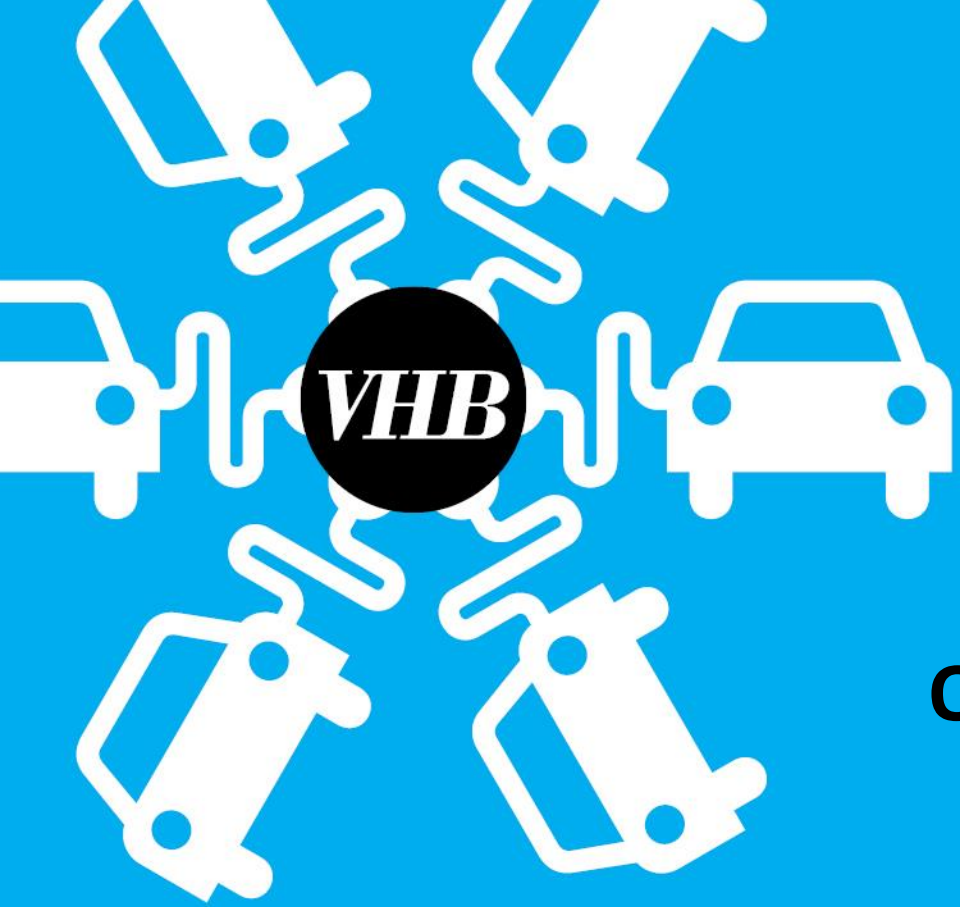


**Capital District Regional Planning Commission
(CDRPC)**
Local Government Planning & Zoning Workshop
June 20, 2013



OVERVIEW



Purpose

To encourage an increase in the number of EVs throughout the Capital District through identification of strategic locations for charging infrastructure and EV friendly policies and permitting requirements



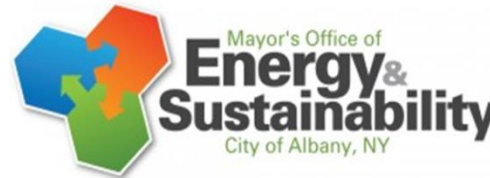


Funding and Partners

- Funded by NYSDOT's State Planning and Research Program and NYSERDA



- Led by Mayor's Office of Energy & Sustainability



- Advised by a Technical Advisory Committee

- National Grid
- University at Albany





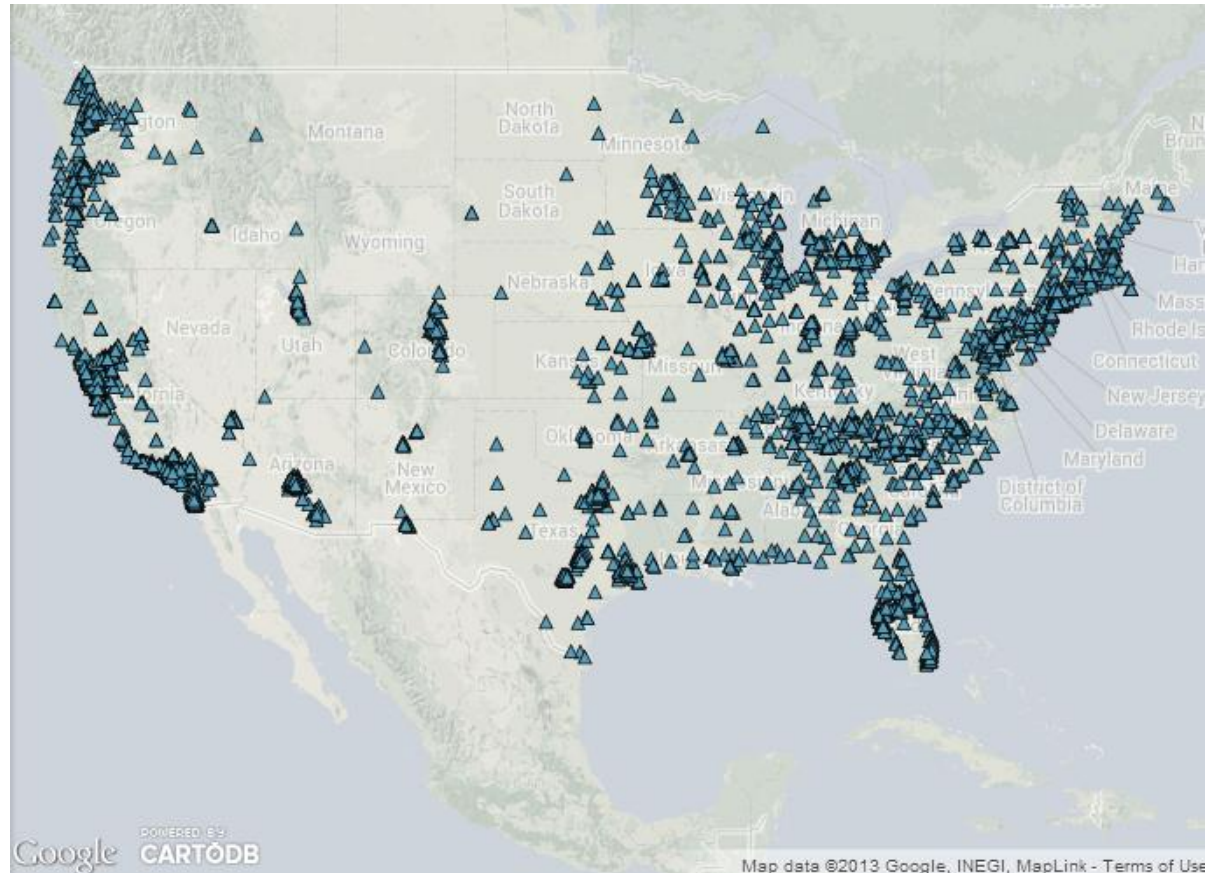
Outcomes of the Study

- Assessment of current opportunities for the City of Albany to support the proliferation of electric vehicles (EVs) throughout the Capital District
- Identification of criteria for strategic placement of charging infrastructure
- Identification of policies and regulations for EV-friendly zoning, infrastructure, and technology
- A thorough review of best practices and their applicability to Albany
- Recommendations for optimal locations for siting charging stations in Albany
- Recommendations on incorporating EVs into the City's municipal fleet



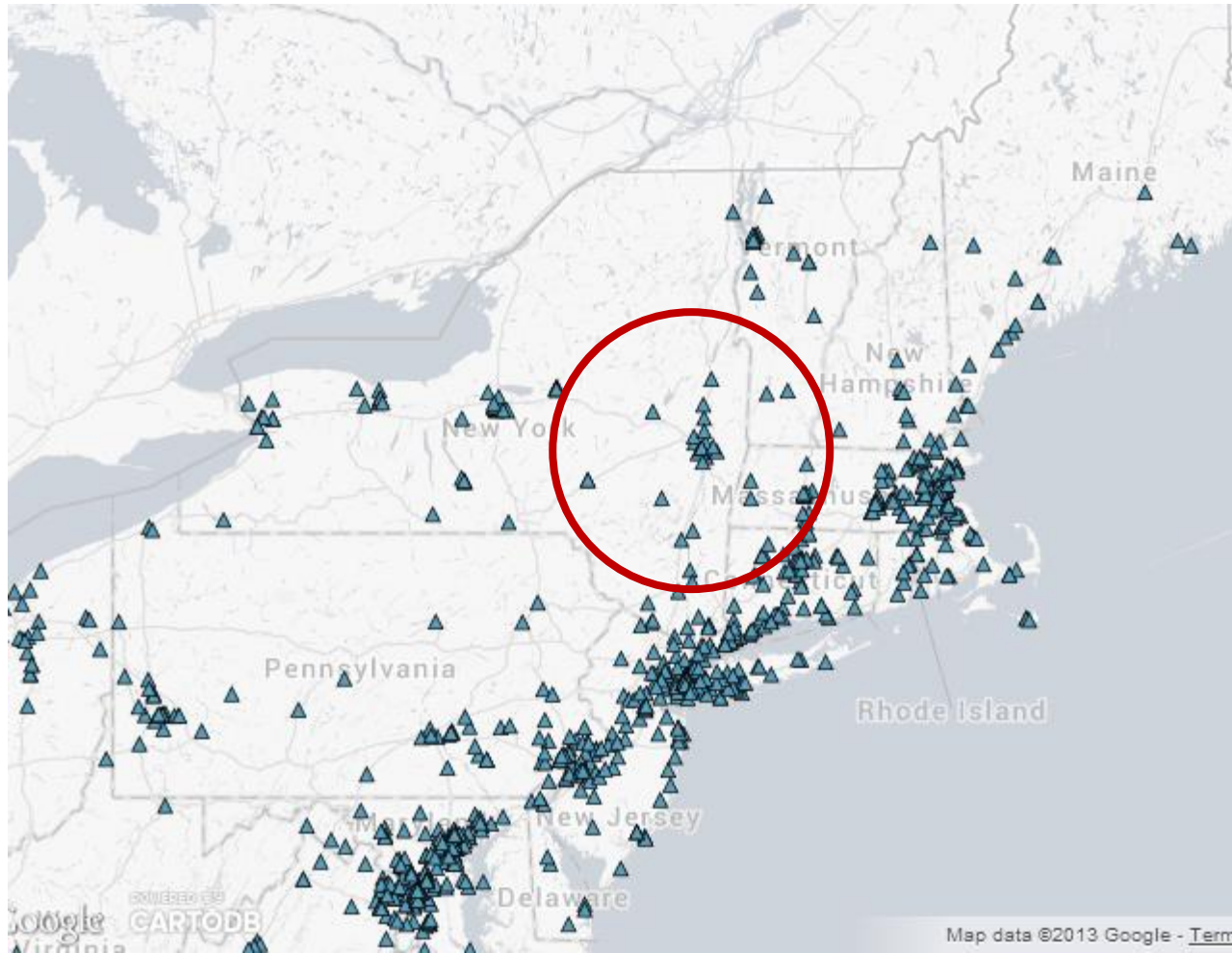
State of Infrastructure

- Currently 6,127 charging stations in the U.S. and growing....





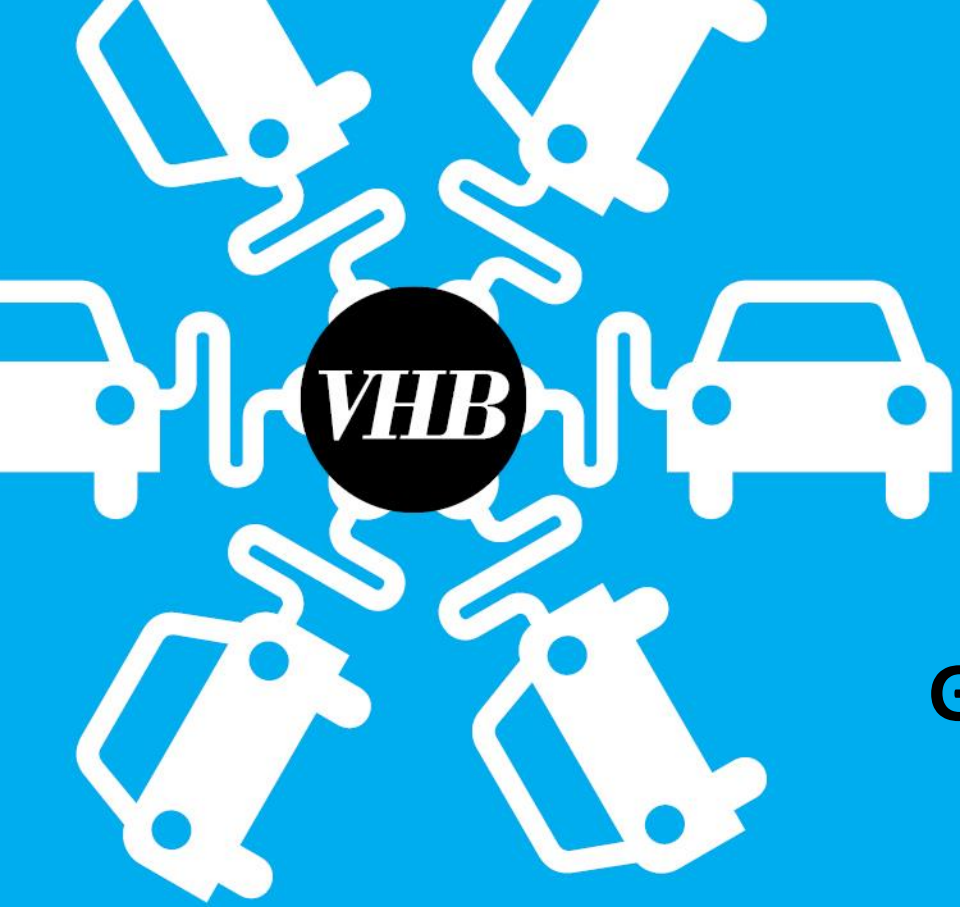
Opportunity in the Capital Region





Why EVs in Albany?

- Energy prices – increasing cost of gasoline
- Central transportation hub for the region
- Demand characteristics of the region
 - Housing stock
 - Short commuting distance (one-way < 10 miles)
- Environmental benefits
- Local, State, Regional commitment to sustainability
 - Mayor's Office of Energy & Sustainability
 - Albany 2030 Comp Plan
 - Climate Smart Community
 - Transportation and Climate Initiative (TCI)
 - NYSERDA EVSE Demonstration and Support Program



Getting Albany Ready



Components of the Study

- **Zoning, permitting, policies that will promote EVs**
 - **Review of existing zoning and permitting in the city**
 - **Review of best practices for EV-friendly zoning, codes, and other policies**
- Design considerations
 - Parking and streetscape
 - Signage
- Charging infrastructure site evaluation and recommendations
 - Determine evaluation criteria
 - Utilize GIS and census data to identify top locations based on criteria
 - Further examine the realities of those sites
 - Take future use/needs into consideration



Zoning, Permitting, Building Code

- Zoning regulations should allow for charging stations in multiple zoning categories, including residential.
- Building codes should include specifications for accommodating EV charging.
- Expedited permitting for charging station installation.



Zoning, Permitting, Building Code

In Albany:

- Current zoning and code does not explicitly accommodate charging infrastructure.
- Revisions could include:
 - Clear definition of EVs and EV infrastructure
 - Develop a specific section of City Code dedicated to installing and managing charging infrastructure
 - Could be modeled after Chapter 270 – Public Pay Telephones – similar issues encountered (siting, ADA compliance, incorporating structures in historic preservation and business improvement districts)
 - Could include an EV section in Chapter 375 Article XIV Specific Use Regulations



Zoning, Permitting, Building Code

Best Practices:

- Allow Level I and Level II charging stations in zoning code
- Allow DC Fast Charging stations in commercial and industrial areas and as a conditional use in residential areas in zoning code
- Allow battery swapping stations in code as a principal use in certain zones
- Require that any new commercial building of at least 5,000 square feet includes the wiring necessary to accommodate an EV charging station
- Require a dedicated 240v outlet and/or charging station in new home construction
- Require a minimum percentage of parking spaces in new multi-unit residential buildings to include EV charging stations and/or conduit to accommodate them in the future
- Adopt the DOE National Model EV Permit for issuing EVSE permits, customize it for local needs, and determine the appropriate permit fee
- Integrate notification of the utility as part of the permitting process
- Create an expedited online or in-person electrical permit and inspection process



Demand Management and Charging Policy

- Update parking regs to define charging policies (active charging, overnight charging, time restrictions, etc) for public charging stations
 - Balance incentivizing/promoting use of EVs with peak demand management
- Adopt a fine schedule for violations
- Enforcement will be necessary – will require development of standard procedures (how do you tow a plugged-in vehicle?)
- Price structure
- Cannot charge directly for electricity use; must charge by time or a flat fee



Models for Installation and Operation

MODEL	DESCRIPTION
EVSE Provider	<ul style="list-style-type: none">• EVSE (Electric Vehicle Supply Equipment) provider installs the charging stations on space leased from a municipality. The utility meters usage, and sends bills directly to the EVSE provider. The EVSE provider owns, operates, and collects payment from use of the charging stations.
Municipality or Business Ownership	<ul style="list-style-type: none">• The municipality or business owns the EVSE equipment, although the EVSE provider may operate and maintain the equipment and collect payments from use.
Utility Ownership	<ul style="list-style-type: none">• A public utility company would install, own, and maintain the EVSE hardware. Costs would be included in the base rate all customers pay, similar to how utility companies finance new substations or utility poles. Charging stations would still use the same pay-for-use systems available from non-utility providers.





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Parking and Streetscape

- Siting in popular public locations
- Visibility is key
- Needs to be able to connect to electricity
- Provide adequate lighting, minimize safety concerns
- ADA compliance
- Update streetscape design or parking requirements to include EVSE considerations
- Consider maintenance requirements of the site

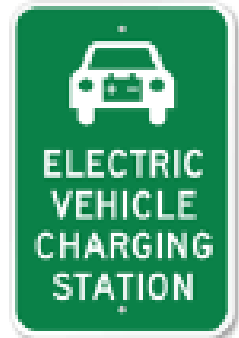


Source: <http://www.designboom.com/weblog/cat/8/view/10856/yves-behar-fuseproject-ge-wattstation-electric-vehicle-charger.html>



Signage

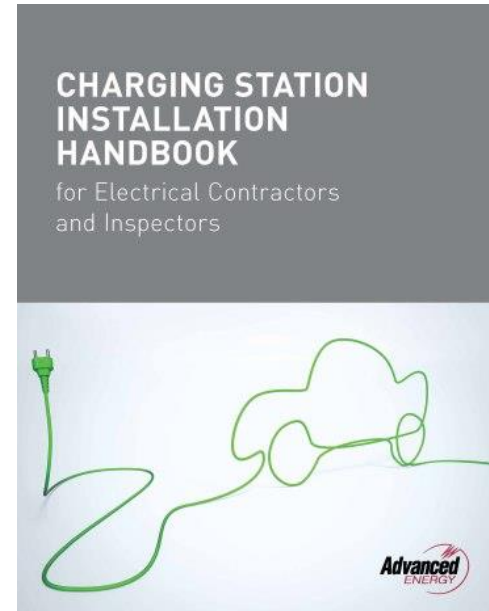
- New EV sign standards included in Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) – standardizes EV charging signage.
- Costs of signs could be charged to EVSE owner, included in permitting fees, or waived to further promote EVs.
- Albany’s sign code may need to be revised to address advertising question for EVSE company ownership and signage.
- Include pavement coloring in EV signage design standards – avoid blue so as not to confuse with handicapped parking; avoid colors/markings that will conflict with NATCO Urban Bikeway Design Guide or the MUTCD





Education and Outreach

- Emergency Responder Electric Vehicle Safety Training
- Work with local auto dealerships to educate them on the process, rebates available, and to notify utility when EV has been sold
- Hold an EV information forum
- Educate electrical contractors on permitting and inspection requirements (Charging Station Installation Handbook)
- Work with the utility to include EV education in utility bills and mailings to customers
- Set up an EV education website
- EV and EVSE training programs for the electrical and automotive trades
- Work with local radio stations on the development of public service announcements on the environmental benefits of EVs



**ELECTRIC VEHICLE
SAFETY TRAINING**
A PROJECT OF THE NATIONAL FIRE PROTECTION ASSOCIATION



Components of the Study

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SITE SELECTION METHODS



EVSE Site Evaluation Methods

Priority Location Identification:

- Determine evaluation criteria
- Utilize GIS and census data to identify top locations based on criteria
- Further examine the realities of those sites
- Take future use/needs into consideration



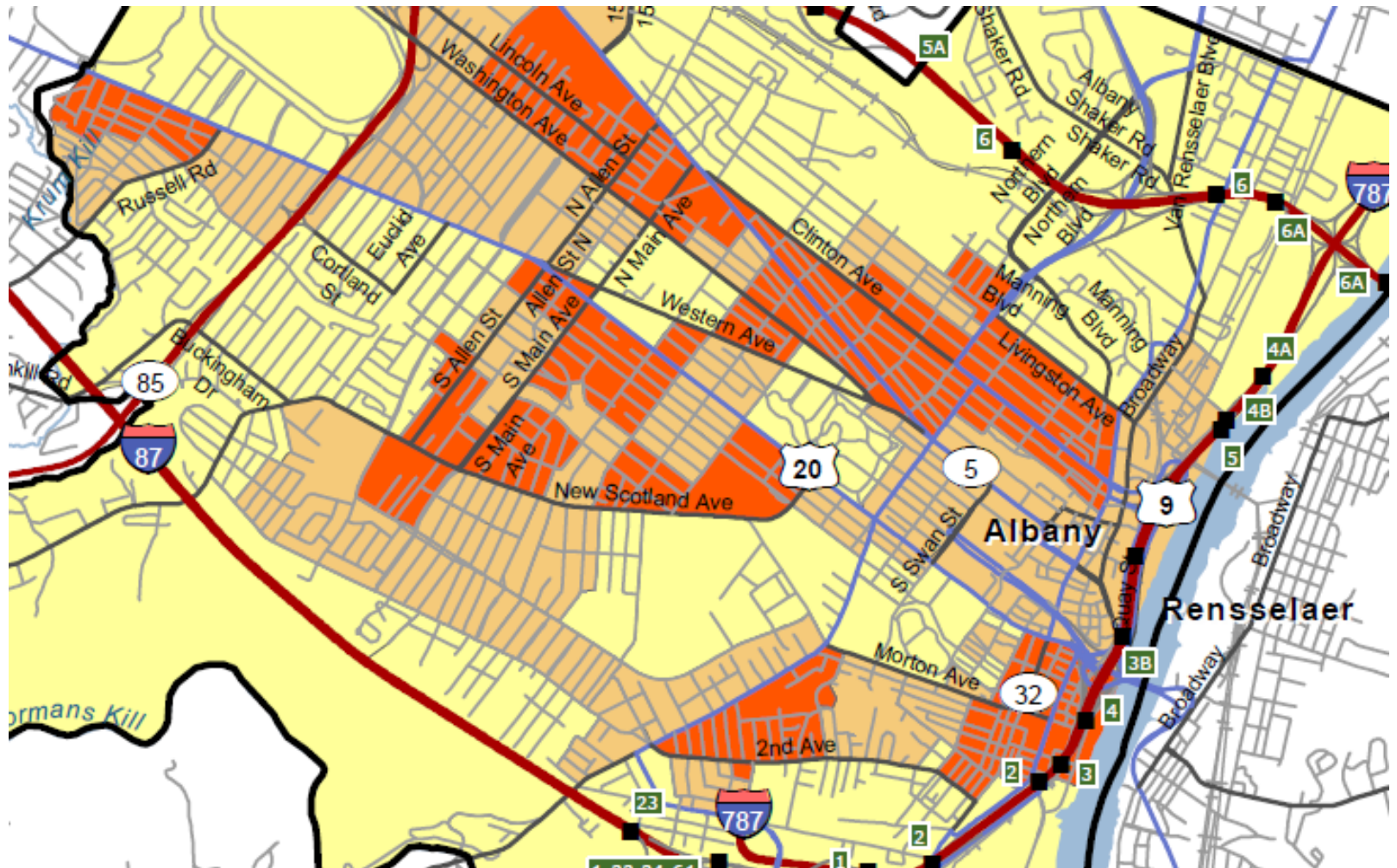
EVSE Site Evaluation Methods

Site Evaluation – Stage One

Step One: Identify Opportunity Zones

- Sites with a minimum household density exceeding 2,500 households per sq mi
- Sites with government institutions and businesses of 250 or more employees





- Household density $\geq 2,500$ and business density ≥ 250 employees
- Household density $\geq 2,500$ or business density ≥ 250 employees
- Household density $< 2,500$ and business density < 250 employees

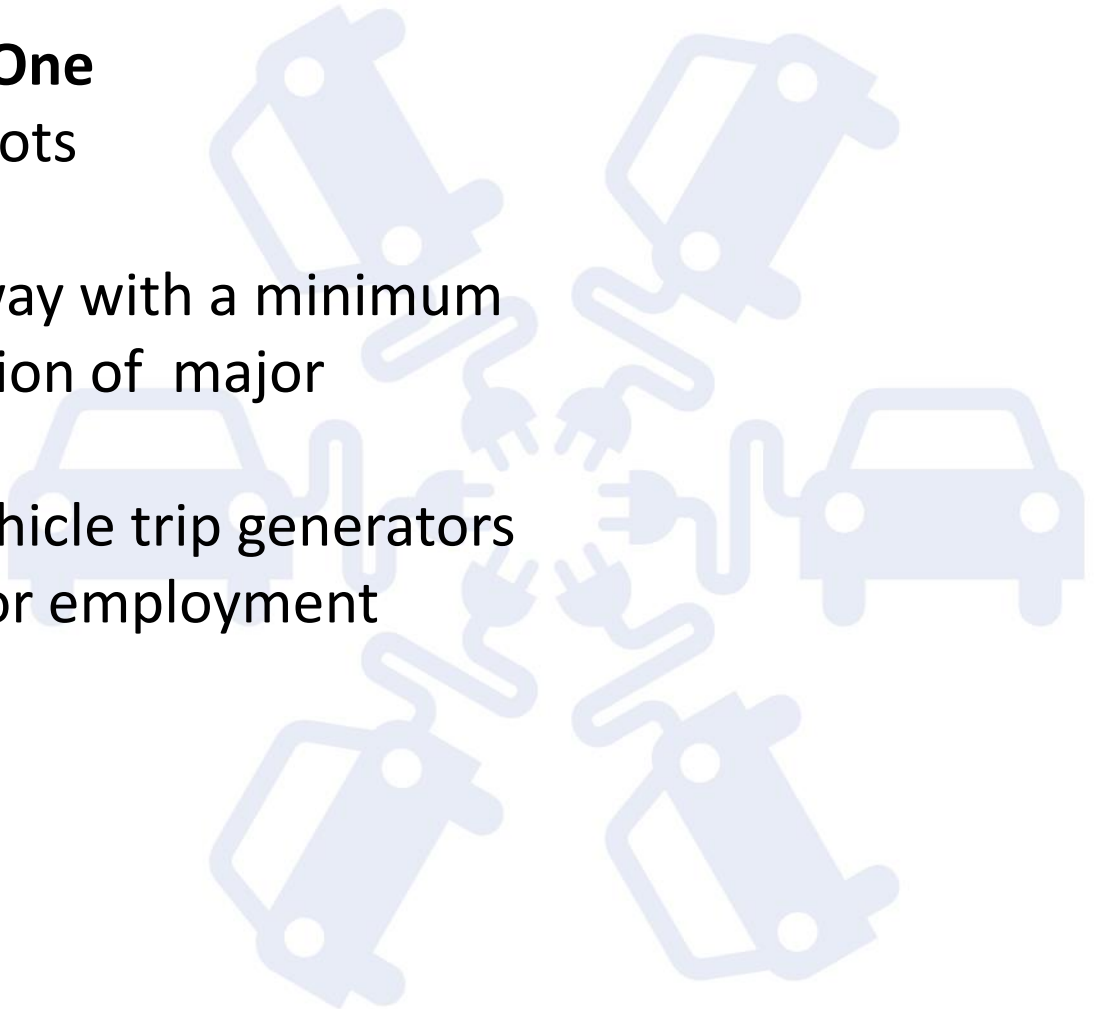


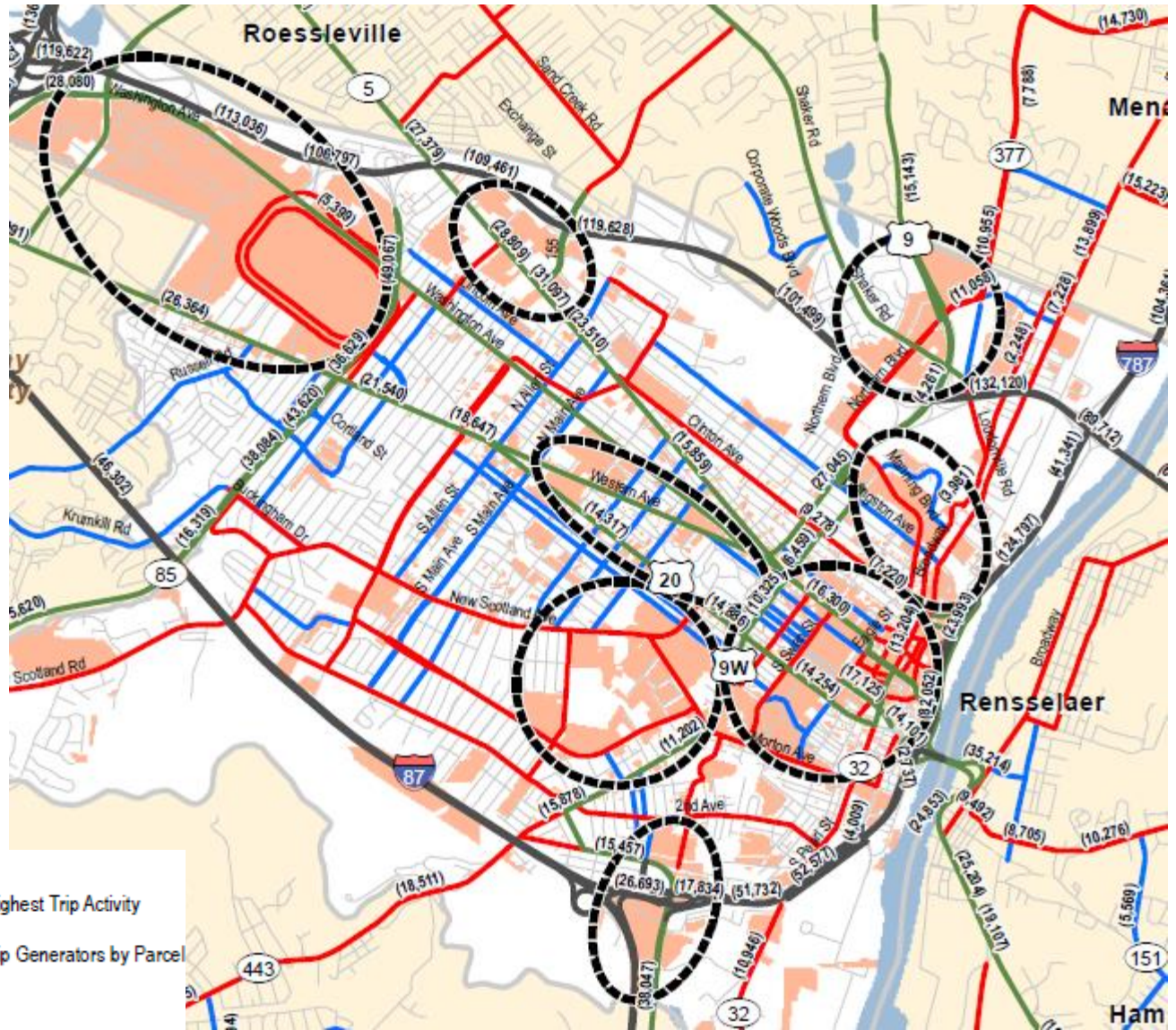
EVSE Site Evaluation

Site Evaluation – Stage One

Step Two: Define Hot Spots





- Near or on a roadway with a minimum functional classification of major collector
- Near or at major vehicle trip generators
- Major commercial or employment districts





Legend

Major Roads

-  Interstate
-  Principal Arterial
-  Minor Arterial
-  Collector



Regions of Highest Trip Activity



Significant Trip Generators by Parcel



EVSE Site Evaluation

Site Evaluation- Phase Two

The “Reality Check”

- Adequate and cost effective electrical infrastructure for Level 2 charging
- Sidewalk widths and ADA accessibility issues
- High-use parking facilities with 50 spaces or more
- Generally a location that is a typically a long dwell time for cars

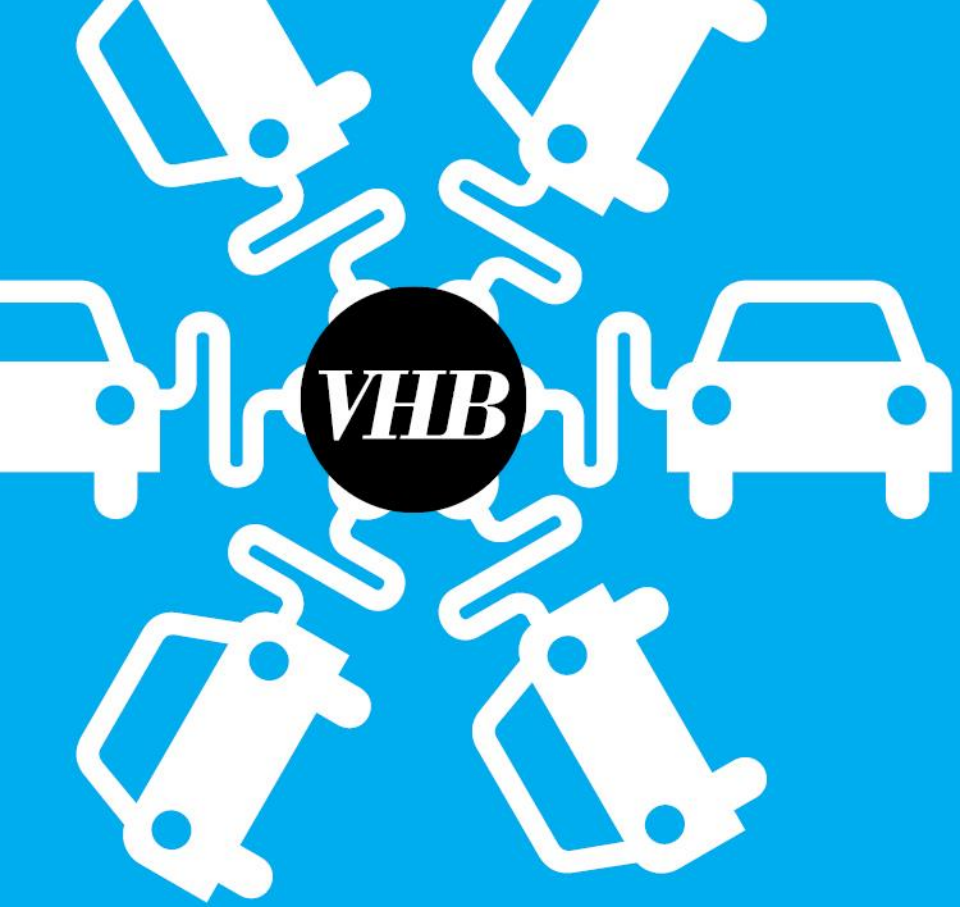


DC Fast Charging

DC Fast Charging Criteria

The criteria used for identifying opportunity zones for DC Fast Charging are as follows:

- Areas of city within 3-5 minute driving distance of each major highway exit off of I-787, I-90, and I-87 and,
- Areas within a walkable commercial district or locations that represent a substantial destination
- Property that can accept the size of a DC Fast Charge unit (typically about 52" W x 98" H x 15" D)
- Sufficient electrical capacity for DC Fast Charging equipment (480 volt 3-Phase AC input)
- Site that has an attendant who could be trained to use the equipment, if necessary



EVSE SITE RECOMMENDATIONS



Recommended Sites

Streets

- Delaware Avenue in front of The Spectrum Theater
- Russell Road (Russell road is a City-owned roadway with on-street parking and is adjacent to Westgate Plaza, a dance studio and County office buildings.)
- Lark Street between Madison and Washington Avenue





Recommended Sites

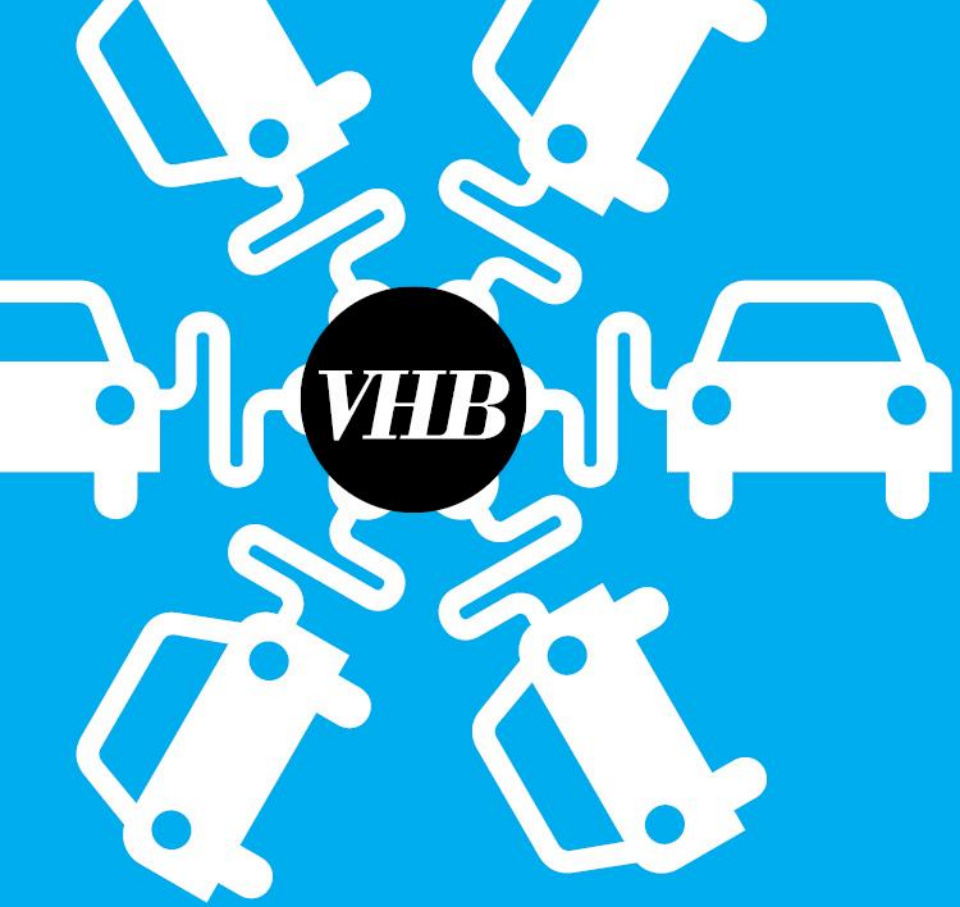
Institutions/Properties/Buildings/Lots

- Robinson Square Parking Lot at Robinson and Swan Streets
- McCarty Avenue New York State Office of General Services Employee Park and Ride lot (This parking lot has 669 designated spaces for State employees.)
- College of St. Rose parking lots
- The church owned parking lot in front of the Hampton Inn that serves Pearl Street, Palace Theatre, and Capital Repertory customers
- UAlbany Campus faculty lots and/or visitor lots
- UAlbany NanoTech Complex
- Harriman State Office Campus (This location is home to multiple State agencies and their fleets and the installation of charging stations could encourage the conversion of existing vehicles to EVs.)
- Pine Bush Preserve Discovery Center
- Capital Hills Golf Course
- Madison Avenue between Western Avenue, Allen Street, and Main Street
- Albany parking garages (The three main Albany parking garages—Columbia Garage, Quackenbush Garage, and Green/Hudson Garage—combined have over 2,650 public parking spaces.)
- Hoffman Park at corner of Hoffman & McCarty



Future Considerations

- In future siting determinations, consider:
 - Duration of stay/turnover rate
 - Popularity of destination (population density, frequency of visits)
- Types of locations:
 - Parking garages
 - College/university campuses
 - Movie theaters
 - Restaurants
 - Malls, supermarkets
 - Public transit sites (though long-term parking not ideal for charging)
 - Hospitals and medical campuses
 - Sports stadiums
 - Libraries, museums
- A lot of multi-family housing in Albany – need to find ways to accommodate potential EV drivers without driveways
- Proactive planning and reducing range anxiety (but don't want to see underutilized infrastructure)



WORKING WITH UTILITIES



Working with Utilities

- Need to coordinate with National Grid
- Notification process for charging station permit applications
- Follow National Grid design standards and process
 - Public Access
 - Near local attractions
 - 1-3 Hour Turnover
 - 208v or 240v power
 - No pavement cutting needed
 - Enthusiastic customer partner

National Grid EV Charging Station Siting Criteria

Public Access – To ease range anxiety, stations must be readily accessible to the public, preferably 24 hrs/day. Certain sites cannot allow this for security reasons, but to be eligible, sites must offer the station to the public at least 10 hrs/day.

Nearby local attractions – Charging can take a typical PEV between 3-8 hours for a full charge. Because of this fact, it is frowned upon to install a charging station in an empty parking lot or isolated area. Charging stations should be sited at or within walking distance to one or more of the following:

- Restaurant or Café
- Library
- Retail Store/Shopping Mall
- Downtown/Town Center
- Sports Arena
- Gym or Fitness Facility

1-3 Hour Turnover – Because PEV drivers rarely park at commuter or all-day parking areas with less than ½ of a full charge they rarely need to be plugged in for more than 2-3 hours. If they are parked somewhere where their vehicle doesn't move for 6-10 hours then they are occupying a station that could be used by another driver. With this in mind, National Grid tries to avoid siting in parking areas with a 6-10 hour turn-over and focus on places with a shorter (1-3 hour) turn-over.

208v or 240v power nearby and no pavement cutting needed – Ideal sites would have 208 volt or 240 volt power within 40 feet of the charging station with little construction required to access it.

Enthusiastic Customer Partner – Finally, the most important thing that leads to successful installations is an enthusiastic customer partner.



MUNICIPAL FLEET



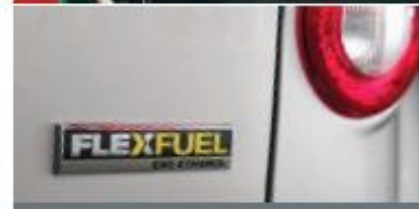
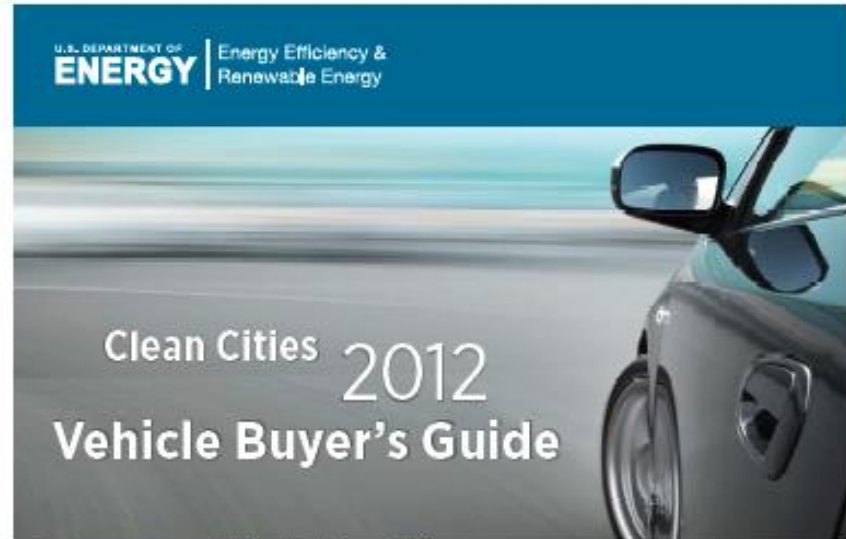
Incorporating EVs into Municipal Fleets

- Install centralized charging equipment
- Phase EVs into fleet
- Not just passenger vehicles – light and heavy duty EVs now available
- Charge during operational downtimes
- Lower maintenance costs
- Lower fuel costs

Lead By Example!



Clean Cities 2012 Vehicle Buyer's Guide



- Natural Gas
- Propane
- Electric
- Ethanol Flex-Fuel
- Biodiesel





VHB

A CHECKLIST FOR EV READINESS



A CHECKLIST FOR EV READINESS

Revise existing building code

Update zoning to allow for charging stations

Update building code and permitting language

Integrate into design review processes

Expedite permitting for charging stations

Adopt standard design and visibility requirements

Adopt standard policies on ownership and installation

Work with local utility EARLY

Adopt a fine schedule for EV parking violations

Establish fees associated with use of equipment

Incorporate EVs into municipal fleet

Form an EV stakeholder group within the community

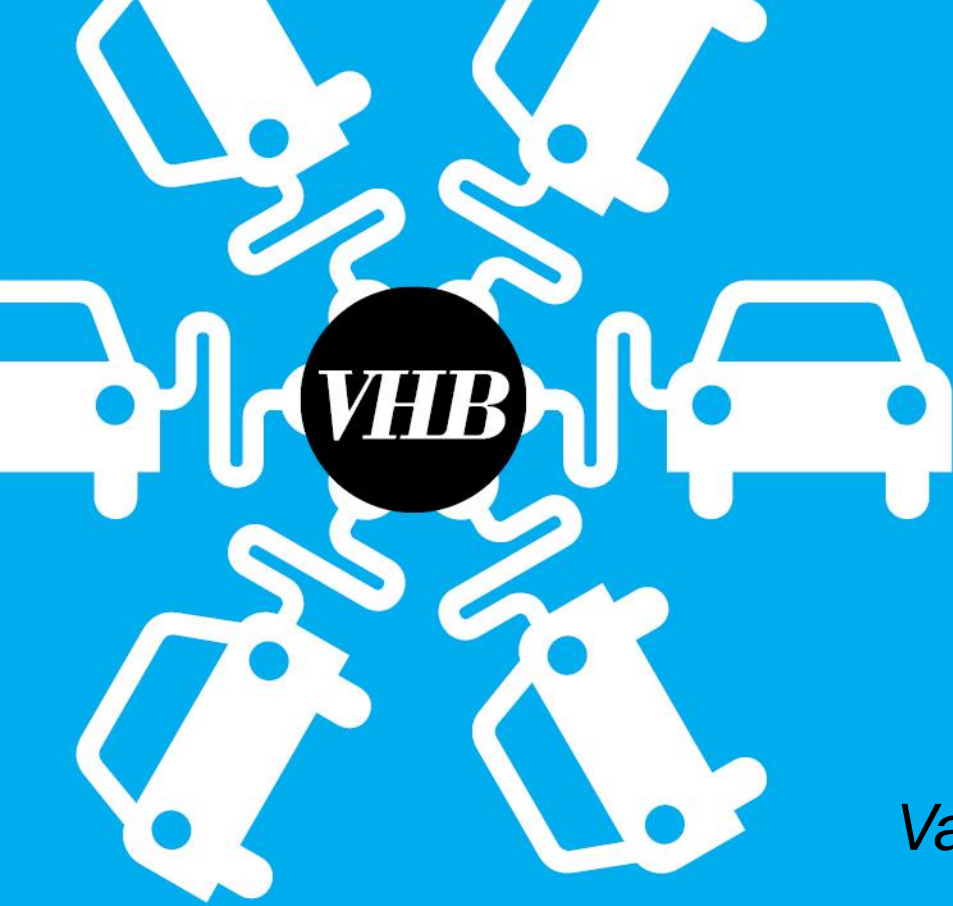
Create an education and marketing program

Establish EV driving incentives

Work with local fleet managers

Develop an EV workforce

Provide training to emergency responders



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