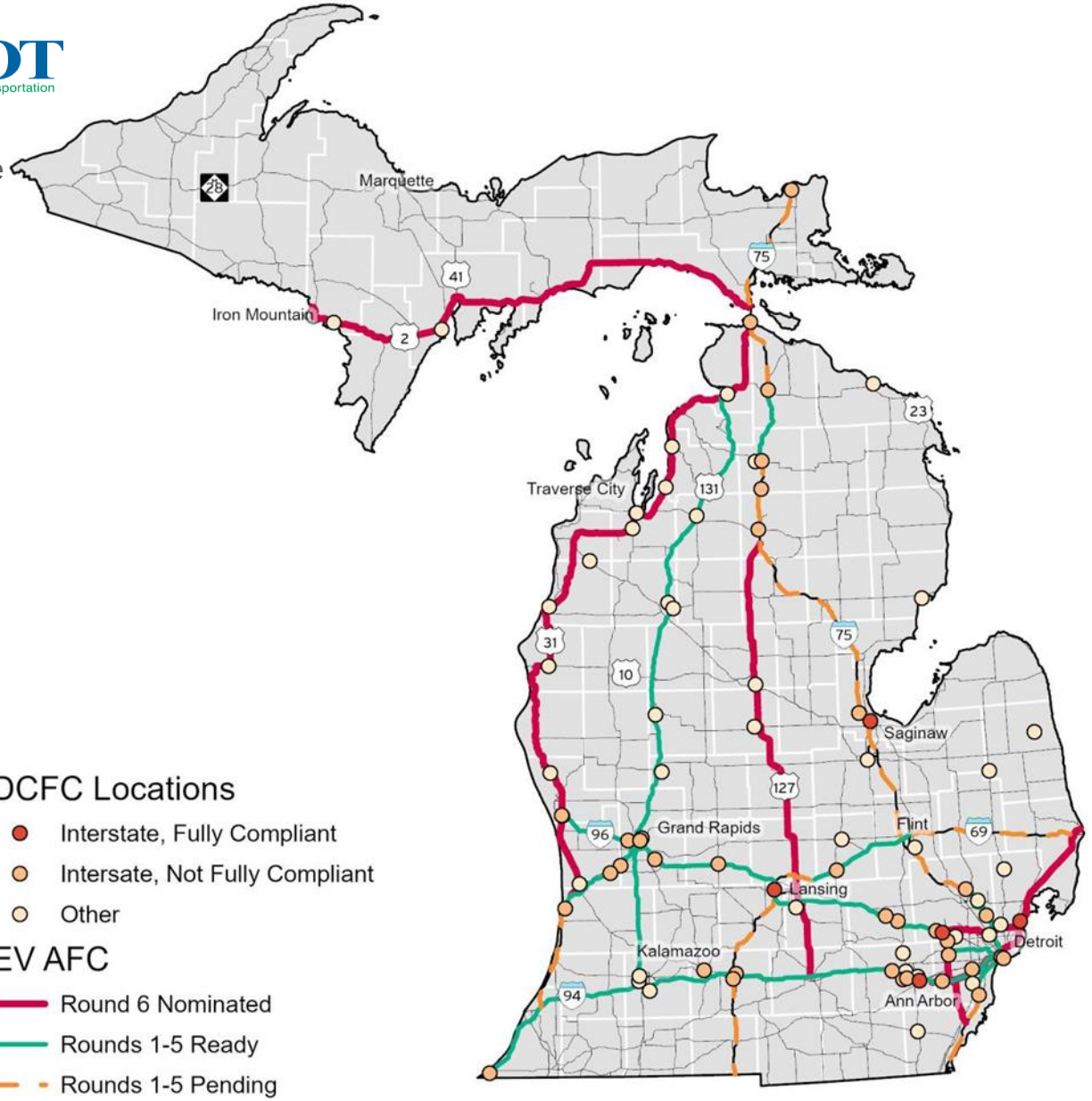
EV charging infrastructure has minimum station power capability at or above 600kW and supports at least 150kW per port simultaneously across four ports for charging.



EV Charging Justice 40 Map

From The Michigan State Plan for Electric Vehicle Infrastructure Deployment by HNTB – June 2022

[Federal Highway Administration - Electric Vehicle (EV-Round 1 - 5)]



Alternative Fuel Corridor Map

Regional EV Study

- MEDC ($100K) & SEMCOG ($50K) Funded project

- Assess existing conditions, propose optimal siting for EV infrastructure, & develop a toolkit to support communities

MICHIGAN ECONOMIC DEVELOPMENT CORPORATION

SEMCOG Southeast Michigan Council of Governments

DRP Detroit Regional Partnership

Regional EV Study

- **Stakeholder Engagement & Outreach**
  - Diversity, Equity, & Inclusion
  - Municipal
  - Technical
- **Existing Conditions**
  - Existing EV Infrastructure
  - Registered EVs & Locations
  - Current Funding
- **EV Network & Location Analysis**
  - Michigan EV Market Analysis
  - Charging Demand Analysis
  - Location Analysis
- **EV Toolkit**

AECOM

eco WORKS

EVENERGI

Regional EV Study

Stakeholder Engagement & Outreach

- Residents
- Cities, Villages, Townships
- NGOs, Community & Faith-based
- Industry/Business
- Developers
- Utilities
- Transportation
- Academic Partners
- Trade Groups & Workforce Development

Existing Conditions

SEMCOG | SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS Electric Vehicle Resource Kit & Planning Hub

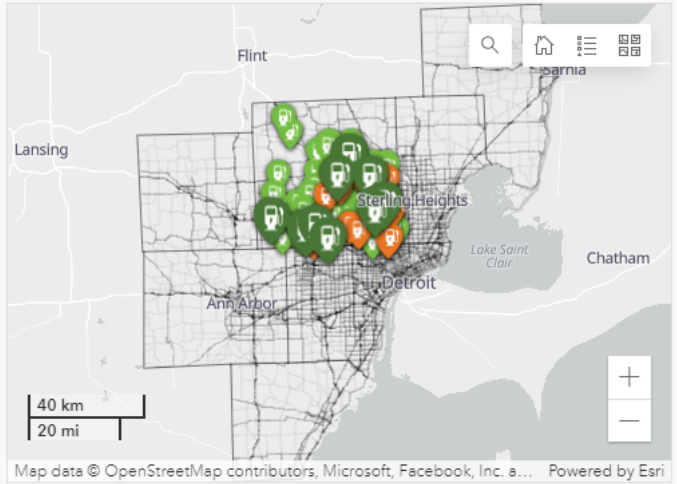
EV 101 | Maps & Data Resources | Ordinances & Local Actions | Funding Opportunities | EV Planning StoryMap | Case Studies & Best Practices | Additional Resources | Feedback

Southeast MI Electric Charging Locations Dashboard

View Data by County: Oakland County

View Data by Community: Select from communities with …

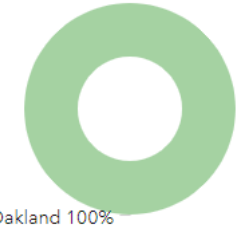
37	362	0
DCFC Charging Ports In 14 Locations	Level 2 Charging Ports In 139 Locations	Level 1 Charging Ports In 0 Locations



Available Charging Locations

149

Locations by County



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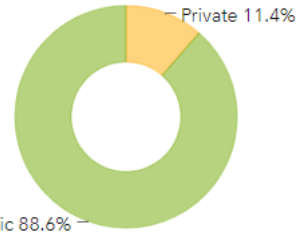
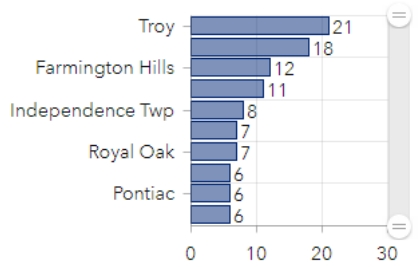
Locations by Access Type

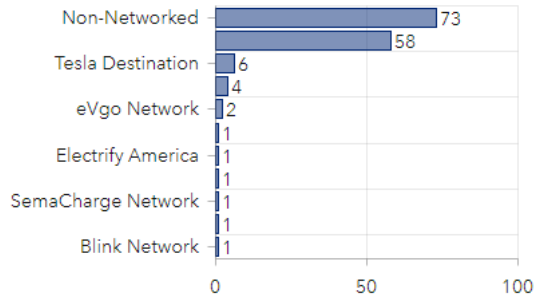


Locations by Community (Top 10)



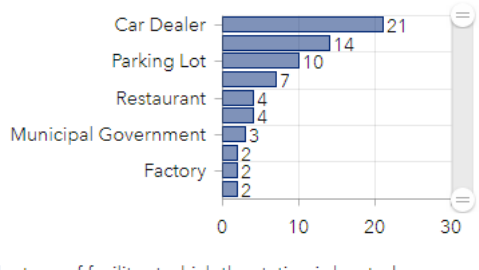
Shows the status of **Stations** by community

Locations by Network



For electric stations, the name of the EVSE network, if applicable.

Locations by Facility Type (Top 10)



The type of facility at which the station is located.
*Excludes Locations with No Information

List of Charging Locations

Auburn Hills
City of Auburn Hills - Log Cabin Streetside Parking

Auburn Hills
City of Auburn Hills - Administrative Campus

Auburn Hills

Locations By Community | Locations by Network | Locations by Connector Type | Locations by Facility Type

According to the 2021 Report from the Council on Future Mobility & Electrification :

Michigan will need approximately

10,000 DCFC (i.e. Level 3)

&

90,000 Level 2 chargers by 2030

to support two million EVs

From The Michigan State Plan for Electric Vehicle Infrastructure Deployment by HNTB – June 2022

SEMCOG
SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS
Electric Vehicle Resource Kit & Planning Hub
EV 101
Maps & Data Resources
Ordinances & Local Actions
Funding Opportunities
EV Planning StoryMap
More
Southeast Michigan
Electric Vehicle Resource Kit and Planning Hub
A one-stop destination for communities, organizations, and stakeholder groups to learn more about what is going on in Southeast Michigan regarding EVs and EV infrastructure.

Discussion & Questions

Thank you!

Additional Resources

- SEMCOG Electric Vehicle Resource Kit and Planning Hub
- Michigan Department of Environment, Great Lakes, and Energy (EGLE) – Office of Climate and Energy – Electric Vehicles
  - Electric Vehicle Readiness
  - Optimized EV Charger Placement Plan
- Climate Mayors Electric Vehicle Purchasing Collaborative
- Urban Sustainability Director's Network
- ICLEI 100% Renewable Roadmap – EV Infrastructure
- C40 Cities – Race to Zero
- C40 Cities – Zero Emission Vehicles (ZEV) Network
- Michigan Green Communities

OAKLAND COUNTY
MICHIGAN
DAVID COULTER
OAKLAND COUNTY EXECUTIVE

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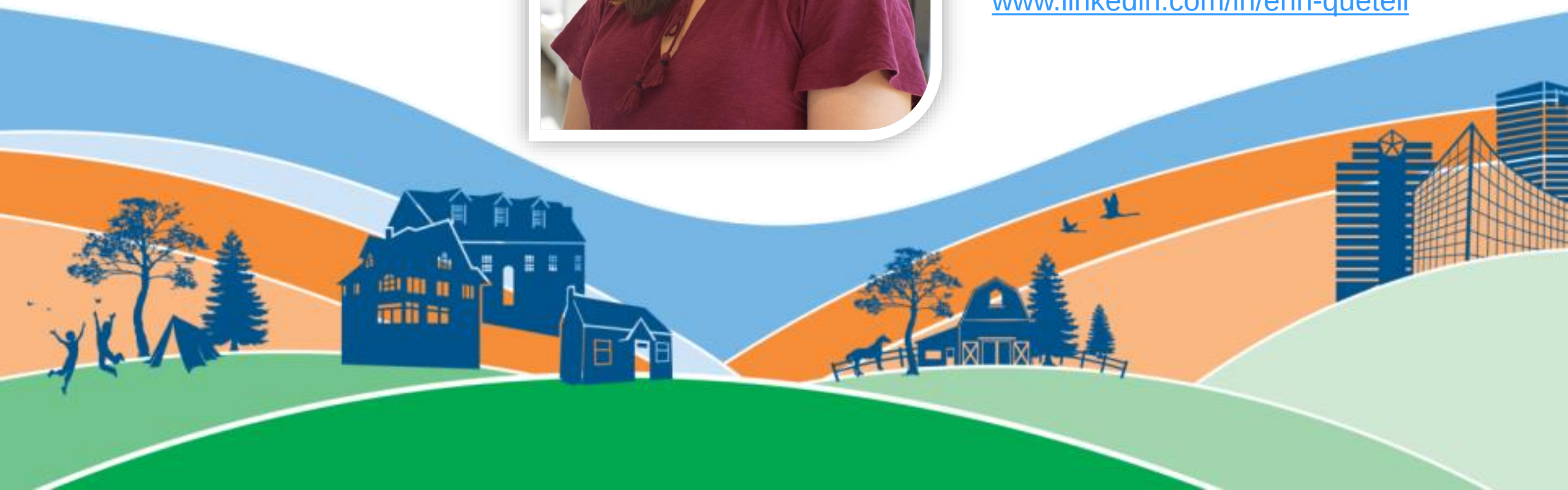
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