

# Electric Vehicle Supply Equipment Support Study

The team of WXY, Energetics and Barretto Bay Strategies created a series of EV guidance documents for the TCI region:

**An Analysis of Current EV and EVSE Deployment** in the TCI region;

**An EVSE Cluster Analysis;**

**Siting and Design Guidelines for Electric Vehicle Supply Equipment;**

**A report on EV-Ready Codes for the Built Environment;** and

**A Guide to Planning and Policy Tools** for creating EV-Ready Towns and Cities.



# About WXY & Energetics

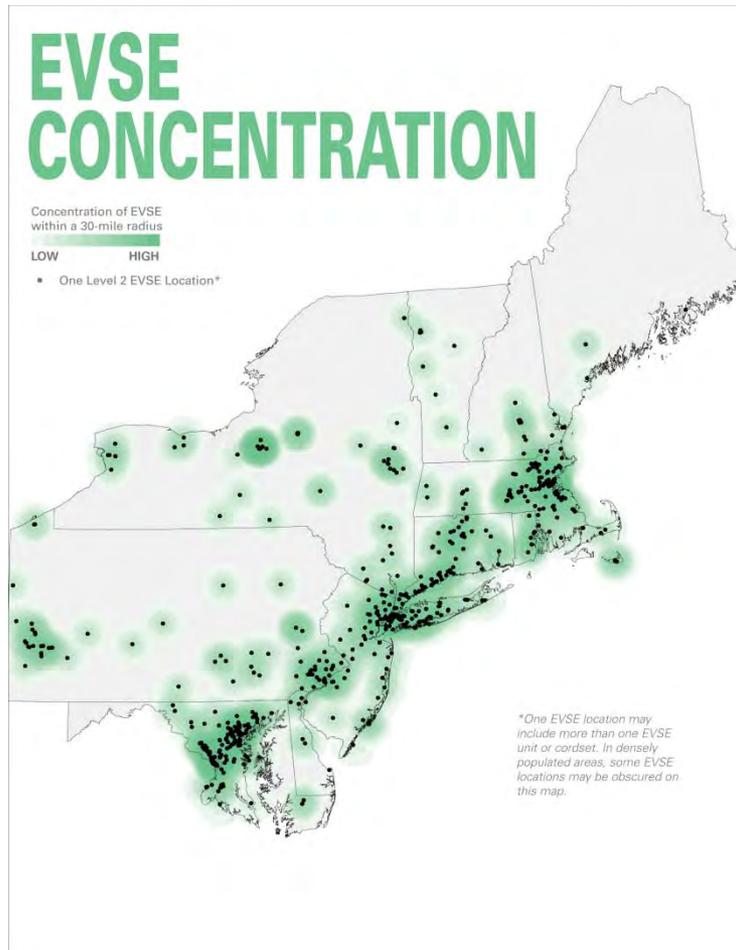
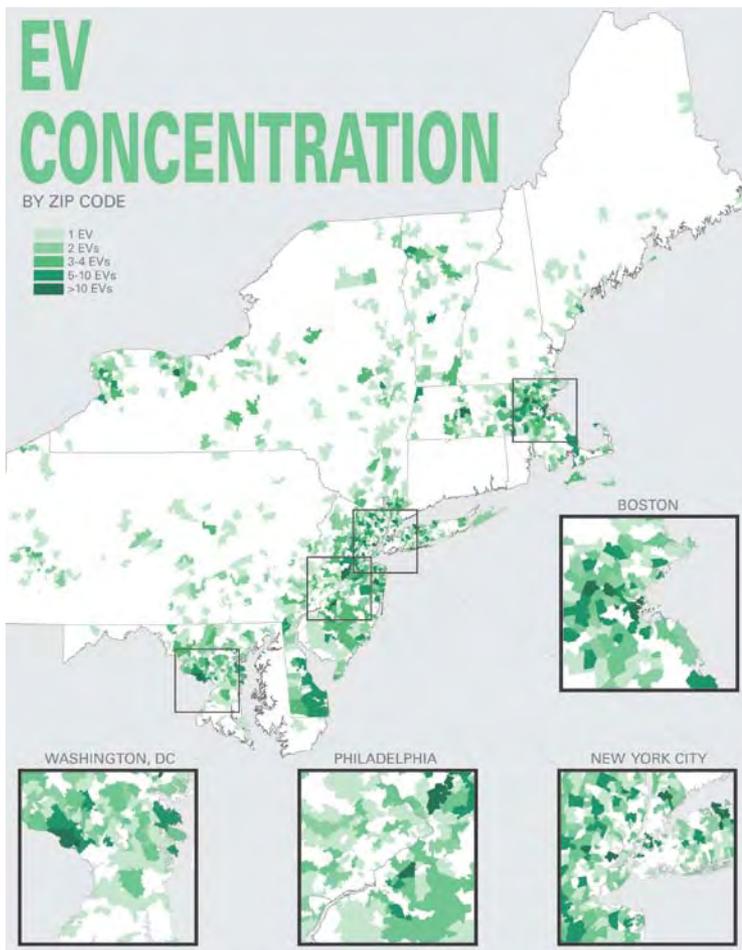
WXY Architecture + Urban Design is a planning and design firm based in New York City focused on social and environmental transformation of the public realm at multiple scales.

Energetics Incorporated is an engineering and management consulting firm serving public- and private-sector clients headquartered in Columbia, Maryland.

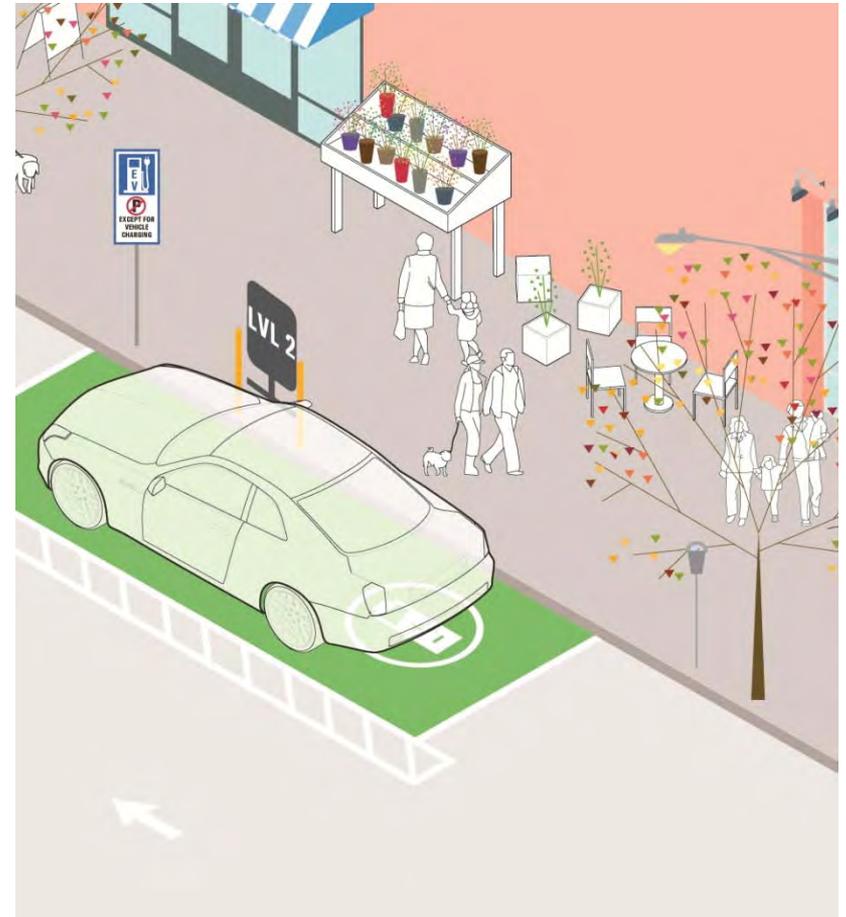
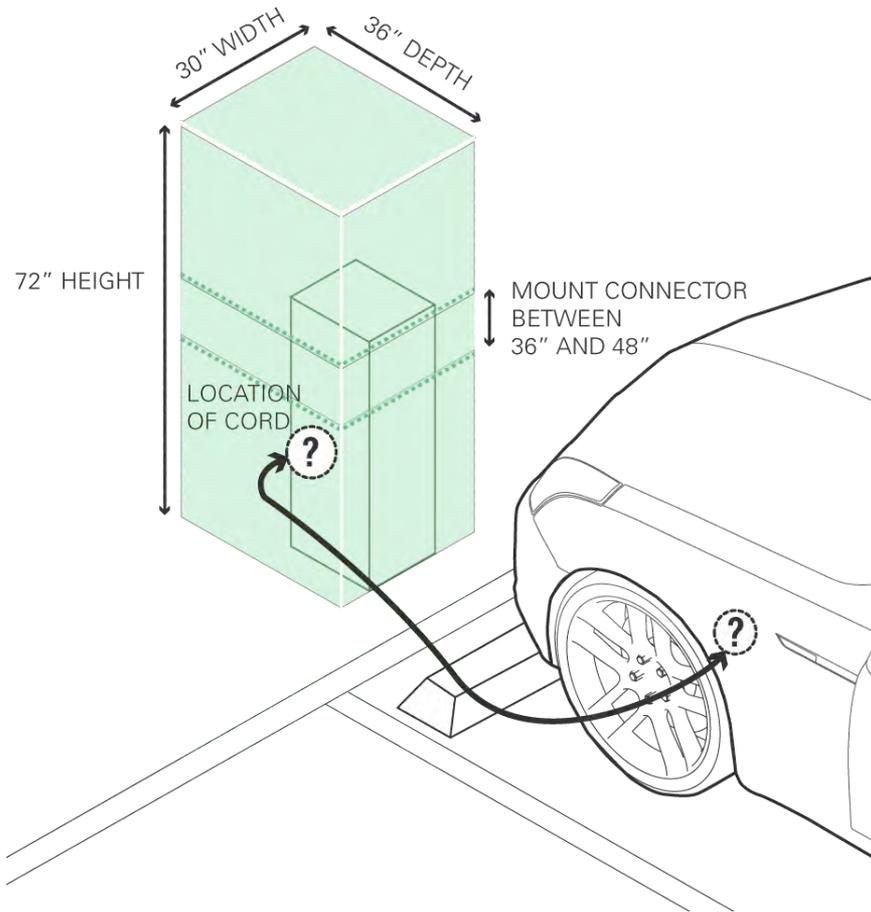
**W X Y** architecture + urban design



# Analysis of Current EV and EVSE Deployment and EVSE Cluster Analysis



# Siting and Design Guidelines

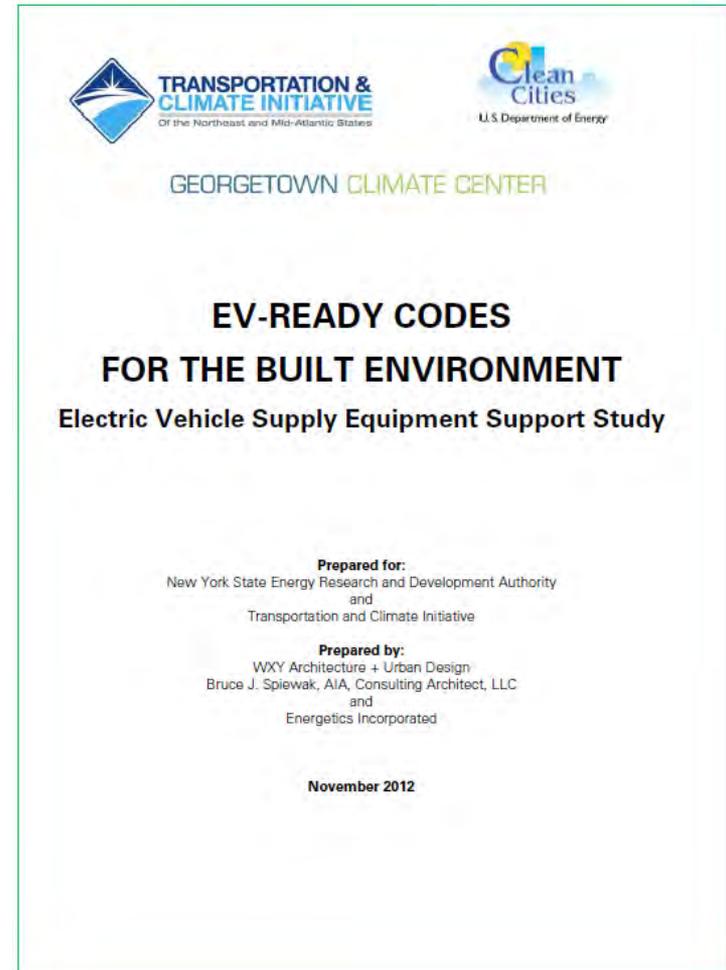


# EV-Ready Codes for the Built Environment

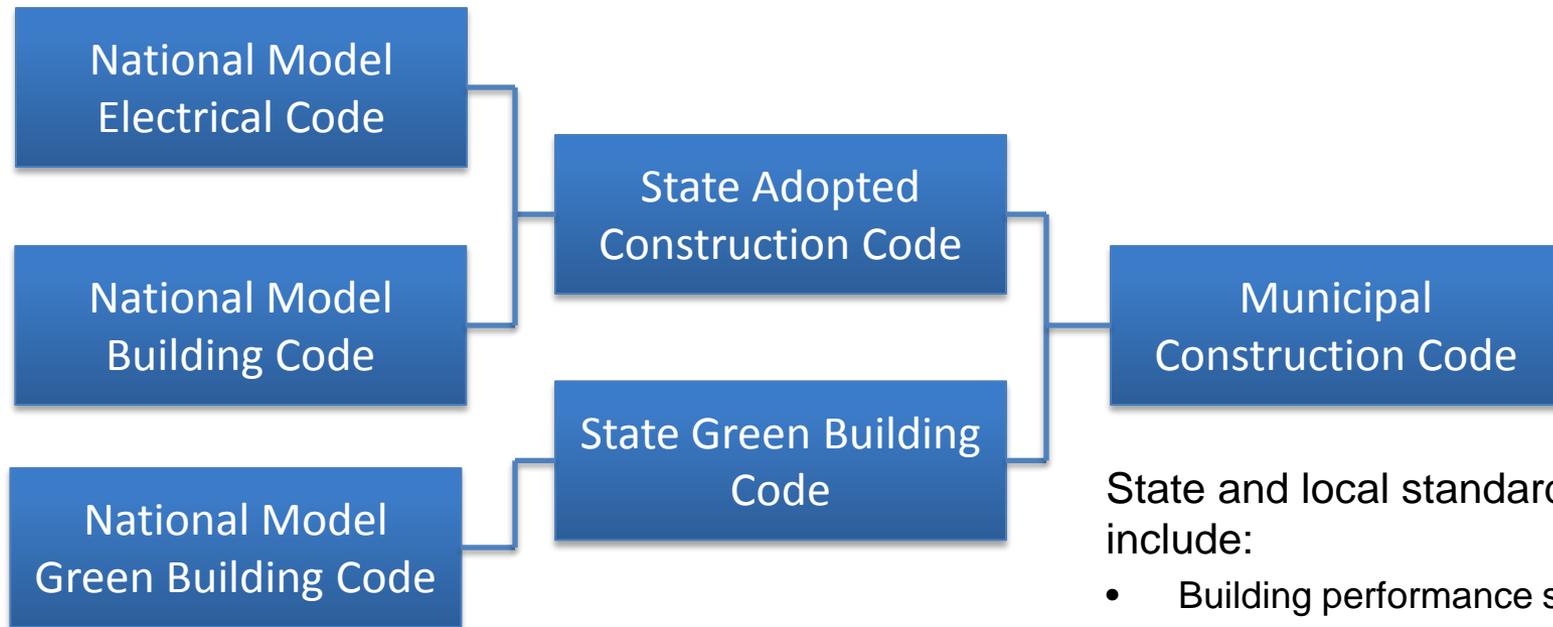
This report is intended to aid local and state practitioners in assessing local code-specific barriers and identifying the code provisions that would encourage a basic or advanced level of EV readiness in local policies and regulations.

The guide:

- Provides an overview of building and electrical codes and their relation to EVs;
- Highlights best practices from around the country; and
- Makes recommendations for jurisdictions in the Northeast and Mid-Atlantic.



# EV-Ready Codes: Code Adoption Process



State and local standards may also include:

- Building performance standards;
- Performance Codes;
- Building Rehabilitation Codes;
- Accessibility Codes;
- Energy Codes;
- Livability Codes; and
- Property Maintenance Codes.

# EV-Ready Codes: Case Study #1: City of Vancouver



## Municipal planning in Vancouver, BC

- An EV Ready Municipal Building Code
- Vancouver City Council took advantage of its unique ability among Canadian cities to modify its building codes in order to require a substantial percentage of parking stalls in new construction to be EV-ready
- At little added cost to developers, amending the scope of the local building code to include mandatory minimum requirements for the future electrical installation of charging stations illustrates a relatively simple, feasible solution to a complex problem.
- In doing so, Vancouver became the first North American city to require EVSE connection in all new development.

# EV-Ready Codes: Case Study #2: Los Angeles

## Regional approaches linking city, county and utility planning in Los Angeles, CA

- Top-down approach: California adopted CALGreen, the nation's first mandatory green building code which includes an EV-ready policy.
- Includes “tiers” of compliance in the voluntary appendices, so that jurisdictions adopting the code can choose the level of enforcement most appropriate for the local market.
- Los Angeles City and County are likely to soon pass and upgrade the requirements for EV-ready construction (5%).

**Designated Parking.** Provide designated parking, by means of permanent markings or a sign, for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles.

<b>Mandatory</b>	8%
<b>Voluntary (Tier 1)</b>	10%
<b>Voluntary (Tier 2)</b>	12%

**Electric vehicle supply wiring.** For each space, provide one 12- VAC 20 amp and one 208/240 V 40 amp, grounded AC outlets or panel capacity and conduit installed for future outlets.

<b>Total Number of Parking Spaces</b>	<b>Number of Required Spaces</b>
<b>0–50</b>	1
<b>51–200</b>	2
<b>201 and over</b>	4

# EV-Ready Codes: Case Study #3: Oregon



**WEST COAST  
ELECTRIC  
HIGHWAY**

## State-level planning in Oregon

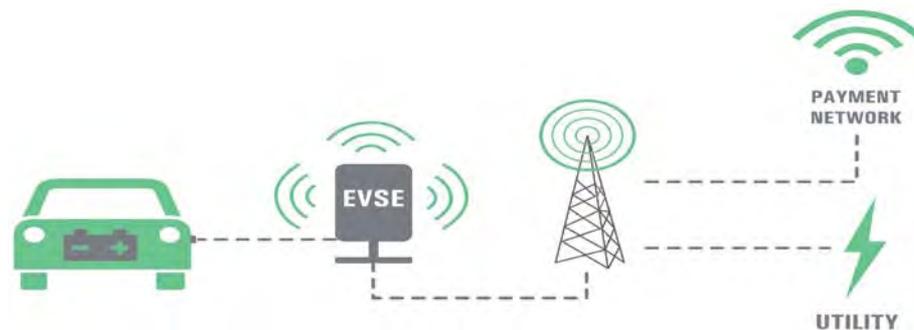
- Electrical code amendments facilitates permitting process
- Inclusion of EVSE in the state's minor label program reduces costs (each permit for a basic installation costs only \$14)
- The Oregon code amendment emphasizes the potential for states or local jurisdictions to amend the NEC to create a more pro-EVSE regulatory environment.
- Portland's EV priorities in its Climate Action Plan and the West Coast Green Highway complement code-specific policies by setting environmental and transportation-oriented goals.

## Incorporate EVSE Infrastructure Planning into Urban Development Strategies

For a downtown revitalization plan, the incorporation of EV charging stations can aid marketing strategies. Portland's Electric Avenue highlights the potential of bringing a unique amenity to Main Street.

# EV-Ready Codes: Key Findings

- This report provides an overview of building and electrical codes and their relation to EVs, highlights best practices from around the country, and makes recommendations for jurisdictions in the Northeast and Mid-Atlantic.
- The report draws several conclusions:
  - Existing codes do not present a significant barrier to EVSE deployment, but there is room within the codes to more clearly encourage EV-readiness;
  - Codes can create a high-level planning framework while retaining flexibility at the local level; and
  - Adopting EV-friendly codes should be part of a collaboration between partners to create a comprehensive EVSE deployment strategy.



# Guide to Planning and Policy Tools

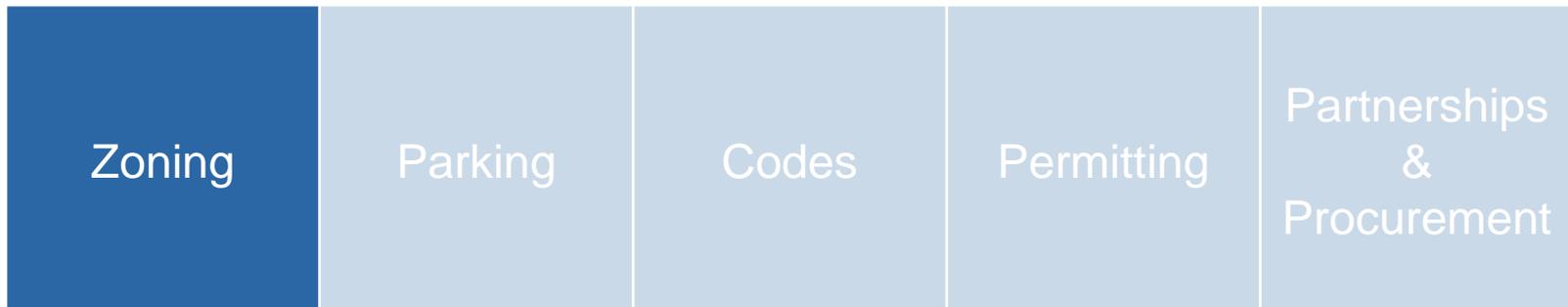
This report provides guidance to practitioners at all levels of state and local governments wishing to take action to implement EVSE deployment in their jurisdictions. The guide:

- Provides discussion and guidance regarding the steps to create, administer, and amend planning processes, rules, and regulations;
- Explores the potential for jurisdictions to encourage EV charging station installation and use; and
- Examines best practices for promoting EV-friendly zoning regulations, parking ordinances, building codes, permitting practices, and partnership and procurement policies.



# Guide to Planning and Policy Tools: Zoning

- Zoning actions can:
  - Permit EVSE in logical locations, which includes nearly all parking lots and garages;
  - Establish clear delimitations and use groups for EV and EVSE;
    - Usually requires separating EVSE from other refueling types
  - Set out high-level criteria for design, accessibility, and parking enforcement; and
  - Require or incentivize EVSE in beneficial or underserved locations.



# Guide to Planning and Policy Tools: Zoning: New York City

- As part of a suite of *green* zoning amendment, New York City enacted “Zone Green” in April 2012.
  - On the EV front this focused on *allowing* EVs, defining “electric vehicle charging in conjunction with parking facilities” as an accessory use in the New York City Zoning Resolution.
  - Zone Green places DC Fast charging stations and battery swap facilities in a use group for “Auto Service Establishments.”



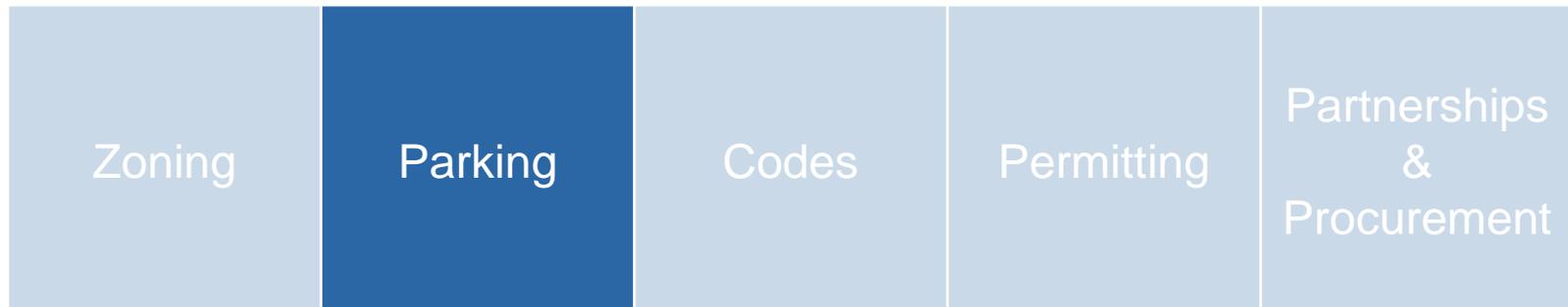
NYCPLANNING



text amendment

# Guide to Planning and Policy Tools: Parking:

- Municipalities can use parking ordinances to:
  - Scope EVSE pre-wiring or installation from a transportation and logistics perspective;
  - Set standards for on-street EV charging and parking;
  - Provide guidance on how best to manage user rotation, access, and violations.
- Private organizations can also promote EV parking by offering EV-only spots in their lots.



# Guide to Planning and Policy Tools: Parking: California & Maryland

- In California, an individual may not:
  - *stop, stand or park* a motor vehicle, or otherwise *block* access to parking, in a stall or space designated for the exclusive purpose of charging an EV *unless* the vehicle displays a valid state-issued zero-emission vehicle decal and is connected for electric charging purposes
- By contrast, other states such as Maryland have determined that EV markets are not yet strong enough to regulate enforcement of EV parking at the state level.



# Guide to Planning and Policy Tools: Codes

- Building and electrical codes can set standards for safety and scope of EVSE deployment by:
  - Specifying scoping requirements that set numerical or percentage-based goals or limits for certain features in new construction; and
  - Providing for new permitting or inspection protocols.



## EV Readiness: Phasing and Tiers

**Voluntary/Mandatory:** Requirements included as an optional appendix; voluntary requirements create consistency among jurisdictions that choose to adopt.

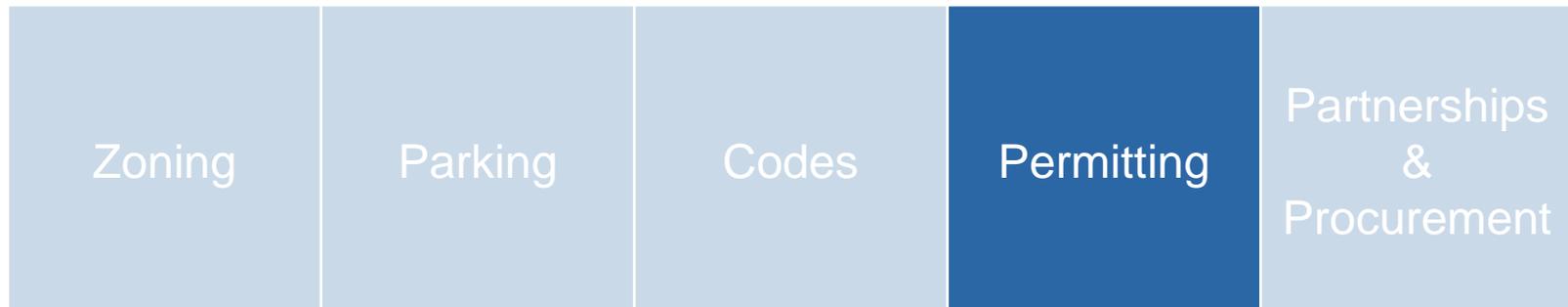
**Local and Developer Burdens:** Code language should be enforceable in the local jurisdiction and not cause undue local burdens.

**Tiered Codes:** Optional appendices to the building code should be structured with additional options, or tiers, that set standards for increasing levels of participation and enforcement.

**Pilot Phases:** Test new codes and allow contractors, inspectors, and other local stakeholders to develop a knowledge base prior to full enforcement of any new code.

# Guide to Planning and Policy Tools: Permitting

- EVSE permitting procedures vary significantly between jurisdictions, leading to uncertainty and higher costs for consumers
- Localities can make it easier to install EVSE by streamlining permitting by:
  - Standardizing permitting across jurisdictions and minimizing permitting cost and procedure;
  - Classifying EVSE installation as “minor work”;
  - Providing a permitting template or online permitting to applicants; and
  - Ensuring that inspections are conducted in a timely manner.



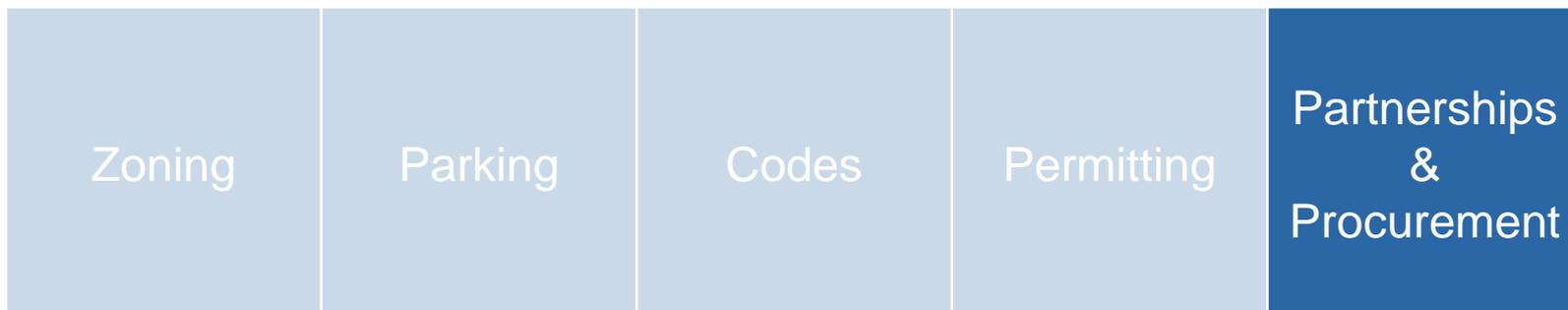
# Guide to Planning and Policy Tools: Permitting: Los Angeles

- Los Angeles applied its existing online Express Permit system to EVSE installations. The system enables standard EVSE customers to:
  - pay a fixed fee of \$75
  - receive a permit automatically / instantaneously and start using their EVSE immediately after installation
  - have inspection within 24 hours
- A separate EVSE inspection division was created within the Department of Building and Safety to ensure this rapid turnaround.

Item	Cost
Permits	\$0–\$750
Circuit breaker panel boards	
- 100A	\$450–\$685
- 225A	\$940–\$1,300
- 60A subpanel	\$385
- 40A circuit breaker	\$23–\$75
240 V outlet and 30 ft. wiring	\$195 installed
Drywall labor 6 ft x 8 ft	\$225
400 ft trenching	\$225
Cut and patch concrete - 221 ft	\$525
Ventilation	\$275 + installation
EVSE	\$0–\$1,500

# Guide to Planning and Policy Tools: Partnerships & Procurement

- Diverse partnerships can strengthen the EV planning process.
  - Private companies, utilities, municipalities and MPOs, and others should be involved to help a community become EV-ready.
  - Having at least two of these types of partners should be the goal for EV-readiness
- Procurement policies can also be used to require the government to purchase EVs, or consider a purchase as part of any procurement process.



# Guide to Planning and Policy Tools: Partnerships & Procurement: London

- In London, one example of a wide-ranging public-private partnership is between the city and the parking management company NCP.
- NCP has agreed to enforce EV-only parking both in lots and on-street. This arrangement is based on the citywide EV initiative laid out in the Plan for London



# Guide to Planning and Policy Tools: Key Findings

- These planning and policy tools lay the groundwork for the deployment of EVSE
- The tools operate at different scales and require different processes to be changed
- They are most effective in particular contexts, and the four government tools have different potentials for allowing, incentivizing, and requiring EVSE.

CRITERIA	ZONING	PARKING	CODES	PERMITTING
<b>JURISDICTIONAL SCALE</b>				
<i>Municipal</i>	●	●	○	●
<i>State</i>	○		●	●
<b>TOOL POTENTIAL</b>				
<i>Allow</i>	●			
<i>Incentivize</i>		●		●
<i>Require</i>	●	●	●	
<b>EVSE CONTEXTS</b>				
<i>Public Realm</i>		●	●	●
<i>Private Development</i>	●		●	
<i>New Development</i>	●		●	●
<i>Existing Development</i>	○	●		●