



# Electric Vehicle Charging in Your Community

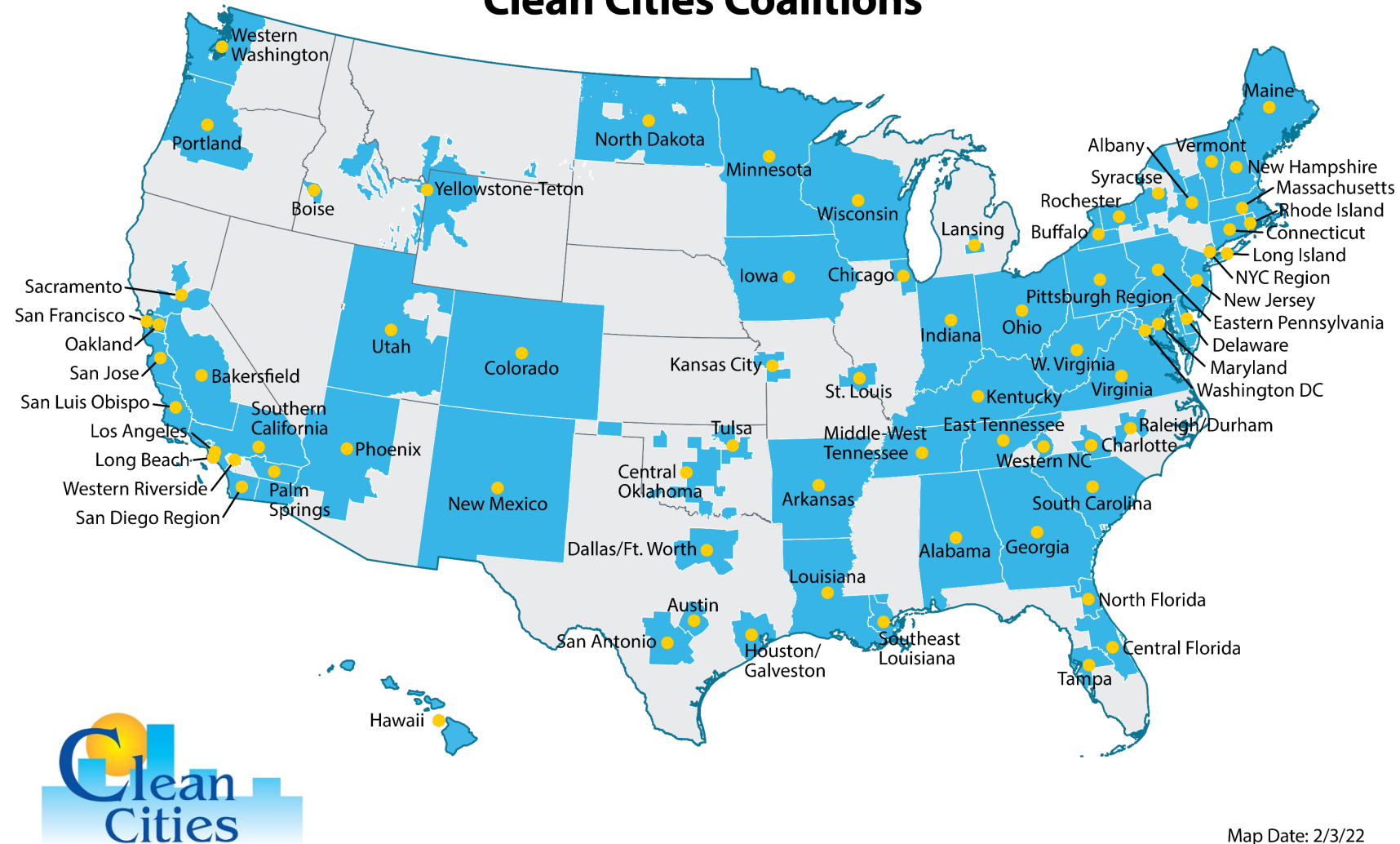
The Chicagoland Condo, HOA & Co-op Expo 2022  
October 13, 2022

# National Network of Clean Cities Coalitions

More than 75 active coalitions covering nearly every state with thousands of stakeholders

[cleancities.energy.gov](http://cleancities.energy.gov)

## Clean Cities Coalitions



Map Date: 2/3/22



# Technology Integration Program

Provides objective/unbiased data and real-world lessons learned that inform future research needs and support local decision-making





# Presentation Structure

- Electric Vehicle (EV) Goals: Government and OEMs
- EV Overview
- EV Charging Infrastructure (EVCI) Options
- Current State of Public EVCI in Chicago Area
- Future EV Landscape
- EVCI at Multi-Unit Dwellings – VCI-MUD project
- Summary of New EV & EVCI Funding

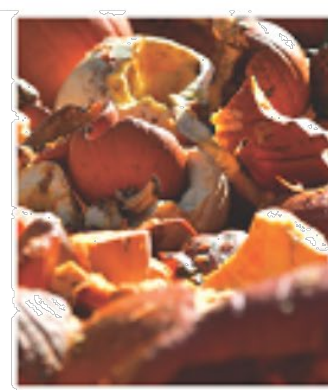
City of Chicago

# Strategic Plan for Transportation

Mayor Lori E. Lightfoot  
CDOT Commissioner Gia Biagi

## ELECTRIFICATION STRATEGIES FROM CDOT'S 2021 STRATEGIC PLAN

- Reduce emissions from CDOT's fleet
- Increase availability of public charging stations for electric vehicles
- Relaunch Chicago's Drive Clean Truck Program and expand efforts to reduce emissions from truck fleets
- Encourage waterway operators to use lower-carbon fuels to reduce marine engine emissions



# CHICAGO'S CLIMATE ACTION STRATEGIES

**3.3.A Enable electric freight loading docks at commercial and industrial buildings, addressing new buildings by 2025 and existing buildings by 2030**

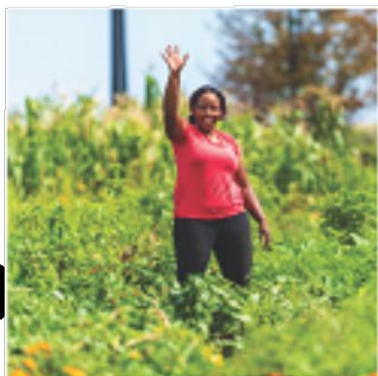
**3.3.B Support equitable electrification of ride-hail and taxi fleets by 2030**

**3.3.C Enable 100% electrification of delivery fleets by 2035**

**3.3.D Electrify 100% of the City's fleet by 2035**

**3.3.E Achieve zero-emission transit fleets across Chicagoland by 2040**

**4.2.F Enable 2,500 new public passenger EV charging stations by 2035**



# STATE OF ILLINOIS' SUPPORT FOR ELECTRIC VEHICLES

**1 million EVs on the road by 2030**

**Incentives for electric vehicle manufacturers, battery manufacturers, and EV charging companies to build facilities and create jobs in Illinois**

**Offering \$4,000 electric vehicle rebates to consumers and incentives for buildout of charging stations to ensure availability statewide**

**Future vehicle purchases or leases by the State of Illinois will be low-emission and zero-emission vehicles**

**IDOT's Statewide Electric Vehicle Adoption Plan**

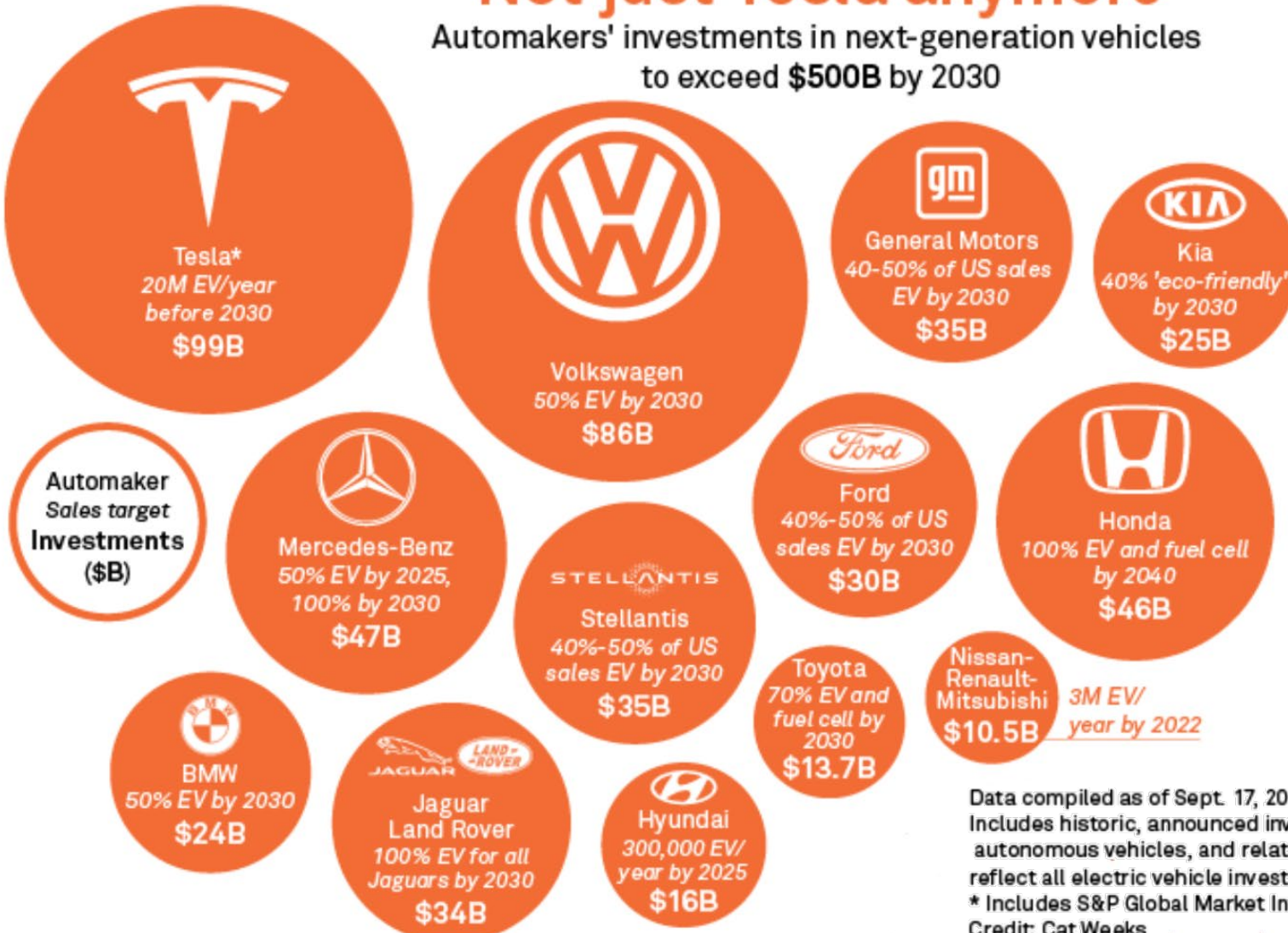
**Regional Electric Vehicle (REV) Midwest Plan**

**Lake Michigan EV Circuit Tour**

# AUTOMAKERS' COMMITMENTS TO ELECTRIFICATION

## Not just Tesla anymore

Automakers' investments in next-generation vehicles to exceed \$500B by 2030



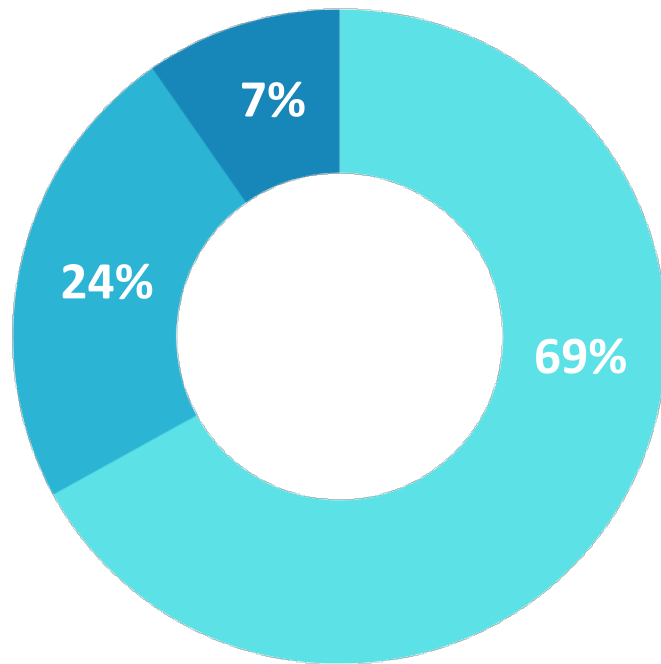
Automaker Sales target Investments (\$B)

Data compiled as of Sept. 17, 2021. Includes historic, announced investments in all forms of hybrid and pure electric and autonomous vehicles, and related technologies, as far out as 2030. Totals do not necessarily reflect all electric vehicle investments for each company. Currencies converted to U.S. dollars. \* Includes S&P Global Market Intelligence consensus estimates of expected capital expenditures through 2030. Credit: Cat Weeks Sources: S&P Global Market Intelligence; International Council on Clean Transportation; company announcements



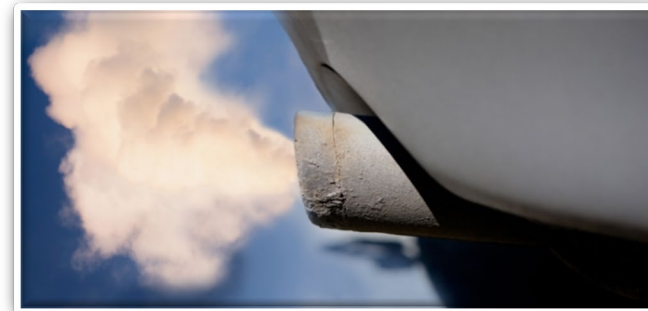
# TRANSPORTATION EMISSIONS

## 2017 Chicago GHG Emissions Inventory



- STATIONARY ENERGY
- TRANSPORTATION
- WASTE

## Criteria Pollutants



# CHICAGO IS A PRIME EV MARKETPLACE

## Ideal Trip Distances

92% of Chicago's residents commute 40 miles or less each day

## Cleaner Power Grid

Gasoline vehicle needs 80 miles per gallon efficiency for wells-to-wheels GHG emissions EV equivalency

## Large Automobile Market

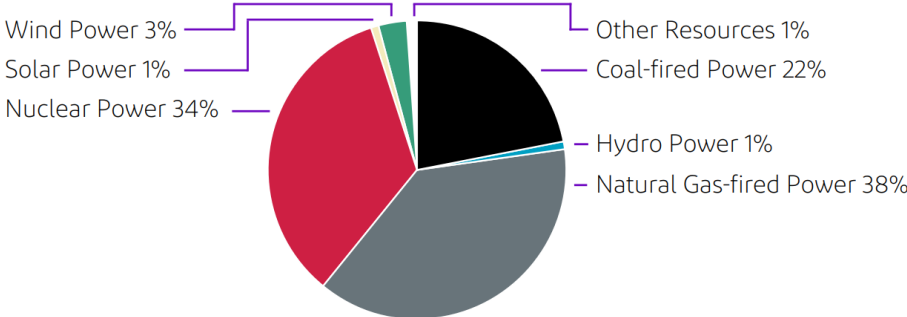
Third largest automobile market in the US

## Easy Home Installation

Easy, online expedited permit process for station installations



Sources of Electricity for the 12 months ending March 31, 2022



ComEd's Annual Environmental Disclosure Report

# ELECTRIC VEHICLE TYPES

## Battery Electric Vehicle (BEV):



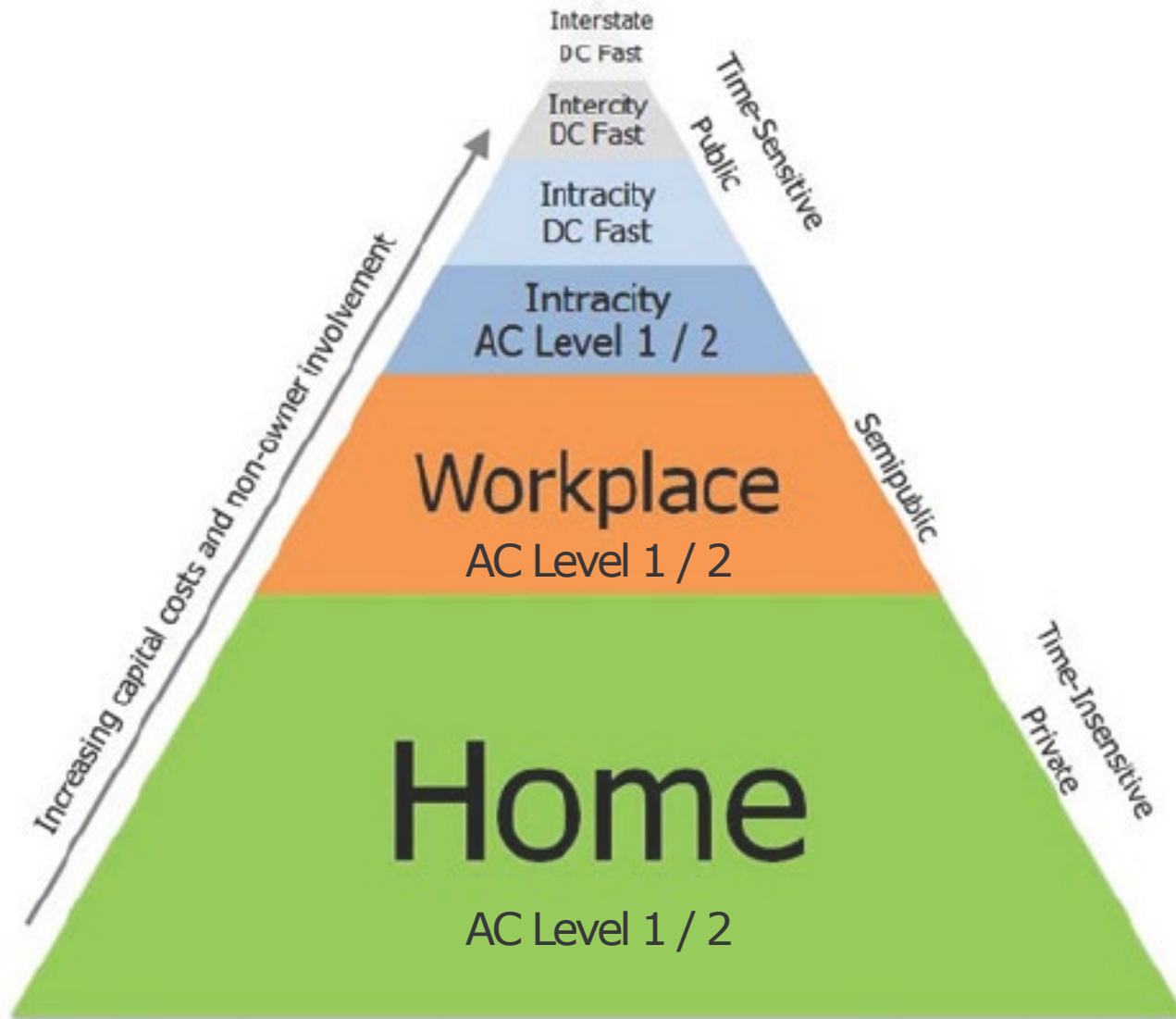
- 100% electric, completely battery powered
- Plug-in to recharge
- 80-400 miles range

## Plug-in Hybrid Vehicle (PHEV):



- Both electric and gasoline powered
- Most have an “Electric Only” mode
- Plug-in to recharge, fill tank when needed
- 20-40 miles electric range

# EV CHARGING INFRASTRUCTURE (EVCI) OPTIONS



**DC Fast Charge**  
80% in 20-50 mins  
\$.40-\$.60/kWh Public



**AC Level 2**  
10-40 miles per hour  
\$.20-\$.30/kWh Public  
\$.11/kWh Home



**AC Level 1**  
3-5 miles per hour  
\$.11/kWh Home



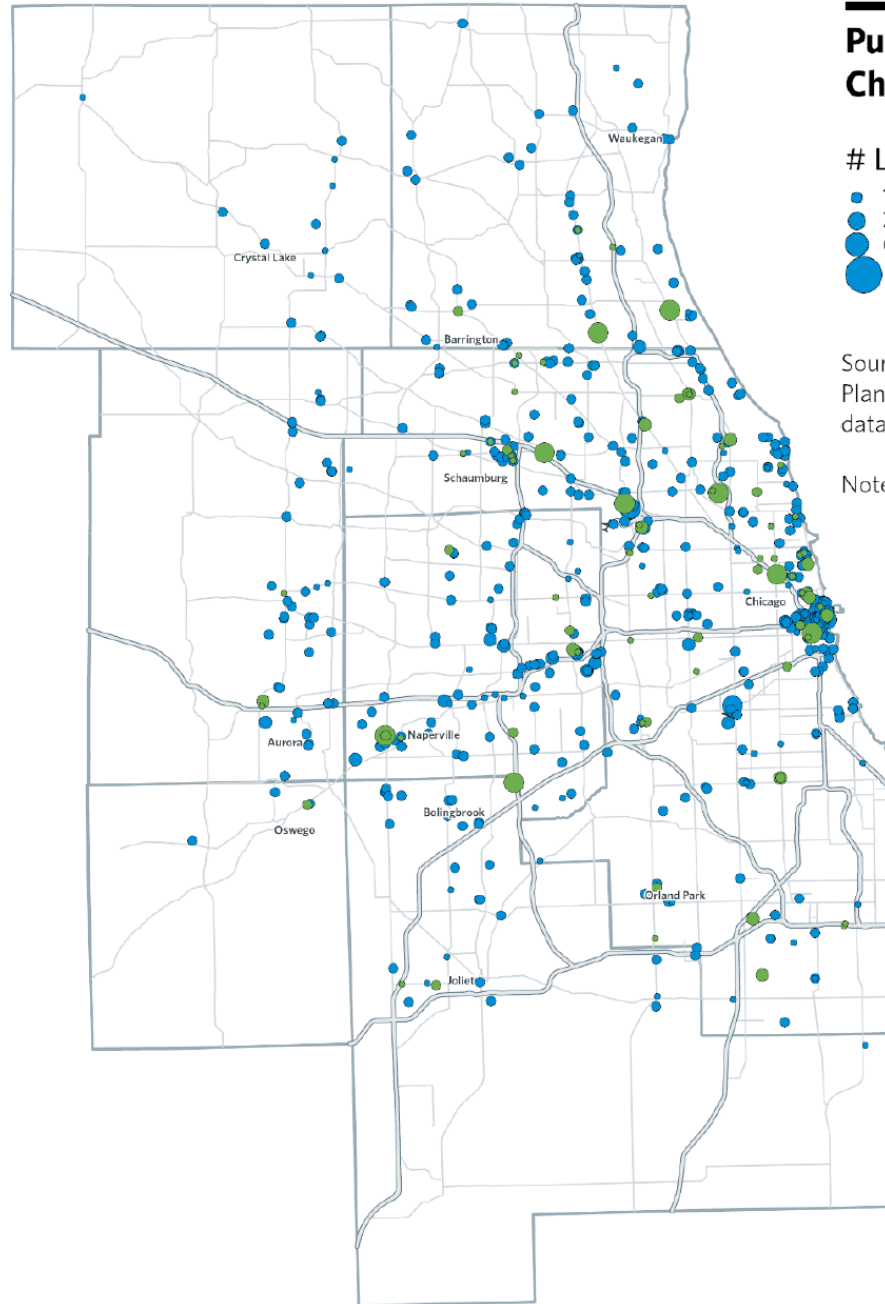
# PUBLIC EV CHARGING NETWORK

Concentrated in Chicago

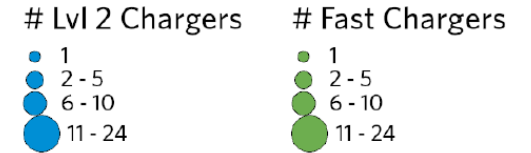
Within Chicago, concentrated downtown

Concentrated in wealthier areas

Station location data available from [Alternative Fuels Data Center: Alternative Fueling Station Locator \(energy.gov\)](#)



## Publicly Accessible EV Chargers in Northeastern IL

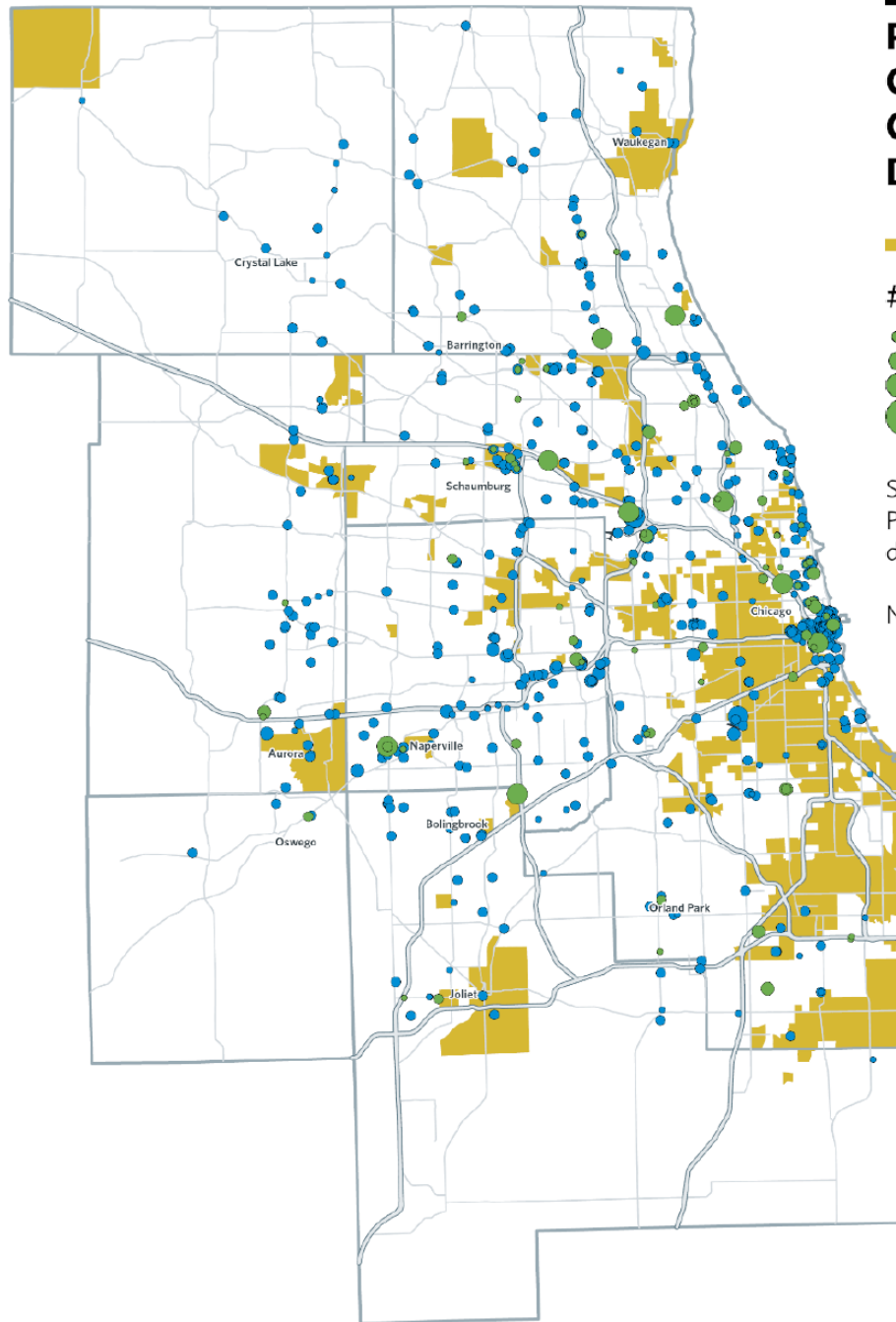


Source: Chicago Metropolitan Agency for Planning analysis of U.S. Department of Energy data, February 2022.

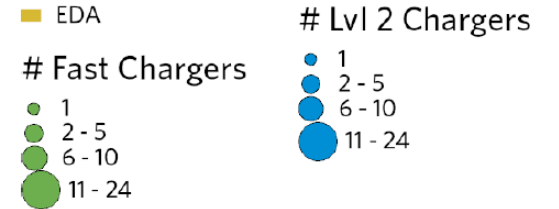
Note: Excludes Level 1 chargers.

# EQUITY AND CHARGING INFRASTRUCTURE

Only 10%-15% of EVCI is in EDAs



## Publicly Accessible EV Chargers in Northeastern IL Compared to Economically Disconnected Areas (EDAs)



Source: Chicago Metropolitan Agency for Planning analysis of U.S. Department of Energy data, February 2022.

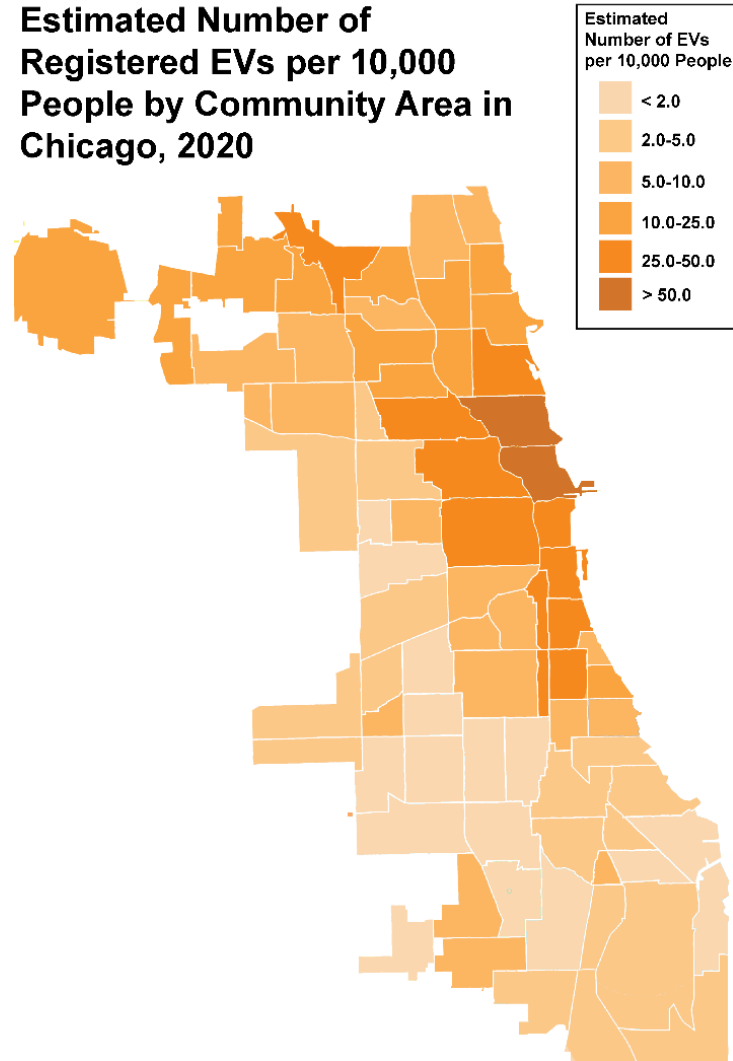
Note: Excludes Level 1 chargers.

# CHICAGO'S CURRENT-ISH EV LANDSCAPE

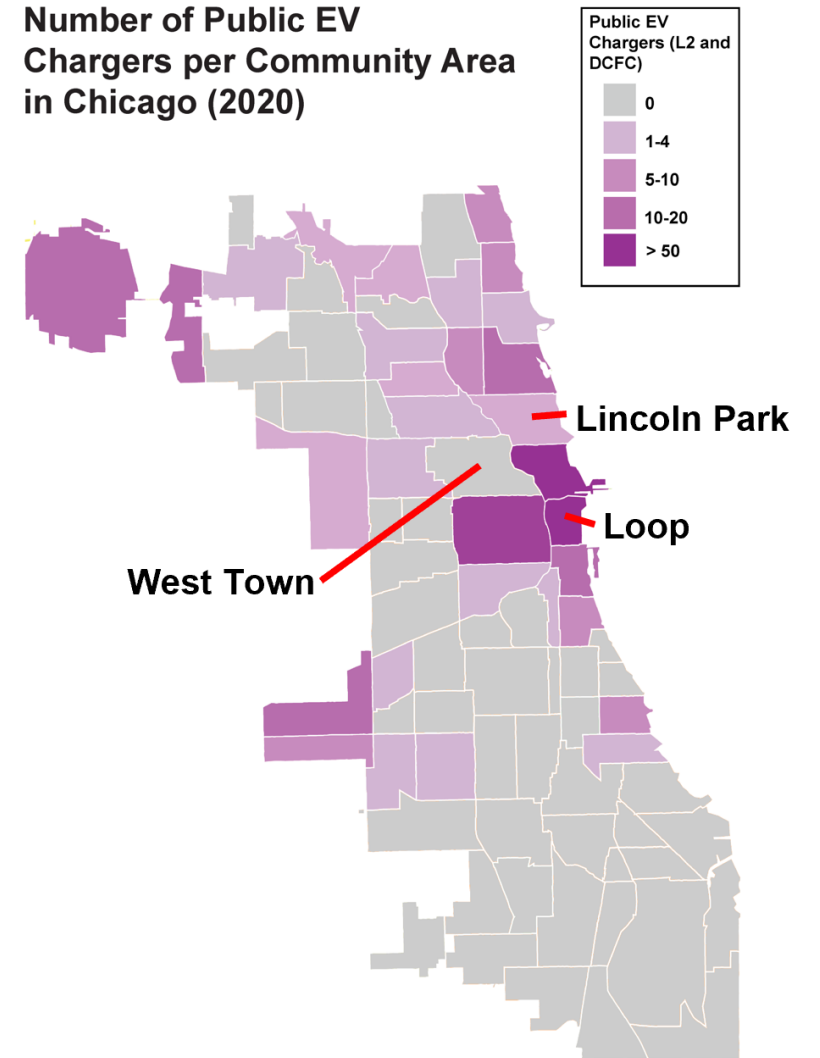
## Key Insights

- Every community area has registered EVs
- 70% of all public EVCI in just 3 community areas
- 47 of 77 community areas do not have a single public charger

Estimated Number of Registered EVs per 10,000 People by Community Area in Chicago, 2020



Number of Public EV Chargers per Community Area in Chicago (2020)

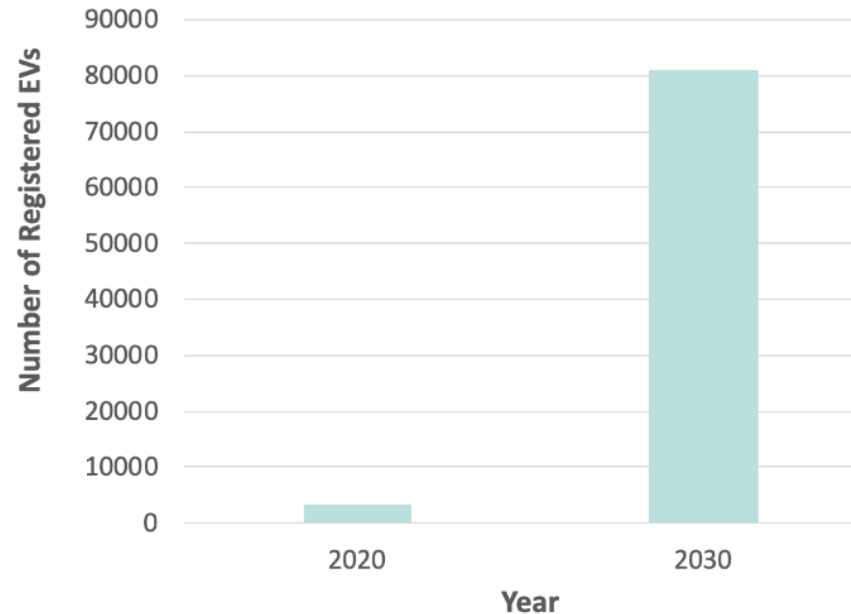


# CHICAGO'S PROJECTED EV LANDSCAPE

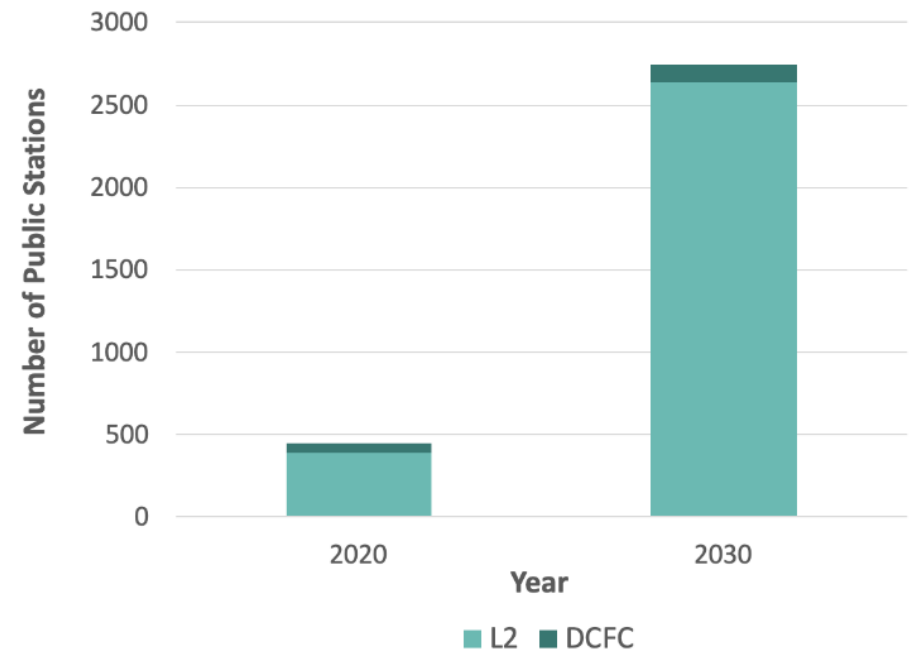
## Key Insights

- Registered cars in 2020: 1,455,248
- Registered EVs in 2020: 6,510 (0.4%)
- Projected number of EVs by 2030: 81,000 (5.6%)
- Projected number of chargers needed by 2030: 2,753

## Number of EVs Projected in Chicago by 2030\*



## Estimated Public Chargers Needed in Chicago by 2030, by Type\*



\*Analysis completed prior to new federal/state subsidies and incentives



# EV FRAMEWORK: RESEARCH THEMES

- ▶ What is our approach to **seek input** from a diverse group of stakeholders?
- ▶ How do we create **dialogue** with communities about how EV charging can benefit their community?
- ▶ How do we **ensure equity** if the supply of cars is a market driven phenomenon?
- ▶ How do we **increase distribution** of EVCI and ensure access where the private market will not move?
- ▶ How do we ensure **safe use of the public right of way**?
- ▶ What are the **criteria** for the siting of public EVCI?
- ▶ How do we generate **economic development** opportunities?
- ▶ How do we obtain and strategically use **data**?

# CHICAGO'S EV READINESS EFFORTS: EV READINESS ORDINANCE

## Residential Buildings

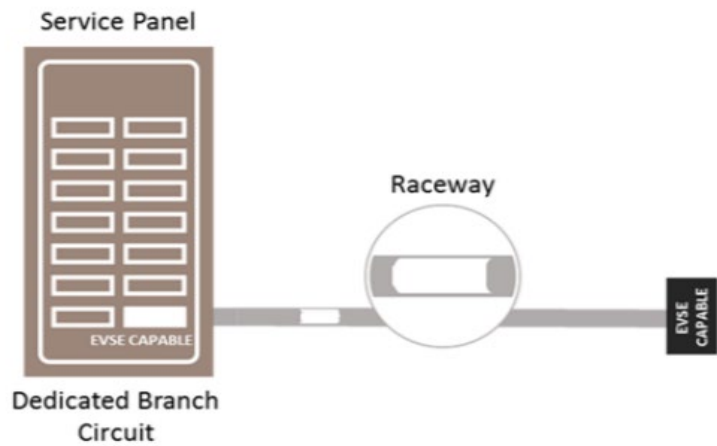
- New construction
- 5 or more dwelling units
- on-site parking
- At least 20%, 1 minimum
- EVSE-Ready or -Installed

## Non-Residential Buildings

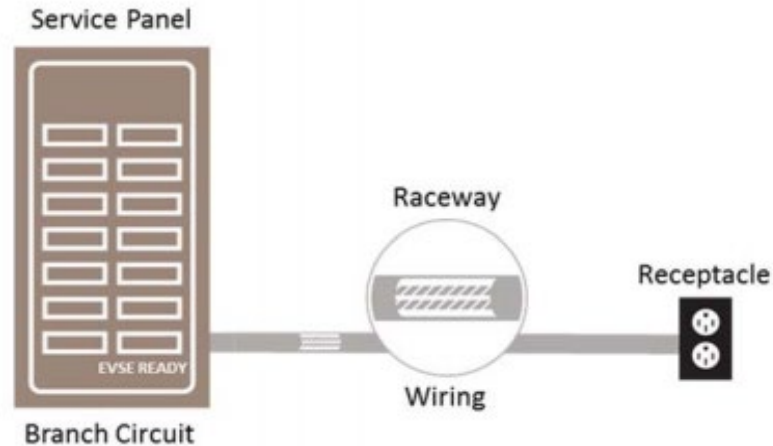
- New construction
- 30 or more parking spaces
- At least 20%
- EVSE-Ready or -Installed

*If an accessible parking space is required, at least one of the EVSE-Ready spaces must be accessible.*

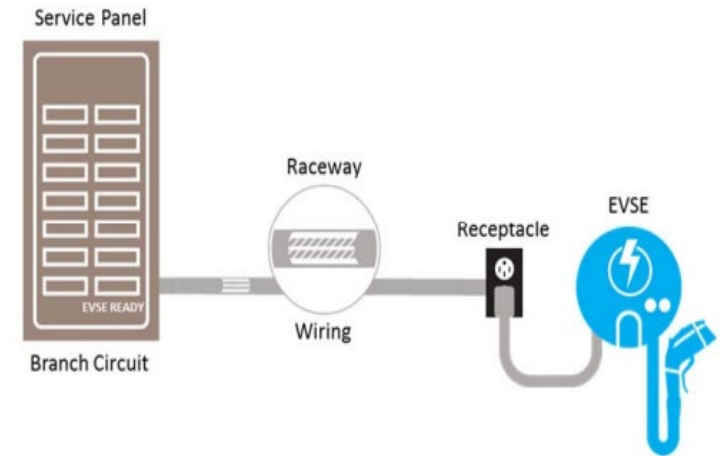
# COMMUNITY EV READINESS: NEW CONSTRUCTION/RENOVATION OPTIONS



EV-Capable

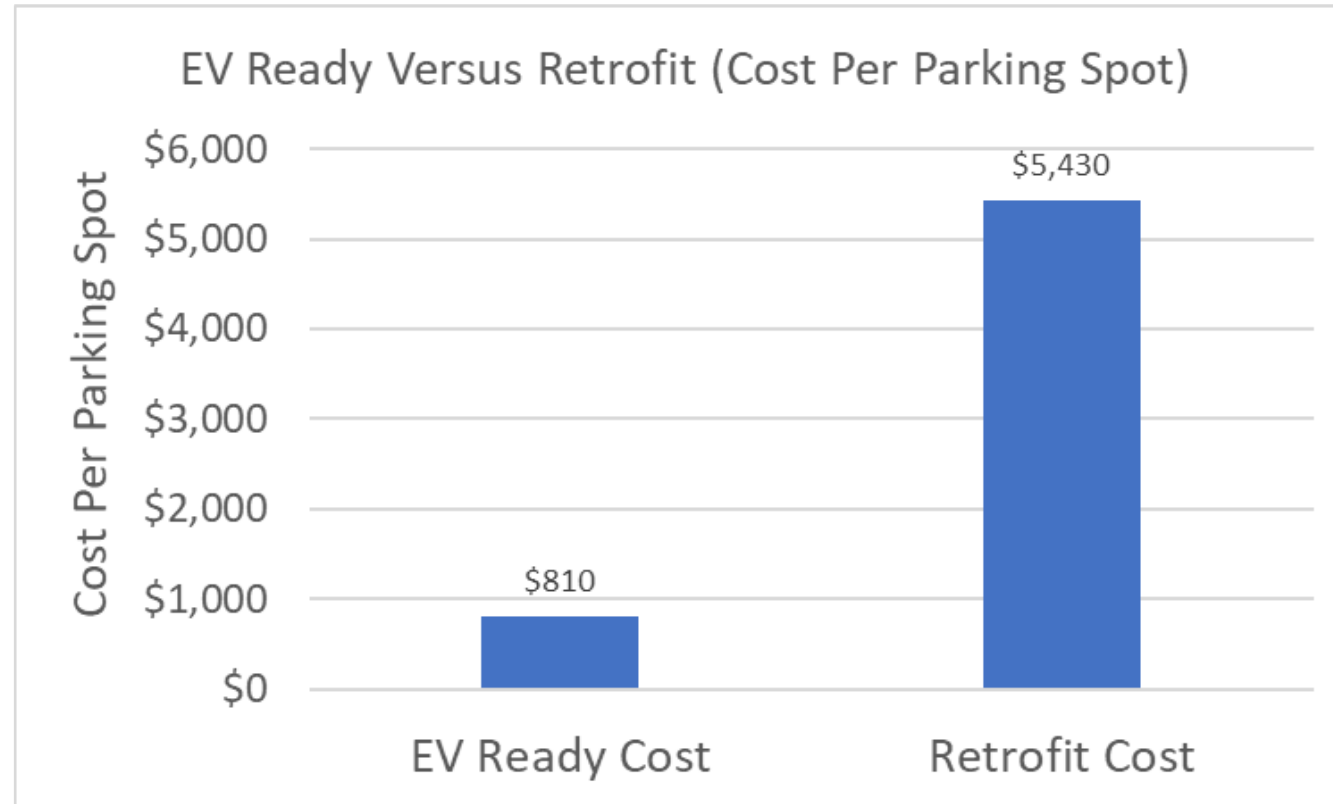


EV-Ready



EV-Installed

# EV-READY COST EFFECTIVENESS



# WHY YOU SHOULD HAVE EV CHARGING AT YOUR BUILDING



**Attracts and retains** EV driving tenants



**Supports Residents** purchasing or leasing EVs through greater awareness and access to charging infrastructure

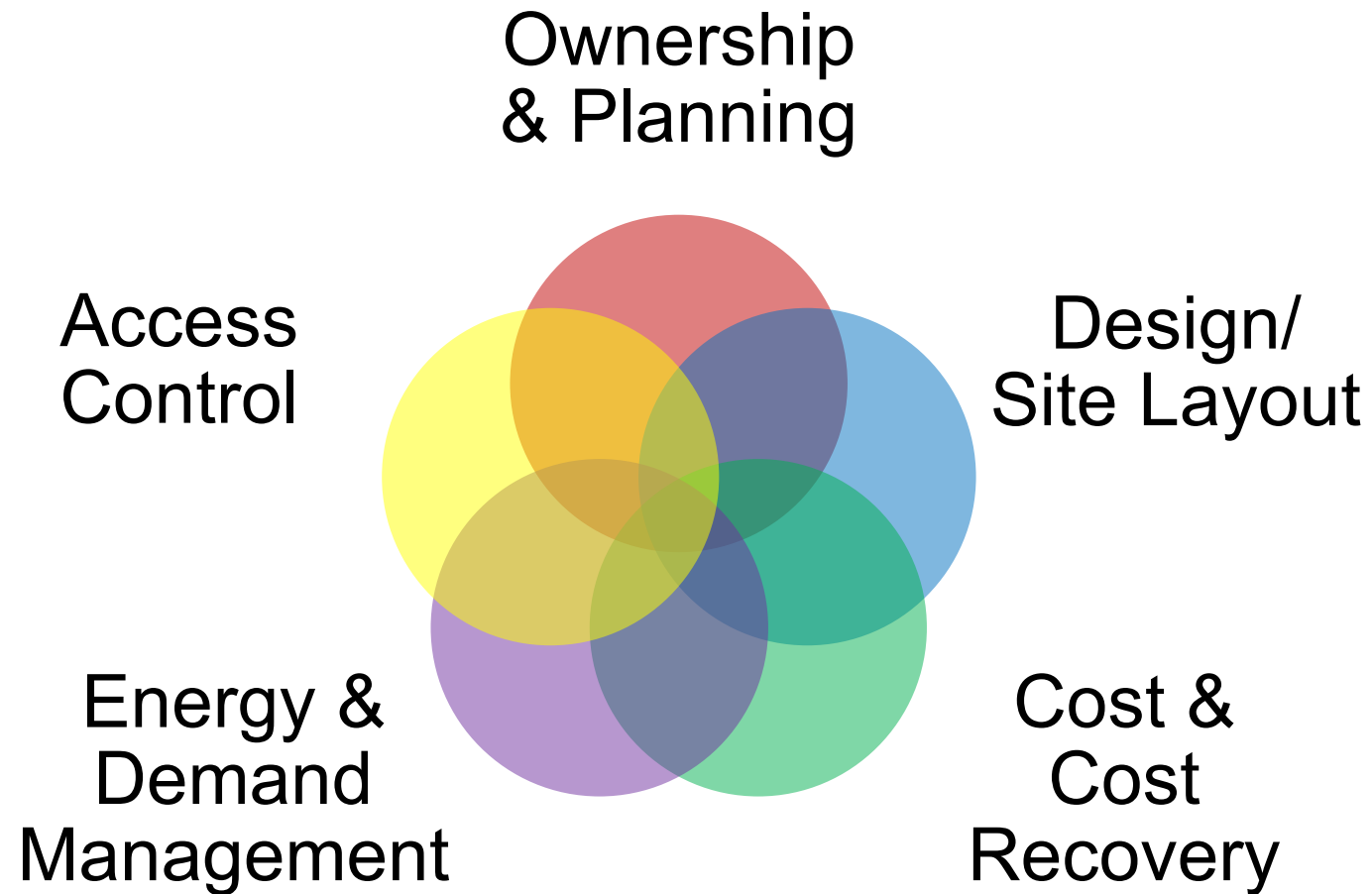


**Demonstrates** a commitment to sustainability



**Increases Property Values**

# EV Charging Challenges at MUDs



# VCI-MUD Project Objectives Overview

- 1) Determine MUD barriers
- 2) Demonstrate Innovative Technologies
- 3) Analyze and Develop Results
- 4) Develop Toolkit
- 5) Disseminate Online Toolkit



## What is Your Role?

Quickly access the right resources for you.



Resident



Apartment building management



HOA

# EVCI solutions for Multi-Unit Dwellings



[www.VCI-MUD.org](http://www.VCI-MUD.org)



# Step 1: Building and Electrical Considerations for EV Charging

## + Conduct a building electrical evaluation

Meet with a qualified electrician\* to determine **desired load** from EV charging and evaluate the building's existing electrical service and available capacity.

## + Engage your property's electric utility service provider's account representative

## ✗ Evaluate parking

The **MUD Self-Evaluation Survey** will help you evaluate parking at your property.



Step 2

\* <https://www.icc.illinois.gov/authority/electric-vehicle-charging-station-installer>

# SELF-EVALUATION SURVEY

## MUD Building Self-Evaluation Survey

### 2) What is your facility's parking situation? \*

- Detached garage for multifamily building without a dedicated electrical power panel
- Deeded parking space in a parking lot, parking deck or shared parking garage. Deeded spaces are owned by an individual person or unit.
- The parking area is owned by the building and the parking spaces are assigned by the HOA or building management.
- Parking lot/parking deck/shared parking garage - non-deeded/non-assigned parking space
- Assigned/deeded carport/driveway parking
- Street parking

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# SURVEY RESULTS AND POTENTIAL BARRIERS IDENTIFIED

## MUD Building Self-Evaluation Survey Output Page

Thank you for taking time to complete this survey. There are 9 common barriers that present challenges when preparing your MUD property for Electric Vehicles. These barriers are listed below with details about each barrier you may face. If details are not provided under a specific challenge, it does not appear that you have a challenge in this area.

### Electrical Barrier

- Your answer for “Installing EVSE will require electrical capacity. Do you believe your building has adequate electrical capacity for EVSE installation?” was: “I No, electrical capacity may be a challenge or I am not sure of the electrical capacity” This may be an electrical capacity barrier and you should reach out to your local electric utility to consult about the available electrical service at your building and talk to an electrical engineer to determine if there will be adequate electrical capacity to accommodate for additional EVSE load.
- You need more EVSEs than you have. This may create an electric capacity a barrier and you should reach out to your local electric utility to consult about the available electrical service at your building and determine if there will be adequate electrical capacity to accommodate for additional EVSE load.

### HOA Related

#### Installation cost

#### Parking Limitation

- Your need more EVSEs than currently available therefore, parking operations could become a barrier as your team will need to determine how you manage the limited number of parking spots with charging capability.

#### Parking Operations

#### Stakeholder Activation

#### Ongoing Cost

## Step 2: Charging Programs and Incentives

- ✘ Understand utility, local, state and federal programs, incentives and policies

Step 3



# Step 3: Resident Engagement

- ✘ Educate residents
- ✘ Conduct a charging demand survey for residents

Use the [EV Charging Demand Survey template](#).

Step 4



# SAMPLE COMMUNITY EV CHARGING DEMAND SURVEY

1. How many vehicles are associated with your unit? Please respond to questions 2-5 (if applicable) for each vehicle.

\_\_\_\_\_

2. Do you or someone else in your unit drive an EV? (Select One Only)

YES, I or someone I live with drives at least one EV. [Skip to Question 6]

(If "YES", please specify vehicle(s): \_\_\_\_\_)

NO, neither I or someone I live with do not drive any EVs.

3. On a scale of 1 to 5 with 1 being "Certainly Not" and 5 being "Certain", how likely are you/is someone else in your unit to drive an EV as your/their next vehicle?

	Certainly Not			Certain	
	1	2	3	4	5
Vehicle 1					
Vehicle 2					
Vehicle 3					

[If you selected 1, 2, 3, skip to Question 6]

# Step 4: Charging Program Design

- ✘ Identify any barriers to EV charging implementation
- ✘ Select best technology for site  
Use the [Technology Selection Tool](#).
- + Develop best practices and operation models
- + Identify location for EV charging
- + Develop strategy for maintenance management
- + Identify payment strategies and options



Step 5

# Technology Selection Tool

Please enter a charging barrier based on the MUD self-evaluation survey results and/or your own understanding of your site. Technology solutions with relevant fact sheets and case studies will become available for research.

## Charging Barriers

Parking Limitations



Search

Community Charging Station Management

Fact Sheet

Relevant Case Studies

[1](#) | [2](#) | [3](#) | [4](#)

Off-site owned/operated charging stations

Fact Sheet

Relevant Case Studies

[1](#) | [2](#)

Mobile Charging

Fact Sheet

Relevant Case Studies

[1](#)



# Step 5: Installation

## ✘ Follow the installation checklist

Use the [installation checklist](#) for guidance.

## + Follow up with residents and stakeholders

## + Obtain bids from installers

## + Electrician obtains permit, if required

## + Installation of technology

## + If networked, initiate EV charger commissioning process



## Step 6: Optimize Program Design

- + Periodically check utilization
- + Maintain reliable uptime of chargers
- + Ensure resident satisfaction



# Shared Charging

## Unreserved parking or guest spaces

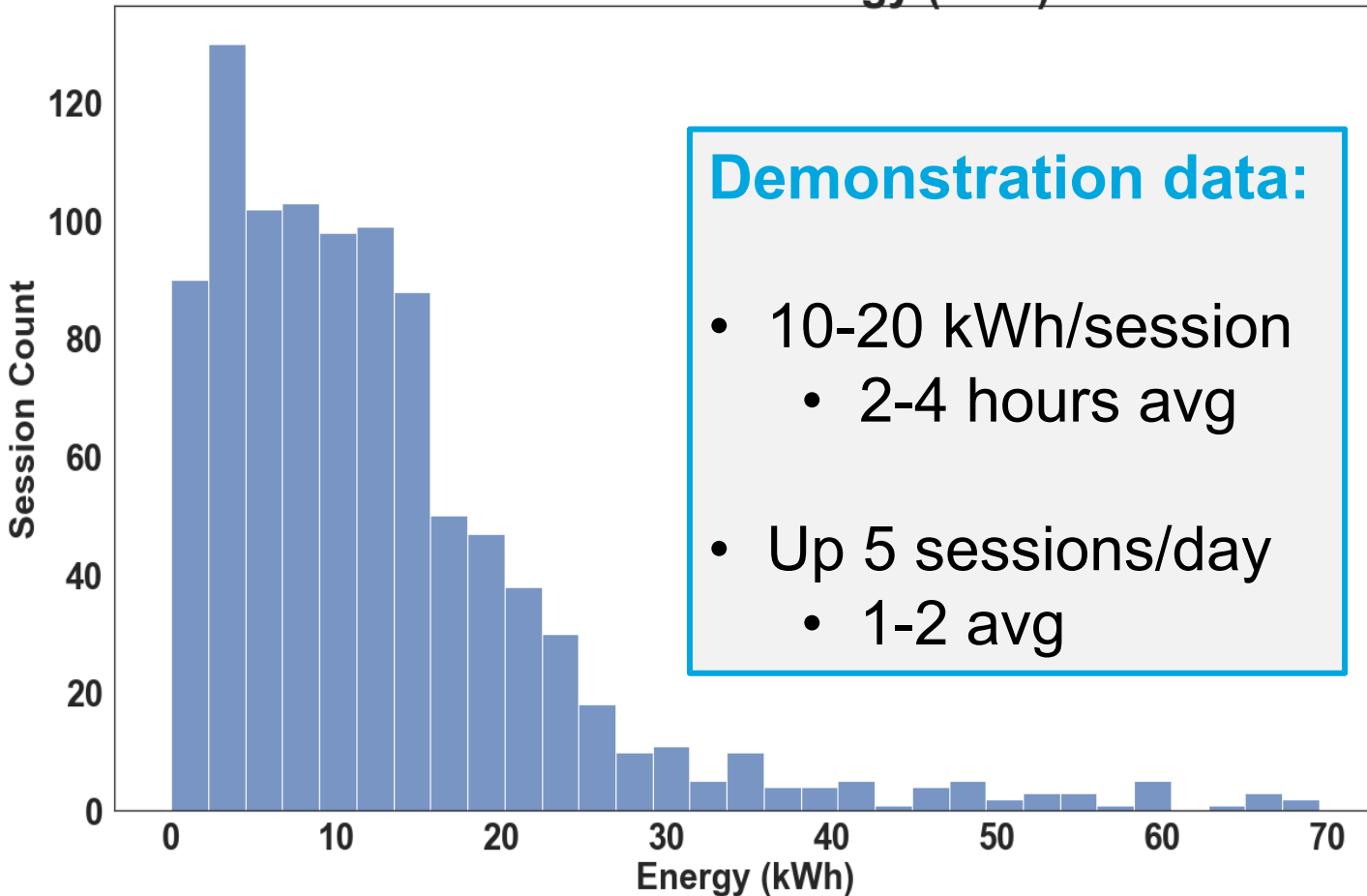
- Energy use usually tracked and billed to resident by vendor
- Fewer stations required to serve a given number of vehicles than dedicated charging
- Idle (Over-stay) fees can dramatically incentivize turnover



*OpConnect- Ko'olani, Honolulu*

# Shared Charging Data

Distribution of Energy (kWh)



## VCI-MUD Demonstration Site

**EV Match** - The Revere, Silicon Valley (Pictured)

**OpConnect** - Ko'olani, Honolulu

**Liberty Plug-ins** - The Brookwood, Atlanta, Ga



# Mobile Charging

## FreeWire Technologies



### When does this technology make sense?

- Limited Parking capacity
- Limited Electrical capacity
- Valet or parking attendant on site
- Secure Parking facility

- 80 kWh energy capacity
- 2 Level-2 charging ports (6.6 kW each)

# Offsite Solutions-DC Charging Hub (EVI)



## VCI-MUD Demonstration Location:

- **Takoma Park Community Center**
  - Surrounded by 10+ MUDs
  - 1 DCFC (35kW) and 3 L2s
- **RS Automotive (Close by TPCC)**
  - Gas station turned charging hub
  - 4 DCFC on fuel islands + 2 L2s nearby



# VCI-MUD PROJECT TOOLS & RESOURCES



Empowerment  
Toolkit



Understanding  
Parking Situations



EV Charging  
Demand Survey  
Templates



Technology  
Selection Tool



Installation  
Checklist



MUD Building Self-  
Evaluation Survey



Curbside Charging  
Resources



Find an Electrician



"Right-to-Charge"  
States

Register at  
[www.ChicagoCleanCities.org](http://www.ChicagoCleanCities.org)

ELECTRIC VEHICLE  
**CHARGING** FOR  
MULTI-UNIT DWELLINGS  
WEBINAR

WEDNESDAY, OCTOBER 19 • 11AM





# NEW EV AND INFRASTRUCTURE FUNDING

## Alternative Fuel Infrastructure Tax Credit (IRA)

- ▶ Beginning January 1, 2023 through December 31, 2032
- ▶ EVCI eligible for a tax credit of 30% of the cost, not to exceed \$100,000
- ▶ Consumers who purchase qualified residential EVCI may receive a tax credit of up to \$1000
- ▶ Must be installed in locations that meet the following census tract requirements
  - A population census tract where the poverty rate is at least 20%; or
  - A metropolitan and non-metropolitan area census tract where the median family income is less than 80% of the state medium family income level

# NEW EV AND INFRASTRUCTURE FUNDING

## Utility Beneficial Electrification Programs (CEJA)

- ▶ ComEd and Ameren required to file BE Plans with the Illinois Commerce Commission for programs that start no later than 1/1/2023
- ▶ ComEd proposed EV and EVCI rebates for all customer classes + EV charging rate class
- ▶ Ongoing proceeding at Illinois Commerce Commission

## IEPA Charger Rebate Program (CEJA)

- ▶ Public and private organizations and companies eligible
- ▶ Install and maintain Level 2 or DCFC stations
- ▶ Up to 80% of the cost of the installation of charging stations

# NEW EV AND INFRASTRUCTURE FUNDING

## \$2.5B Grants for Charging Infrastructure for Corridors and Communities (IIJA)

- ▶ National, competitive 5-year program
- ▶ Fill gaps in publicly accessible EVCI + other alt fuels
- ▶ Up to 80% of project costs, including planning & community engagement activities
- ▶ Must prioritize projects in rural areas, low- and moderate-income neighborhoods and communities with limited parking or **high MUD** vs single-family homes
- ▶ Eligible entities include states, local governments, MPOs, etc.

# ILLINOIS ELECTRIC VEHICLE REBATE PROGRAM



- 2<sup>nd</sup> rebate cycle opening soon: Nov 1, 2022 – Jan 31, 2023
- Purchasers must apply during an open rebate cycle and within 90-days of vehicle purchase
- *??For 1<sup>st</sup> cycle, vehicles must be purchased on or after July 1, 2022??*

# TAG TODAY'S EVENT AND FOLLOW CACC & CDOT ON SOCIAL MEDIA



**@CooperatorEventsCHExpo**



**@ChiCleanCities @ChicagoDOT**



**facebook.com/CACCCoalition**



**Chicago Area Clean Cities Coalition**

# THANK YOU



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**[DriveElectricChicago.ORG](http://DriveElectricChicago.ORG)**

**[ChicagoCleanCities.ORG](http://ChicagoCleanCities.ORG)**

