Electric Vehicle Infrastructure Implementation Plan

September 6, 2024

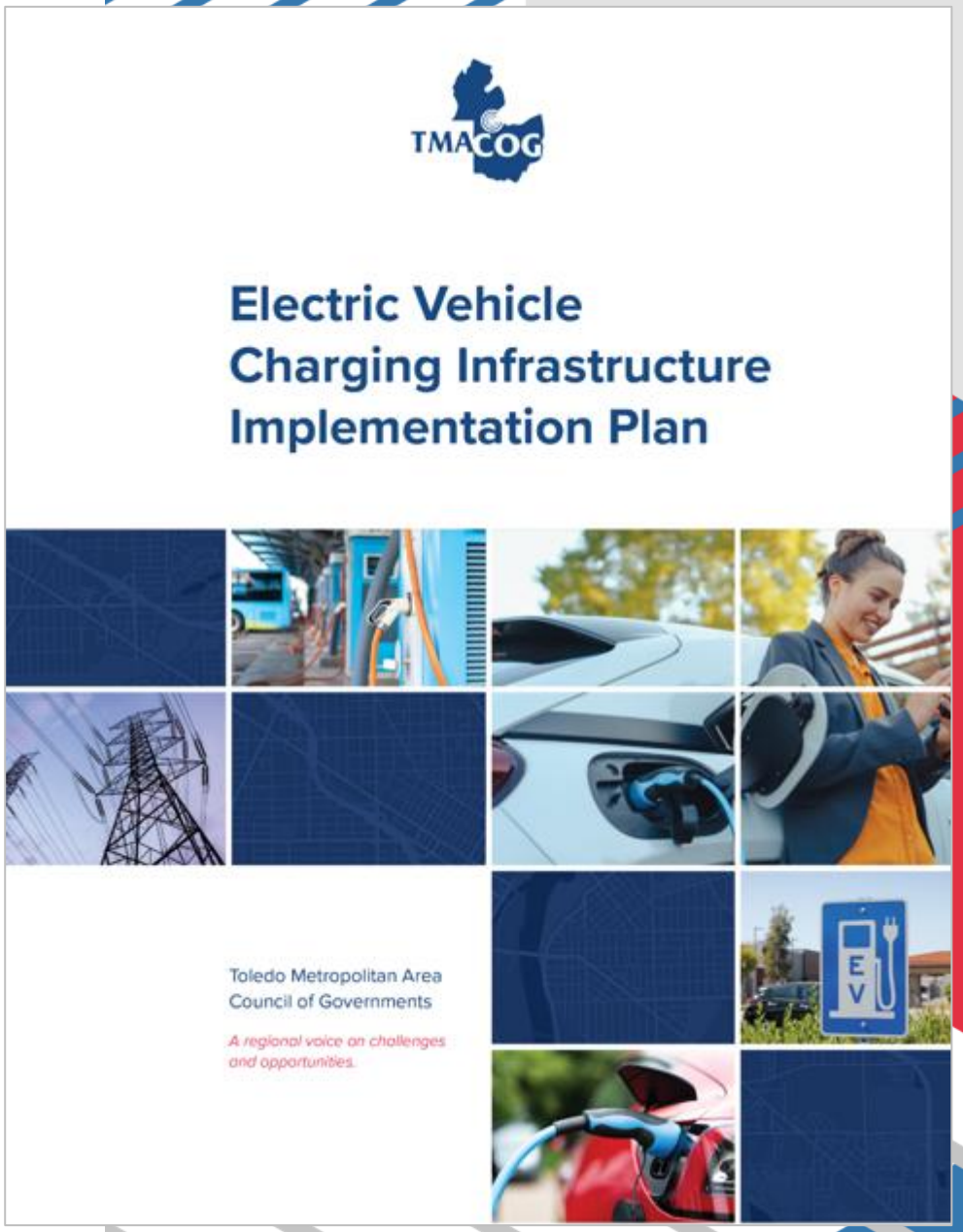
Introduction

What does the plan do?

- Identifies preferred locations for public vehicle charging infrastructure
- Establishes a strategy and guidelines for EV charger implementation

What is included in the plan?

- EV infrastructure assessment
- Market demand analysis
- Charging infrastructure analysis
- Implementation guidelines and recommendations
- Financial analysis



Study Area


Study Area
Reference Layers
Study Area
Toledo
County Boundaries
Monroe County
Lucas County
Wood County
Ottawa County
Sandusky County
Dundee
Monroe
Sylvania
Toledo
Harbor View
Holland
Maumee
Rossford
Perrysburg
Woodville
Bowling Green
Fremont
Port Clinton
Lake Erie
MICHIGAN
OHIO
Miles
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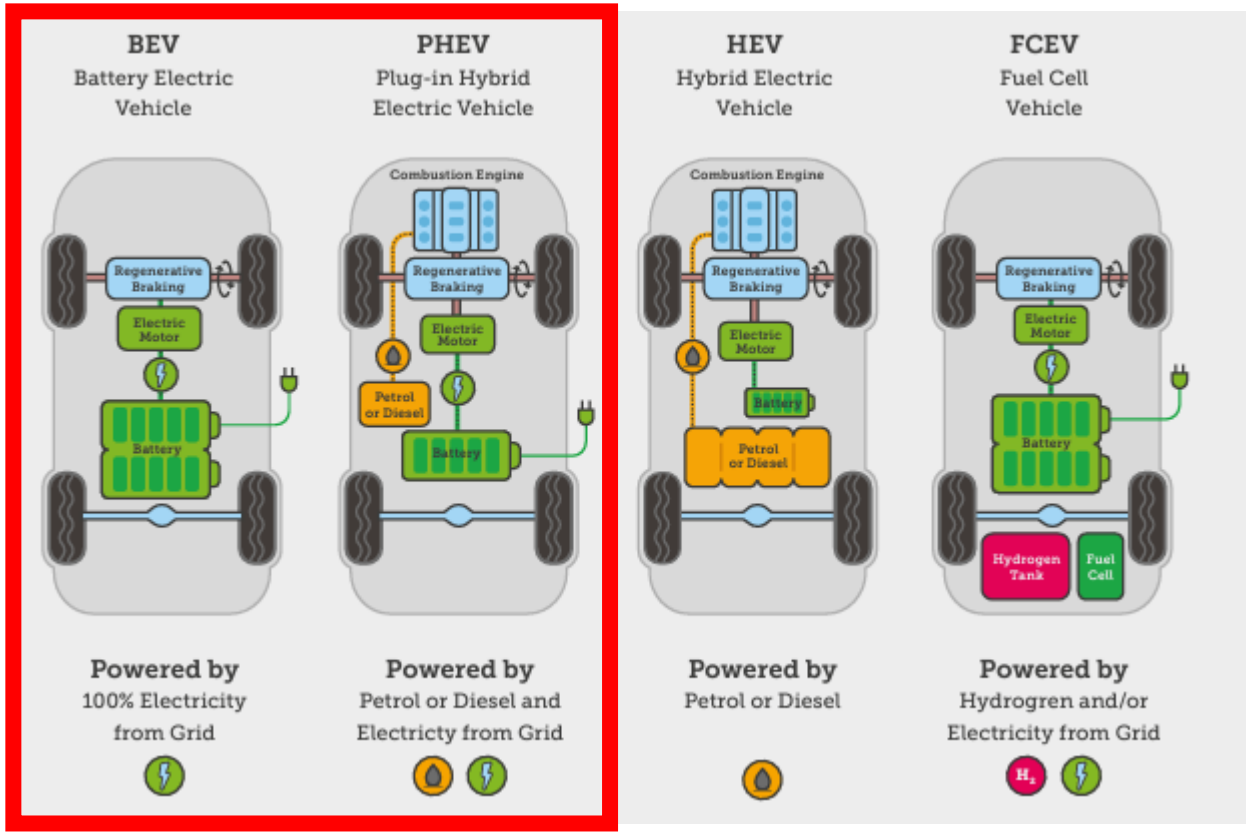
Toledo
Miles
0 2 4

Electric Vehicles Overview

Types of Electric Vehicles

This plan focuses on the **plug-in electric vehicles** that use the region's EV charging network.



Source: climatecouncil.org.au

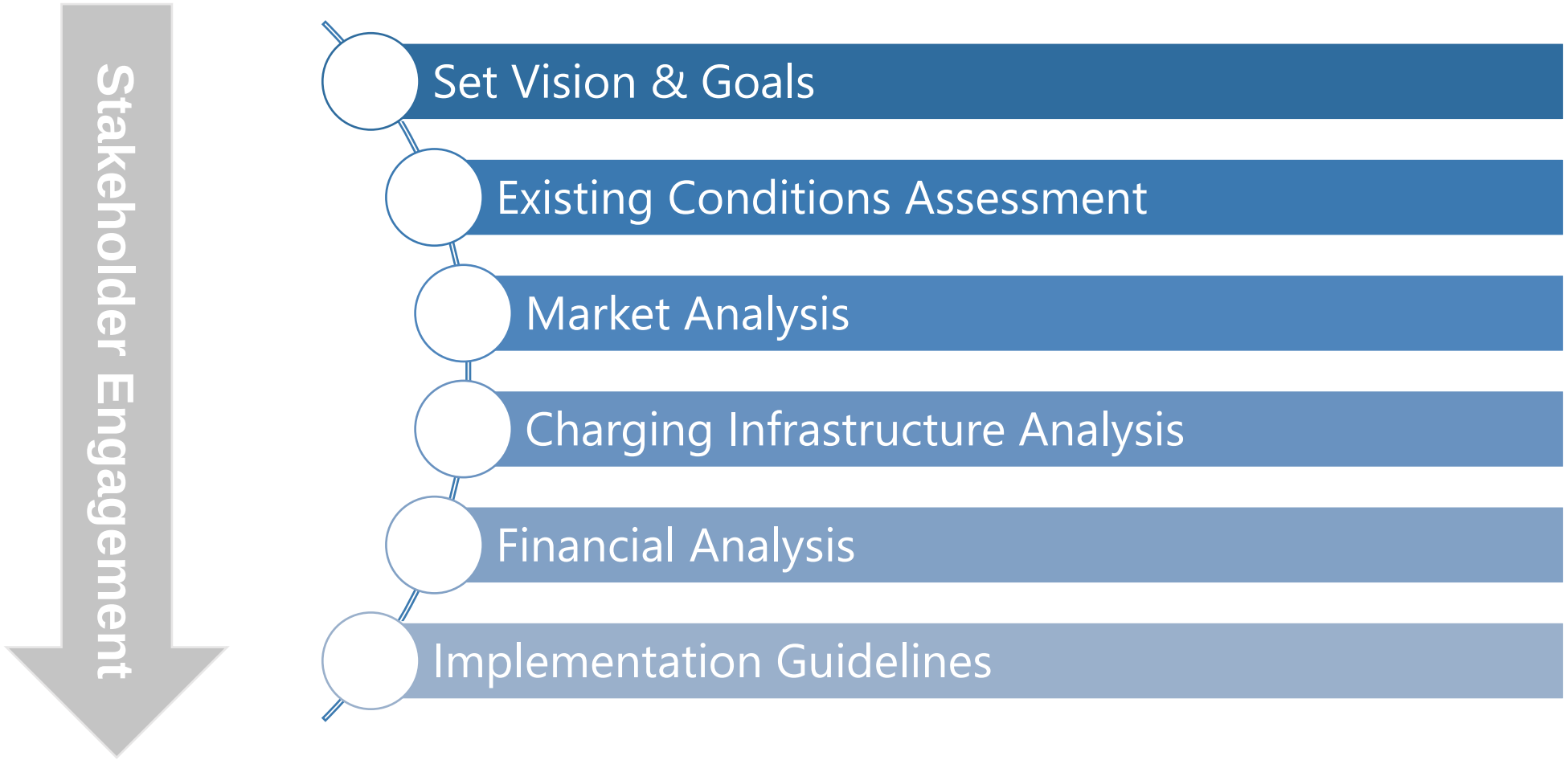
Electric Vehicle Chargers

This plan focuses on **Level 2** and **Level 3 (DCFC)** chargers which comprise the public charging network.

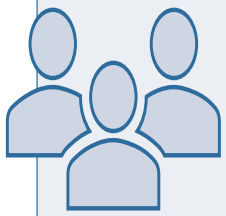
Charging Station Type	Level 1	Level 2	Level 3 (DCFC)
Voltage Requirement	120V, single phase	240V, single phase	480V, three phase
Load in Amps	12 A	40 A	+100 A
Connector	None	SAE J1772, Tesla*	CHAdeMO and SAE Combo, Tesla
Charge Rate	3-5 Miles per hour	12-80 Miles per hour	3-20 Miles per minute
Compatibility	All EVs	All EVs	Not all EVs
Typical Use	Overnight home charging	Accounts for most EV charging	Best for long-range travel
Notes	Standard residential receptacle	Similar to large appliance circuit	Likely requires new infrastructure to site

Developing the Plan

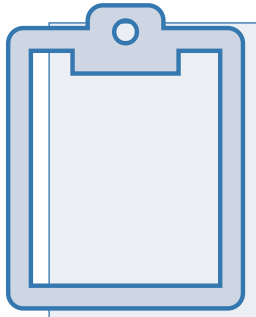
Planning Process



Input & Engagement



Stakeholder Advisory Group



Public Survey

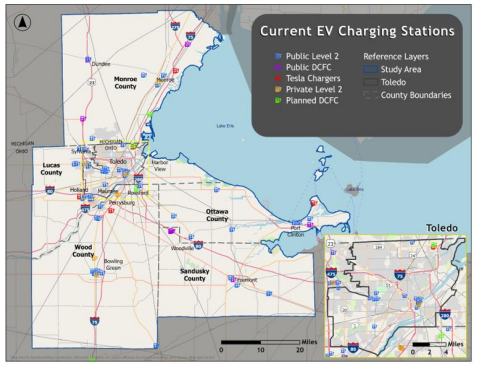
Stakeholder Advisory Group (SAG)

The SAG met 4 times to review and provide input on key components of the study.

Meeting #1

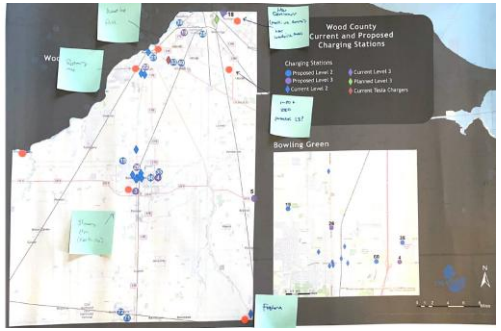
Project introduction
EV charging network gaps
Vision and goals

Meeting #2



Existing conditions and trends
Review public survey input
Siting methodology

Meeting #3



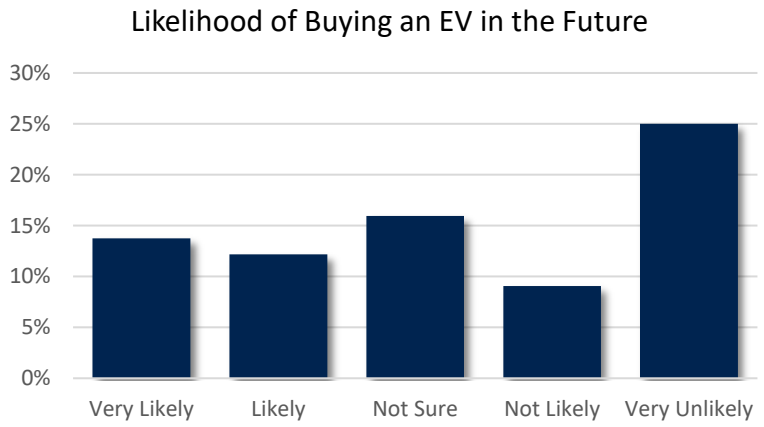
EV adoption projections
Equity considerations
Draft siting recommendations
Prioritization criteria

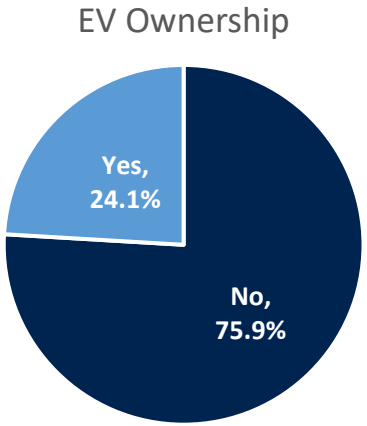
Meeting #4

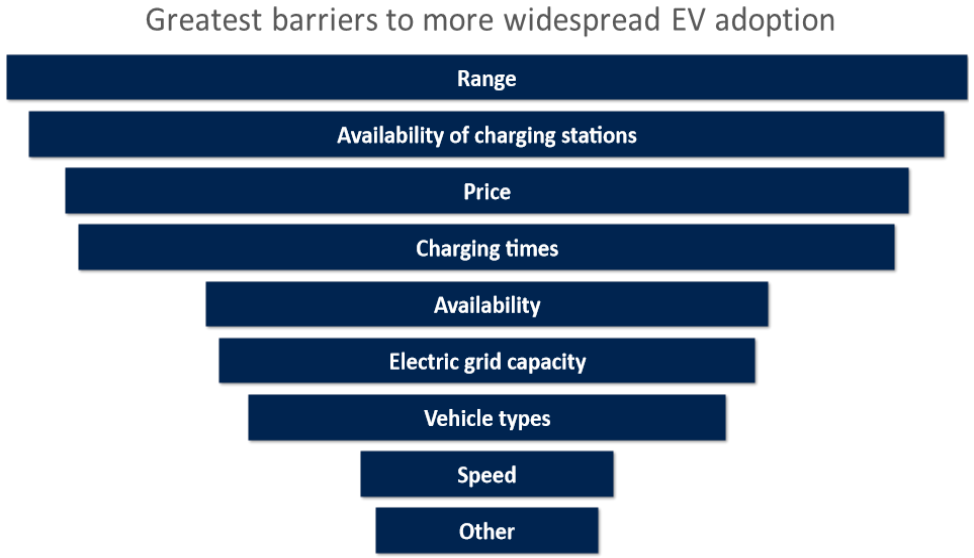
Discuss recommendations
Implementation guidelines
Financial analysis
Schedule for draft and final reports

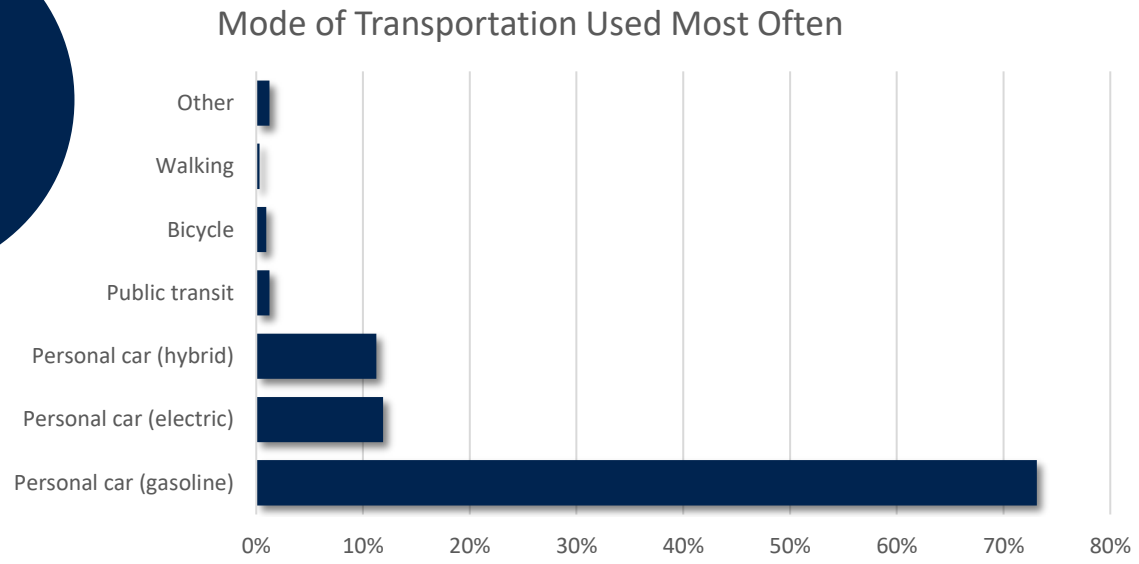
Public Survey

- January 17 – February 28, 2024
- 341 responses
- Asked questions about public perception and interest in EVs.









Vision & Goals

Our vision is to create a future where our region is connected by a convenient, sustainable, and equitable charging network that encourages the use of electric vehicles and promotes economic development.

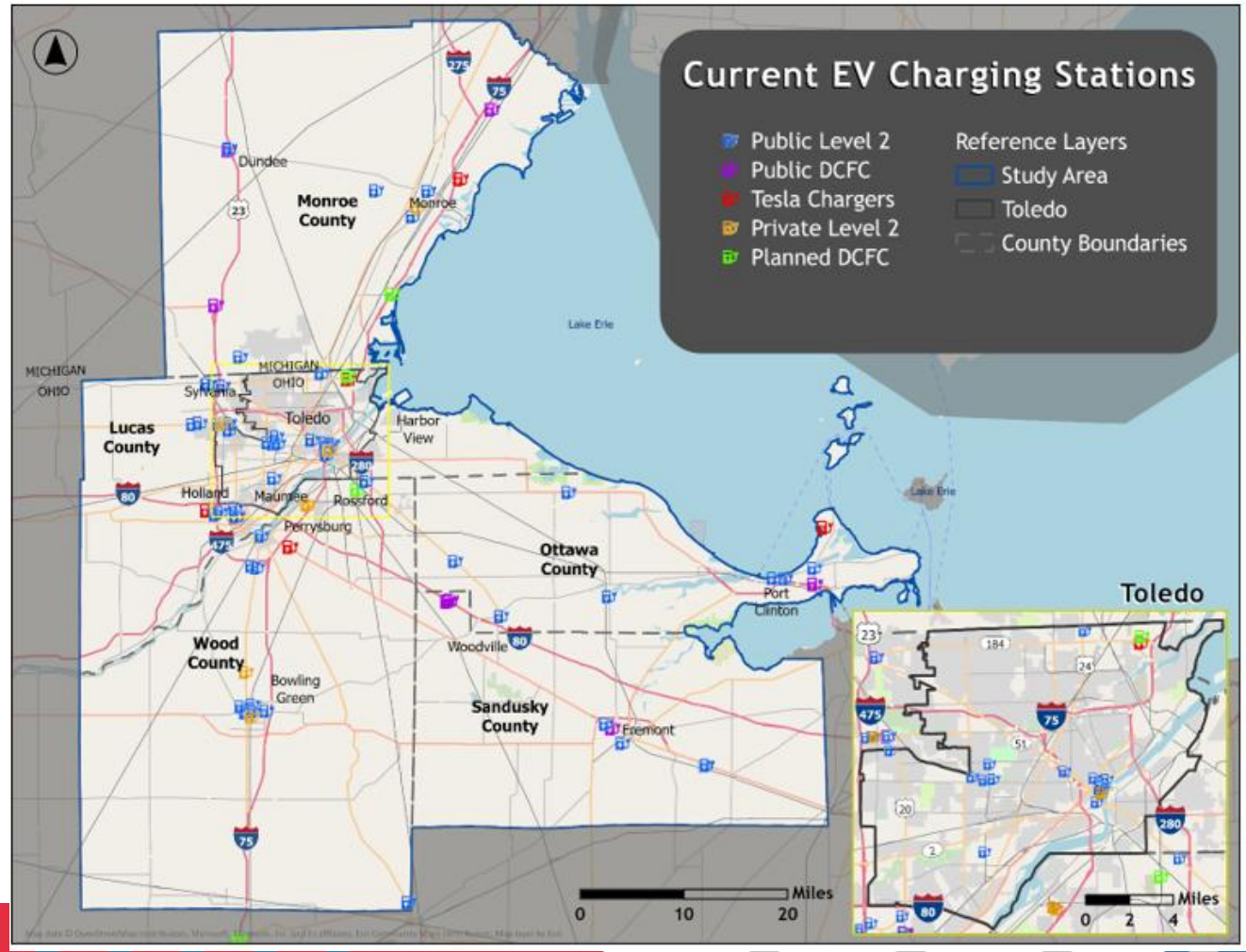
Goal #1: Convenient & accessible

Goal #2: Support economic development

Goal #3: Equitable

Goal #4: Sustainable & reliable

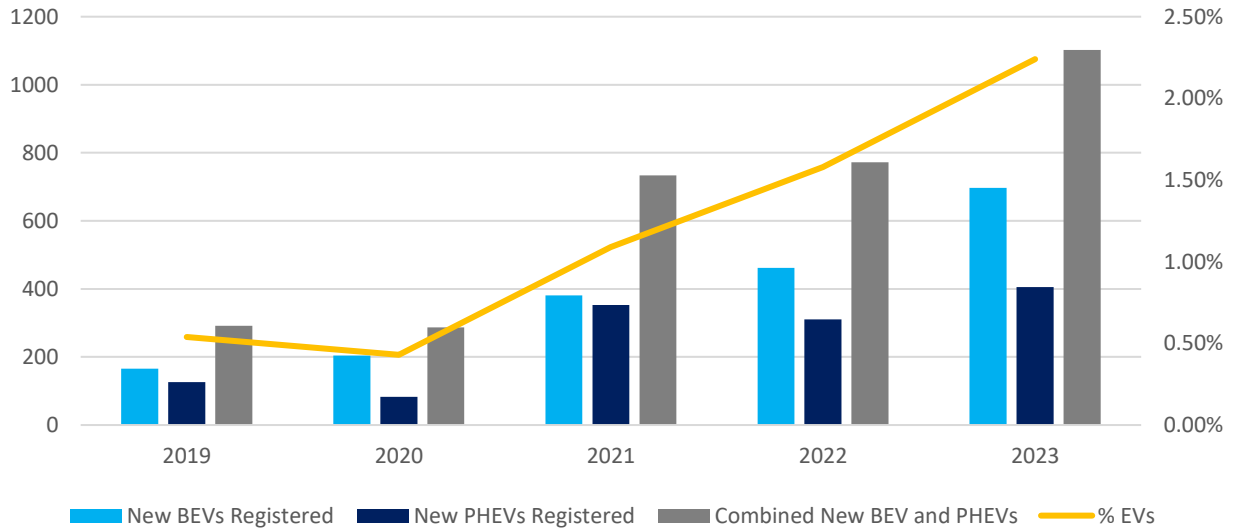
Existing Conditions Assessment



County	Level 2	DCFC	Tesla/Tesla Destination
Lucas	75	9	30 DCFC, 4 L2
Wood	27	1	12 DCFC
Sandusky	11	3	-
Ottawa	10	12	16 DCFC, 2 L2
Monroe	1	10	1 L2
Total	**133**	**35**	**58 DCFC, 7 L2**

EV Adoption Trends

TMACOG Study Area EV Adoption Trends – Ohio Counties



Source: DriveOhio Alternative Fuel Vehicle Registration Dashboard

Monroe County (MI) 2023 EV Registrations

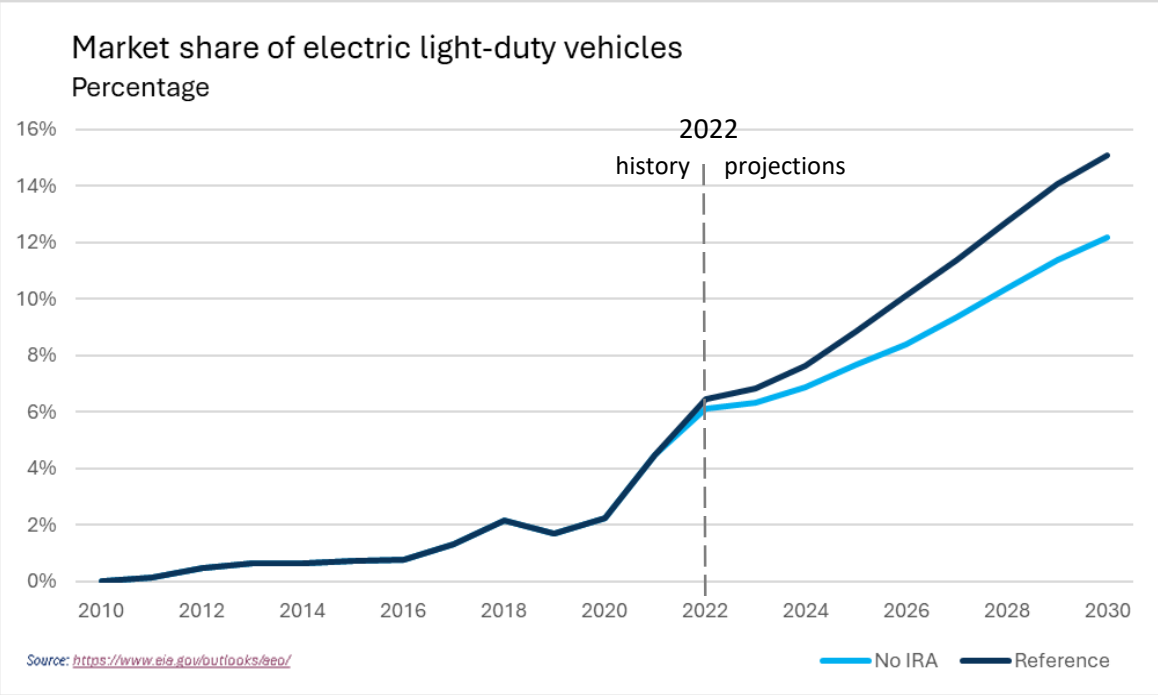
BEV	PHEV	Total	Percent EVs
293	175	468	0.35%

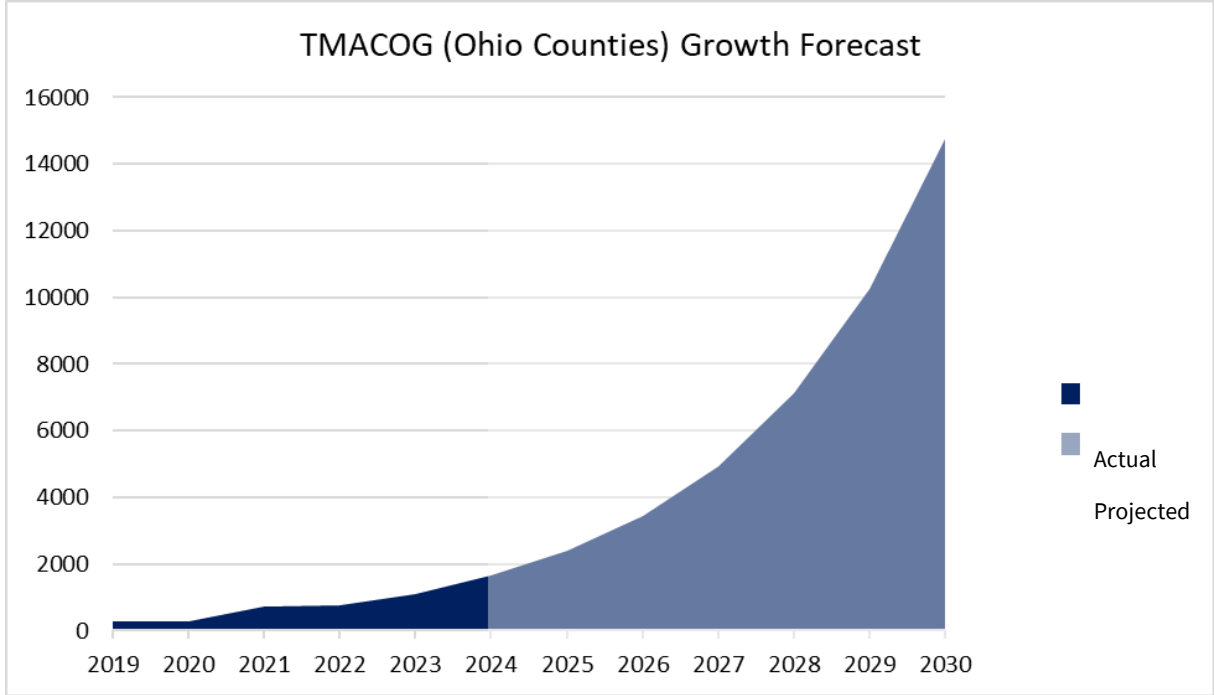
Existing Conditions

Additional Considerations:

- Census data – population, housing types, etc.
- EV Registrations
- Planned EV charging stations
- Electric service areas
- Land use
- Traffic patterns
- EV-related policies, plans and incentives

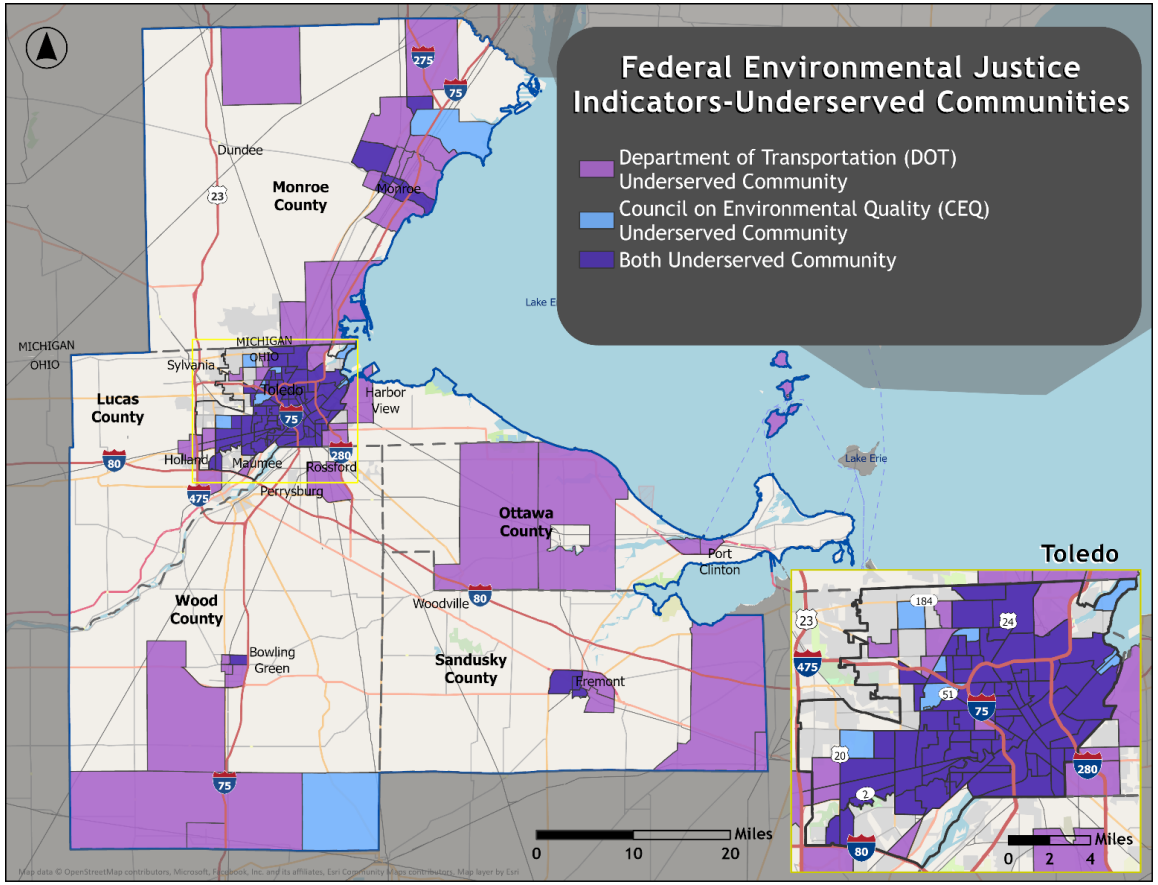
Market Analysis

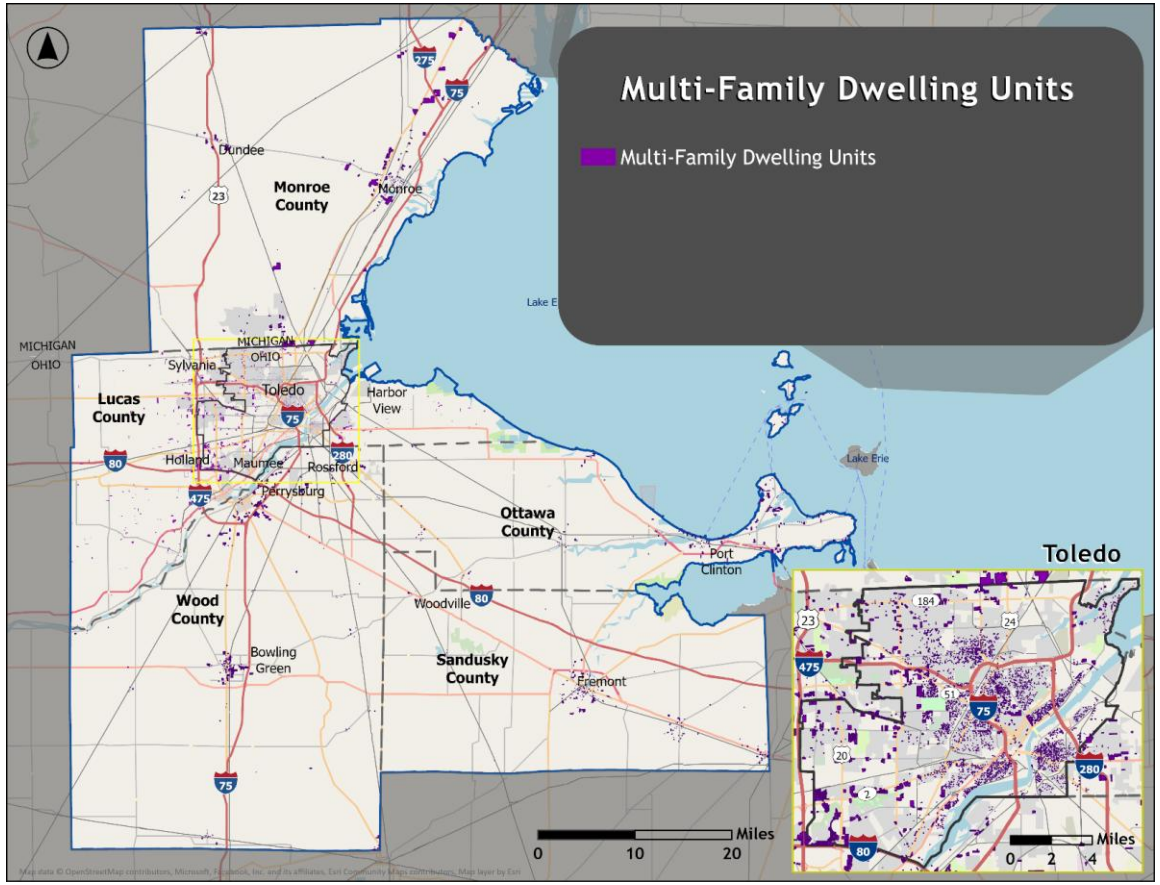




Recommendations & Implementation Guidance

Equity Considerations





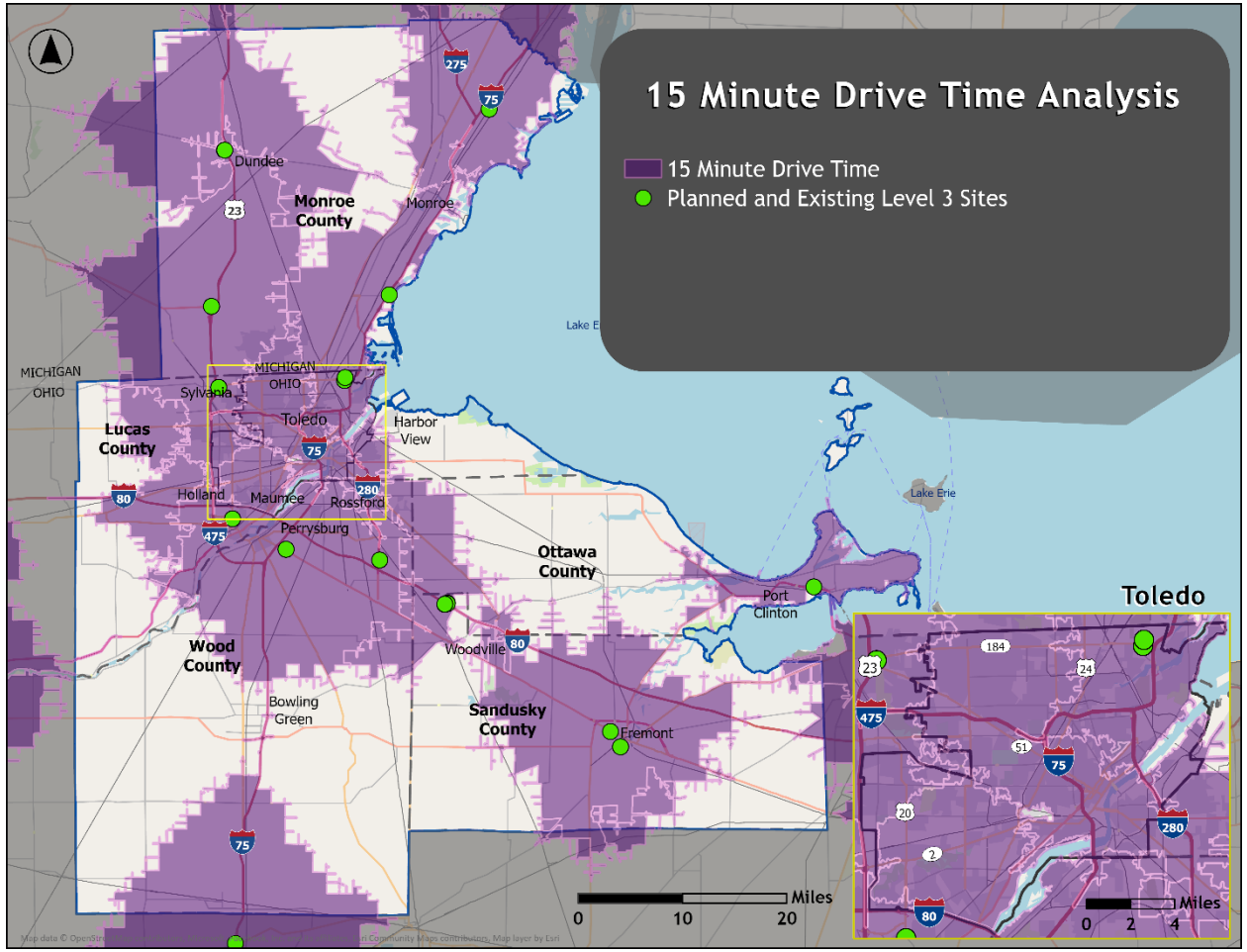
Siting Methodology

Level 2

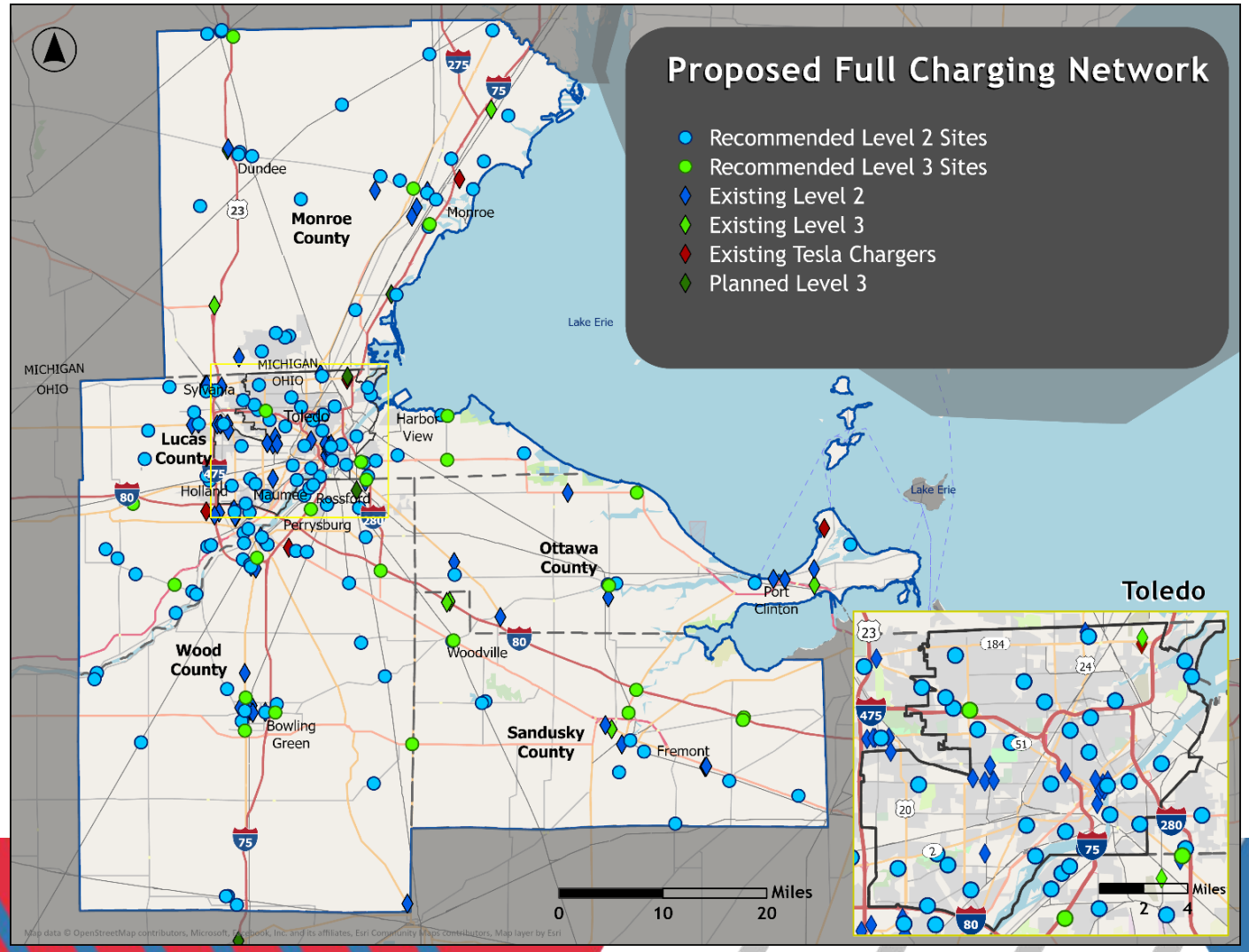
- Prioritize places where people are likely to spend more time (parks, libraries, shopping areas, etc.)

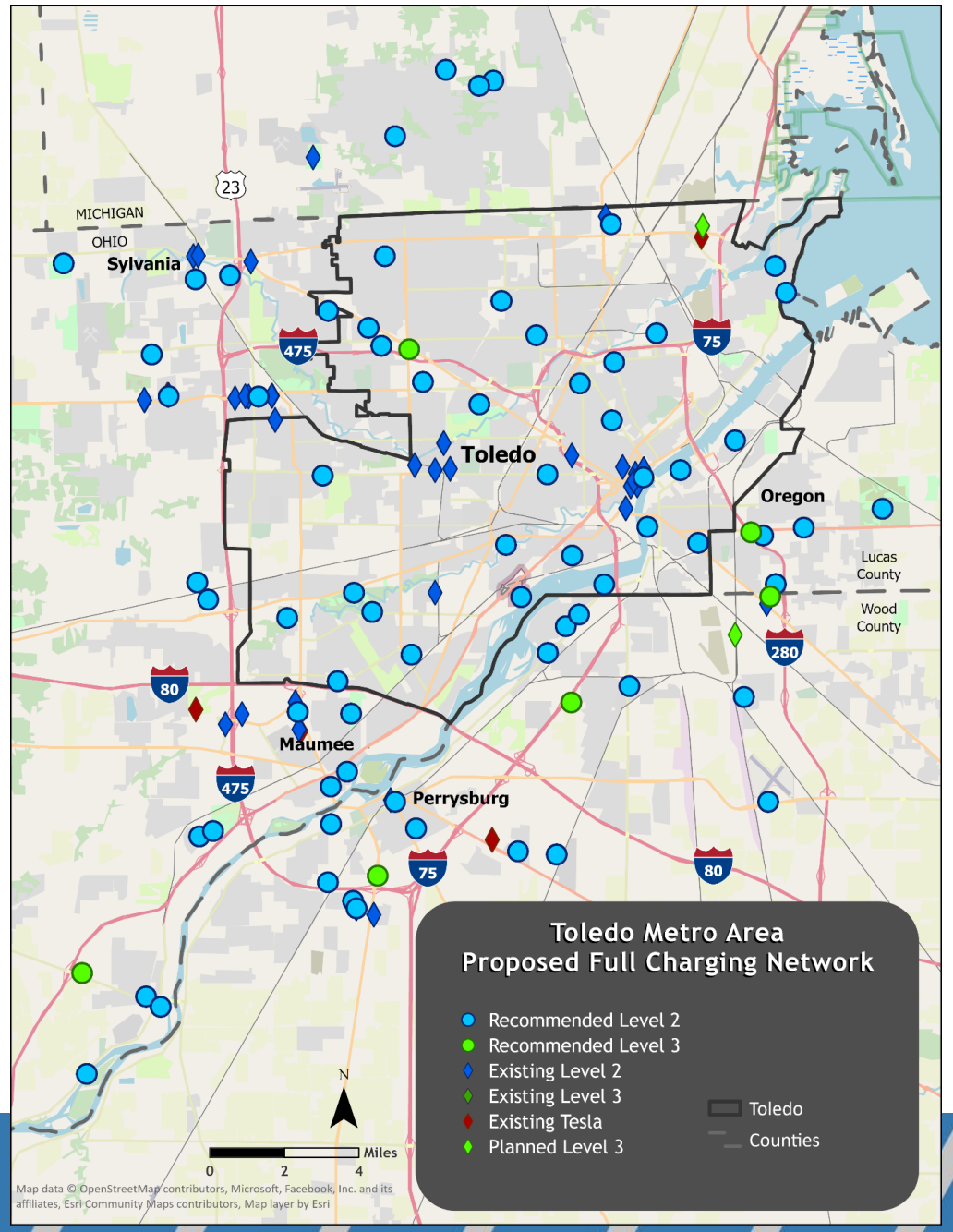
Level 3

- Higher-traffic corridors that support regional travel
- Network gaps



Site Recommendations

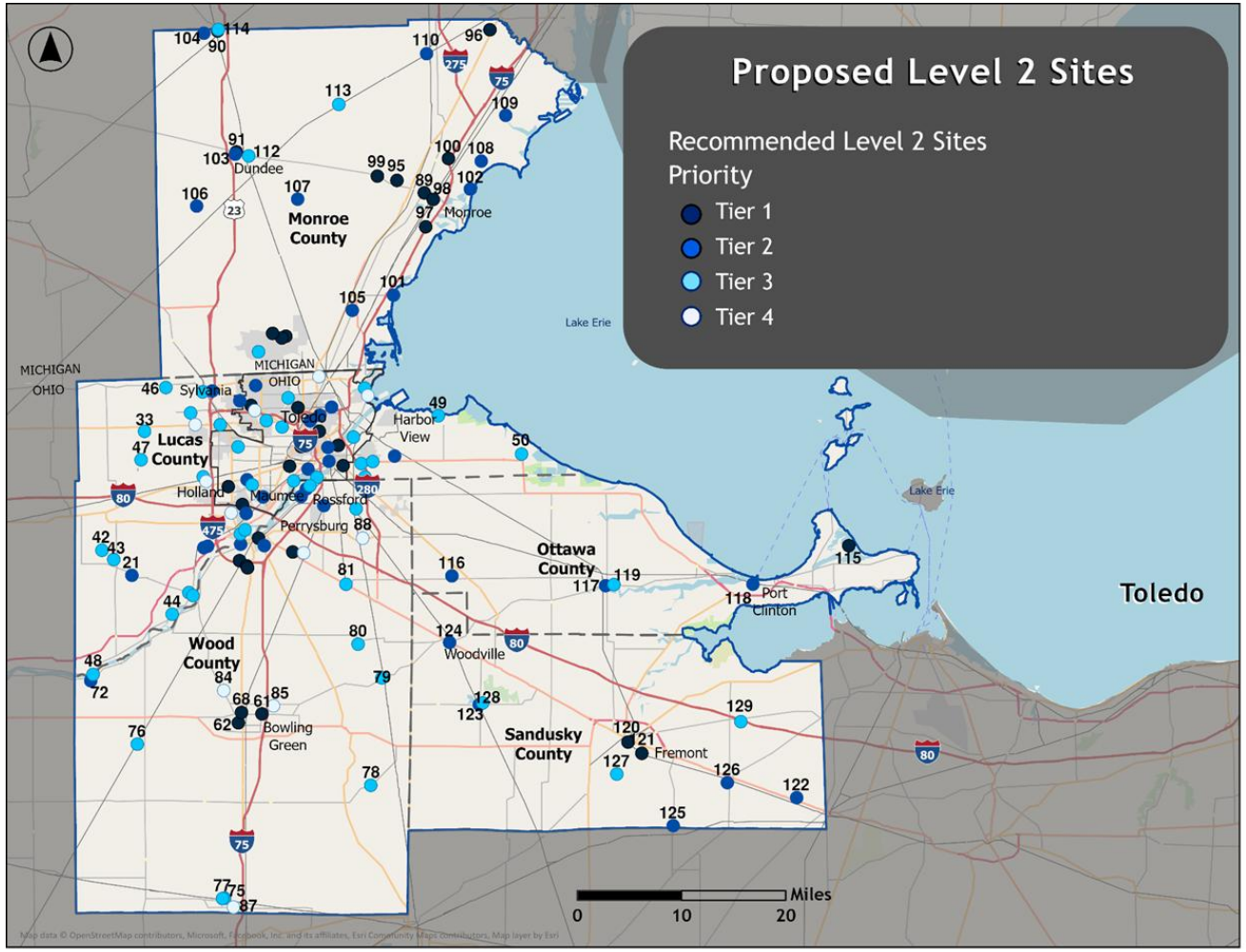


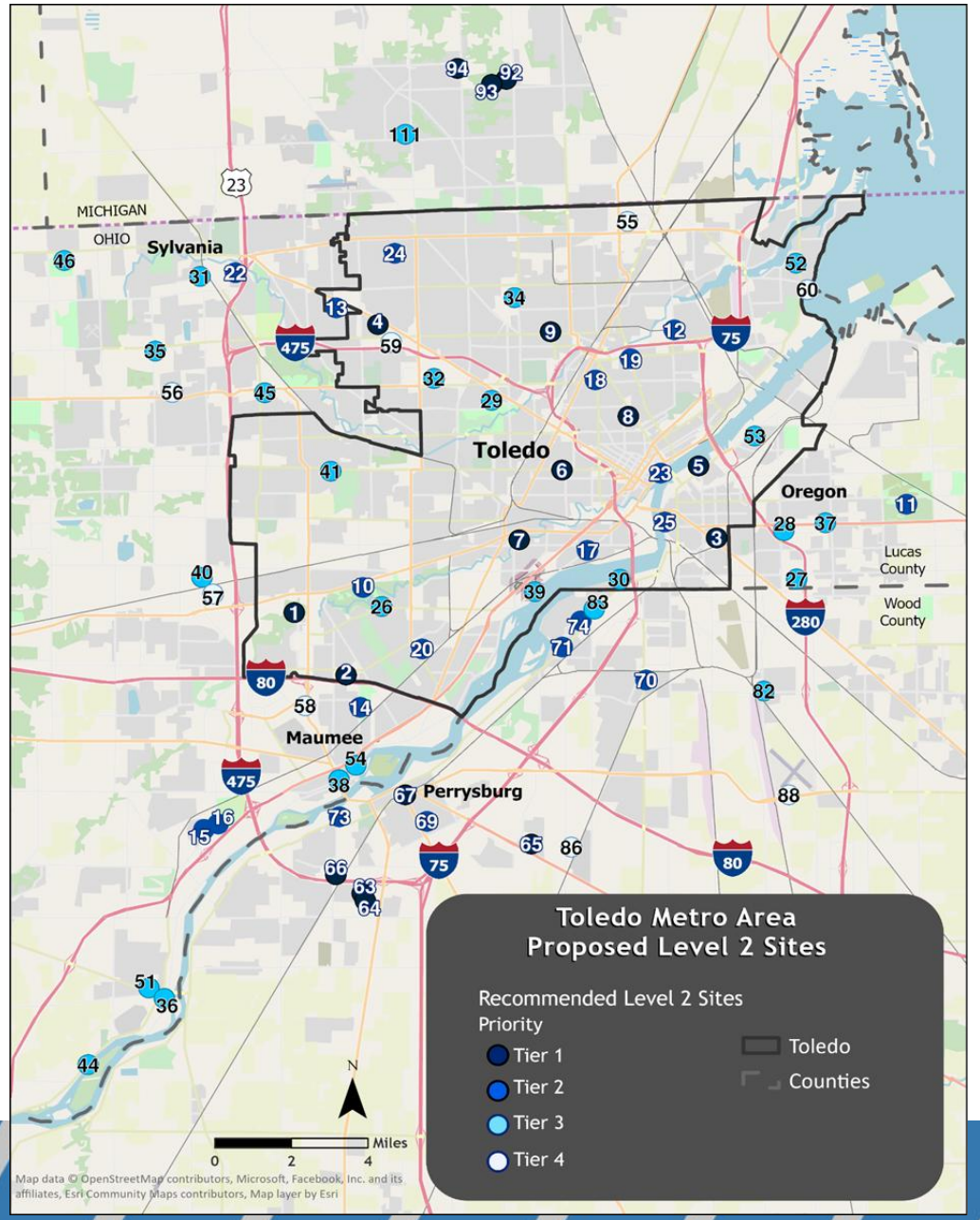


Charging Station Site Recommendations

County	Existing L2 Stations	Additional Recommended L2 Stations	Total L2 Stations	Existing and Planned L3 Stations	Additional Recommended L3 Stations	Total L3 Stations
Lucas, OH	35	60	95	7 (6 existing, 1 planned)	6	13
Wood, OH	13	28	41	1 existing	8	9
Sandusky, OH	6	10	16	4 existing	5	9
Ottawa, OH	7	5	12	2 existing	2	4
Monroe, MI	7	26	33	6 (4 existing, 2 planned)	3	9

Level 2 Site Prioritization





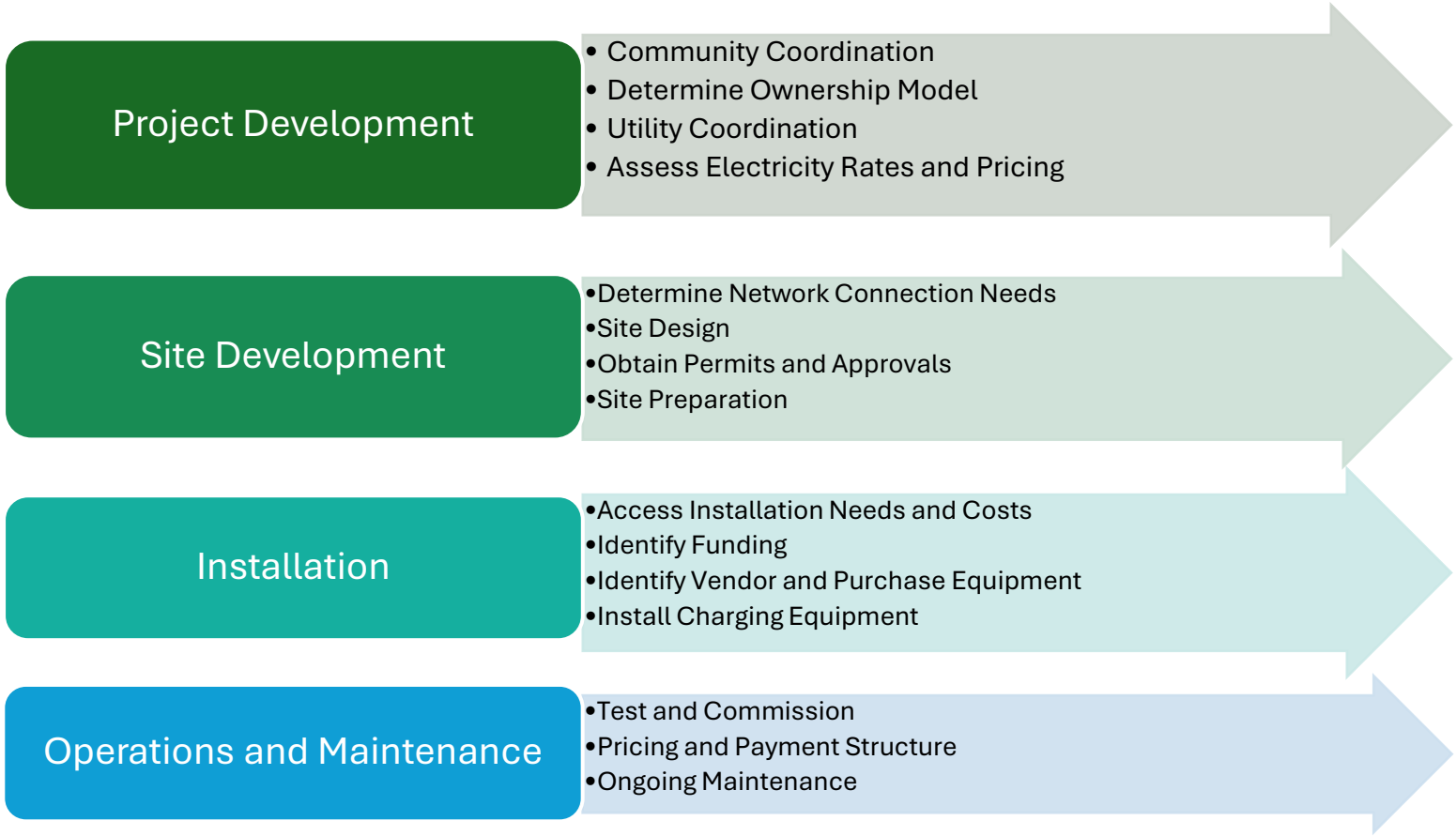
Level 3 Site Prioritization

Financial Analysis

		Level 2 Station 2 per site		Level 3 Station 4 per site	
		Urban	Rural	Urban	Rural
Initial Construction	Permitting[1]	2,050	2,050	2,050	2,050
	Utilities (costs to upgrade based on cost of transformer)	12,000	10,000	125,000	105,000
	Installation	21,000	8,000	50,000	22,000
	Equipment (panels, circuiting)	45,000	20,000	135,000	100,000
	Charging Stations	10,000	10,000	164,000	164,000

[1] Includes permitting costs related to site plan review, the zoning permit application (average review time is two weeks), and the building permit application (average review time is four weeks). A majority of jurisdictions require that the electrical permit be submitted by a licensed Electrician and/or Electrical Contractor.

Implementation Guidance



Questions?

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