



Joint Office of
**Energy and
Transportation**

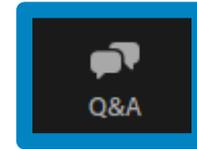
Navigating Zoning and Building Codes for EV Charging Infrastructure

2/15/2024

driveelectric.gov

Zoom Tips and Housekeeping

- Controls are located at the bottom of your screen. If they aren't appearing, move your cursor to the bottom edge.
- Submit questions using the “Q&A” window



Disclaimer

Notice: This webinar is being recorded and may be posted on the Joint Office website or used internally.

If you speak during the webinar or use video, you are presumed to consent to recording and use of your voice or image.

Agenda

Introduction from the Joint Office

Presentations

- Austin Willman, Project Leader National Renewable Energy Laboratory
- E.J. Klock McCook, Principal at Rocky Mountain Institute
- Ed Gilliland, Senior Director at Interstate Renewable Energy Council
- Daphne Dixon, Executive Director of Connecticut Southwestern Area Clean Cities Coalition and Live Green
- Mike Salisbury, Transportation Energy Lead at the Office of Climate Action, Sustainability & Resiliency for City and County of Denver

Panel Discussion and Audience Q&A



Mission and Vision



JOINT OFFICE OF
**Energy and
Transportation**

Mission

To accelerate an electrified transportation system that is affordable, convenient, equitable, reliable, and safe.

Vision

A future where everyone can ride and drive electric.

Bipartisan Infrastructure Law Programs Supported by the Joint Office

The Joint Office provides unifying **guidance**, **technical assistance**, and **analysis** to support the following programs:



National Electric Vehicle Infrastructure (NEVI) Formula Program (U.S. DOT)

\$5 billion for states to build a national electric vehicle (EV) charging network along corridors, including **\$148 million** awarded to repair and replace non-operational chargers.



Charging & Fueling Infrastructure Discretionary Grant Program (U.S. DOT)

\$2.5 billion in community and corridor grants for EV charging, as well as hydrogen, natural gas, and propane fueling infrastructure



Low-No Emissions Grants Program for Transit (U.S. DOT)

\$5.6 billion in support of low- and no-emission transit bus deployments



Clean School Bus Program (U.S. EPA)

\$5 billion in support of electric school bus deployments



Polling Questions

Presenters



Austin Willman
NREL



E.J. Klock McCook
*Rocky Mountain
Institute*



Ed Gilliland
IREC



Daphne Dixon
*Connecticut SWA
Clean Cities Coalition
and Live Green*



Mike Salisbury
*Office of Climate
Action,
Sustainability &
Resiliency at
City and County of
Denver*



Austin Willman

Project Leader,
National Renewable Energy Laboratory

Alternative Fuels Data Center

Search the AFDC

SEARCH

FUELS &
VEHICLES

CONSERVE
FUEL

LOCATE
STATIONS

LAWS &
INCENTIVES

Maps & Data

Case Studies

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[Printable Version](#)

Electricity Basics

Benefits &
Considerations

Stations

State & Local
Infrastructure Planning

- Initial Considerations

- EV Readiness

- State Funding

- Building Codes,
Parking, & Zoning

- Permitting Processes

- Signage

- ADA Compliance

Procurement &
Installation

Operation &
Maintenance

Charging at Home

Charging for Multifamily
Housing

Charging in Public

Building Codes, Parking Ordinances, and Zoning Ordinances for Electric Vehicle Charging Infrastructure

Building codes, parking ordinances, and zoning ordinances can influence electric vehicle (EV) infrastructure planning by creating design standards, requiring a minimum number of EV-ready spaces for new construction, or allowing EV charger installation as part of zoning ordinances. In addition to considering charging for light-duty EVs, codes and regulations should also be adopted to support infrastructure for neighborhood EVs and e-micromobility options, which typically only require access to a 120V receptacle to charge.

The following definitions are important to know when reading through these sections:

EV-Capable Parking Space: Electrical Panel Capacity & Conduit

- Install panel capacity and conduit (raceway) to accommodate the future build-out of EV charging with 208/240 V, 40-amp circuits.
- Rational: Provide hard-to-retrofit elements during new construction while minimizing up-front cost.



EV-Ready Parking Space: Install full circuit

- Full circuit installations include 208/240V, 40-amp panel capacity, raceway, wiring, receptable, and overprotection devices similar to a dryer circuit.
- Rational: Full circuits are plug-and-play ready and minimize total costs and additional barriers to installing Electric Vehicle Supply Equipment (EVSE).



EV-Installed: Install EV Charging Station (also known as Electric Vehicle Supply Equipment or EVSE).

- Install charging stations during new construction.



New EV
Planning
Content
on the
AFDC

State and Regional Government Role

- Create regional consistency
- Consider statewide legislation
- Conduct targeted outreach
- Maintain an EV webpage
- Provide funding support



(Photo by Werner Slocum / NREL)

Build a team of
EV champions

Identify relevant
plans, policies,
and regulations

Identify changes
needed to
facilitate EV
infrastructure
development

Develop roadmap
to update plans,
policies, and
regulations

Execute plan for
EV infrastructure
development

Steps for Local Government to
develop more EV friendly policy
and regulations

Communities Technical Assistance

driveelectric.gov/communities

The Joint Office of Energy and Transportation has partnered with NREL to offer **FREE** technical assistance to communities at all stages of interest, planning, and deployment of electric mobility technologies.

Communities Technical Assistance

JOCommunityTA@nrel.gov
driveelectric.gov/contact
(select “Community inquiry”)



[About](#) ▾ [Technical Assistance](#) ▾ [Data & Tools](#) ▾ [Publications](#) [News & Events](#) ▾ [Contact](#)

energy.gov | transportation.gov

Technical Assistance and Resources for Communities



E.J. Klock McCook

Principal, Rocky Mountain Institute

Ed Gilliland

Senior Director,
Interstate Renewable Energy Council (IREC)



Joint Office of Energy and Transportation

February 15, 2024

Planning and Zoning Guidance for EV Charger Deployment

Ed Gilliland, IREC

EJ Klock-McCook, RMI

Today

- *Why focus on planning and zoning?*
- *Planning documents*
- *Zoning and use designation*
- *Parking*

Accelerating Local Regulatory Approval for EVSE: Predictable, Transparent, Streamlined

The Challenge

Process can be slow and expensive

- Up to 6 months (or more) for permits
- New topic for many local officials
- 23,000 AHJs in the US—each is different
- Permitting process cumbersome

The Solution

Modeled on SolSmart

Predictable, Transparent, Streamlined

- Consensus standards
- Consensus educational materials
- Model process with checklists
- Automated or streamlined permitting

Development of the *Guidance*

Planning, Zoning and Permitting Subcommittee of IREC's Sustainable Energy Action Committee's Electric Vehicle Working Group

- Multidisciplinary team included
 - EV charging providers
 - Local, state, and regional planning professionals
 - Other experts
- Several internal drafts
- Released and circulated an *Exposure Draft* and integrated hundreds of comments.

PURPOSE:

Provide guidance for predictable and transparent local standards to speed deployment of the nearly 3 million non-home EV charging ports needed by 2030.

Local EV Readiness

EV Policies, Goals & Metrics

Integration with Solar & Other Renewables

Education, Outreach, Incentives

Clean Fleets

Building / Electrical Codes, Permitting, Inspection

Plans, Zoning Ordinances, Development Regulations

Local Regulatory Approval

The Approval Process

Utility Incentives

Public Utilities Commissions

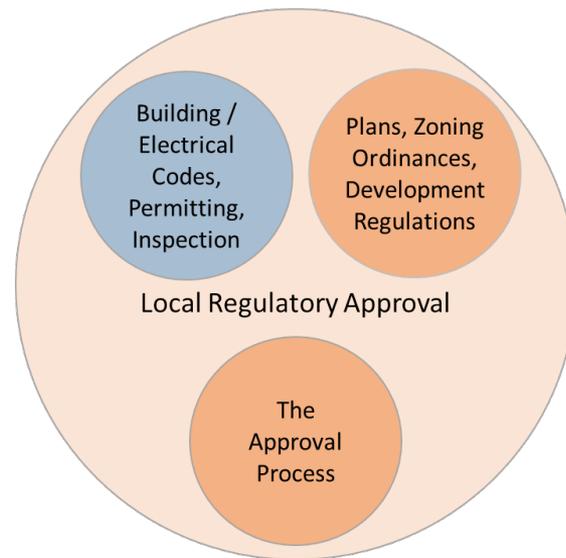
State and Federal Enabling Legislation

New Utility Service Connections and Power Capacity

Regulatory Approval Framework

- A. Regulatory requirements - documents
 1. Plans, zoning ordinances, development regulations
 2. Building codes for permitting & inspection

- B. The approval process



Planning and Zoning Guidance for EVSE Deployment

Document Structure

- Overview
 - Why is this guidance needed?
 - Key characteristics of EVs and EV chargers
 - The local regulatory approval process
 - **Regulatory requirements** guidance 
- Each section presents:
- Challenges
 - Recommendations
 - Discussion
- Zoning and permit approval process guidance
 - Other considerations
 - Key terms and acronyms
 - Appendices

Regulatory Requirements

- Planning documents
- Zoning and permitted accessory use
- Parking requirements
 - Parking count and mandates
 - Charger accessibility
 - EV charger readiness
- Design, aesthetics, equipment location
- On-street charging

Challenges and Recommendations Overview

Regulatory Requirements

- Planning documents
- Zoning and use designation
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Approval Process

- Application process
- Application review



Planning and Zoning Guidance Spotlight



Planning

Planning Documents

Zoning

Zoning and Use Designation

Parking

Parking Counts

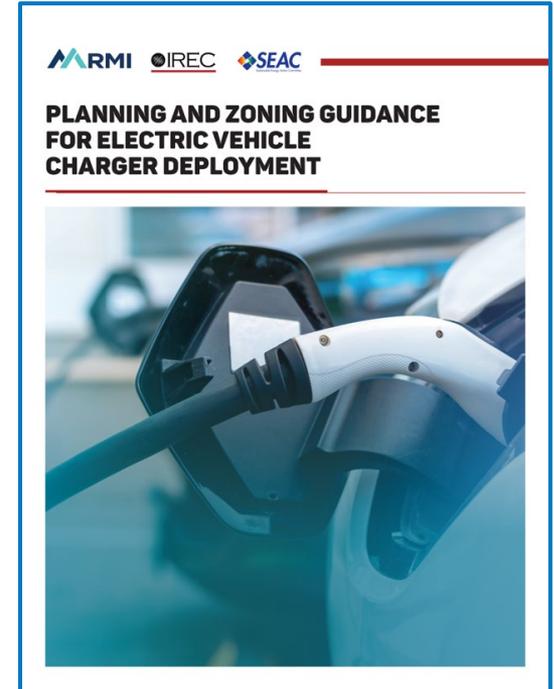
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Regulatory Requirements: Planning Documents

Planning Matters

1. Address EV charging in comprehensive plan and supporting plans
 1. Climate action plans, capital improvement plans, transportation plans
2. Collaborate with regional planning organizations & utilities
3. Inventory existing and proposed locations of public charging.
 1. Project EV charger demand by use case.

Planning

Zoning

Parking

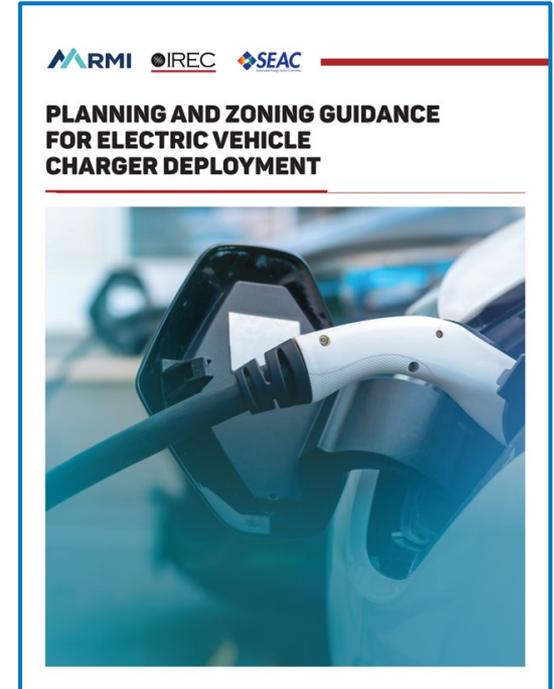
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Zoning Code

Zoning

1. Regulates how a parcel of land can be used
 1. Building and site characteristics
 2. Allowed activities

Zoning code

1. Legal tool for zoning
 1. Zoning district map & district descriptions
 2. Use standards
 3. Development standards
 4. **Administration & procedures**

Planning

Zoning

Parking

Zoning and Use Designation

Zoning Focus

1. Accessory use
2. Discretionary Reviews
3. Primary use

Planning

Zoning

Parking

Zoning and Use Designation

Accessory Use

- Relatively low impact on a property or surrounding properties
 - Lower level of regulatory review
- Allow accessory use EV charging by right in all zones
- Review administratively, avoid discretionary reviews

Planning

Zoning

Parking

Zoning – Discretionary Reviews

Conditional Use

1. Required for development that is permitted subject to compliance with conditions or requirements in the zoning code
 1. Churches in a residential area
 2. Gasoline stations
2. Public hearings and zoning commission and/or city council approval
3. Often very time consuming, delaying projects for months
4. Avoid for EV charging

Planning

Zoning

Parking

Zoning – Discretionary Reviews

Site plan review

1. Required for development to ensure consistent with comp plan, is safe, and in harmony with existing surroundings and the environment
 1. Commercial, industrial, multifamily, mixed-use, institutional uses
2. Public hearings and zoning commission and/or city council reviews and approval
3. Often very time consuming, taking months or years
4. Avoid for EV charging
 1. Sometimes there is a minor site plan review process that can be approved administratively

Planning

Zoning

Parking

Zoning and Use Designation

Primary Use

1. When clearly a primary use
 1. Allow EV charging as an approved use
 2. Define as own use, not a traditional fueling station
 3. Avoid discretionary reviews
2. Update zoning codes

Planning

Zoning

Parking

Zoning and Use Designation

Summary

1. Allow accessory use EV charging by right in all zones
2. When clearly a primary use allow EV charging as an approved use
3. Approve administratively – avoid discretionary reviews
4. Update zoning codes

Planning

Zoning

Parking

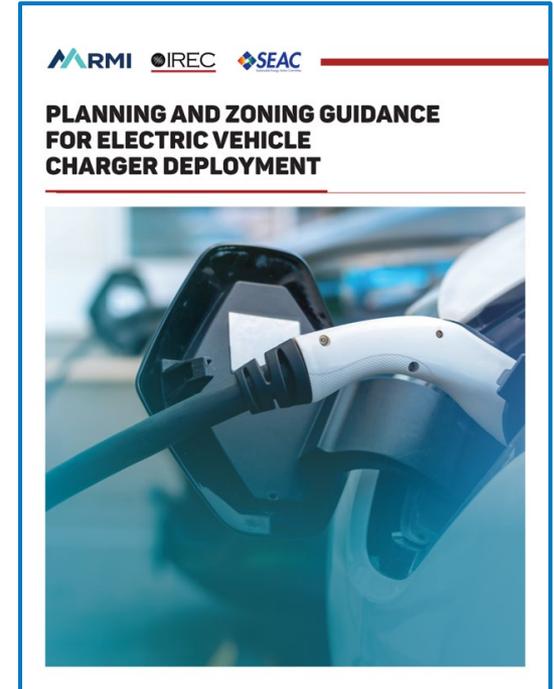
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Parking

Minimum Parking Requirements

1. Many localities set minimum parking requirements based on land use
 1. A shopping center may require 4 spaces per 1000 GSF
2. Trend is to reduce those requirements to encourage more travel by transit, bike, etc.
3. Converting existing spaces to dedicated EV charging spaces may be viewed as a violation of the minimum parking requirements

Planning

Zoning

Parking

Parking Counts

Allow

1. Existing spaces converted to EV charging spaces to count toward minimum parking mandates
2. Accessible charging spaces to count as two parking spaces for determining minimum parking requirements
3. Parking space reductions for charging related equipment count toward minimum parking mandates

Planning

Zoning

Parking

Accessing the Report

Planning and Zoning Guidance for Electric Vehicle Charger Deployment
and the

6-page *Executive Summary*

are available on SEAC website via **tinyurl.com/EV-Guidance**

Contacts:

- Ed Gilliland, IREC, edg@irecusa.org
- E.J. Klock-McCook, RMI, ekmccook@rmi.org



Daphne Dixon

Executive Director,
Connecticut Southwestern Area Clean Cities Coalition
and Live Green

Navigating Zoning and Building Codes for EV Charging Infrastructure

Thursday, February 15, 2024



Daphne Dixon

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Connecticut SWA
Clean Cities Coalition

Live Green Network

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EV Zoning Regulations Experience

Zoning Board of Appeals
2010 - 2021

Municipal EV Readiness
Studies & Toolkits

EV Zoning Regulations
Toolkits and Training
Programs

EV Zoning Regulations
Blueprint

Multi-state EV Zoning
Regulations Training
Programs

EV Zoning Regs Regional
Pilot

Collaborating with
commissions, land use staff
and COGs on EV zoning
regs model language

Coast-to-Coast
EV Road Trips

Coast-to-Coast EV Road Trips

11,000 miles - 30 states



2022

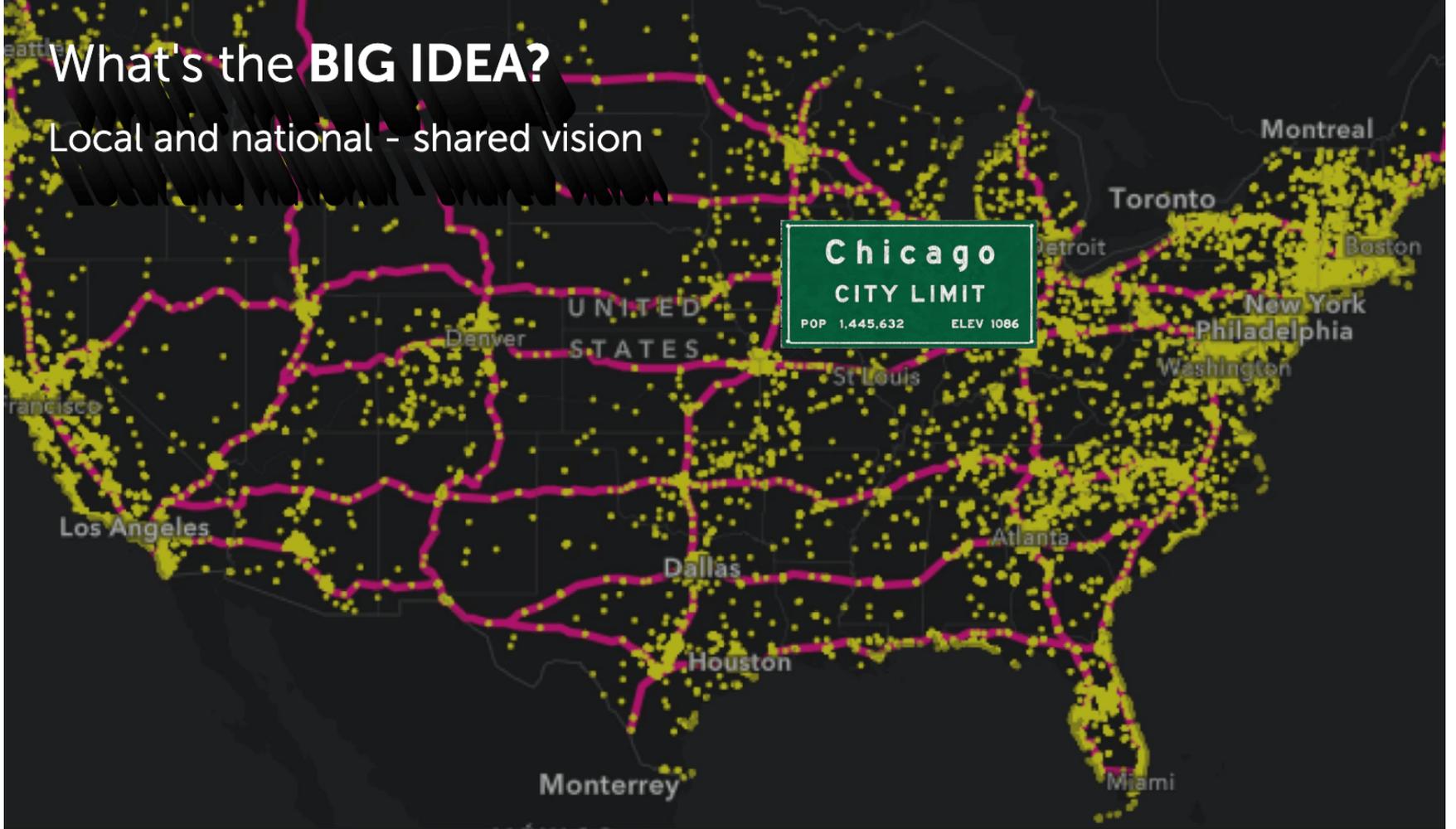


2023



What's the **BIG IDEA?**

Local and national - shared vision



How Do Local EV Zoning Regulations Create Change?



Foster Diversity,
Equity, and
Inclusion



Help to make
EV adoption
inevitable



Regional
Consistency



Reduces range
anxiety and
creates safety



Economic and
Community
Development

Different Zones Have Different Needs



Historic
Districts



Isolated
Locations



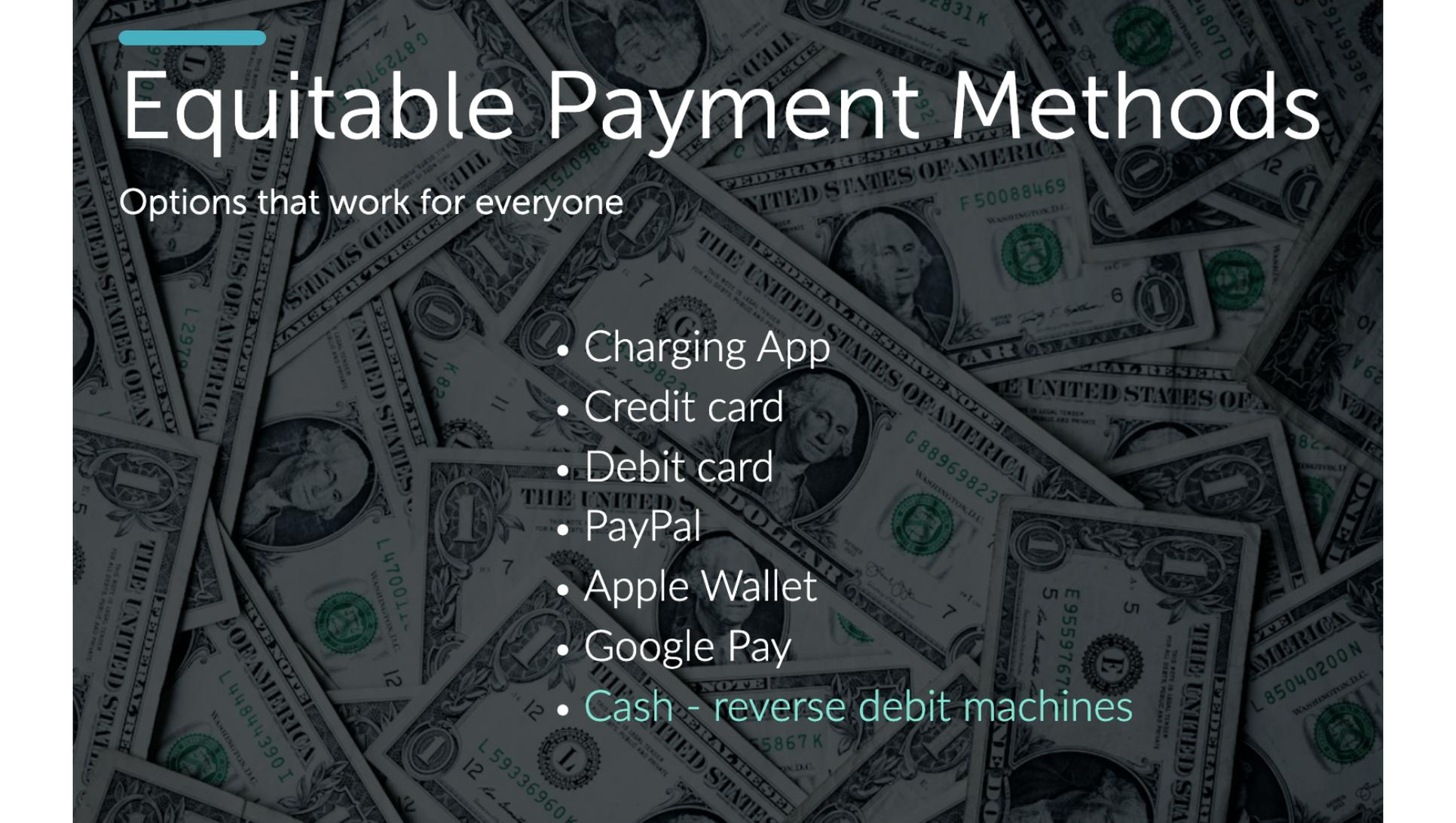
Service Plazas



Shopping
Centers/Strip
Malls



Street Parking

The background of the slide is a dense, overlapping pattern of US one-dollar bills, rendered in a dark, semi-transparent grey. The bills are oriented in various directions, creating a textured, financial backdrop. A solid light blue horizontal bar is positioned at the top left of the slide, partially overlapping the top edge of the text.

Equitable Payment Methods

Options that work for everyone

- Charging App
- Credit card
- Debit card
- PayPal
- Apple Wallet
- Google Pay
- Cash - reverse debit machines

Safety

Would you want your best friend to charge their car in this location?

- Lighting
- Cameras
- Proximity to services
- Protection from the elements

Local Authority

Local EV Zoning Regulations Opportunities

	Safety	Experience	Equity
Cover	X	X	
Lighting	X	X	
Cameras	X	X	
Proximity to Services	X	X	
Retractable Cords	X	X	
Signage		X	
Historic District		X	
Allowable Overnight Parking			X
Reverse Debit Machine			X

2020 Municipal EV Readiness Toolkit 12-Week Program

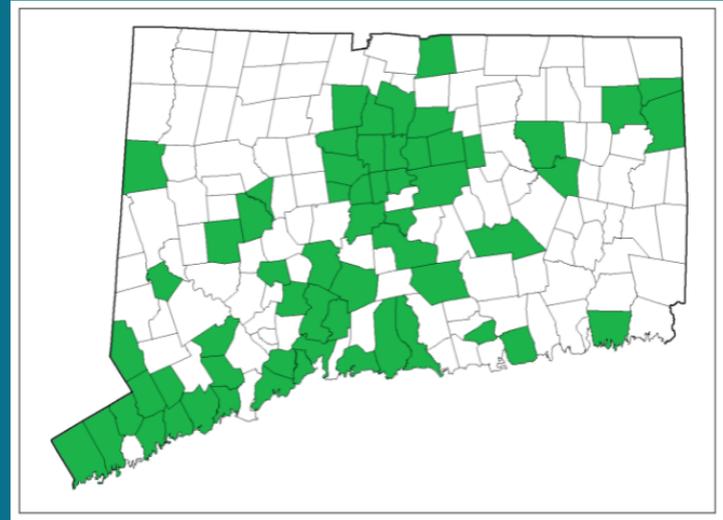
Metrics

Number of participants: 202

Number of towns: 60

Number of counties: 8

Certificates of Completion*: 202



*Certificates of Completion can be used to apply for Sustainable CT points



Live Green Connecticut and
CT Southwestern Area
Clean Cities Coalition
present



EV Zoning Regulations Bootcamp

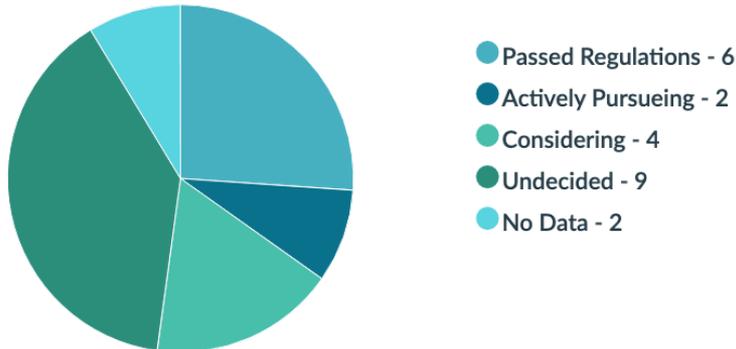


Fairfield County Pilot

Participating Municipalities

Bethel	Norwalk
Bridgeport	Redding
Brookfield	Ridgefield
Danbury	Shelton
Darien	Sherman
Easton	Stamford
<i>Fairfield</i>	Stratford
Greenwich	Trumbull
Monroe	Weston
New Canaan	Westport
New Fairfield	Wilton
<i>Newtown</i>	

Current Status of EV Zoning Regs





Municipal EV Readiness Toolkit EV Zoning Regulations Blueprint



2023 EV Zoning Regulations Blueprint

Prepared for: Municipal and Community Leaders

Prepared by: CT Southwestern Area Clean Cities Coalition and Live Green Network

Audience: Community Leaders, Energy Task Force Members, Planning and Zoning Boards and Commissions, Municipal Staff and Chief Elected Officials

EV Zoning Regulations: 9-Step Process

Step 1: Working in Collaboration with State Goals

Step 2: Building the EV Zoning Regulations Core Team

Step 3: Analyze Existing EV Zoning Regs to Identify Potential EV Zoning Opportunities

Step 4: Develop Public Outreach Plan, Collaborate with all Sectors, Gather Feedback

Step 5: Preparation for Public Meeting by Assimilating Feedback

Step 6: Write the EV Zoning Regulations Draft

Step 7: Share Draft EV Zoning Regulations with the Public

Step 8: Presenting Proposed EV Zoning Regulations to the Zoning Commission

Step 9: Managing Setback and Obstacles

EV Zoning Regulations Resistance



Site Host Issues

Learning about and understanding how site hosting works



Enforcement Pushback - Time limits and Restrictions

Need to Coordinate with
Police Commission



% of Parking Spaces

Don't want to alienate
businesses



Which EV regs are right/over regulating and signage

Review existing EV zoning
regs examples



Liability - Equipment and User

Understanding insurance
coverage and responsible parties



Lack of understanding about types of and reliability of equipment

Varying EVSE styles and
advertising/cost options to
consider

Connecticut Task Force on EVSE Zoning Regs, Standards, Equity, Safety, and Experience

Charging App Representatives

Civic Organizations

Chambers of Commerce

Council of Governments

Economic & Community Dev. Directors

Engineering Professionals

Equity Organizations

EVSE Manufacturers

Mayors/First Selectmen

Police Commissions

Planning and Zoning Professionals

Service Plaza Property Owners

State Historic Preservation Office

Sustainability Task Force Members

To learn more visit:
evzoningregs.com

The background of the slide is a photograph of an electric vehicle charging station. A dark-colored car is parked at the station, with a charging cable plugged into it. The station consists of two white charging units. The scene is outdoors in a parking lot with trees and a clear blue sky in the background.

Daphne Dixon

Executive Director

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Mike Salisbury

Transportation Energy Lead,
Office of Climate Action, Sustainability & Resiliency,
City and County of Denver



Navigating Zoning and Building Codes for EV Charging Infrastructure

February 15th, 2024

Mike Salisbury
Transportation Energy Lead
Mike.salisbury@denvergov.org

Denver 2022 Building Code EV Charging Requirements

Occupancy	EVSE Installed Spaces	EV Ready Spaces	EV Capable Spaces
Group Assembly, Business, Educational, Mercantile	10%	5%	10%
Group Institutional	5%	0%	5%
Group R-1 (hotels) and R-2 (Apartments)	15%	5%	40%
Group R-3 (Boarding Houses) and R-4 (Assisted living/rehab)	2%	0%	5%
Group S-2 (Parking Garages)	10%	5%	0%



Accessibility Requirements

- Number of accessible vehicle spaces. Not less than 5 percent of vehicle spaces on the site served by an EVSE Installed Space, but not fewer than one, shall be accessible.
- Example: New MF building with 100 parking spaces would require 15 EVSE Installed spaces

Flexibility

- One EVSE can serve multiple parking spaces
- In multi-family settings, load management systems allow 50% reduction in power per parking space
- Can substitute 1 DC fast charging station for up to 10 Level 2 stations
- No requirements for buildings with fewer than 10 parking spaces

Building Code Resources

[Denver 2022 Building Code](#)

[A Guide for Adopting Equitable US Code](#)

EV Charging for All Coalition



Questions and Answers

Resources

Planning and Zoning for Electric Vehicle Charger Deployment

<https://sustainableenergyaction.org/resources/planning-and-zoning-guidance-for-electric-vehicle-charger-deployment/>

Alternative Fuel Data Center

https://afdc.energy.gov/fuels/electricity_infrastructure_planning.html

Municipal EV Readiness Toolkit: EV Zoning Regulations Blueprint

<https://evzoningregs.com>

Plug In America EV Building Codes Toolkit

<https://pluginamerica.org/policy/ev-charging-for-all/ev-building-codes-toolkit/>

City and County of Denver EV Charging Spaces

<https://denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directories/Community-Planning-and-Development/Building-Codes-Policies-and-Guides/Electrical-Vehicle-Charging-Spaces>



PLANNING AND ZONING GUIDANCE FOR ELECTRIC VEHICLE CHARGER DEPLOYMENT



Electrical Vehicle (EV) Charging Spaces

EV code requirements impact how parking is configured for a project and should be addressed during the Site Development Plan process. Section C405.13 of the 2022 Denver Energy Code (DEC) governs the quantity of EV spaces required. Section 1107 of the 2022 Denver Commercial Building Code (DCBC) governs accessible and universal spaces for installed electrical vehicle (EV) charging stations. This page provides a summary of requirements, please see the 2022 [DEC](#) and [DCBC](#) for full requirements.

On June 20, 2023, City Council approved amendments that take a phased approach to these requirements to ensure projects already at the formal site development plan/construction drawing preparation stage can continue with minimal impacts.

The EV requirements on this page are for commercial and multifamily building projects. These requirements **do not** apply to detached one- and two-family dwellings, townhouses, and Group R-3 and R-4 buildings three stories or less in height. Provisions for these projects can be found in DEC Section B104.4.

Municipal EV Readiness Toolkit EV Zoning Regulations Blueprint



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Upcoming Webinar Topics

February 27th

**Curbside EV Charging
Strategies**

March 5th

Workforce Development Tools
and Resources

More to come!

driveelectric.gov/webinars

** Some dates may be subject to change*

Thank you!

Today's Presentation:
Navigating Zoning and Building Codes
for EV Charging Infrastructure

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be posted within a few weeks here:
driveelectric.gov/webinars