Equitable Electric Vehicle Ready Parking in Columbus

Roundtable #2

February 9, 2022

A few Zoom reminders for today

Roundtable attendees:

- **Please mute** when not speaking

- Please *also* use the chat function to react, ask questions, and comment!

- Please **rename yourself with name, org, and pronouns** by right clicking on the 3 dots on your image

Refresh: How we are working together

The role we hope you will play

1. Share how you are approaching the transition to electric vehicles
2. Work together to co-create an Equitable EV Ready Parking Ordinance

Suggested group norms

1. Use video whenever possible
2. Minimize distractions
3. Practice the democracy of time
4. Be respectful of opinions
5. *Anything else?*

Together, we hope to accomplish the following today

- Gain a better understanding of how your organization is approaching the transition to electric vehicles

- Hear from you on what is going well and what else is needed to support widespread adoption of electric vehicles

This collaboration will advance a policy approach
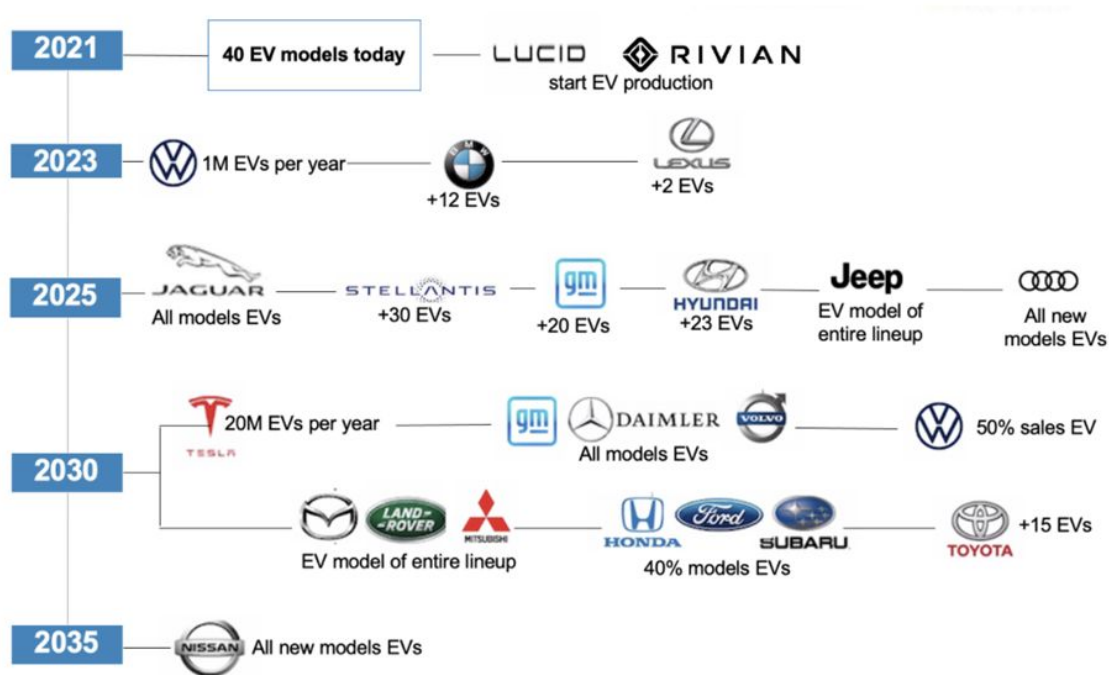
Mural board activity

- Navigate to the Mural Board link in the chat and answer the prompt: **What is one takeaway** you had from last meeting?

Agenda

- *Welcome and Introduction*
- **Refresh: What we shared last meeting**
- Recap: What we heard last meeting
- Breakouts and small group discussion
- Summary and next steps

Last meeting, we shared some of the national trends driving the EV transition


BY: APRIL BOLDUC, PRESIDENT, ELECTRIC AUTO ASSOCIATION

2021 — 40 EV models today — LUCID / RIVIAN start EV production

2023 — Volkswagen 1M EVs per year — BMW +12 EVs — Lexus +2 EVs

2025 — Jaguar All models EVs — Stellantis +30 EVs — gm +20 EVs — Hyundai +23 EVs — Jeep EV model of entire lineup — Audi All new models EVs

2030 — Tesla 20M EVs per year — gm / Daimler All models EVs — Volvo — Volkswagen 50% sales EV
Mazda / Land Rover / Mitsubishi EV model of entire lineup — Honda / Ford / Subaru 40% models EVs — Toyota +15 EVs

2035 — Nissan All new models EVs

How automakers plan to electrify through 2035. Source: Electric Auto Association.

We shared how national momentum has spurred local commitments, and highlighted recent charger expansion...
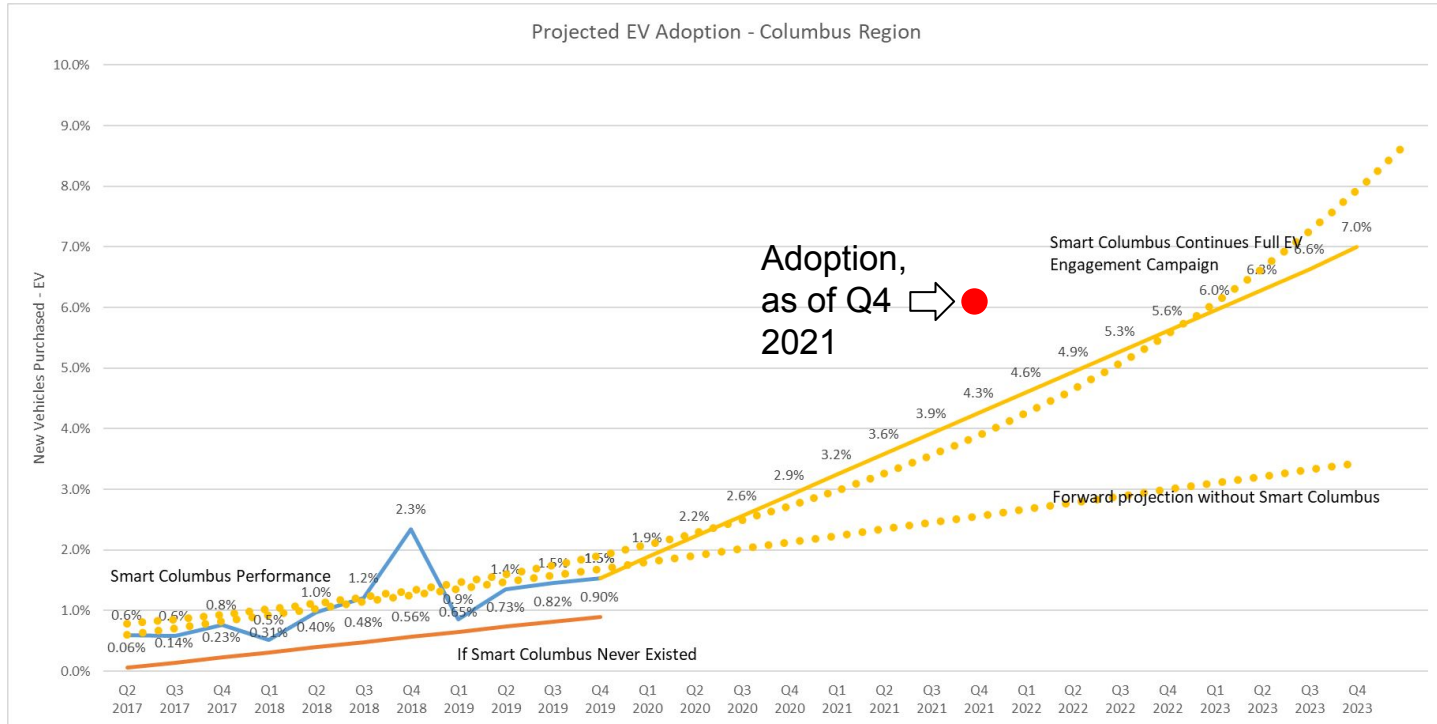
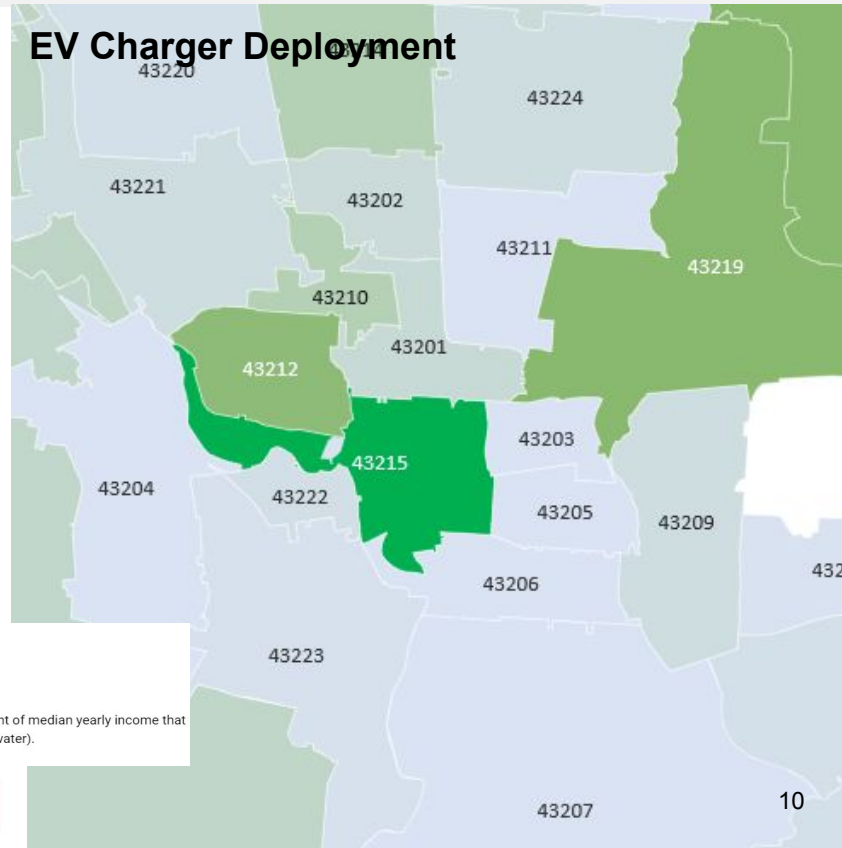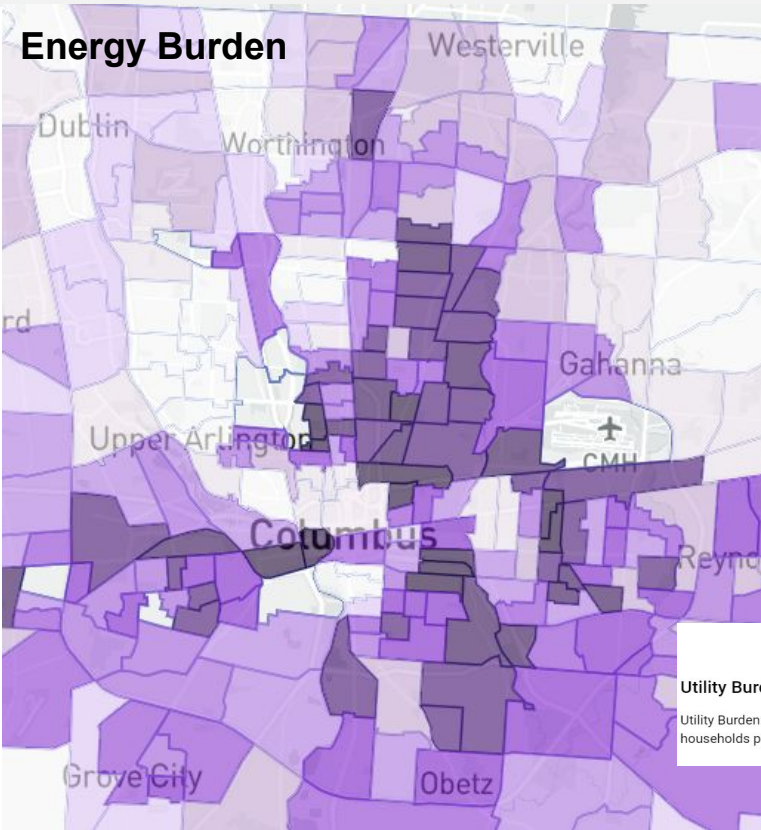**Pre-Smart Columbus (2018)**
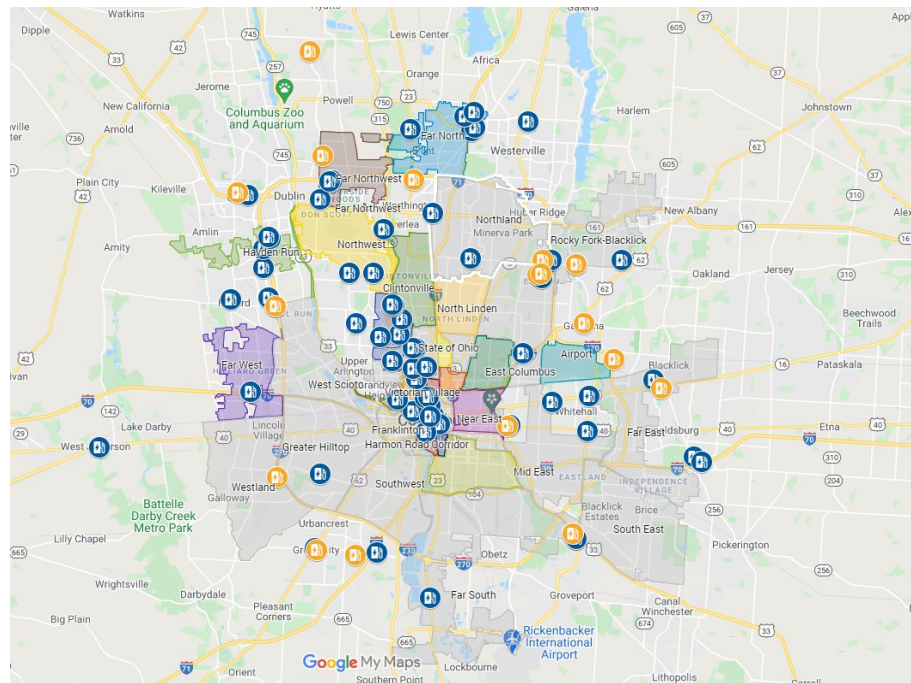
Post-Smart Columbus (2021)
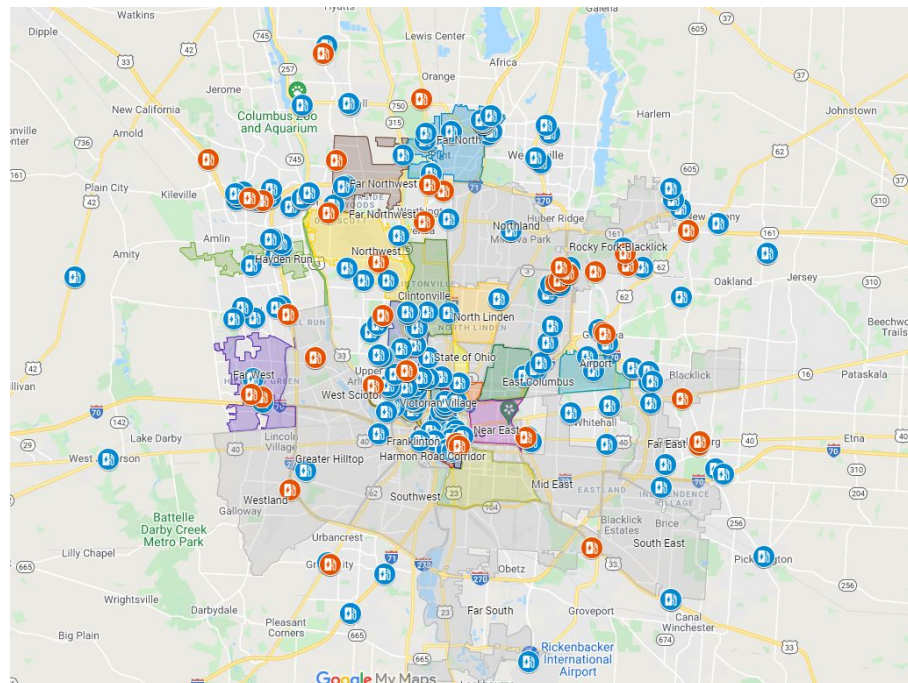
...leading to increased EV adoption in Columbus...

- ... yet have already hit/exceeded 6% new vehicle purchases, **2 years** ahead of schedule!

Projected EV Adoption - Columbus Region

...but highlighting a need for equitable access to new charging infrastructure

Energy Burden

EV Charger Deployment

Legend

Utility Burden: Neighborhood Average

Utility Burden: Neighborhood Average shows the percent of median yearly income that households pay for utility bills (electricity, gas, and/or water).

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How you all shared you are engaging so far

I have engaged in some of these efforts, but think there needs to be a LOT more. What has been done is a start, but not nearly enough

Have been involved in community engagement. We received a lot of good information

We put in chargers on a few properties - pretty easy install, but curious if there's better way to do it

very involved, it has been successful and effective

Not as engaged as I would like to be so I'm excited to do a lot more

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What you said you hoped to accomplish in this second meeting

To be a more collaborative group, who is missing from the table, especially those that are underserved and of low income?

I'd like to better understand how changing charging technology can be accommodated into an EV ready ordinance

Get a better understanding of how other cities are approaching EV charging

Understand what efforts have been made to make EVs more affordable in Columbus

Further discussion on mobility justice and how we can support those considering EV purchases

Learn more about the varying perspectives around the community

Other questions and comments you raised last meeting

Is there a plan to bring funds from the infrastructure bill to Columbus and aid with these efforts?

Do we expect EVs to become more affordable as they become more prominent?

What are the main barriers to Low Income adoption? Costs? Access?

What types of chargers would be required/general specs?

What're the key criteria being used or planning to be used for EV siting?

What is the best approach to installation of EVSE? RFP? Allow anyone to install that follows city requirements?

Scope of this roundtable series

What we're solving for	Potential solutions *(non-exhaustive list)*	Timeline
Increasing the number of EV chargers	● EV Ready Parking **Ordinance** ● Department of Public Service charger installations	Winter and Spring 2022
Increasing access to electric vehicles	● **Programs** led by Sustainable Columbus, Smart Columbus, Clean Fuels Ohio and other partner organizations	Winter 2022 and beyond
Increasing access to EV chargers	● EV Ready Parking Ordinance, DPS charger installations, **and** ● City and partner programs	Winter 2022 and beyond

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Three levels of EV readiness - elements included
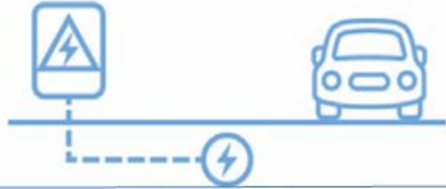
EV Capable: Install electrical panel capacity with a dedicated branch circuit and a continuous raceway from the panel to the future EV parking spot.

Panel space

Conduit

EV Ready: Install electrical panel capacity and raceway with conduit to terminate in a junction box or 240-volt charging outlet (typical clothing dryer outlet).
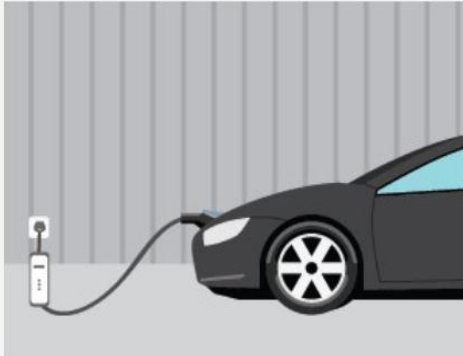

Wiring

NEMA socket
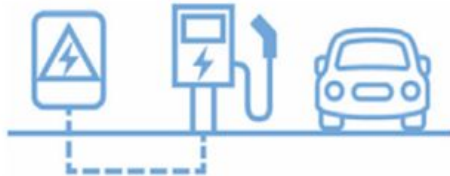
EVSE Installed: Install a minimum number of EV charging stations (min. 32A)

(Home) EVSE

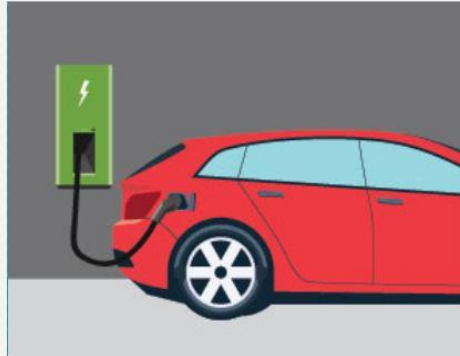# Charging levels - scope of EV ready ordinance

AC Level 1

VOLTAGE:
120V 1-Phase AC

AMPS:
12-16 Amps

CHARGING LOADS:
1.4 to 1.9 kW

CHARGE TIME FOR VEHICLE:
3-5 Miles of Range Per Hour

AC Level 2

VOLTAGE:
208V or 240 V 1-Phase AC

AMPS:
12-80 Amps (Typ. 32 Amps)

CHARGING LOADS:
2.5 to 19.2 kW (Typ. 6.6 kW)

CHARGE TIME FOR VEHICLE:
10-20 Miles of Range Per Hour

DC Fast Charge

VOLTAGE:
208V or 480V 3-Phase

AMPS:
<200 Amps (Typ. 60 Amps)

CHARGING LOADS:
<150 kW (Typ. 50 kW)

CHARGE TIME FOR VEHICLE:
80% Charge in <30 Minutes

Single family and multifamily with individual garages

- Level 1 and Level 2 EV Ready
  - 120-volt or 240-volt circuit (dryer plug)
- Installed in private garages for residents to use on-vehicle EV chargers
- Allows residents to "trickle charge" their vehicles overnight

©ElectricalLicenseRenewal.Com
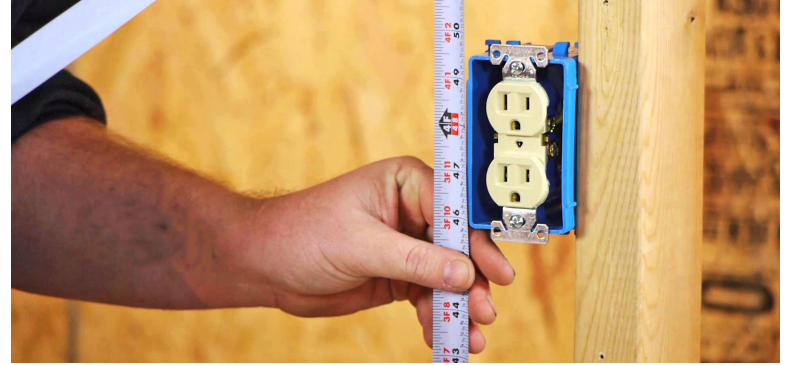
Single family and multifamily with individual garages infrastructure costs

Case Study: Cost Per EV Ready Space

EV Ready Outlet - New vs Retrofit Cost	Single family
Cost during construction	$50-300[1]
Retrofit cost	$250-$1,354[2]
Estimated savings (per spot)	*$200-$1,054*

Conversations with local developers confirmed $50 average cost per space

Why the variation?
➜ Typically, minimum 2 parking spaces per EV station
➜ Distance from electrical panel
➜ Type of parking (in garage or outside)

Sources:
[1] Estimates from Plug in NC: Electric Vehicle-Ready Homes Guide for Builders and SWEEP.
[2] Cost includes national average cost of installation. How do Residential Level 2 Charging Installation Costs Vary by Geographic Location?

Commercial, multifamily, retail, workplace, etc.

- Level 2 Charging

- L2 chargers are installed in a certain percentage of the overall parking spots

- One charger typically has **two ports**, serving two parking spots

- Additional parking spaces are built to "EV Ready" to enable easy addition of chargers in the future
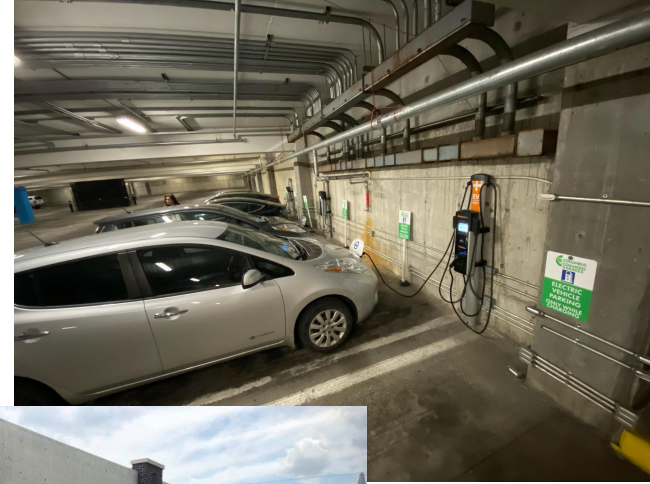
Commercial, multifamily, retail, workplace, etc. infrastructure costs

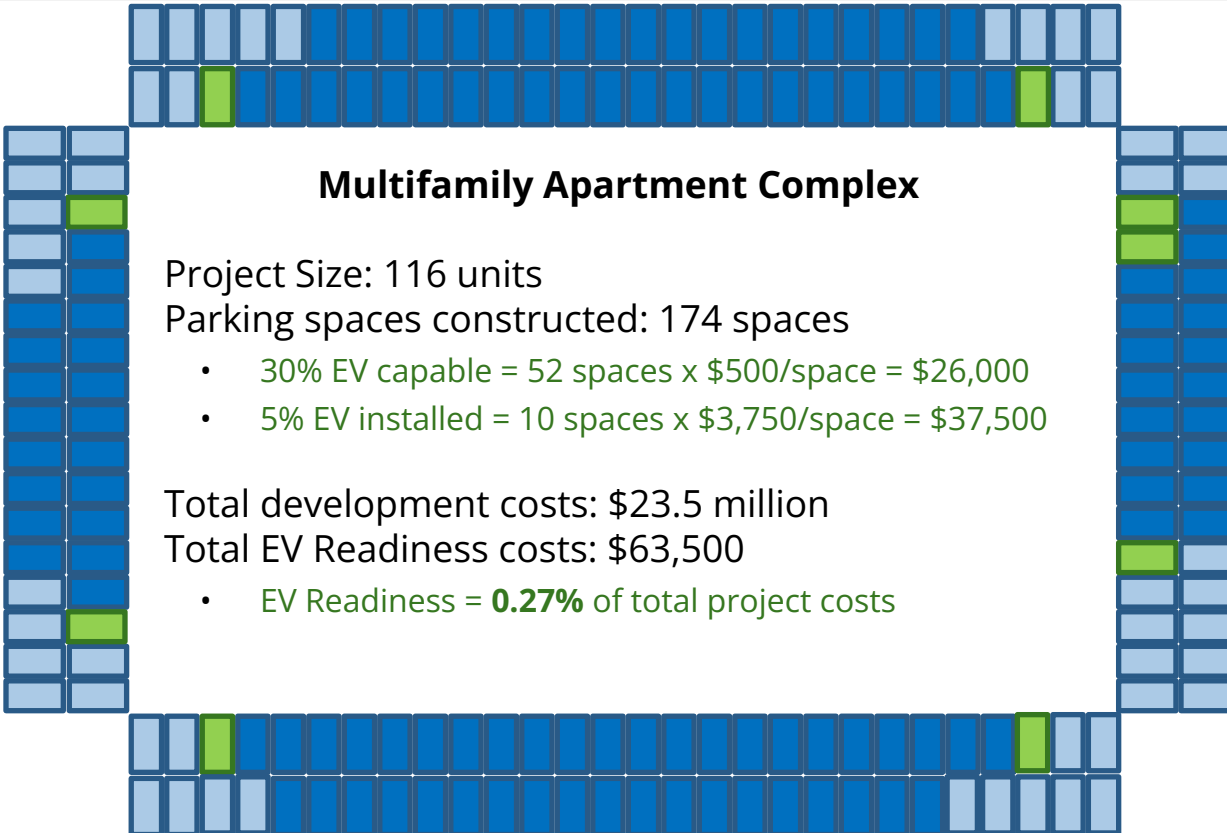## Case Study: Cost Per EV Ready Space

Readiness Level	New vs Retrofit	Commercial and Multifamily
EV capable	Cost during construction	$200-$810
	Retrofit cost	$1,010-$5,420
	Est. savings	*47-85%*
EV ready	Cost during construction	$1,160-$1,380
	Retrofit cost	$1,870-$6,260
	Est. savings	*26-80%*
EVSE installed *(per port cost for networked charger)*	Cost during construction	$2,660-$5,880
	Retrofit cost	$4,370-$11,559
	Est. savings	*21-74%*

Example project building to EV Ready standards

Legend:
- **"Traditional"** (dark blue)
- **EV Capable** (light blue)
- **EV Installed** (green)
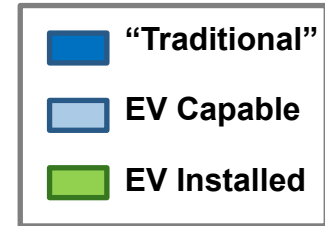
Multifamily Apartment Complex

Project Size: 116 units
Parking spaces constructed: 174 spaces
- 30% EV capable = 52 spaces x $500/space = $26,000
- 5% EV installed = 10 spaces x $3,750/space = $37,500

Total development costs: $23.5 million
Total EV Readiness costs: $63,500
- EV Readiness = **0.27%** of total project costs

What influences cost?
➔ Distance from electrical panel
➔ Type of parking (in garage or outside)
➔ Other site design elements (landscaping, trenching/boring requirements, etc.)
➔ Economies of scale w/ more charging

Clarifying questions
before breakout groups

Breakout discussions

Discussion prompts

- Share if/how your organization is approaching the transition to electric vehicles.

- Share **what is going well** and **what is needed** to support widespread EV adoption.

Suggested breakout group norms

1. Use video when possible

2. Practice the democracy of time

3. Be respectful of opinions

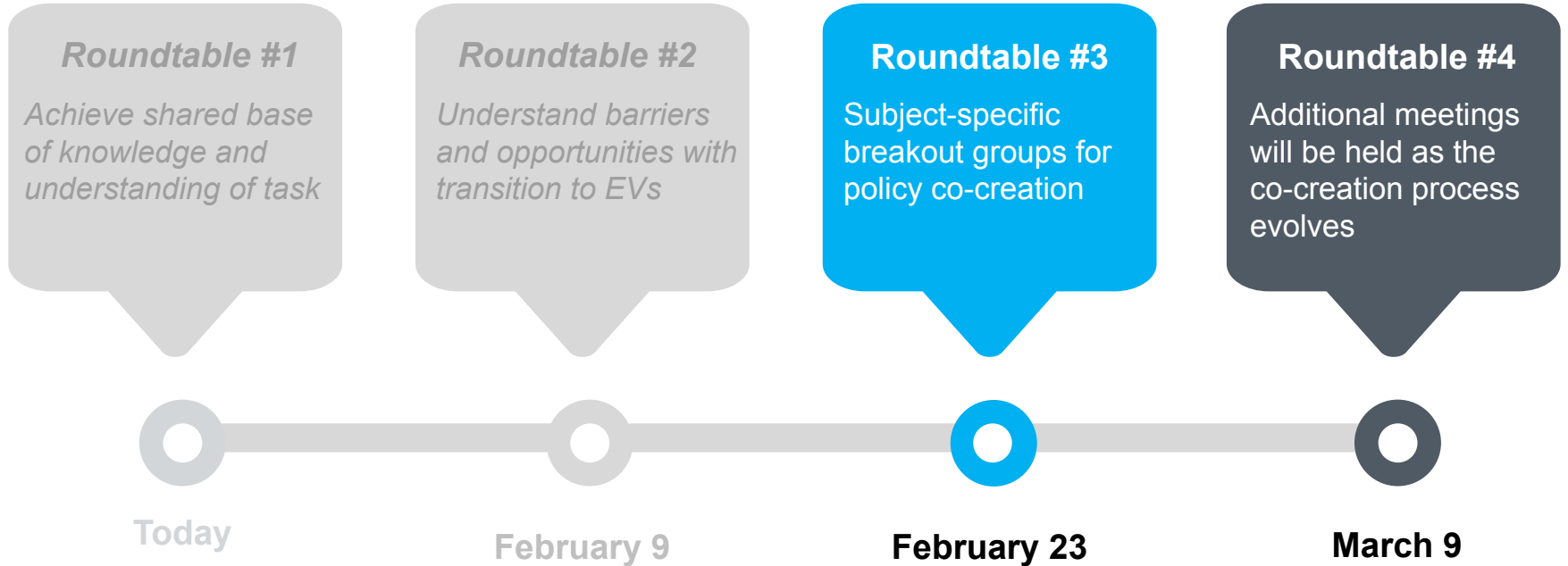4. Use the chat + react functions

❄️ **Icebreaker question: What is your name, organization, and favorite snow day activity?**

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Questions / Open Dialogue

Upcoming Meetings

Roundtable #1

Achieve shared base of knowledge and understanding of task

Roundtable #2

Understand barriers and opportunities with transition to EVs

Roundtable #3

Subject-specific breakout groups for policy co-creation

Roundtable #4

Additional meetings will be held as the co-creation process evolves

Today

February 9

February 23

March 9

Additional Resources

- **Equitable EV Ready Parking Website:**
  - Process overview
  - One-pager to download
  - Frequently Asked Questions document
- Examples of how other cities have approached EV Ready:
  https://www.swenergy.org/transportation/electric-vehicles/building-codes#who

THANK YOU!

Our contact information
- Bryan Clark (BMClark@columbus.gov)
- Jenna Tipaldi (JETipaldi@columbus.gov)
- Jordan Davis (JLD@smartcolumbus.com)
- Matt Stephens-Rich (mstephensrich@electrificationcoalition.org)