

Hillsborough TPO

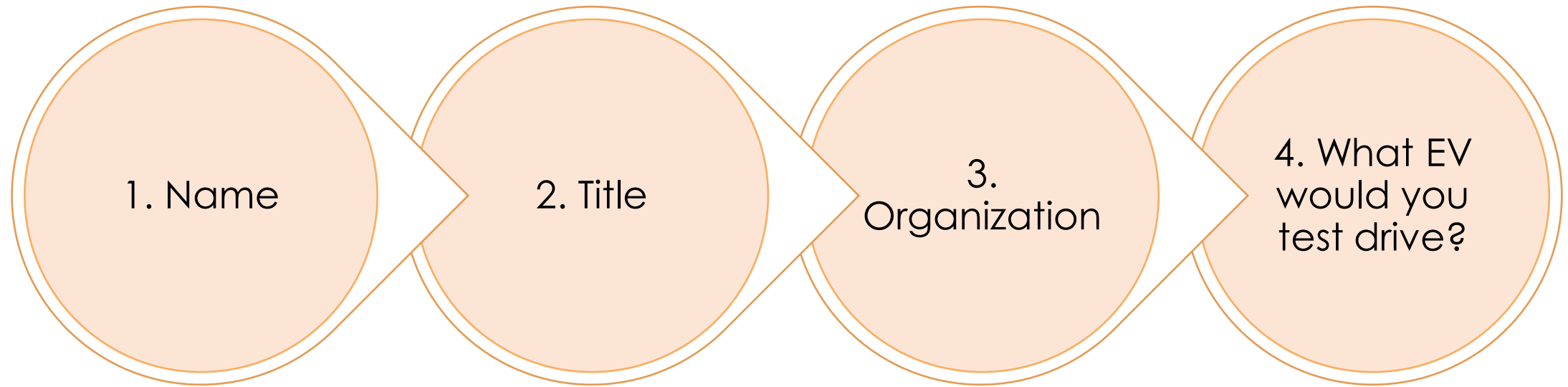
ELECTRIC VEHICLE INFRASTRUCTURE PLAN

TECHNICAL ADVISORY
COMMITTEE MEETING #1

FEBRUARY 3RD, 2023



WELCOME! Please introduce yourself...

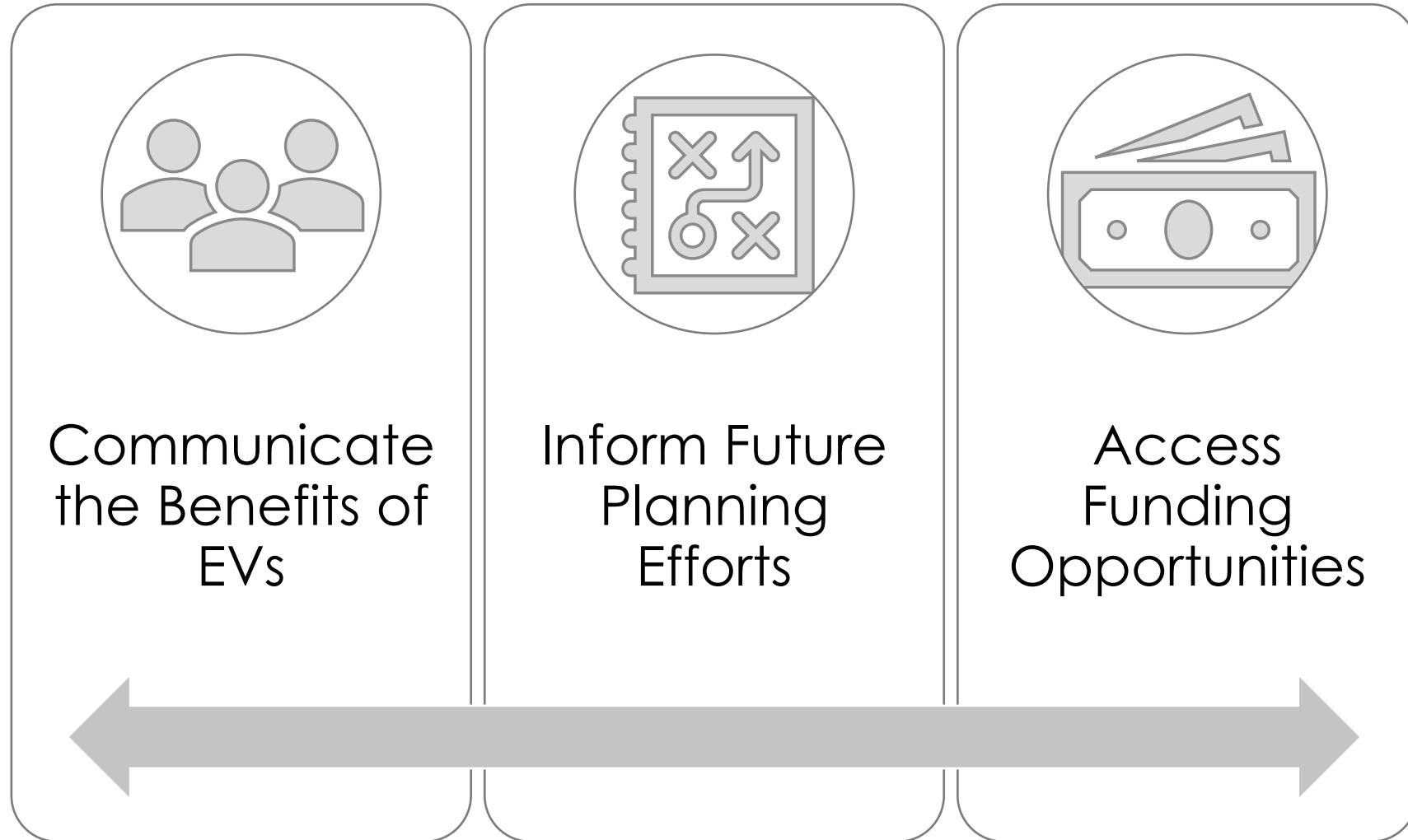


Today's Agenda

1. Plan Context & Desired Outcomes
2. Overview of Existing Plans
3. Fundamentals of Electric Vehicles
4. Existing Conditions
5. Plan Goals & Indicators
6. Next Steps & Discussion



Plan Context & Overview: Desired Outcomes



Existing Plans

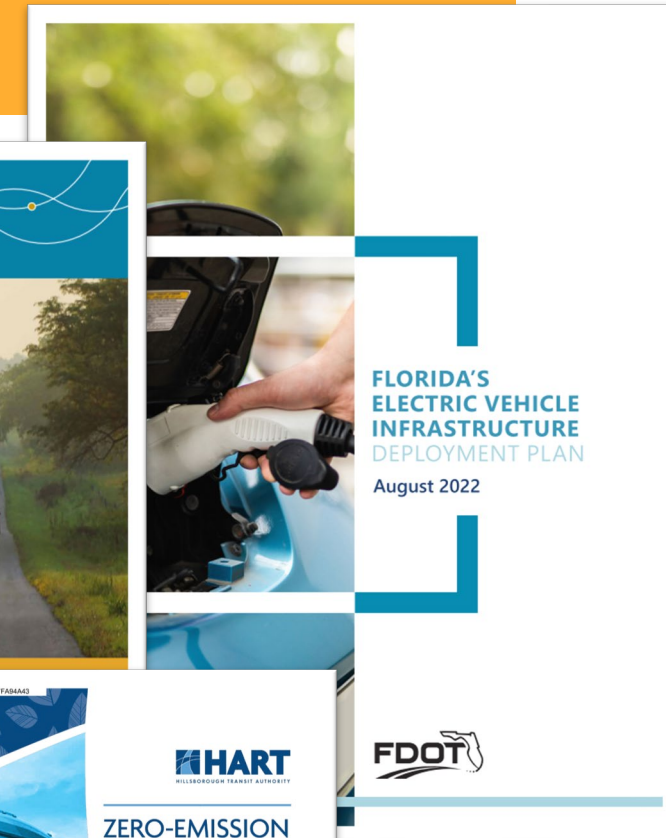
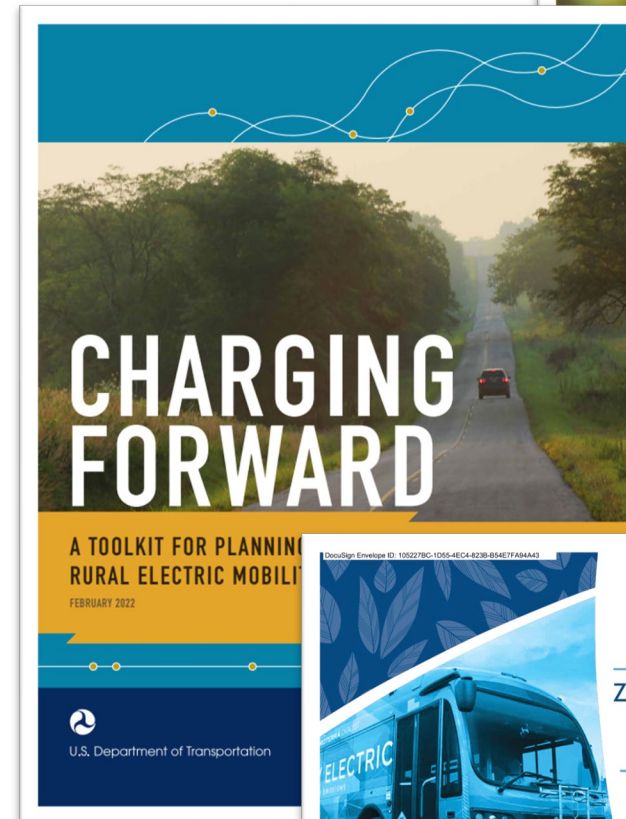
Hillsborough Area	<ul style="list-style-type: none">• HART Zero-Emission Fleet Transition Plan (2022)
Florida	<ul style="list-style-type: none">• Florida EV Roadmap (2020)• FDOT EV Infrastructure Master Plan (2021)• FDOT Electric Vehicle Infrastructure Deployment Plan (2022)• FDOT Florida Transportation Plan (2022)
National	<ul style="list-style-type: none">• USDOT Charging Forward – A Toolkit for Planning and Funding Rural Electric Mobility Infrastructure (2022)• USDOE National Plug-In Electric Vehicle Infrastructure Analysis (2017)
Other	<ul style="list-style-type: none">• Orlando's 2030 Electric Mobility Roadmap (2021)

Existing Plans: Key Findings

- The TPO is aligned with partner agencies
- Identified barriers and strategies
- Supported the development of a methodology for analysis
- Developed expected adoption rates
- Suggested targets and indicators of success



Are there any important documents we missed?



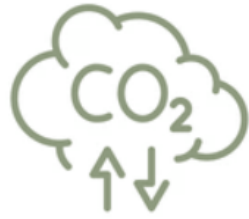
Fundamentals of Electric Vehicles & Charging Infrastructure

- Benefits of Electric Mobility
- Barriers to Adoption
- Types of EVs
- Charging Infrastructure
- EV Adoption Trends

Benefits of & Barriers to Electric Adoption



Reduced Fuel Costs



Reduced Emissions



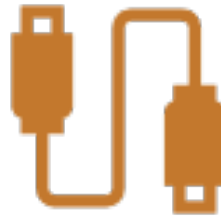
Reduced Maintenance Cost



Backup Power Supply



EV Purchase Price



EV Charging Access



Lack of Education

Types of EVs

Battery Electric Vehicles (BEVs)



Powered **solely** by an **electric battery**

"all-electric vehicles"

Recharged by an external power source

Driving range: 150 - 400 miles (battery)



Tesla Model 3

Nissan Leaf

Ford Lightning

Fuel Cell Electric Vehicles (FCEVs)



Use **hydrogen** to power an **electric motor**

For commercial uses such as buses and long-haul trucks

Driving range: 300 - 400 miles



Toyota Mirai

Plug-In Hybrid Electric Vehicles (PHEVs)



Powered by an **electric battery** AND a **gasoline tank**

The electric battery can be recharged by an external power source; the gasoline tank can be refilled.

Driving range: 20 - 40 miles (battery) + 300 miles (gas)

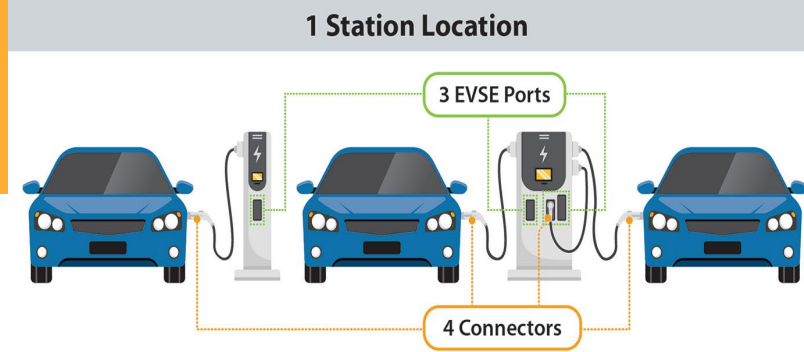


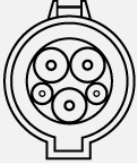
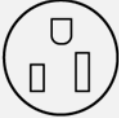

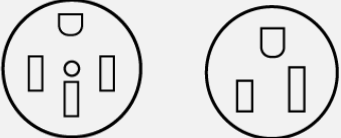
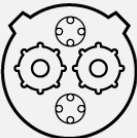
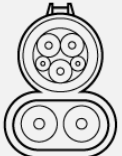

Chevrolet Volt

Chrysler Pacifica

Ford Fusion Energi 10

Charging Infrastructure Overview



Charging Level	Miles Per Hour of Charge	Connector	Wall Plug	Venue
Level 1	3 - 5	 Port J1772	 Nema 515, Nema 520	Home Workplace
Level 2	12 - 50	 Tesla HPWC	 Nema 1450 (RV plug) Nema 6-50	Home Workplace Public
Direct Current Fast Charger (DCFC or Level 3)	75 - 300	   CHAdeMO SAE Combo CCS Tesla Supercharger	--	Workplace Public

Charging Infrastructure Ownership Models



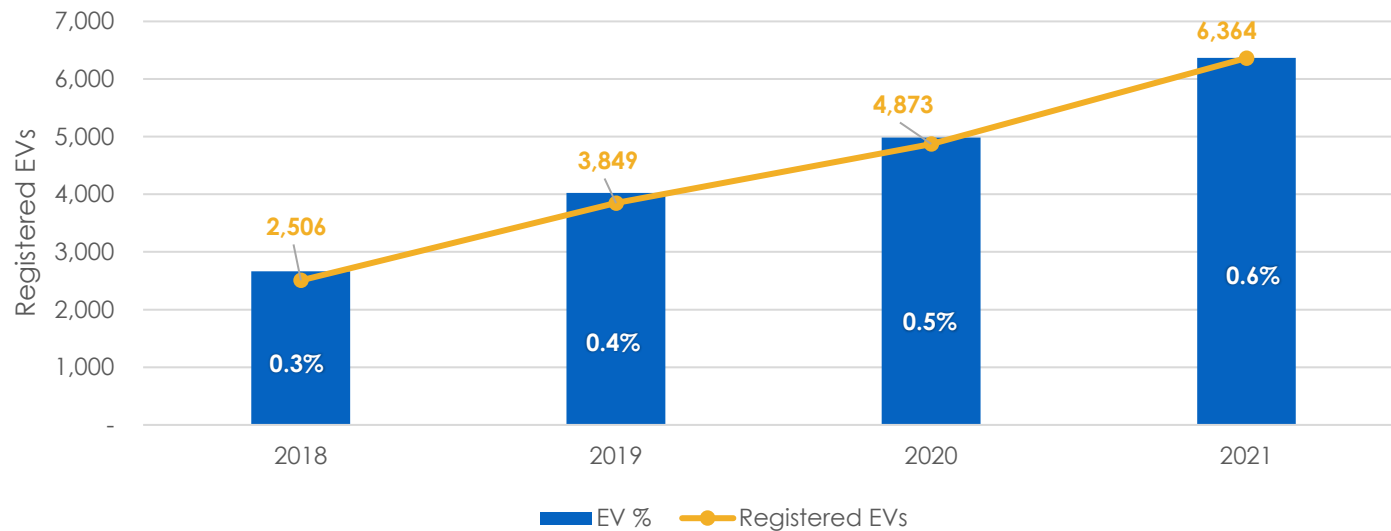
Electric Vehicle Service Provider



Station Host

Charging As A Service	Responsible for deployment and maintenance	Leases charging equipment from EVSP with limited responsibilities
EVSP-owned	Responsible for deployment and maintenance	--
Outright Purchase	Some warranty service	Responsible for deployment and maintenance
Hybrid Owned	Share all costs with the station host	Share all costs with the EVSP

EV Adoption Trends



EV Registrations in Hillsborough County, 2018 – 2021



Tampa Bay area: One of the nine major US metro areas where used EVs are selling faster than used conventional vehicles.



Florida: In 2035, between 5 - 20% of light-duty vehicles are projected to be EVs.



Nationwide: In 2030, 32% of annual light-duty vehicle sales are projected to be EVs, with 26.4 million EVs on US roads.

Fundamentals of EVs

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Do you have any questions on the types of EVs available, how they charge, or how charging infrastructure is operated?

Which level of charger is more relevant to the public charging plan in the Hillsborough TPO planning area?



Charging Station Credit: Ryan Casburn, Kittelson & Associates, Inc.

EV Use Cases



EV Use Cases: Urban & Light Duty Vehicles

Urban

- Chargers at multi-unit dwellings is increasing in importance as an amenity, but can be difficult to find currently

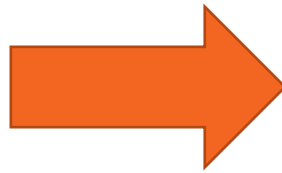
Rural

- Typically, higher cost to upgrade electrical network to handle EV charging demand
- EV drivers are more spread out than in urban areas

EV Use Cases: Disadvantaged Communities

Hillsborough TPO
Nondiscrimination
and Equity Plan

Joint Office of Energy
and Transportation
Justice 40 Historically
Disadvantaged
Communities



Disadvantaged
communities...

Are more likely to bear a
disproportionate burden of
transportation-related air pollution

Are more likely to live in lower-
income households and buy higher-
emitting / lower-cost vehicles

Are more likely to live in multi-unit
dwellings without chargers available

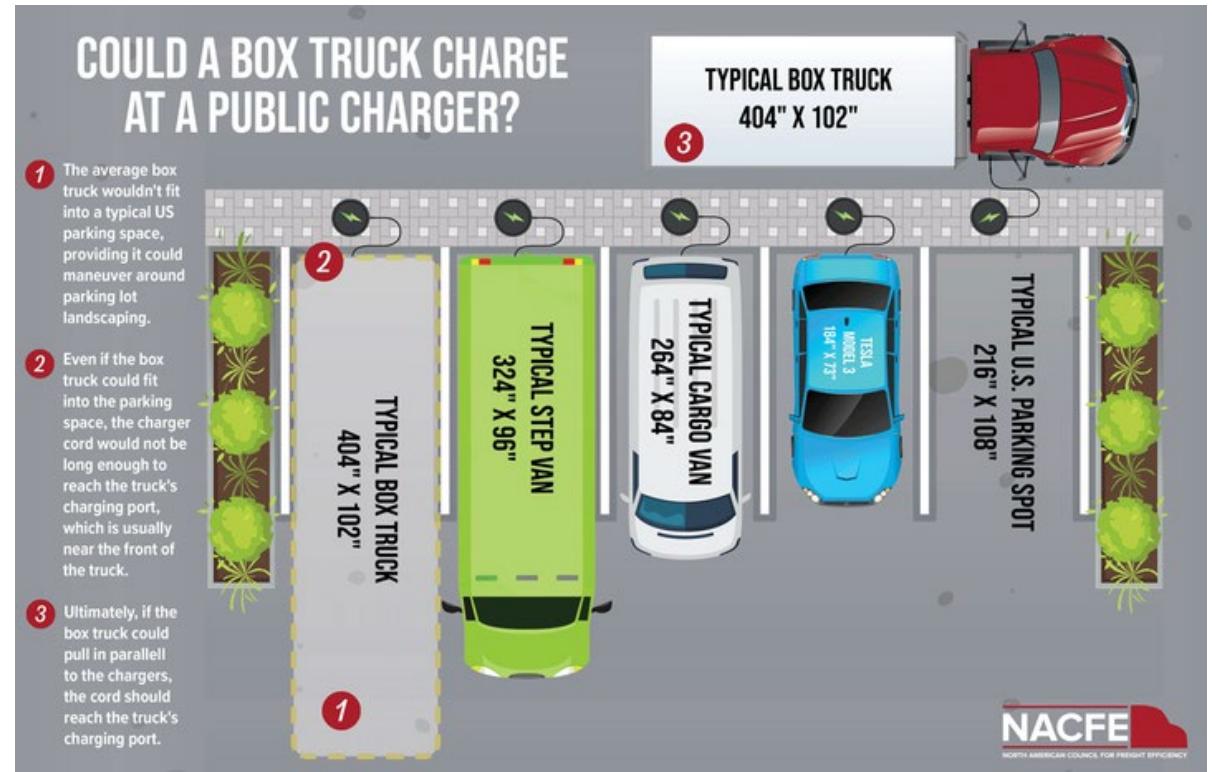
EV Use Cases: Commercial Delivery (Medium-Duty Freight)

Used for delivery or short trips

Usually, part of a fleet that returns to a depot each day

Major source of air pollution

May require both “at depot” and “on route” charging



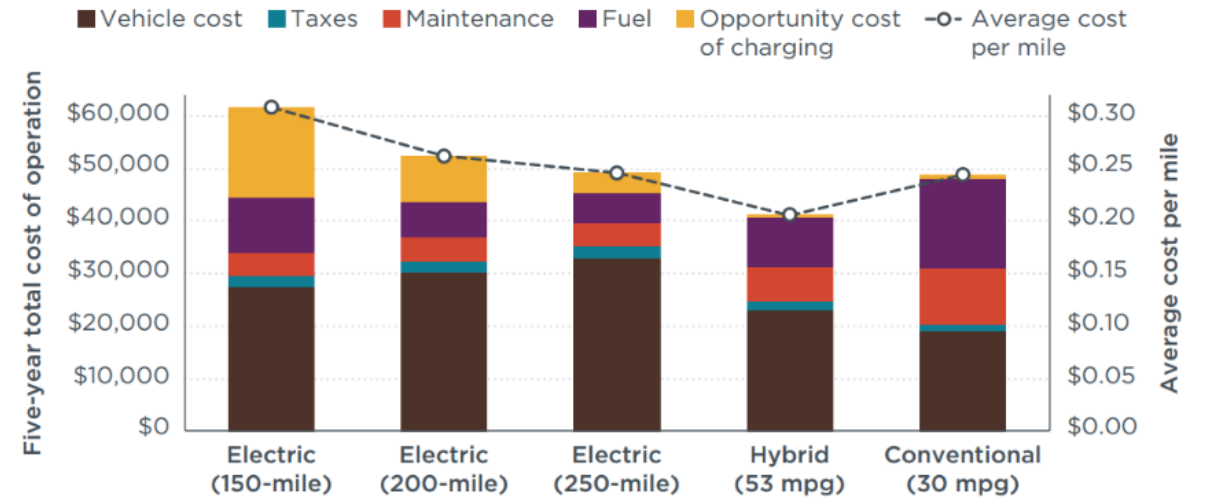
EV Use Cases: Transportation Network Companies & Gig Drivers

Give rides (Uber, Lyft) or make deliveries (Amazon Flex, Door Dash)

Typically driving light-duty vehicles

Tend to drive more miles per day (100-300 miles, compared to 35 miles)

Likely require both at home and public charging



This figure presents data on the TCO of different ride-hail vehicles by fuel type excluding existing state and federal vehicle incentives. Without public subsidies, EVs have a higher TCO than conventional ride-hail vehicles.

TNC Drivers Waiting at Tampa International Airport. Credit: Google Streetview



EV Use Cases: Transit Fleet

Vehicles typically travel between 150 – 350 miles per day

Require in-depth planning and evaluation to electrify

Eligible for many federal grant programs to assist with vehicle and charging infrastructure procurement

May need depot and on route charging depending on the route



A TriMet (Portland, OR) Bus Charging. Credit: TriMet

EV Use Cases

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Is there something relevant to these use cases in Hillsborough that we didn't discuss here?

Do you have any questions on these use cases?



Existing Conditions

Infrastructure Inventory & Demographics

- Charging Infrastructure
- Disadvantaged Communities & Underserved Areas
- HART Fleet & Facilities
- Vehicular Parking Facilities in Tampa

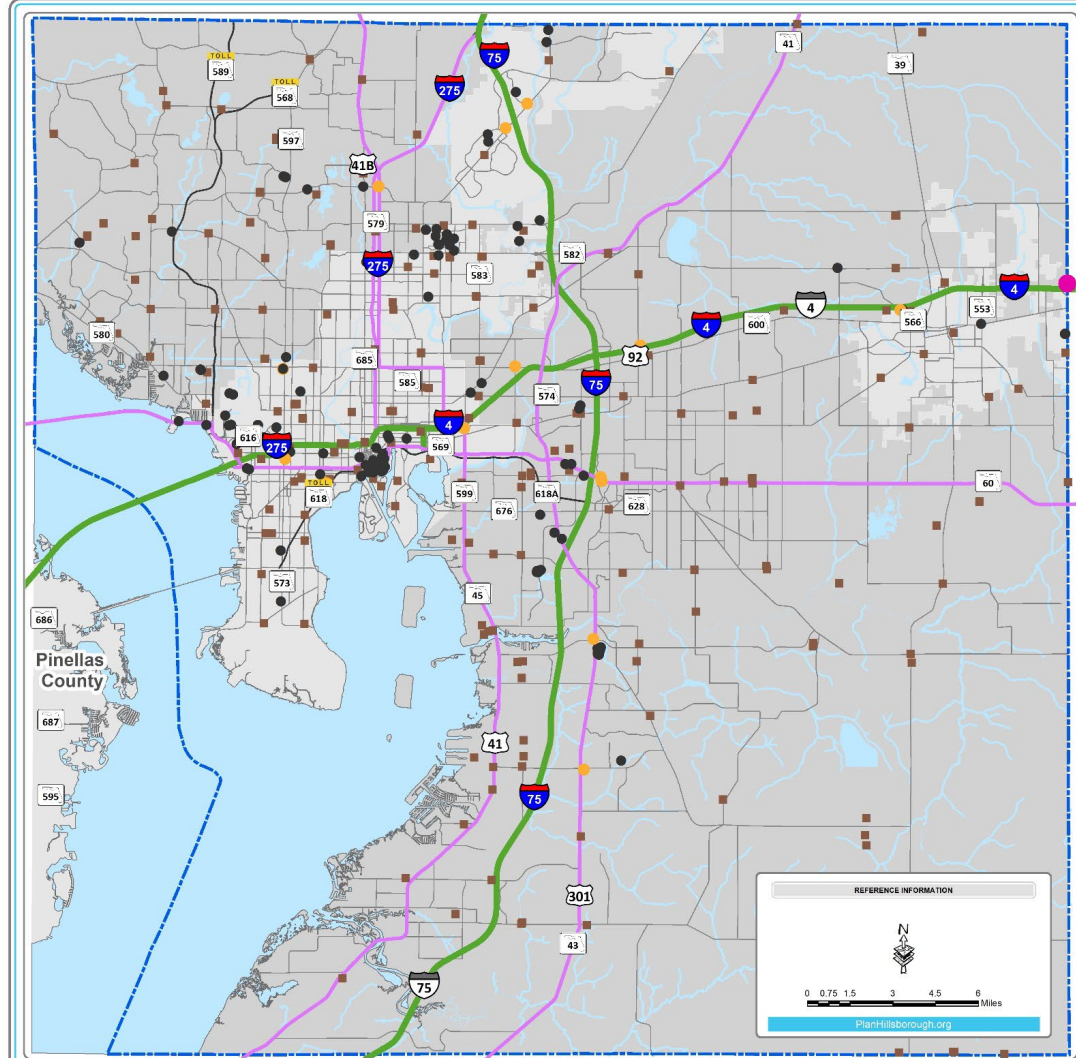


Local Land Use & Development Assessment

- Existing Land Use & Activity Centers
- EV Infrastructure Supportive Lands

Existing Conditions: Charging Infrastructure

Charging Level	Number of Stations	Number of Chargers
Level 1	1	8
Level 2	165	387
Level 3 / DCFC	14	94



HILLSBOROUGH COUNTY, FLORIDA

ELECTRIC VEHICLE INFRASTRUCTURE PLAN EXISTING INFRASTRUCTURE

LEGEND

- Electric Vehicle Charging Infrastructure
 - DCFC Chargers
 - Level 1 and Level 2 Chargers
- FHWA EV Corridor Designation
 - Ready
 - Pending
 - FDOT High Priority Potential EVSE
- Electrical Substation
- Hillsborough County
- Hillsborough County
- Tampa
- Plant City
- Temple Terrace

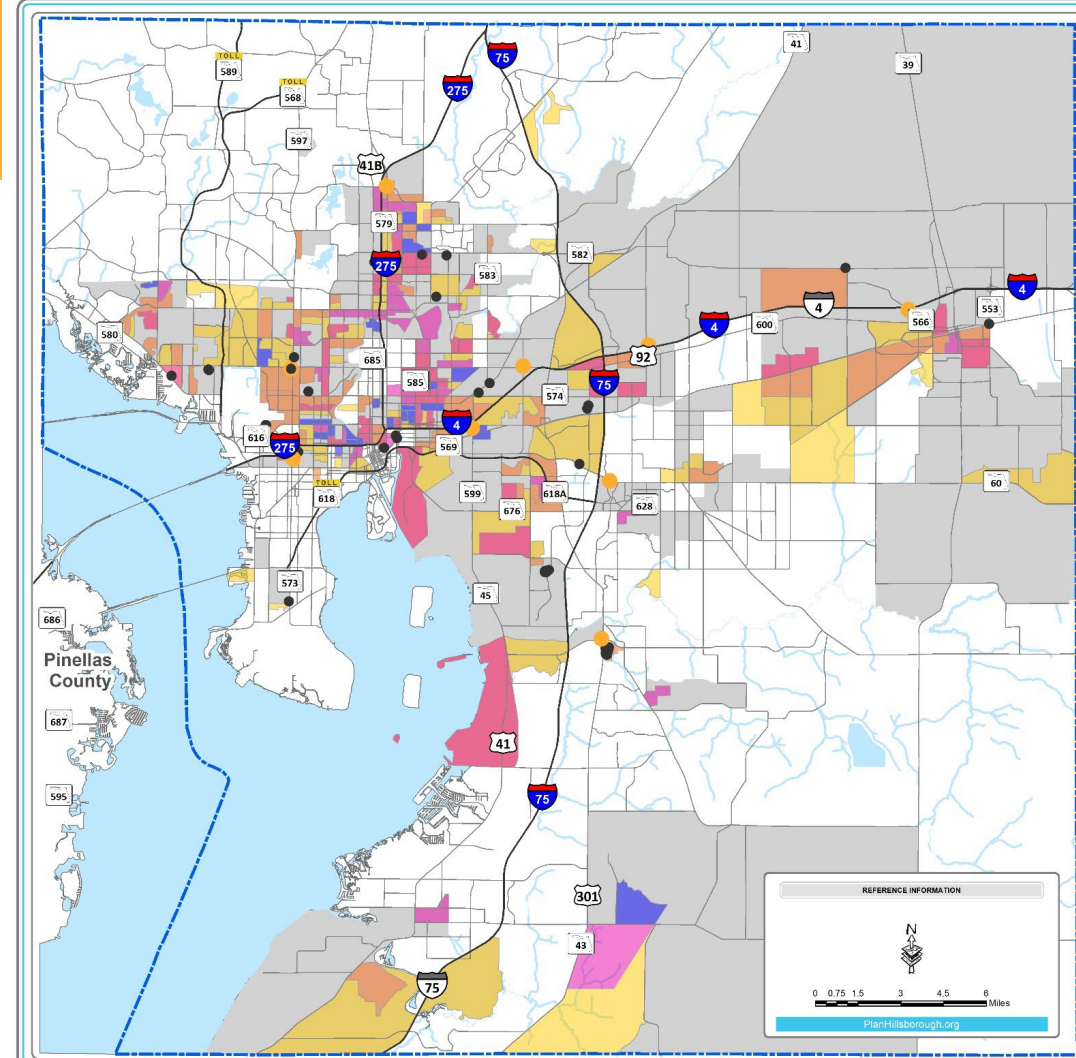
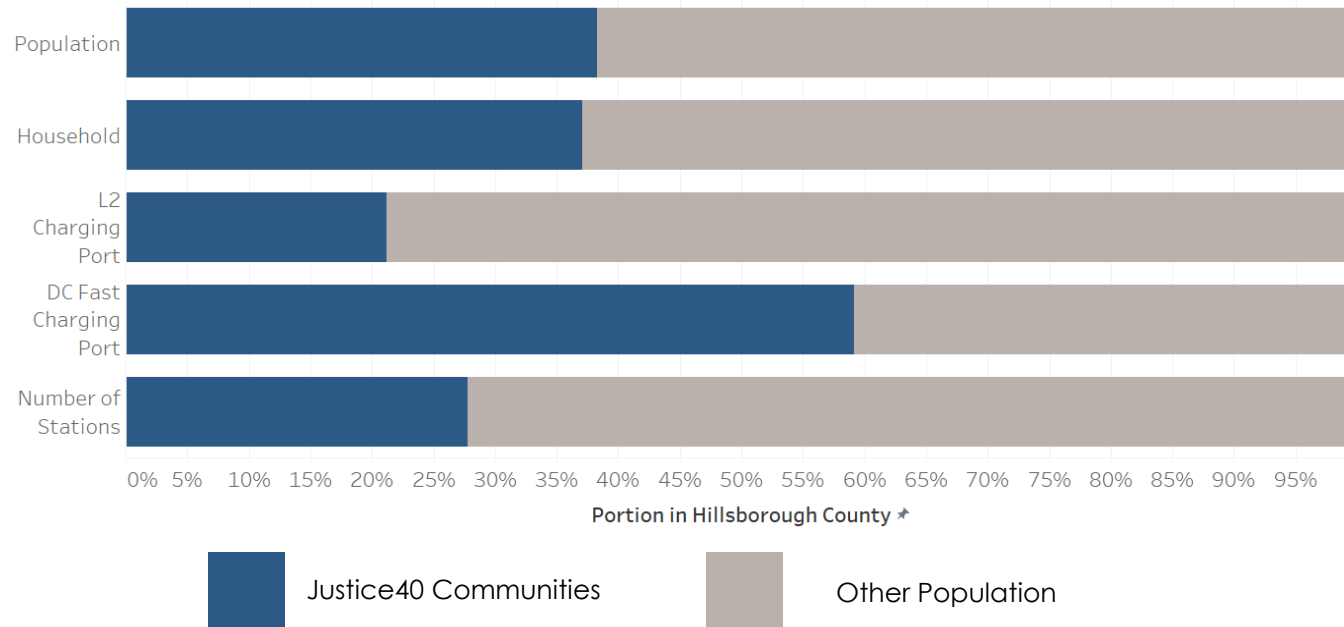
Hillsborough TPO Transportation Planning Organization

EV Charging on the Street in Downtown Tampa Credit: Ryan Casburn, Kittelson & Associates, Inc.



Existing Conditions: Infrastructure in Disadvantaged Communities

Distribution of Charging Infrastructure and Population in Hillsborough County (JOET Justice40)



HILLSBOROUGH COUNTY, FLORIDA

ELECTRIC VEHICLE INFRASTRUCTURE PLAN

EXISTING INFRASTRUCTURE IN DISADVANTAGED COMMUNITIES

LEGEND

● DCFC Chargers	■ JOET Disadvantaged Community
● Level 1 and Level 2 Chargers	■ TPO Most Underserved Areas
— Hillsborough County	■ 4 Characteristics
	■ 5 Characteristics
	■ 6 Characteristics
	■ 7 Characteristics
	■ 8 or 9 Characteristics

Existing Conditions: HART Fleet & Facilities



132
40' CNG
& Diesel
Buses



83
23' Gas
Vans



Current
HART
Fleet

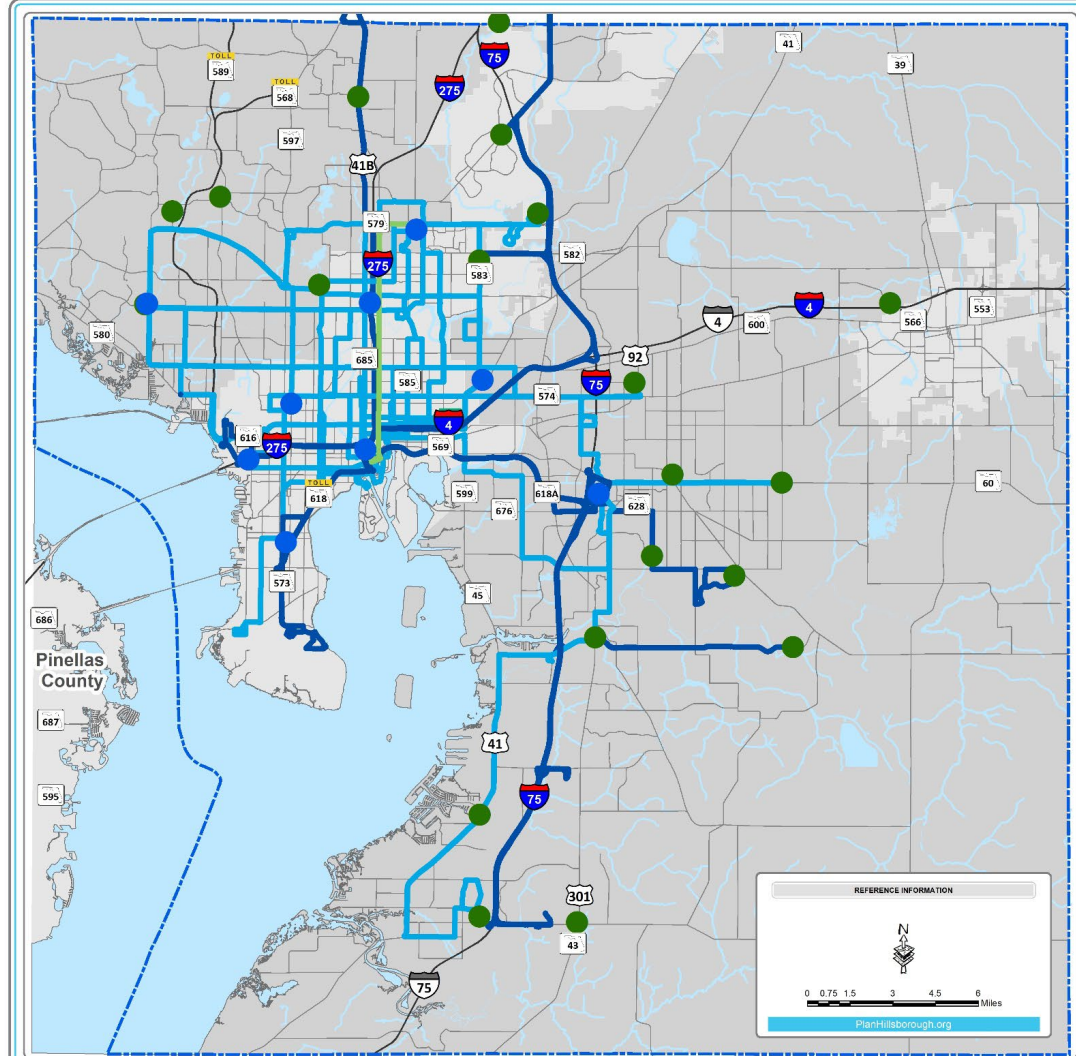
Existing & Potential Fuel Types

Diesel

Compressed
Natural Gas

Battery
Electric

Hydrogen
Fuel Cell



HILLSBOROUGH COUNTY, FLORIDA
ELECTRIC VEHICLE
INFRASTRUCTURE PLAN
HART ROUTES
& FACILITIES

LEGEND

- HART Transit Centers
- HART Park & Ride
- HART Maintenance & Operations Facility
- Hillsborough County
- Hillsborough County
- Tampa
- Plant City
- Temple Terrace

HART Transit Routes

- Route 400 MetroRapid
- HART Limited Express Routes
- HART Local Routes

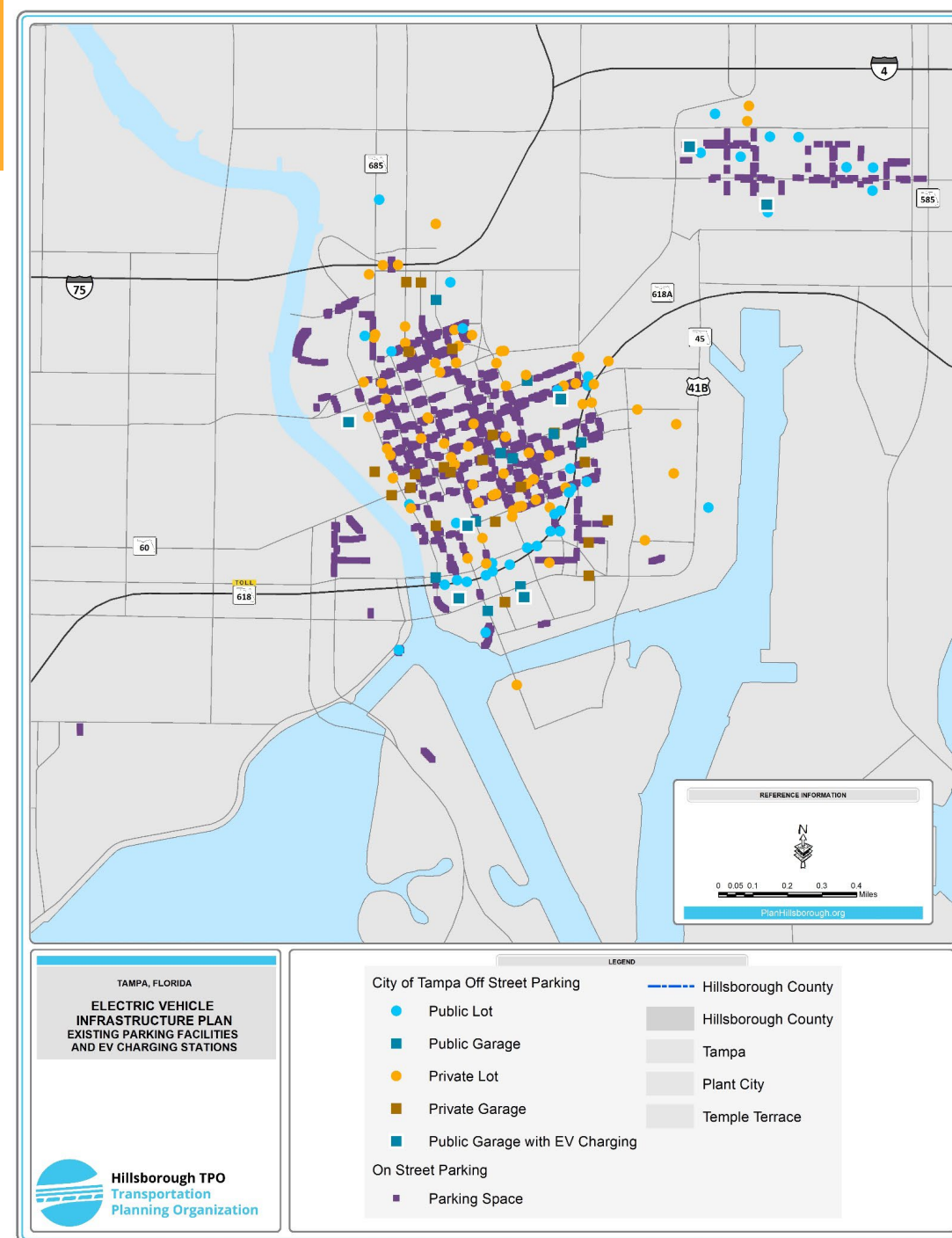
Existing Conditions: Public Vehicular Parking Facilities

Name	Charging Level	Number of Chargers
Twiggs Garage	Level 2	2
Palm Fernando Garage	Level 2	2
Tampa Convention Center Garage	Level 2	2
Fort Brooke Garage	Level 2	6
William F Poe Garage	Level 2	4
Centro Ybor Garage	Level 2	2
Pam Iorio Garage	Level 2	2



?

Does your jurisdiction have parking data to share?



Local Land Use & Development Assessment

Local Agency	Key Findings
Hillsborough County	<p>/ Policy 6.7.7 of the Comprehensive Plan states: "Incentivize the use of electric vehicles through the implementation and expansion of electric vehicle charging stations."</p> <p>/ Land Development Code does not mention electric vehicles or charging infrastructure at this time.</p>
City of Tampa	<p>/ Comprehensive Plan does not mention electric vehicles or charging infrastructure at this time.</p> <p>/ In Chapter 15 of Tampa's Land Development Code, the City prohibits all other vehicles except those charging to parking in electric vehicle charging spaces, as per Ord. No. 2011-84, § 6, 7-14-2011</p>
City of Temple Terrace	<p>/ Comprehensive Plan does not mention electric vehicles or charging infrastructure at this time.</p> <p>/ Land Development Code does not mention electric vehicles or charging infrastructure at this time.</p>
Plant City	<p>/ Comprehensive Plan does not mention electric vehicles or charging infrastructure at this time.</p> <p>/ Land Development Code encourages EV-equipped parking and allows spaces to be compact spaces.</p>

Best Practices for EVs

Address where chargers must be installed

Create a standard for the minimum electrical load capability needed

Outline the number of charging spaces required by land use context

EVs Charging in Hillsborough County Credit: Ryan Casburn, Kittelson & Associates, Inc.



EV Infrastructure Supportive Lands Analysis

Key findings include:

~14,000 acres of publicly owned land in activity centers or Key Economic Spaces, and about 400 acres in both activity centers and Key Economic Spaces.

~3,000 acres of publicly owned land in the parcels identified as “Future Activity Centers”.

31 libraries in Hillsborough County, seven of which are in underserved communities.

~10,000 acres of publicly owned land within a half mile of the 74 interchanges in Hillsborough County.

~11,000 acres of publicly owned land in and adjacent to TPO-identified underserved areas.



Goals & Indicators

Goals

- What are our goals for this Plan?



Indicators

- Each goal will have an indicator by which to measure progress

Goals & Indicators: How will we measure success?

Provide access to charging for:

All residents?

All employees?

All visitors?

Is there a charging station within 1 mile of:

Where people live?

At large employers?

At every activity center?

Increase the number of chargers?

Is there a certain number of chargers we should try to get to?

Meet adoption targets?

For each use case? (Rural, urban, TNCs, Commercial Delivery, Transit Fleet)

Overall percentage of vehicle registrations?

Access and progress are equitably distributed?

Is everyone in Hillsborough County sharing in the benefits of EVs and investment in charging infrastructure?

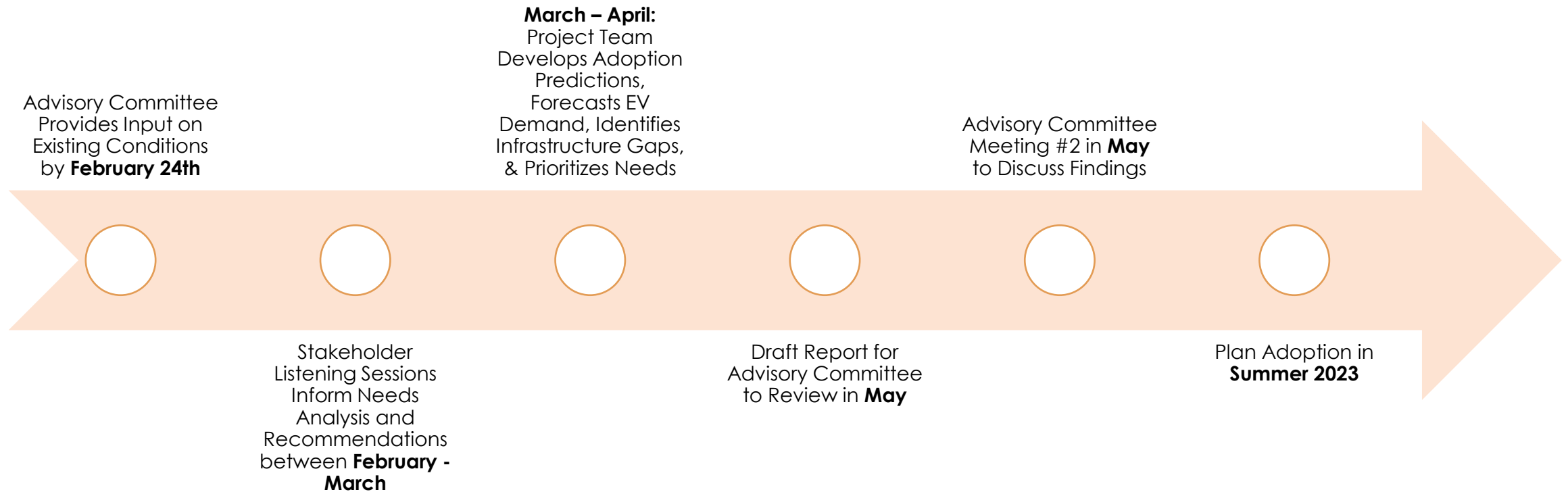
Goals & Indicators

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Are there other ways we should be measuring?



Next Steps



Discussion

