



Hillsborough TPO
Transportation
Planning Organization

Electric Vehicle Infrastructure Plan (EVIP)

July 2023



planhillsborough.org



Why now?

- Growing demand for electric vehicles = growing demand for chargers
 - Public need
 - Private need (Need for code guidance)
- Infrastructure Investment and Jobs Act (IIJA) will provide \$2.5B to cities, counties, local governments, and Tribes

Why now? (Cont.)

Planning now vs. ***reacting*** later

| | |
|--|---|
| Initial Cost of Public Charger \$920 | Retrofit cost \$3,550 (City of San Francisco) |
| Diverse vehicle market | Limited purchasing of EVs |
| Equal access to charging for all communities | Charging deserts |



Purpose

- Put charging stations where people need them
- Plan for need and impact first
- Ensure policies and codes will allow for easy installation



Overview

Industry
Background
Research

Existing
Conditions
Analysis

Public
Outreach &
Stakeholder
Engagement

Recommendations
& Report



Industry Background Research

Section 1



Types of EVs

Battery Electric Vehicle (BEVs)

- “All electric”
- Range: 150 to 400 miles
- Tesla, Nissan Leaf, and Rivian



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

Plug-in Hybrid Electric Vehicles (PHEVs)

- Battery and gas tank
- Between 20 and 40 miles
- Chevrolet Volt, Ford Fusion Energi



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)

Hybrid Electric Vehicles (HEVs)

- Battery and gas tank, but battery cannot be plugged in to charge
- Toyota Prius and Ford Maverick



[This Photo](#) by Unknown Author is licensed under [CC BY-NC](#)

Fuel Cell Electric Vehicles (FCEVs)

- Use hydrogen to fuel an electric motor
- More common for buses and long-haul trucks



[This Photo](#) by Unknown Author is licensed under [CC BY](#)



Benefits and Barriers to EV Adoption

Benefits


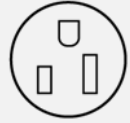

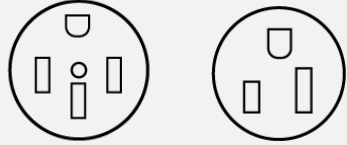
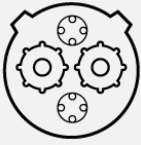
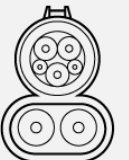

- Reduced fuel costs
- Reduced emissions
- Reduced maintenance costs

Barriers

- EV purchase price
- Misinformation/ lack of trust
- EV Charging Access



Charging Infrastructure Overview

| Charging Level | Miles Per Hour of Charge | Connector | Wall Plug | Venue | Time for Charge |
|----------------|--------------------------|--|---|-----------------------------|---|
| Level 1 | 3 - 5 |  Port J1772 |  Nema 515, Nema 520 | Home Workplace | 40-50+ hours for BEV 5-6 hours for a PHEV |
| Level 2 | 12 - 50 |  Tesla HPWC |  Nema 1450 (RV plug) Nema 6-50 | Home Workplace Public | 4-10 hours for BEV 1-2 hours for PHEV |
| Level 3 | 75 - 300 |  CHAdeMO  SAE Combo CCS  Tesla Supercharger | -- | Workplace Public | 20 min- 1 hr for BEV Most PHEVs currently do not work on fast chargers |

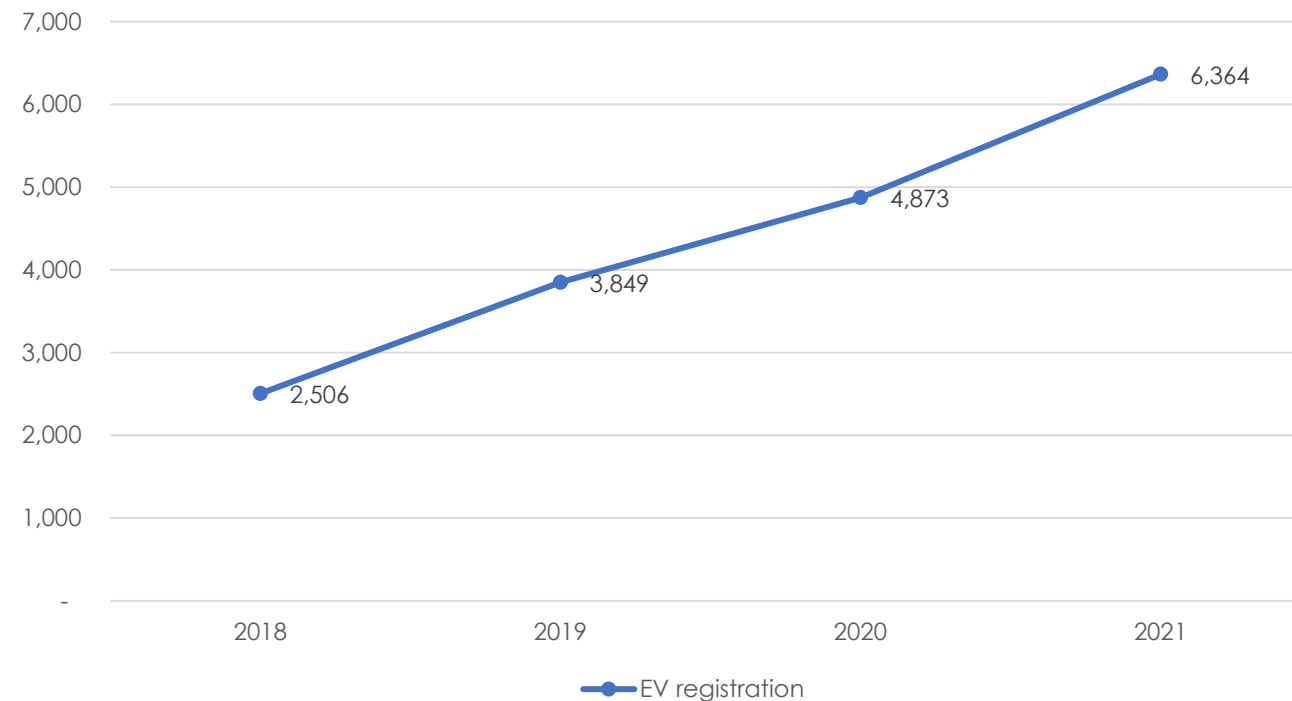



Existing Conditions Analysis


Section 2




EV Adoption Trends



 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.

EV Registrations in Hillsborough County, 2018 – 2021

Sources: [Smart Cities Dive](#), 2022; [FDOT – EVMP](#), 2021; [Edison Electric Institute](#), 2022



EV Boom

Stocks making the biggest moves midday: Tesla, Rivian, XPeng and more

Forbes

Automakers Are Gearing Up To Get Ahead Of EV And Hydrogen Trends

Jun 19

Bloomberg

Global EV Sales Have Soared as Overall New Car Sales Sag

Jun 8

News Releases are to be used for informational purposes only. Information provided should not be relied upon for any type of legal action.

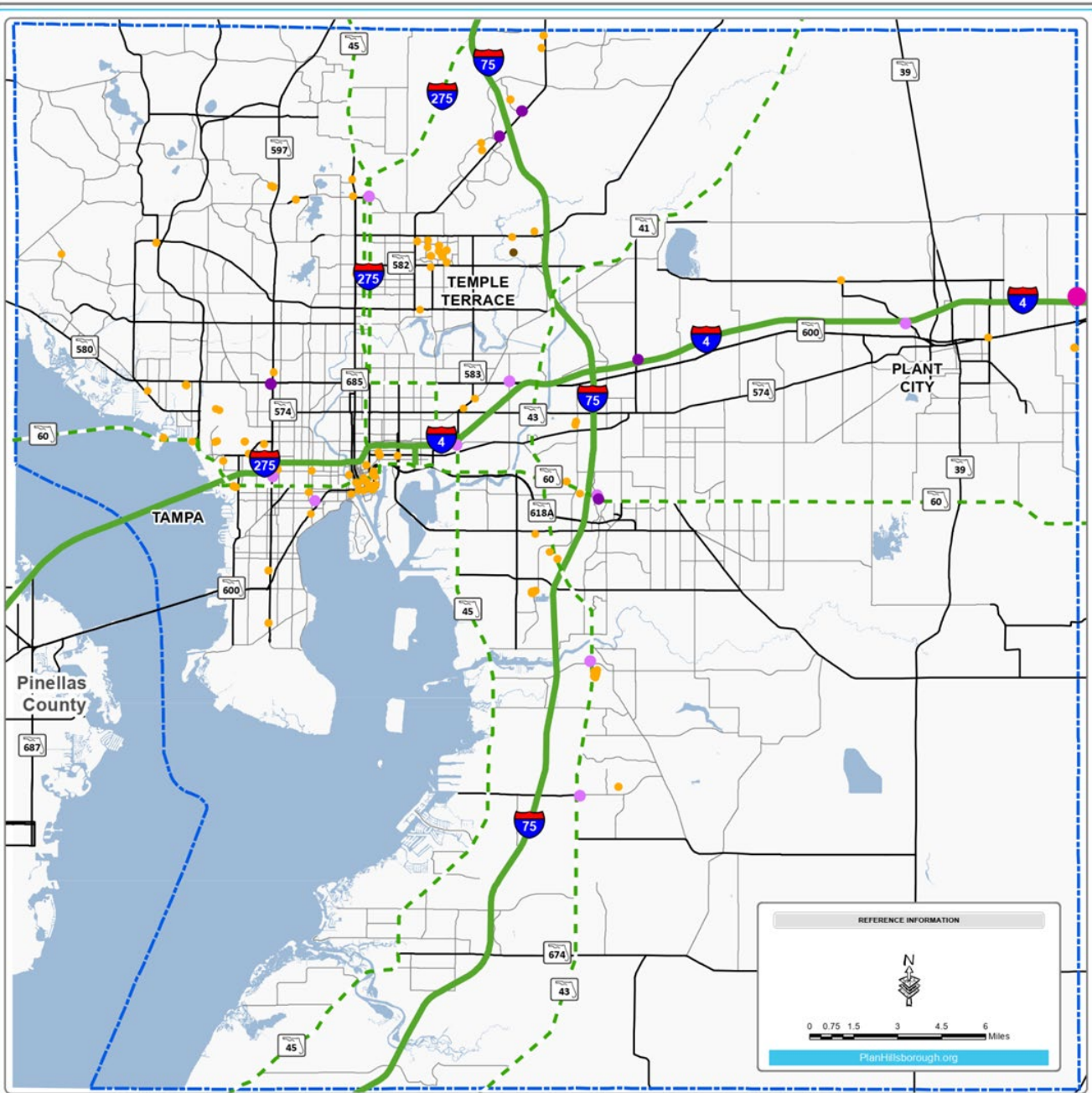
HCSO ADDING ELECTRIC VEHICLES TO ITS FLEET

For Immediate Release : Hillsborough County Sheriff's Office

📅 November 23, 2022 👤 Public Affairs Office | piocommandcenter@hcsso.tampa.fl.us 📞 (813) 247-8060



Existing Charging Infrastructure



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

- Public (Non Proprietary) DCFC
- Public (Proprietary) DCFC
- Public L2
- Workplace L2
- FDOT High Priority Potential EVSE
- FHWA EV Corridor Designation
 - Ready
 - - - Pending

Performance Measurement: EV Charging Desert

Residential:

- 8% of the county's total population lives with a 1-mile radius of DCFC stations
- 10.8% of condo units have fast charging infrastructure within a 1-mile radius

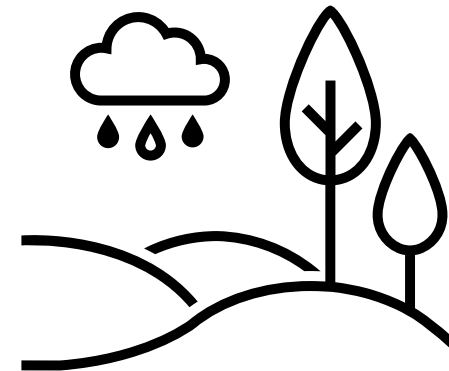


Workplace:

- 39% of jobs are within 0.5 mile of L2 chargers
- Employment centers have higher access rates

Activity Centers:

- 7% of activity center area is within 0.5 miles of DCFC charging
- 48% of total area of activity centers is within a 0.5-mile radius of L2 chargers



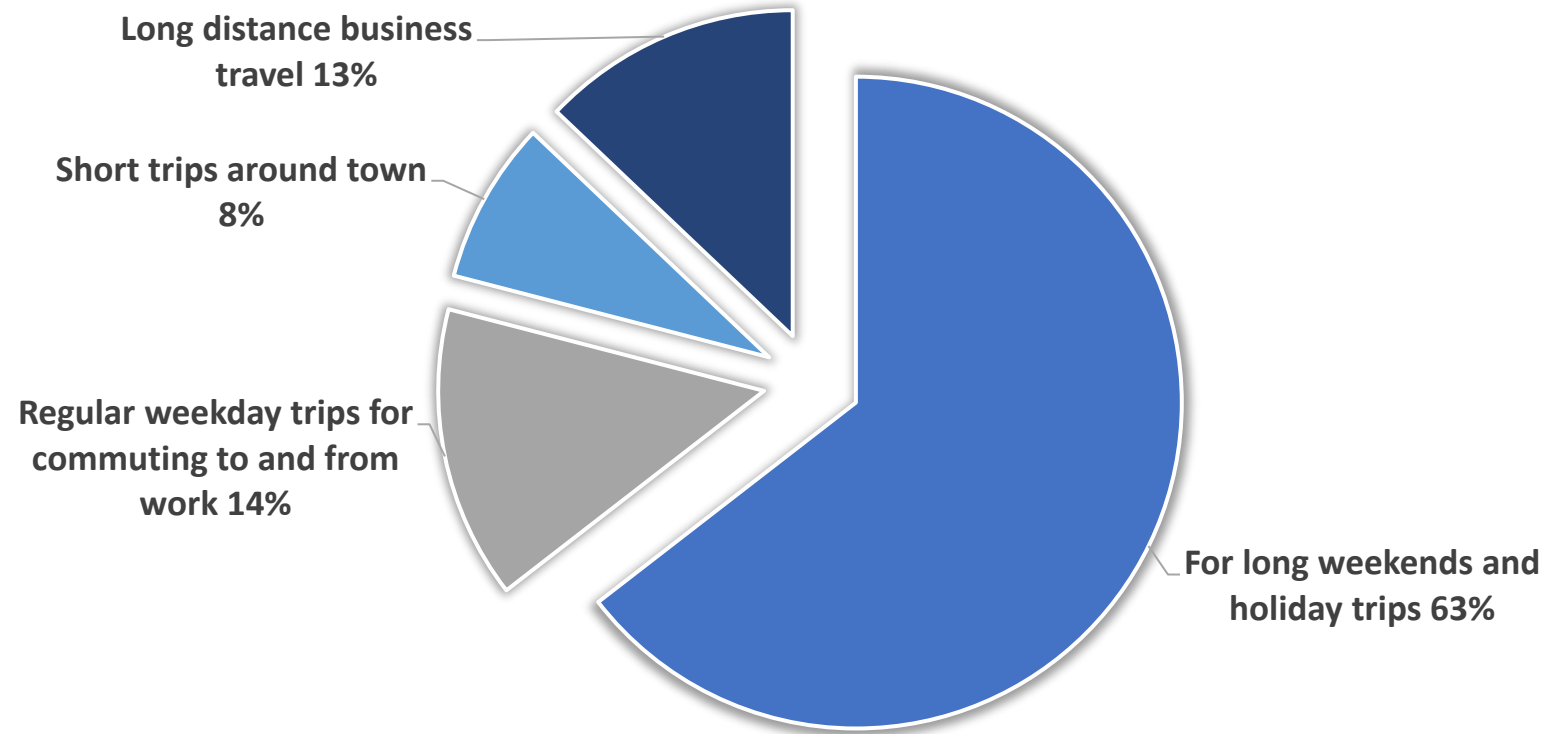
Public Outreach & Stakeholder Engagement

Section 3



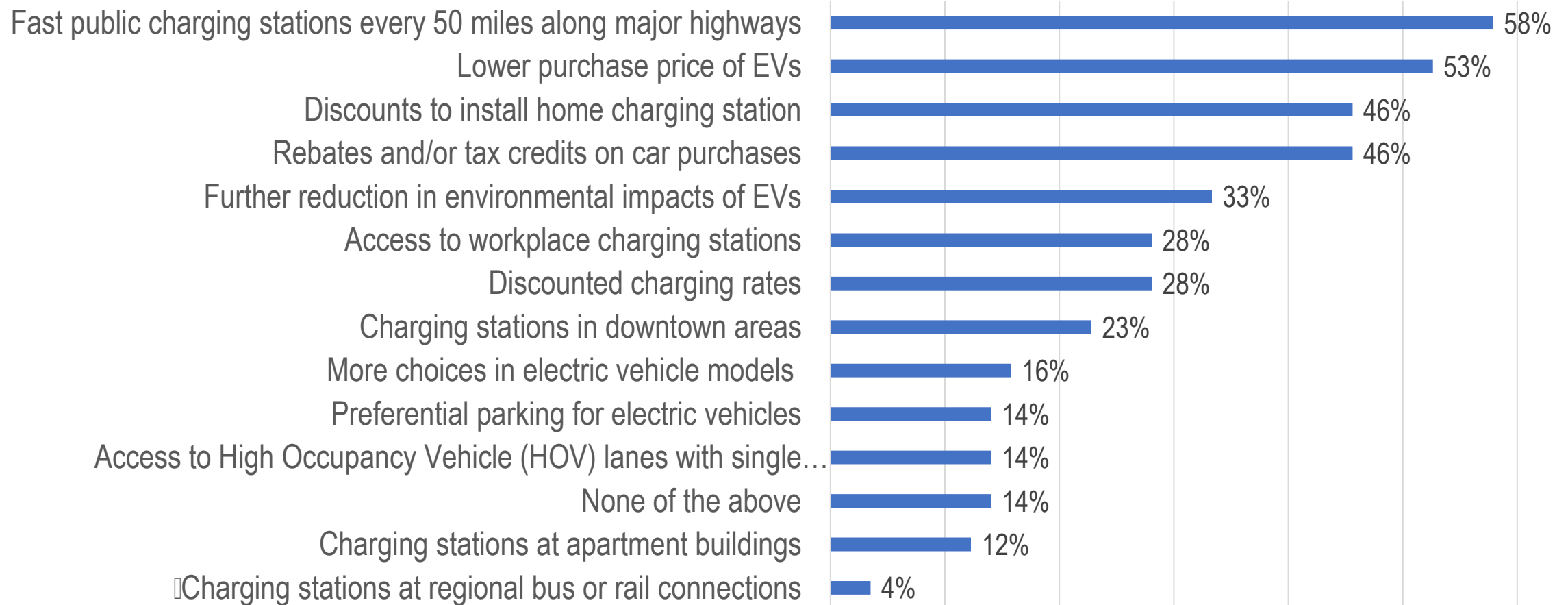
Public Outreach Findings

When do you most often use a publicly accessible charger?



Public Outreach Findings (cont.)

What would most likely increase your interest in purchasing or leasing an electric vehicle?



Public Outreach Findings (Cont.)



About 80% prefer to charge at home



Respondents prioritize amenities including bathrooms and convenience store options



About 30% are concerned about the dependability of EVs during emergency situations



Stakeholder Listening Sessions

Disadvantaged Communities Session:

- As EVs become more affordable and widely adopted in the future, a lack of investment in charging infrastructure in disadvantaged communities **could result in charging deserts** and further slow the rate of adoption in these communities

Commercial Delivery:

- Design the flow of the facility to use one-way aisles
- Some amenities that are included at truck parking facilities include: bathrooms, security office, dynamic signs to indicate available spaces, and CCTV coverage.

FDOT:

- Recommends considering medium duty fleet in EVIP
- Intends to use NEVI funds to complement investment from private companies and incentivize installation

HART:

- HART has been hesitant to transition to battery electric buses due to vehicle range and reliability
- Typically, drivers have a layover between 10-30 minutes at the ends of the route



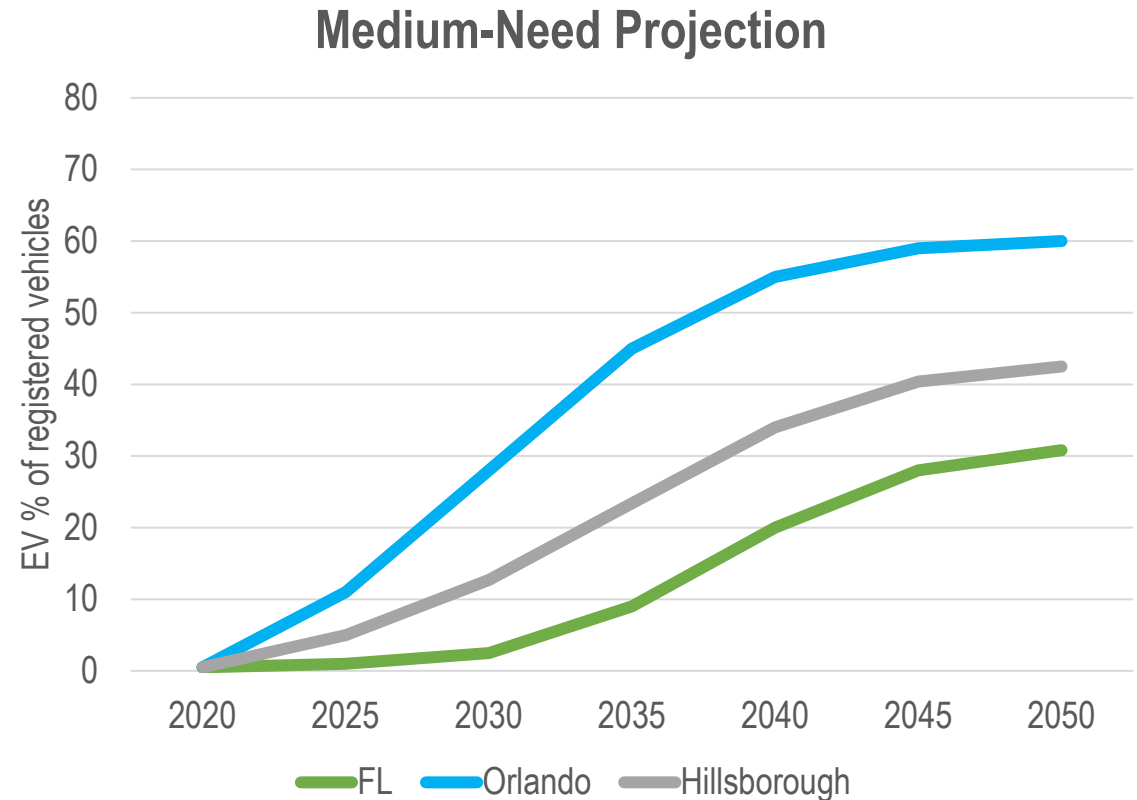
Report: *Needs Projections*

Section 4



Adoption Scenarios: Projected EV Adoption

- Currently, EV adoption in Hillsborough County is higher than Florida and lower than Orange County
- Florida and the City of Orlando have defined projected EV adoption rates
- EV adoption is expected to be somewhere between the City of Orlando and Florida

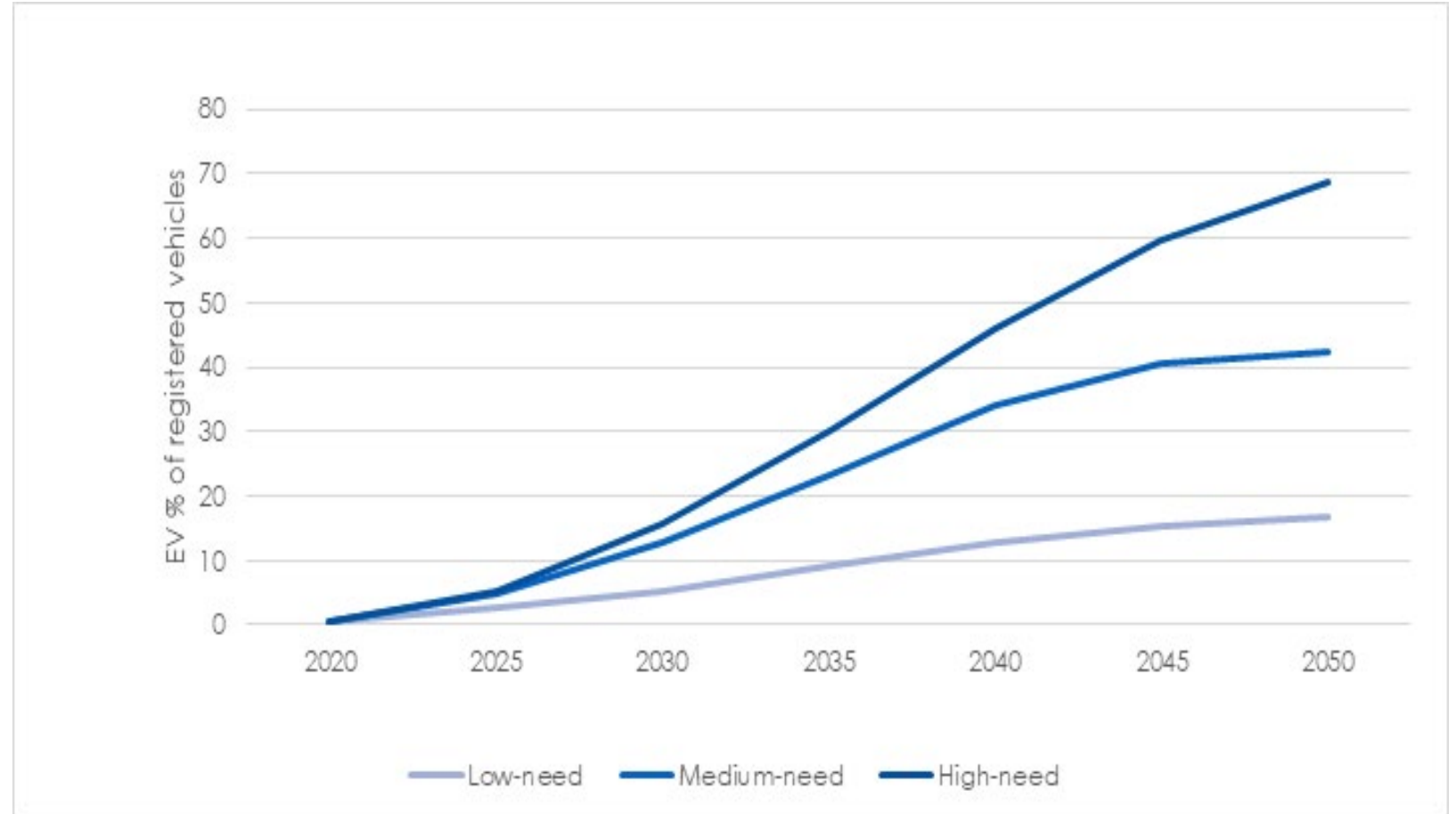


Light Duty EV Projections

2023: 6k (0.5%)

2035: 90k-300k (9-30%)

2050: 170k-700k (17-69%)



Light Duty Charging Infrastructure Need

- Methodology

- EVI-Pro Lite model

- Assumptions

- 80% of EV charging to occur at home
- 75% of households have access to home charging

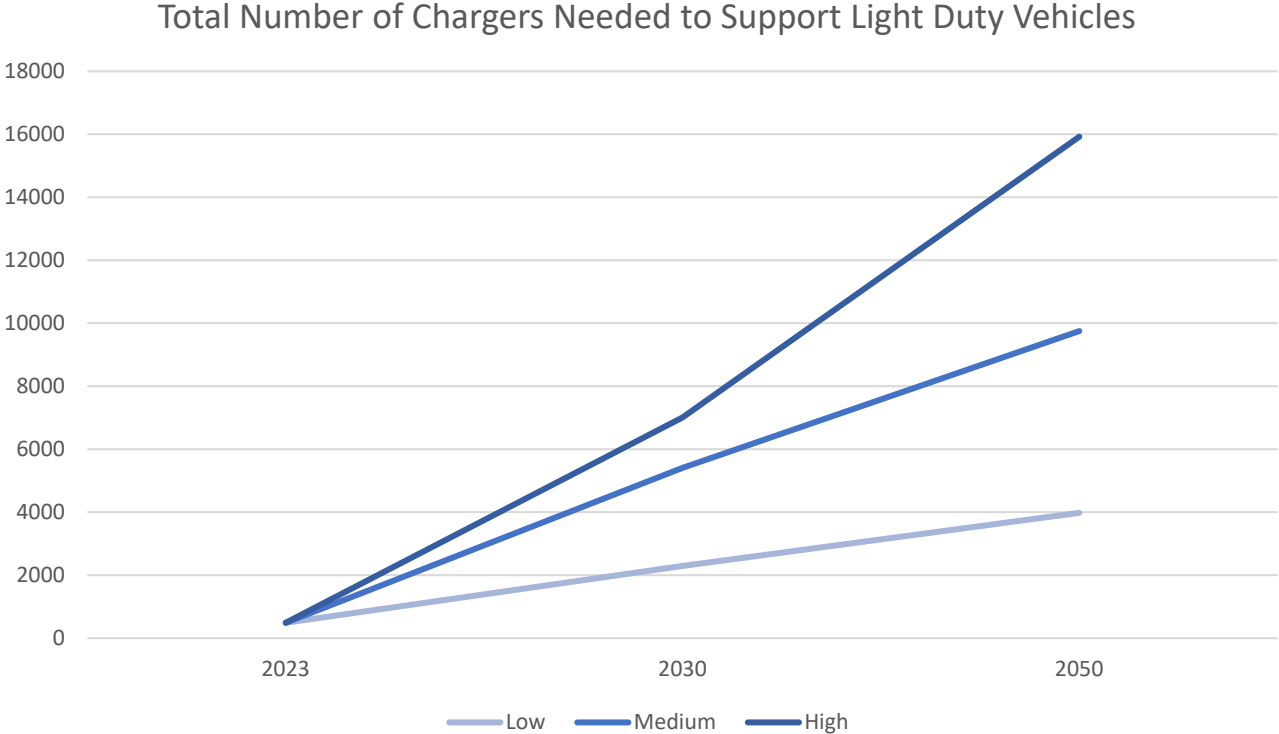


Light Duty EV Charging Need Projection

2023: 500

2035: 2k-7k

2050: 4k-16k



Transportation Network Companies (TNC) Projections and Needs

| | 2035 | 2050 |
|---|--------|--------|
| Estimated EV TNCs | 14,000 | 35,000 |
| Estimated number of DCFC ports to support TNCs | 245 | 613 |
| Estimated number of DCFC ports allocated under LDV to these vehicles | 47 | 117 |
| Additional DCFC ports that should be added to LDV scenario | 198 | 496 |
| Approximate additional percentage for DCFC ports | 25% | 40% |



HART Projections and Needs

| | Low | Medium | High – Increased Fleet | High – On Route Charging |
|---|-----|--------|------------------------|--------------------------|
| # Total Battery Electric Buses | 4 | 60 | ~160 | ~130 |
| # Lower Powered Chargers at Depot (60-150 kW) * | 4 | 20-60 | 60-160 | 50-130 |
| # Higher Powered Chargers on Route (350-600 kW) | 1 | 1 | 1 | ~40 |



Commercial Delivery Projections and Needs

| | 2023 | 2035 | 2050 |
|---|-------------|-------------|-------------|
| MD Daily VMT in Hillsborough County | 1.5 million | 1.5 million | 1.5 million |
| Portion of MD that are EVs | <1% | <1% - 18% | <1% - 60% |
| Portion of Charge Need at Public Chargers | 5% | 5% | 5% |
| 150 kW Charger Need | - | 1 – 13 | 1 - 44 |
| Addition to LDV charger need (Med scenario) | | +0-2% | +0-3% |



Recommendations

Section 5



Prioritization Framework

| Goal | Close public charging deserts | Install chargers where there is a high expected demand | Ensure that chargers are equitably distributed | Install the right charger type in the right place |
|----------------------|---|---|--|---|
| High Priority | <p>L2 charging is not available within 2 miles</p> <p>DCFC is not available within 5 miles</p> | <p>Many residents do not have access to home charging & Nearby land uses that attract people and give something to do, for example restaurants, tourist attractions, or public services</p> <p>OR</p> <p>High density of employment</p> | <p>Disadvantaged communities as defined by the TPO or Justice 40 initiative</p> <p>&</p> <p>No existing access to EV charging that meets the community need</p> | <p>Places that have a high turnover or are frequented by a range of people may be prioritized for DCFC</p> <p>Places that people tend to dwell for long periods of time like homes and workplaces may be prioritized for L2</p> |
| Med Priority | <p>L2 charging is not available within 0.5 miles</p> <p>DCFC is not available within 1 mile</p> | <p>Many residents do not have access to home charging</p> <p>OR</p> <p>Nearby land uses that attract people and give something to do, for example restaurants, tourist attractions, or public services</p> | <p>Disadvantaged communities as defined by the TPO or Justice 40 initiative</p> <p>&</p> <p>Low existing access to EV charging that meets the community need</p> | |



Policy Recommendations: *Requirements for New Developments*

EV READINESS



EV Capable



EV Ready



EV Installed

- 25-50% of on-site parking spaces should be EV Capable or EV Ready
- 5-15% should be EV Installed



Policy Recommendations: *Incentives for EV Infrastructure*

- A density bonus in return for incorporating EV chargers in new development
- A reduction in the required minimum parking in return for offering EV charging, and/or
- Expedited permitting and approvals or reduced/waived fees for new developments with EV infrastructure



Policy Recommendations: *Design Considerations*

- ADA accessible mobility features (physical access) and accessible communication features
- Designing in Conflicting or Sensitive Areas
 - Avoid charging spots near curbside bus lanes, sidewalks, bike parking features, etc.
- Security and Cybersecurity
 - Require EVSE to utilize ISO and EMV standards for Direct, Secure payments
- More design considerations included in final report



What's Next?

- Monitor technology developments in planning for EV infrastructure
- Continue to fund and enhance non-auto modes to develop livable communities
- Ensure equitable access to EV adoption and infrastructure
- Ensure reliable and resilient charging infrastructure in relation to hurricane evacuations



For more info, visit
[planhillsborough.org/electric-vehicle-
infrastructure-plan-evip/](http://planhillsborough.org/electric-vehicle-infrastructure-plan-evip/)



Recommended Action:
*Approve the Electric Vehicle
Infrastructure Plan and recommend
approval TPO Board*



Questions/ Comments

Connor MacDonald
macdonaldc@plancom.org

