City of Cincinnati

801 Plum Street
Cincinnati, OH 45202

Agenda

Climate, Environment & Infrastructure

Councilmember Meeka Owens, Chairperson
Councilmember Mark Jeffreys, Vice-Chair
Councilmember Jeff Cramerding, Member
Councilmember Seth Walsh, Member

Tuesday, January 14, 2025 **10:00 AM** **Council Chambers, Room 300**

PRESENTATIONS

Electric Vehicle & Charging Infrastructure Adoption

Oliver Kroner, Director OES

Rob McCracken, Energy Manager OES

Andrew Linowes, Vice President of Clean Energy and Infrastructure Advisory, JLL

AGENDA

1. 202500047 PRESENTATION submitted by Sheryl M. M. Long, City Manager, dated 1/14/2025, regarding Electric Vehicle & Charging Infrastructure Adoption.

Sponsors: City Manager

Attachments: Transmittal
Presentation

ADJOURNMENT

city of CINCINNATI
Interdepartment Correspondence Sheet

January 14, 2025

To: Members of the Climate, Environment, & Infrastructure Committee

202500047

From: Sheryl M.M. Long, City Manager

Subject: **Presentation – Electric Vehicle & Charging Infrastructure Adoption**

Attached is a presentation regarding the Electric Vehicle & Charging Infrastructure Adoption.

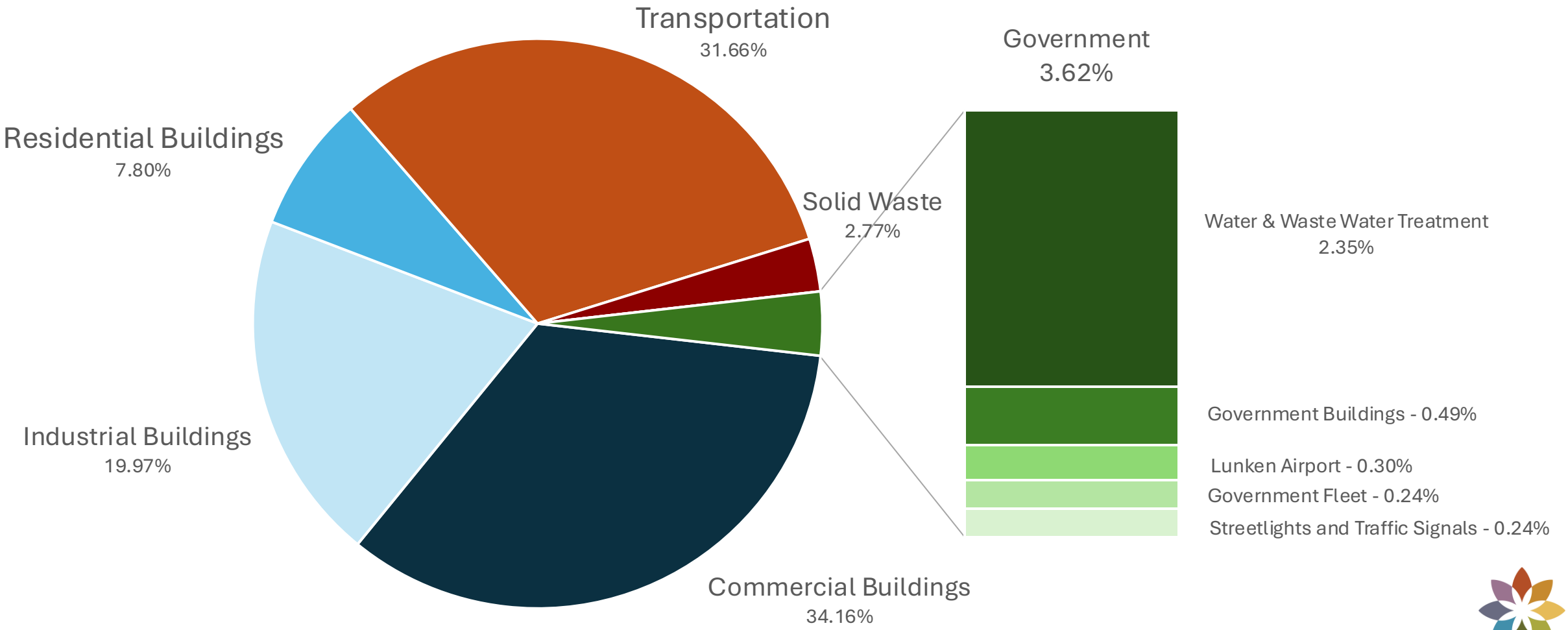
Electric Vehicle & Charging Infrastructure Adoption

Update for Climate, Environment, & Infrastructure Committee | January 14, 2025

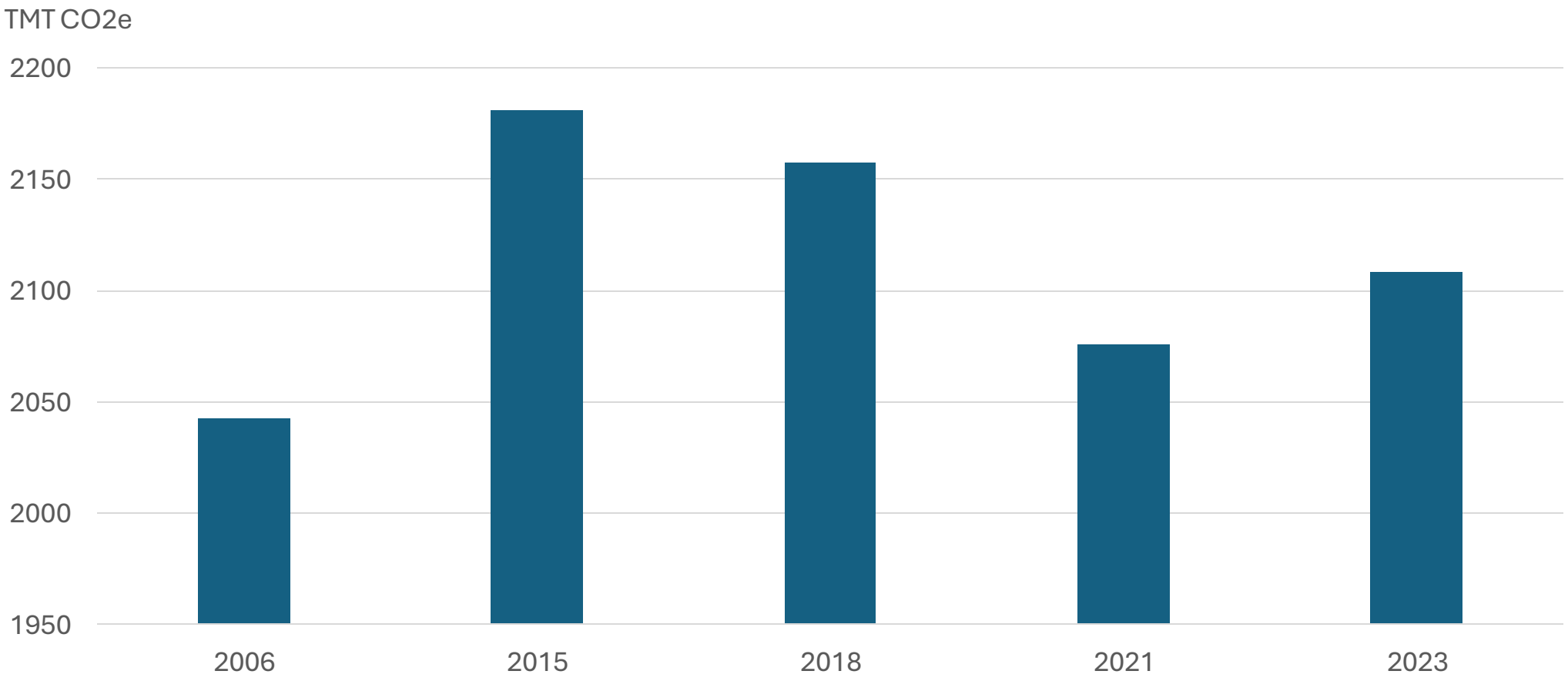
Cincinnati Carbon Profile

5.9M

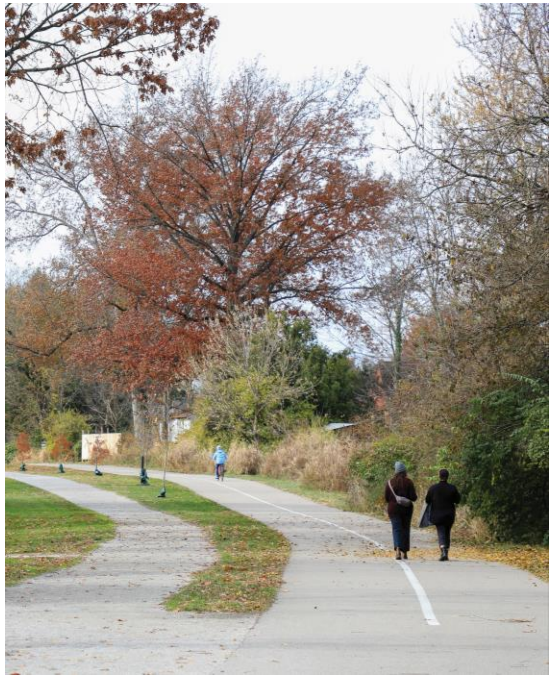
metric tons of carbon emitted in Cincinnati in 2021



Historic Transportation Emissions

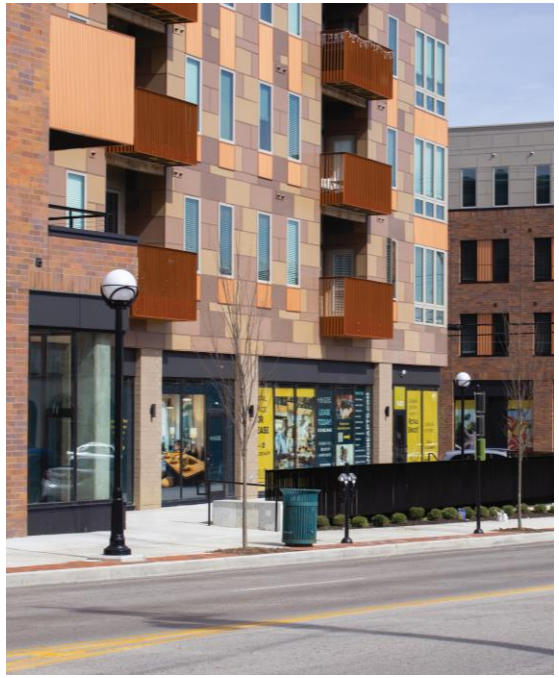


Strategies to decarbonize transportation



Improve access to walking and biking

Increase Use of Public Transit



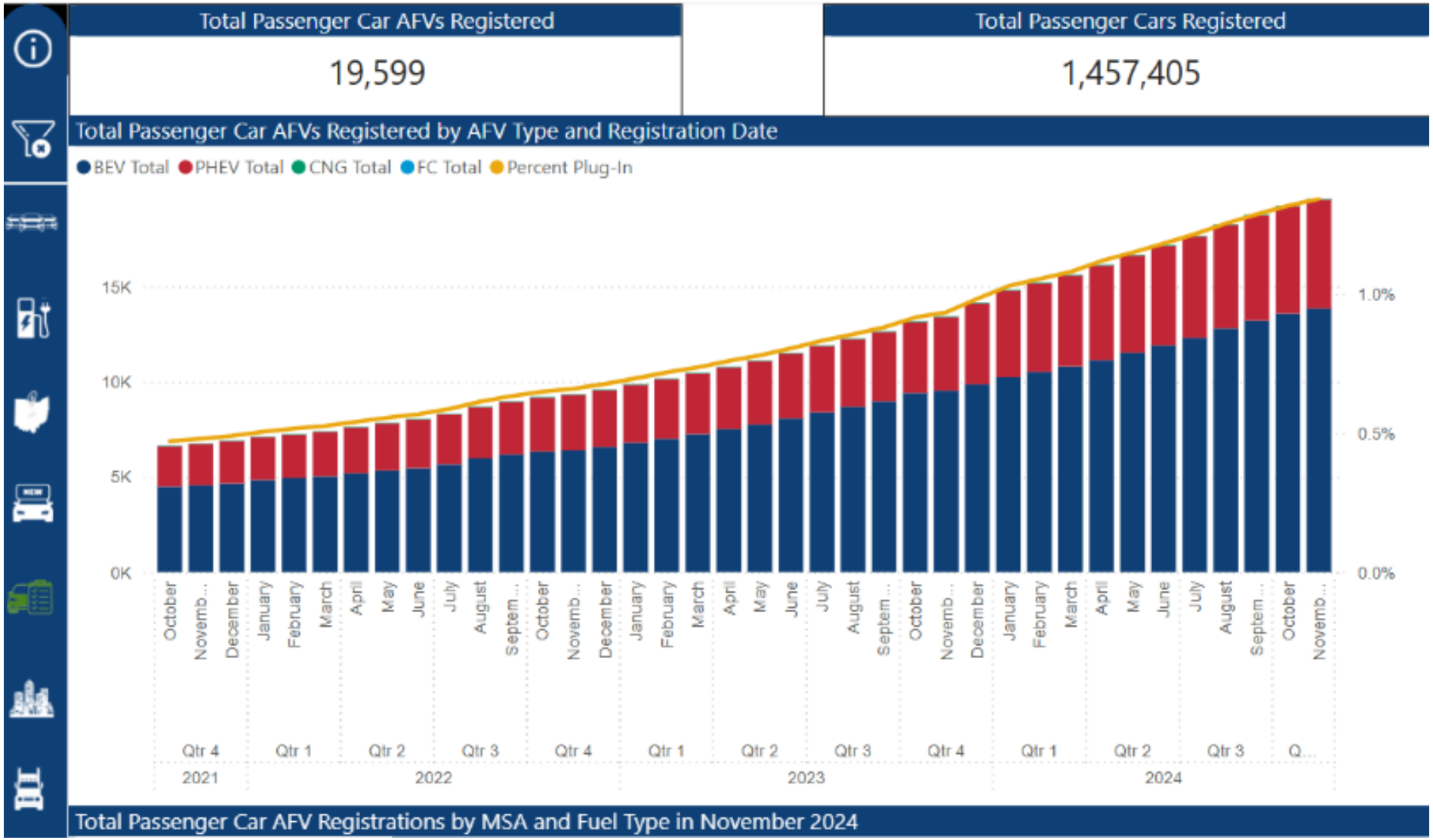
Increase Urban Density

Electrify Vehicles

Connected Communities & Green Cincinnati

- ✓ Embrace zoning reform that increases density near transit, reduces or eliminates parking requirements across the City, and minimizes the use of surface parking lots
- ✓ Promote “15 Minute Neighborhoods” with mixed residential (including multi-family) and commercial zoning to increase transit connectivity as well as density and affordability
- ✓ Continue to design bus routes and bus stop shelters to ensure convenient and consistent service with reliable connections
- ✓ Develop regional bus rapid transit routes along key corridors

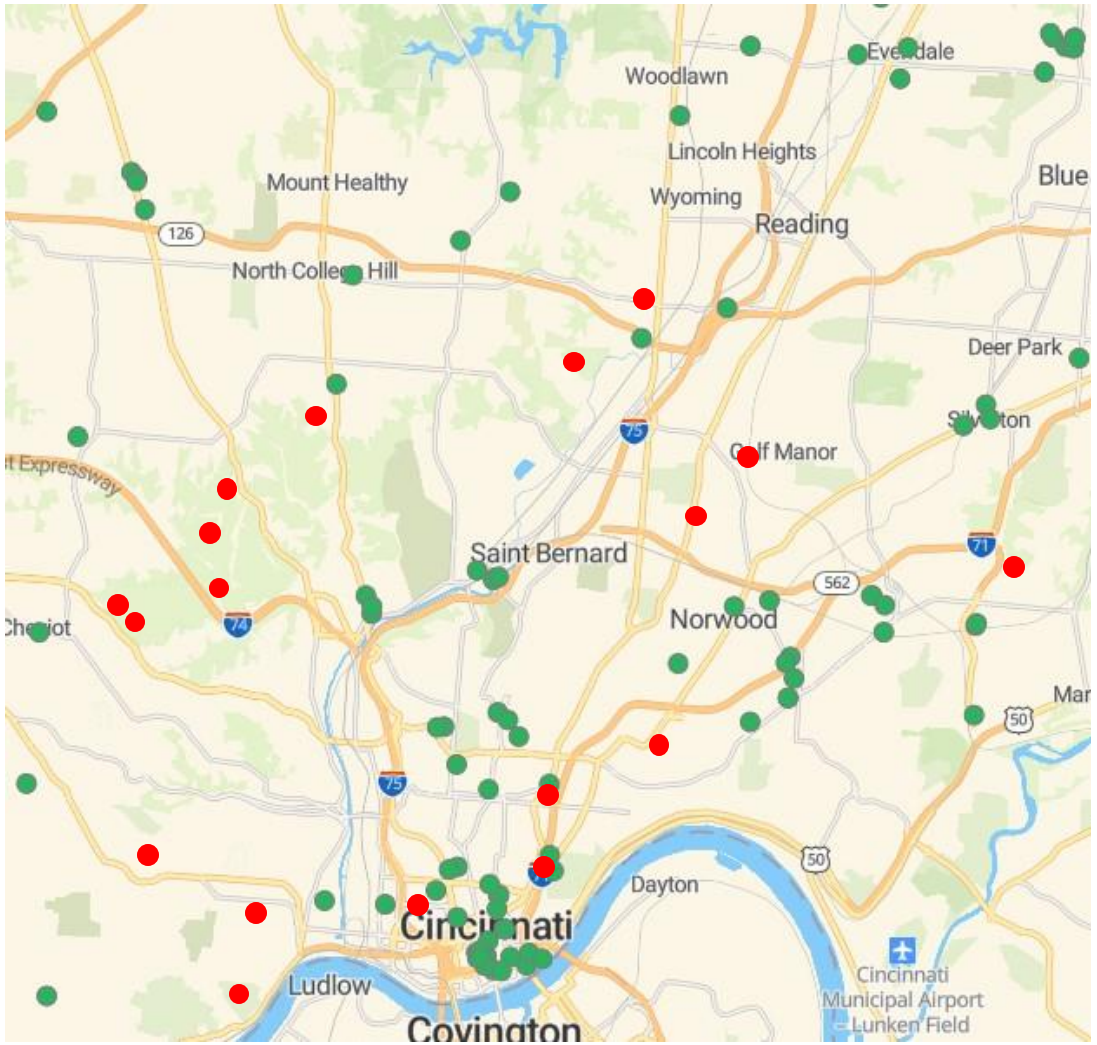
Electric Vehicle Adoption Rates



EV Charging Grants

- FHWA Charging & Fueling Infrastructure grant: $850K

- Install publicly accessible EV charging ports at 18 Parks & CRC locations in or adjacent to disadvantaged communities.



Carbon Reduction Grant

Mt. Washington

- Level 3 chargers
- Award Amount: $196,000

Cincinnati Recreation Centers

- East Price Hill, Hartwell, and Madisonville
- Level 3 chargers
- Award Amount: $998,238

Key Partners

city of CINCINNATI TRANSPORTATION & ENGINEERING

OKI REGIONAL COUNCIL OF GOVERNMENTS

Cincinnati Recreation Commission

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

Curbside EV Charging

- The City selected GreenSpot to install and manage curbside EV charging infrastructure
- GreenSpot will own the chargers and share revenue with the City. The City has the option to buy them out if desired.
- Vision for 100 chargers in business districts and areas with concentration of multi-family units
- Parking enforcement and revenue will continue without changes.
- GreenSpot will collect charging fees and idling penalties.

greenspot EV Infrastructure

City Fleet Electrification Progress

Recent Fleet Additions

9 – Ford Mach-Es

8 – Ford Lightnings

1 – Ford E-Transit

Goal: 400 Fleet Electric Vehicles by 2028

Current Total: 60 electric vehicles, 9 Plug-in Hybrid EVs

EV adoption challenges

Vehicle Purchasing

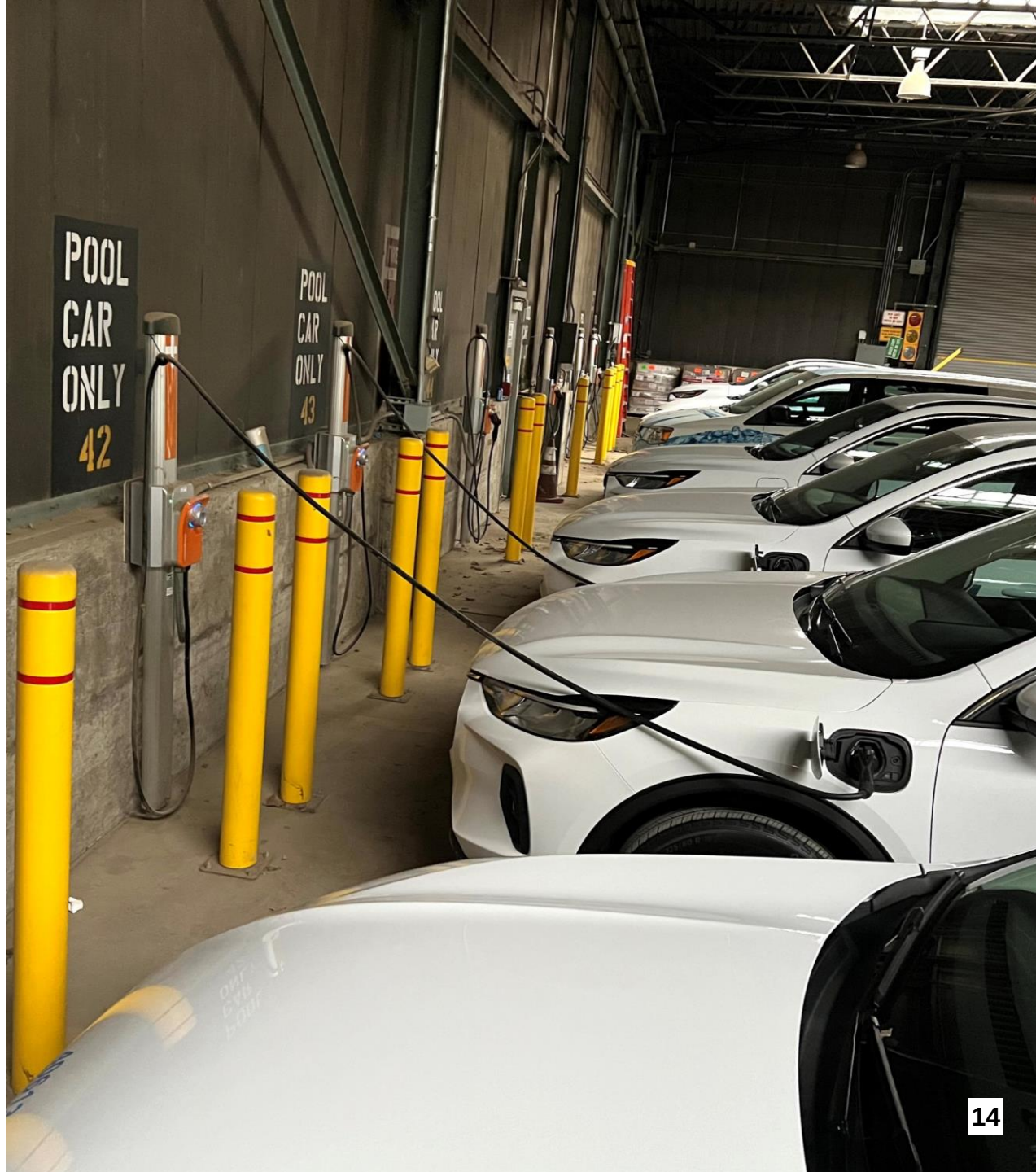
- Vehicle availability & supply chain delays
- Balancing increased capital cost versus ongoing operational savings

Vehicle Maintenance Concerns

- City Fleet mechanics trained in basic EV maintenance
- Most EVs are being serviced under manufacturer warranty

Charging is a limitation

- Current reliance on wall outlets and non-networked charging
  - Level 2 (240-volt): **34**
  - Level 1 (120-volt): **30**
- Non-networked chargers limit data collection



Level 2 Charging at Greater Cincinnati Water Works

Fleet Electrification Plan

Andrew Linowes
Jones Lang LaSalle

Fleet Analysis - Summary Results

The fleet conversion study identified 916 vehicles out of the 1,797 vehicles in the City's fleet that may be operationally suitable for transitioning to an EV.

1,800 City Fleet vehicles were evaluated for electric vehicle (EV) operational suitability[1] and financial favorability[2].

Remove 263 specialty vehicles[3] that do not have an EV equivalent and 148 vehicles with minimal use[4] from analysis

Of the 1,386 vehicles analyzed, **66% (n=916) were identified as operationally suitable** for electrification[5]

54% (n=743) are operationally suitable and financially favorable as EVs; electrifying these vehicles would **save an estimated $10.1M[6]** over the assumed 12-year vehicle lifetime before accounting for charging infrastructure costs

[1]Operational suitability is defined as a comparable EV being able to serve the same route as the existing internal combustion (ICE) vehicle

[2]Financial favorability is determined by comparing the lifetime total cost of ownership (TCO) of an EV to an ICE vehicle

[3]Specialty vehicles include ambulances, snow plows/brooms, bucket trucks, knuckle boom cranes, fire trucks, etc. that do not have an EV equivalent

[4]Vehicles with very few fuel transactions (<3 within a year) determined to have minimal use. A portion of these vehicles were later recommended for removal to right-size the fleet, reducing overall operational costs.

[5]Operationally suitable and financially favorable vehicle counts have been updated since the initial analysis to reflect removal of police pursuit vehicles (PPVs), emergency vehicles, and other vehicles determined as not suitable by the City's Fleet Services team upon further assessment

[6]Detailed savings breakdown is in the Fleet Replacement Summary excel file and detailed TCO methodology

Electrification of Common Vehicle Types

Common vehicle types categorized from high priority to low priority for electrification.

High Priority for Electrification

Low Priority for Electrification

Passenger Cars and SUVs

- **163 operationally suitable passenger cars and SUVs that will be out of lifecycle (OOL) by 2028**
- With exception of emergency vehicles and police pursuit vehicles (PPVs), upfits are typically not required
- Flexibility in EV models on the market
- **Simplest to convert from ICE to like-to-like EV**

Passenger Trucks and Vans

- **City's fleet has 314 passenger trucks and vans that may be operationally suitable for electrification but still require further evaluation**
- For many, upfits are required (liftgate, long bed, etc.) which add significant weight to the vehicle and reduce the EV replacement's expected range
- EV replacements in the market would not be operationally suitable with upfits
- Few EV options with upfits or higher weight classes in the market

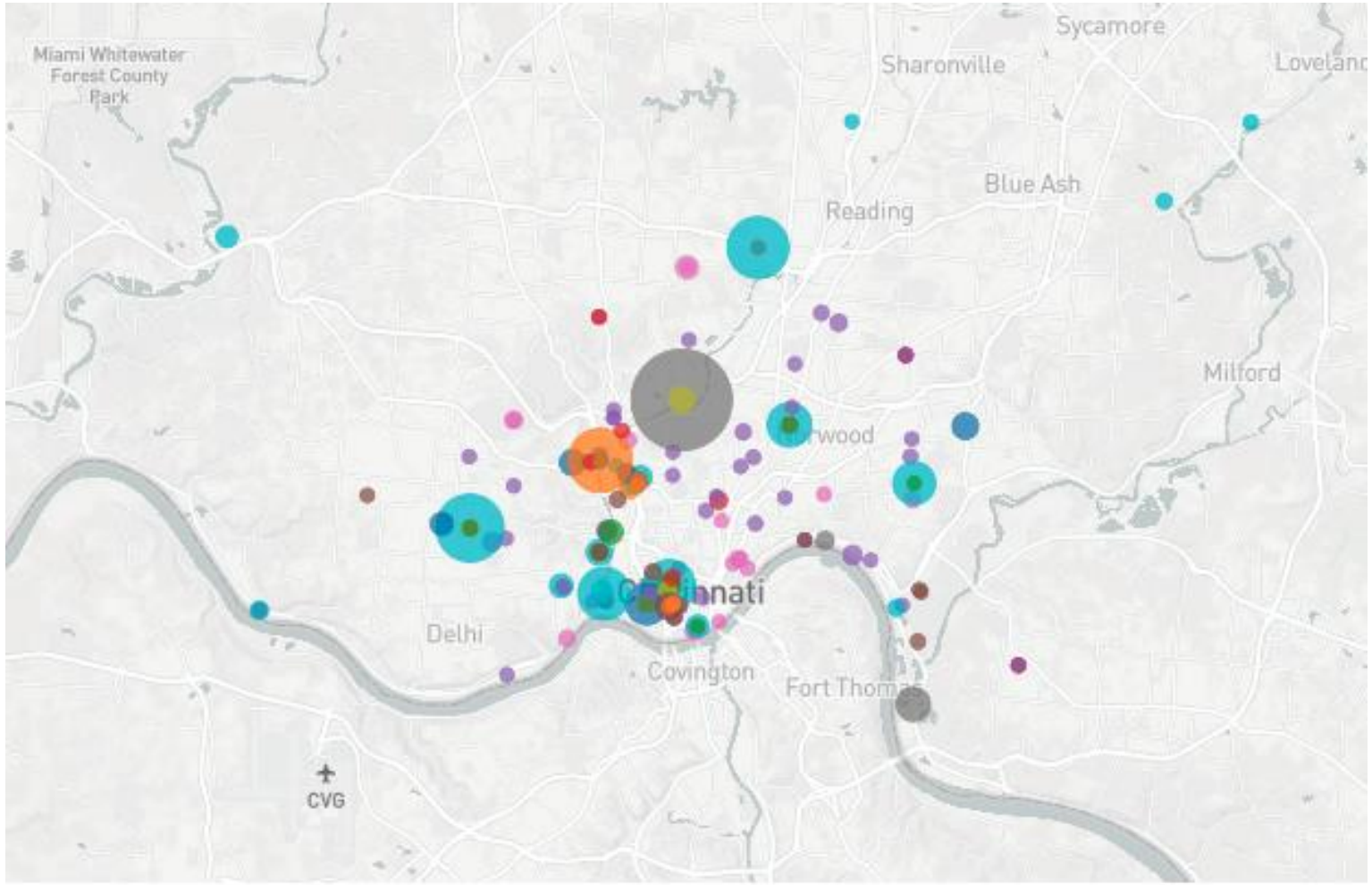
Other Medium-Duty and Heavy-Duty Vehicles

- **City's fleet has 247 other Medium-/Heavy-Duty vehicles that may be operationally suitable for electrification but still require further evaluation**
- For many, upfits are required
- **Very few EV options in the market with much higher cost than ICE option**

Fleet Geographic Concentration

The fleet conversion study mapped out vehicle dwelling sites based on the density of vehicles concentrated at each location, by department.

Total Number of Vehicles Assessed	**1386**
Total Number of Locations	**102**
Total Expected Annual Miles (MM)	**12.37**



Recommended Infrastructure Investments

The recommended investments for individual locations and charging hubs detail the recommended chargers, parking spaces, and estimated power demand required to build out each site for operationally suitable cars and SUVs OOL by 2028.

Site	Recommended Charger Ports[1]	EV Parking Spaces	Estimated Power Demand (kW)[2]	Indicative Capital Cost[3]
Individual Locations with Potential Clustering				
Chester Park Complex	L2 - 22 L3 - 2	24	410	$2.3 M
1600 Gest	L2 - 28 L3 - 4	32	610	$4.1 M
Galbraith	L2 - 14 L3 - 2	16	310	$2.0 M
1106 Bates Ave	L2 - 22 L3 - 2	24	410	$2.8 M
Richard Miller TP	L2 - 16 L3 – 2	18	330	$2.2 M
Potential Charging Hubs				
Downtown Parking Garage	L2 - 76 L3 – 8	84	1470	$7.3 M
Dunham Rec Center	L2 - 36 L3 – 4	40	720	$4.3 M

[1]Charger ports are sufficient for operationally suitable passenger cars and SUVs OOL by 2028. L2 ports determined by number of operationally suitable passenger cars and SUVs OOL by 2028 with a 20% contingency. Assumed 1 Level 3 charger port for every 20 L2 ports.

[2]Assumed 11 kW capacity for a Level 2 charger and 50 kW capacity for a Level 3 charger. Power demand calculated by adding the product of L2 and L3 charger capacity by number of ports with a 20% contingency and rounded to the closest tens value.

[3]Costs include estimated futureproofing for potentially more EV chargers but costs don't include those future EV chargers

INDICATIVE PRICING, NOT FOR BUDGETARY PURPOSES

JLL 19

Summary of Results and Recommendations

Fleet Electrification Strategy

Findings:

JLL identified 916 vehicles in the City's fleet that may be suitable for EV conversion

Considerations:

- Roll out electrification with an approach that accounts for existing and planned charging infrastructure rather than procuring EVs in mass without the necessary infrastructure

Recommendations:

- Prioritize electrification of **163 passenger sedans and SUVs** that will be eligible for replacement, or out of lifecycle (OOL), by 2028

Fleet Charging Locations

Findings:

JLL identified 5 sites and 4 potential charging hubs

Recommendations:

- **Explore public, mobile, and other short-term charging solutions to meet existing charging requirements while rolling out medium- and long-term infrastructure investments**
- **Make initial investment in 1106 Bates Ave site**
- Coordinate with Water Works and MSD to plan electrification of their sites
- Explore feasibility of a charging hubs at prioritized locations

Key Takeaways

Challenges in **reaching 400 EVs in the City's fleet** by 2028:

- Using current technology, focusing electrification on passenger car and SUV vehicle types allows the City's fleet to achieve **215 EVs by 2028**
- Electrifying many vehicles at once without a methodical approach may lead to operational deficiencies

Mitigation Strategies

- Passenger car and SUV vehicle types are the easiest to electrify – minimal/no upfit and simplified operational use case
- Annually reassess advancements in EV models and apply lessons learned from initial electrification investments and **telematics** to future EV and EV charging infrastructure procurement

Fleet Electrification Plan Implementation

Implementation Efforts

FY 2025 Vehicle Purchases

- Fleet is evaluating departmental requests to determine if suitable EV options exist
- Identifying purchasing options

Implementation Efforts

Charging Infrastructure

- Negotiating with vendor
- Securing funding for priority charging sites
- Initial focus:
  - Install smart chargers for enhanced data collection
  - Focus on Bates Ave and downtown charging hubs

Charging Smart:

A National Designation Program for EV Charging Excellence

Program Criteria Categories

- Planning
- Regulation
- Utility
- Education & Incentives
- Government Operations
- Shared Mobility
- **EVs for All:** ensuring an equitable approach to charging deployment efforts

PRE-REQUISITES for BRONZE

- Review zoning code for any potential roadblocks to charging equipment deployment. Compile findings in a memo.
- Adopt an EV charging infrastructure permit application process and post online
- Develop a charging infrastructure permitting checklist and post online
- Meet with utilities to discuss EV collaboration opportunities

Looking Forward

- Public EV Charging
  - GreenSpot – First chargers operational late 2025
  - Grant deployment – Site approval and procurement by end of 2025
- Fleet Charging
  - Upgrading to smart chargers – First half of 2025
  - Charging hubs – Plans completed by end of 2025
- Fleet EV Acquisition
  - Ongoing – Determination of suitable EVs for 2025 departmental requests
  - Ongoing – Collection of telematics data to better understand fleet operations
- Charging Smart Certification
  - Ongoing – Coordination with Planning and B&I will begin Q1 2025