COTA

RESOURCES & *Responsibility Plan*

PRESENTED BY:

go sustainable energy

Table of Contents

1

EXECUTIVE *summary*

COTA's mission is to provide solutions that connect people to prosperity through innovation, dedication and teamwork. This plan identifies multiple goals, centered on resource responsibility, and a framework within which to pursue them. This framework is built upon the recognition that COTA's ability to achieve these goals depends on upon collaborative, interdepartmental engagement on the activities that will impact the metrics by which they are measured.

MONICA TÉLLEZ-FOWLER
CEO/President

1.1. RESOURCE & RESPONSIBILITY PLAN FRAMEWORK

The Resource & Responsibility Plan is comprised of six performance categories that reflect initiatives being engaged and embraced by other organizations and society. Each performance category will have at least one goal associated with it. Performance categories are not meant to mirror COTA's team and departmental structure but will instead require interdepartmental collaboration to effectively promote the changes necessary for success.

Figure 1: **THE SIX PERFORMANCE CATEGORIES SERVING AS THE FRAMEWORK FOR THIS RESOURCE & RESPONSIBILITY PLAN**

Working within this framework, this plan will serve as a living document to help guide COTA as it progresses towards its goals. Given the evolving technological landscape that has developed, this plan will need to adapt within this dynamic environment if it is to leverage the best solutions economically. Consequently, a repeated four-step cycle developed for ongoing strategic management has been incorporated. The steps are:

STEP 1

CREATE an action plan around each performance category and their related goals.

STEP 2

IMPLEMENT the action plan activities to achieve their projected benefits.

STEP 3

EVALUATE results and capture progress.

STEP 4

MESSAGE achievements and identify next steps for incorporation in the future cycles.

This method will foster the necessary agility to progress towards goals while adjusting to the changing economic and technological landscape over the coming decades.

The baseline year against which progress will be measured is 2013 and was selected to align this plan with the City of Columbus Climate Action Plan. The following sections present the goals, metrics, achievements and next steps for each performance category.

1.1.1. RIDERSHIP

COTA's greatest impact on regional emissions comes from increasing ridership and mode shift.

GOALS AND METRICS

- Align with the annually set Performance Incentive Compensation metric for ridership.
- Pursue and support Columbus Climate Action Plan's goals.
    - Increase passenger miles traveled by 20% by 2030
    - Increase passenger miles traveled by 50% by 2050
    - Implementation of 3 regional high-capacity transit lines by 2030 and 8 by 2050

ACHIEVEMENTS

- Ridership has been increasing since the pandemic. Passenger miles have increased 33% since 2021 and unlinked passenger trips have increased 26%.
- Increased service hours 27% from 2022 to May 2025.
- Three Bus Rapid Transit (BRT) lines have been approved for entry into Project Development under the FTA's Capital Improvement Grant (CIF) program. The three BRT lines have been designed with LinkUS and construction on the first line is expected to begin in 2026.

NEXT STEPS

- Transit agencies are uniquely positioned to impact regional emissions through mode shift. This is the net benefit gained from a shift in use from passenger vehicles to the efficiency gains afforded through mass transit. By continuing to increase ridership, COTA supports the region in its broader climate goals.
    - Generating a mode shift factor is a key step in quantification of the benefits for each rider switching to COTA's services.
- Assess aspirational ridership goal in the City of Columbus Climate Action Plan and adopt or revise the targeted annual increase based upon that engagement.
- Generate a mode shift factor for use in capturing the impact of increased ridership on regional emissions goals, which has already been initiated.
- Continue and increase engagement with regional initiatives to identify collaborators in reducing regional emissions through mode shift.

1.1.2. EMISSIONS - GREENHOUSE GAS AND POLLUTION

Tracked emissions include COTA's scope 1 and 2 emissions from vehicles and energy use at the facilities. As the largest source of emissions, the bus fleet is the primary focus.

GOALS AND METRICS

- Net-zero green-house gas (GHG) emissions by 2045
- Net-zero particulate patter 2.5 (PM2.5) emissions by 2045

ACHIEVEMENTS

- Reduced GHG emissions per vehicle mile by 13.7% since 2013.
- Reduced PM2.5 emissions per vehicle mile, a local pollutant that affects human health, by 61% since 2013.
- Pollution reductions fostered more than $16 million dollars in community savings through avoided work disruptions and medical costs within Franklin County since 2013.
- Operational integration of zero-emission vehicles into the fleet with the acquisition of 50 battery electric buses (BEBs) in 2022.
- Began a contract for renewable natural gas (RNG) in early 2025. Through engagement with the renewable fuel standard (RFS) program, COTA will receive revenue and GHG reduction credits for utilizing this fuel in its compressed natural gas (CNG) buses.
- Collaborative engagement in regional development through LinkUS, Columbus Downtown Strategic Plan, Columbus Zone In and other initiatives.
- Awarded funding for 10 hydrogen fuel cell buses and fueling infrastructure, scheduled to begin operation in 2029.

NEXT STEPS

- Work with the manufacturers of electric buses and charging equipment installers to resolve the reliability and charging issues that are currently limiting the use of these assets.
- Continue to pursue en-route charging and verify compatibility between the pantographs and electric buses. Work in partnership with appropriate parties to ensure en-route charging can be installed as planned with the expected charge time between equipment and vehicles.
- Continue to monitor low-emission and zero-emission technologies including emerging fuel types for revenue vehicles, options for demand response, mobility and non-revenue fleet vehicles, and renewable energy when feasible.

1.1.3. COMMUNITY & ENGAGEMENT

A focus on community and engagement stems from the core value of empowerment which extends to employees, customers served and businesses.

GOALS AND METRICS

- Pursue 12% Disadvantaged Business Enterprise (DBE) spending goals
- Increase the number of women at COTA by 10% over the next 10 years in support of the Mobility XX initiative

ACHIEVEMENTS

- Improved benefits such as 12-week paid family leave, increased Operator wages and increased downtime between shifts which helps attract and retain a workforce.
- Surpassed the 12% DBE spending goal every year that it has existed by reaching approximately 20% DBE spending for the past three years.
- Data tracking and collection have been decentralized to the finance team.
- On track to reach the goal of increasing the number of women at COTA in alignment with the Mobility XX initiative.
- Continual positive influence of Employee Resource Groups (ERGs) on the community, recruitment, and employee experience.

NEXT STEPS

- Align the Resource & Responsibility Plan with the Strategic Plan that is currently being updated. This will ensure the Resource & Responsibility alignment with prioritized organizational initiatives to best serve the community and implement the LinkUS vision.
- Identify a means of capturing community and engagement achievements across COTA by other teams so that they can be recorded and conveyed internally and externally.
- Expand access to underserved individuals and communities through increased accessibility to critical destinations and affordability. Consider adding a community and engagement metric to capture customers served.

1.1.4. WASTE

GOALS AND METRICS

- Achieve a 100% waste diversion rate from landfills by 2045.

ACHIEVEMENTS

- Over $160,000 in revenue has been generated from scrap metal, paper and cardboard recycling since 2013.
- Several recycling and waste diversion programs are already in place including recycling of yard waste, waste oil, transmission fluids and oil filters, wooden pallets, tires and fluorescent lamps.

NEXT STEPS

- Identify priorities within the Resource & Responsibility Plan and determine resource availability to further waste efforts.
- Conduct a waste assessment to identify all waste streams generated, quantify the streams in tons, record current management practices and select waste streams where opportunities for improvement should next be investigated.

1.1.5. WATER

Water is included in the Resource & Responsibility Plan to show stewardship for the region's watershed through minimizing usage, water recycling and good stormwater management.

GOAL AND METRIC

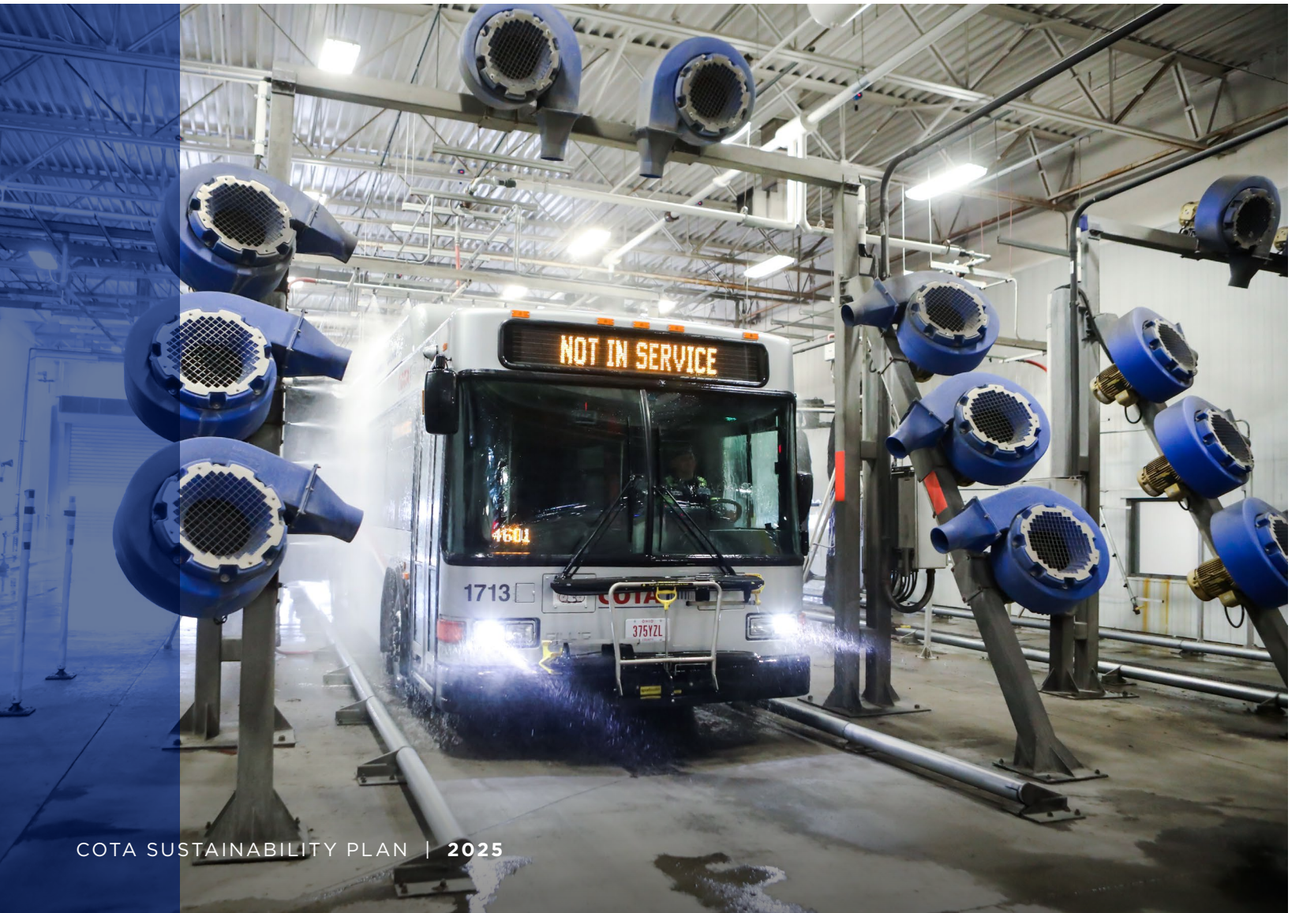
- Interim goal of 2% reductions per year in water consumption

ACHIEVEMENTS

- Installed reclamation and recycling for the vehicle wash systems at both bus facilities as part of renovation efforts

NEXT STEPS

- Identify priorities within the Resource & Responsibility Plan and determine resource availability to further water efforts.
- Update interim goal to be a technically and financially achievable percent reduction from the 2013 baseline as informed by the end use breakdown analysis. Consider identifying a metric that normalizes water consumption to vehicles in service.
- Establish a water end use breakdown that identifies each portion of water usage across the building portfolio by the function it supports.



1.1.6. RESILIENCY AND BUSINESS CONTINUITY

In order to be a reliable transportation choice and reduce regional emissions, business operations and safety must be maintained through minor interruptions and long-term shifts in regional transportation needs.

GOAL AND METRIC

- Incorporate vehicle and fueling planning into the existing Business Continuity Plan to enable:
  - Continuation of essential functions no later than 12 hours after the event
  - Maintenance of these functions for at least 30 days

ACHIEVEMENTS

- Increased security measures and training through rollout of the ELERTS app, increasing the number of Allied Universal Security guards and requiring all employees and contractors to complete cybersecurity training
- Connected 453 people to critical resources including temporary housing, food assistance, drug counseling and mental health services
- Planning for a diversified vehicle fuel mix

NEXT STEPS

- Update the COTA Business Continuity Plan (CBCP) and align it to the Resource & Responsibility Plan
- Support existing business continuity planning and incorporate the needs of this plan into the CBCP through identification of personnel who can best oversee that process
- Support the CBCP by continually evaluating how best to build out a resilient vehicle portfolio, back-up power contingencies and planet change adaptation planning

1.2. KEY FINDINGS

Through the course of updating this plan, several noteworthy takeaways were illuminated which will be helpful in navigating the path forward. In this section we summarize and highlight these findings.

1.2.1. A DYNAMIC ECONOMIC AND TECHNOLOGICAL LANDSCAPE

This Resource & Responsibility Plan serves as a framework to guide COTA in pursuit of its goals through 2045 while allowing flexibility in the exact path chosen to achieve these goals. This is particularly critical given the coming decades will see dynamic changes and volatility within the technologies and economics associated with planet change solutions.

In alignment with its long-term commitment, COTA is dedicated to modernizing its fleet and achieving net-zero emissions by 2045. The future fleet will include a mix of low-emission and zero-emission vehicles, examples of the latter include battery electric and hydrogen fuel cell buses. This will give COTA flexibility to incorporate the best fit technologies at time of purchase, incorporating more novel vehicle options as they become viable. To achieve COTA's net-zero emission goal, low-emission vehicles will be powered by fuels such as RNG and renewable electricity to offset emissions from those vehicles and achieve net-zero planet impact within fleet operations.

Since the original plan's adoption, the COTA team has engaged opportunities across multiple performance categories. Key milestones include the acquisition of 50 battery electric buses in 2022, the adoption of RNG in 2025, and the scheduled integration of 10 hydrogen fuel cell buses in 2029, marking significant progress toward a net-zero emissions fleet. Ongoing reevaluation, identification and investigation of opportunities will continue to be a core engagement strategy for COTA in navigating the changing economic and technological landscape to optimize success.

1.2.2. PRIORITIZED ENGAGEMENT WITH EMISSION REDUCTION OPPORTUNITIES

For COTA to achieve its GHG and pollution goals, a transition to a low- and zero-emissions fleet vehicles and facility operations is required. While in the long term this will include every vehicle and facility in COTA's portfolio, the near-term engagement should focus on portions of the fleet with the largest contributions toward total emissions. To the right is presented the basis for the strategy currently being pursued for the vehicle fleet and the facility portfolio. The bus fleet is the greatest opportunity and the primary focus in the immediate term.

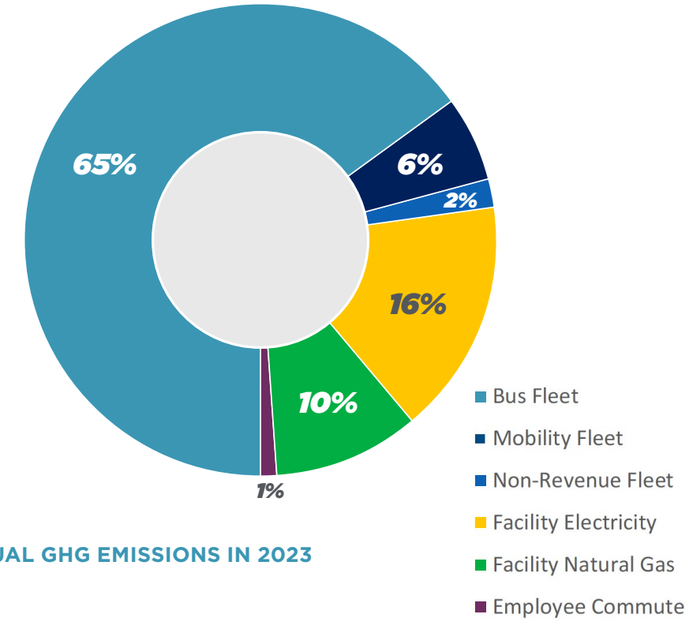


Figure 2: **BREAKDOWN OF COTA'S ANNUAL GHG EMISSIONS IN 2023**

1.2.3. SOURCING EMISSION FREE ENERGY SUPPLIES

Even with the acquisition of low-emission vehicles and zero-emission vehicles and the equipment to fuel them, to achieve net-zero emissions the source of the energy used must be GHG and pollution free. While on-site renewable energy assets provide an opportunity to reduce the energy needs obtained from utilities, the sheer magnitude of energy required far exceeds the potential contribution possible from on-site renewable energy. For COTA's current fleet, this means that BEBs will need to be fueled with renewable electricity and the CNG fleet will need to use RNG which has been pursued and began early in 2025. One common pathway to source fuels, such as electricity and natural gas, is through utility supplier contracts, though this may entail paying an increased utility rate for clean energy.

1. Sourcing renewable energy supplies for either electric or natural gas utility use is one option for maintaining achievement trajectories towards long term goals. Maintaining GHG emission reductions at a rate to be "on track" for 2045 goals would only require a portion of current energy fueling and facility use to be supplied by renewable sources.

2. While opportunities to reduce emissions through supplier contracts for electricity should be investigated, doing so often comes at a price premium and requires diverting resources from investment in organizational improvements to purchase offsets in the form of renewably sourced electricity or renewable energy certificates (RECs).

3. COTA's CNG buses and fueling equipment have positioned COTA to leverage this portion of the fleet into the market created by the Renewable Fuel Standard (RFS). In February 2025, COTA began a contractual arrangement to participate in the RFS, pairing their vehicle use with RNG producers through a contract with Trillium. The contract is between February 2025 and Jan 2028 with two options where the arrangement can be extended by a single year. The current arrangement includes both environmental attributes and revenue for their participation.

1.2.4. REGIONAL TRANSPORTATION EMISSION REDUCTIONS AND MODE SHIFT

COTA's emissions are less than 1% of regional transportation emissions. While it is critical for COTA to transition its own operations to net-zero emissions, COTA is positioned to have a greater, transformative impact in reducing regional emissions through mode shift than by eliminating COTA's internal GHG emissions.

1. COTA's engagement and focus on mode shift are key to realizing the City of Columbus Climate Action Plan goals and reducing regional emissions. COTA must collaborate with external agencies to promote transit-oriented development which will incentivize residents to opt for public transit over single occupancy vehicles.

2. In addition to the emissions reductions that come from mode shift, there are other benefits to the community, including safety. An APTA study shows that metro areas with 40 annual transit trips per capita have about half the traffic fatality rate of those with 20 annual transit trips per capita[1].

[1] APTA VZN Transit Safety Brief 2018.pdf

1.2.5. ADDRESSING BATTERY ELECTRIC VEHICLE CHALLENGES

Major challenges have manifested within the initial phase of electric bus adoption at COTA. While this has been a setback for the net-zero emission transition, there are many years left to correct these issues and redirect COTA's trajectory to stay on schedule. Electric vehicles still have a place in COTA's overall plan, and it will be critical to engage the following issues in the next few years.

1. Work with contracted manufacturers and installers to address charging issues.
2. Ensure the coming pantograph equipment will be able to charge the existing electric bus fleet to the expected power level.
3. Facilitate collaborative route schedule planning to ensure the existing electric vehicles are used within their range limitations to the highest degree.

2 INTRODUCTION

COTA engaged Go Sustainable Energy to update the Resource & Responsibility Plan, which serves as a guiding strategy for organizational transformation around engagement and pursuit of net-zero emissions. COTA has already identified community and engagement as a core tenant of its identity within COTA's "Moving Every Life Forward Strategic Plan 2019–2024. As a transit agency, greenhouse gas (GHG) and particulate matter 2.5 (PM2.5) emissions are a primary focus and will be a key area of engagement within the initiatives the plan lays out. This plan identifies goals to pursue and provides processes to navigate the changing technological landscape. Throughout the timeline of pursuit of the goals laid out, the plans strategies should evolve with the changing solutions, challenges and economics over time.

The original plan was developed through broad engagement with stakeholders both inside and outside of COTA, while in this iteration a more focused engagement with stakeholders was conducted to provide updates on challenges faced, progress made, and the help identify the next steps to pursue. Consultations with COTA staff, along with resources identified during development of the original plan were utilized to inform strategies, identify best practices, and align this plan with local, regional and national initiatives. This plan will continue to be a living document, adapting to changes in COTA's strategic plan and the City of Columbus Climate Action Plan, both of which are currently being updated.

To be successful, this plan will need to be embraced within COTA's organization and its culture. This means every staff member should understand the goals of the plan and what opportunities each person must contribute to this organizational transformation within their responsibilities

2.1. VISION

Ecological and social challenges affect every organization. These complex challenges do not have simple solutions. Resource and responsibility plans create a framework to set direction for an organization, establish next steps and measure progress. The vision of the plan is to continue the strategy for engagement and pursuit of multiple goals across COTA's operations that will address critical social and planet needs.

This Resource & Responsibility Plan will guide COTA in pursuing its own goals while supporting regional initiatives external to the agency. Though the exact plan is expected to shift over time as technology advances and regional needs change, the strategy being laid out will result in a process that supports navigation of organizational decisions across all departments, with interim engagement points over the next two and a half decades. To do this, the plan will be built upon the engagement cycle often utilized for strategic energy management[2]. The process begins with an initial commitment to making change, which is embodied by this document.

[2] en.wikipedia.org/wiki/Strategic_energy_management

Following this initial commitment, progress is achieved through cycles of engagement that include each of the following steps:

STEP 1
DETERMINATION of next actions

STEP 2
IMPLEMENTATION PLAN for actions

STEP 3
ASSESSMENT of progress

STEP 4
REPORTING on successes and challenges experienced

Figure 3 is a visualization of this process.

Such a strategy allows pursuit of the Resource & Responsibility Plan to be a constant practice, incorporated into decision making consistently throughout the course of the plan. A determination of the optimal cycle of engagement is critical to ensure activities align with resource and funding cycles. Our initial recommendation is to internally establish annual cycles for this process that also incorporate COTA's regular budgeting cycle. This will allow COTA to align existing investment practices while facilitating incorporation of the opportunities and challenges that result from changing technologies, community and engagement opportunities, priorities and economic factors such as energy costs.

Figure 3: **ENERGY STAR'S GUIDELINES FOR ENERGY MANAGEMENT[3]**

The plan establishes areas of focus, referred to as "Performance Categories," which will each have targeted goals along with metrics by which they will be measured. Pursuit of these goals will require consideration of each performance category within ongoing decision making through the plan's target year of 2045.

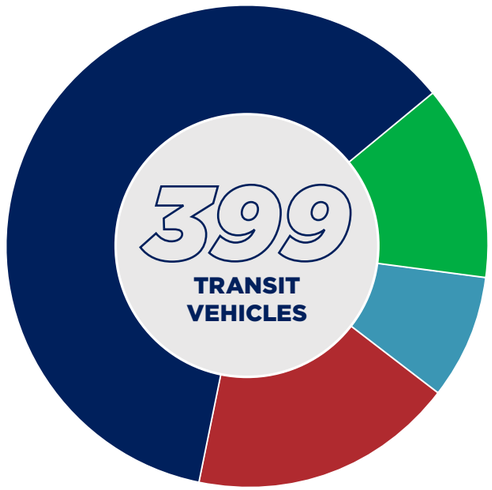
In order to meet the plan's goals, COTA will need to navigate the transitions in technologies, costs and opportunities in the coming decades. For this reason, the plan recommends interim assessments of the plan and progress towards its goals on five-year intervals. This will facilitate an actionable cycle of engagement to assess progress and achievements, illuminate areas that require focus and identify the next steps to take within the dynamic landscape that manifests. This update aligns with this strategy.

[3] en.wikipedia.org/wiki/Strategic_energy_management

3 AGENCY OVERVIEW

The Central Ohio Transit Authority (COTA) serves 1.3 million residents in the greater Columbus and Central Ohio area, connecting people with more than 12 million trips every single year. As of April 2025, there were 38 fixed routes covering a service area of 562 square miles with 3,000 active Transit Stops. COTA's mission is to provide solutions that connect people to prosperity through innovation, dedication and teamwork. The COTA fleet includes 299 buses and 100 COTA plus and Mainstream vehicles. A fleet breakdown is shown below.

OUR FLEET



234 HYBRIDS OR COMPRESSED NATURAL GAS

50 ELECTRIC BUSES

32 COTA//PLUS

68 MAINSTREAM

Figure 4: **COTA'S TRANSIT VEHICLE FLEET COMPOSITION AS OF APRIL 2025**

COTA operates out of several facilities, the largest of which are the maintenance garages and fueling stations at 1600 McKinley Ave and 1330 Fields Ave. These sites host CNG and diesel refueling stations, bus washing and servicing and offices. Other facilities include an administrative building, paratransit facility, transit centers and terminals, park and ride facilities and 424 bus stop passenger shelters.

3.1. TIMELINE AND PHASES

Long term goals have a target date of 2045 with interim goal trajectories available across the plan's entirety. In conjunction with the annual review cycle and 5-year fiscal planning cycles, progress towards goals should be regularly evaluated to inform budget and resource responsibility action items. Frequent tracking of these goals helps better evaluate organizational progress and can help embed the resource responsibility mindset within company culture. Ongoing engagement can also help apply resources strategically based upon the relative impact possible through improvement in specific areas of COTA.

Because these goals span over 20 years, it is impossible to determine an exact path to their achievement at this time. Technological, operational and budgetary changes will alter what opportunities offer the best next steps towards ultimate success. COTA will need to mobilize organizationally to address the immediate needs and next best steps for progressing towards the plan's goals.

4 RESOURCE & RESPONSIBILITY GOALS, METRICS, TIMELINE

Building off the progress already made, COTA wishes to pursue bold, ambitious goals as they move into the future. Goals must be measurable, reportable and relatable to facilitate real progress and broadcast achievements to stakeholders. Additionally, goals should be technically and economically achievable and consistent with COTA's community and engagement principles. The Resource & Responsibility Plan will outline short-term targets, on a five-year cycle and long-term (2045) targets for COTA to achieve across environmental, social and governance (ESG) areas of impact. 2013 has been selected as the baseline year because it aligns with the baseline year established by the City of Columbus Climate Action Plan. Tracking for each performance category may be limited due to access to historical information.

Long-term goals will provide a decision-making framework that enables navigation of changing technological opportunities and cost constraints over the next three decades. To be in alignment with external stakeholders such as the city and MORPC, goals should match or exceed goals set by these agencies.

Short-term goals will act as waypoints to ensure constant progress. As milestones are met, we encourage internal and external messaging for recognition. It is important to celebrate achievements to keep teams encouraged and to bring outside awareness to improve customer, community and government relations.

We are recommending that COTA establish performance categories in its Resource & Responsibility Plan. We recommend the following Performance Categories for COTA's consideration and feedback: community and engagement, emissions, ridership, waste, water and resiliency. These performance categories will have their own set of short- and long-term goals. Key Performance Indicators (KPIs) specific to each performance category will be the metrics or units of the goal and the measurement used to track progress toward each goal. For each performance category, the plan will identify goal(s) to be pursued by 2045 along with KPI(s) to measure progress. In the following sections we provide descriptions of each performance category, why they are important and the direction we plan to take in identifying goals and KPIs.

4.1. RIDERSHIP

4.1.1. BACKGROUND AND CONTEXT

Ridership encompasses the interface between passengers and their use of COTA's services. Understanding rider demographics, trip purpose, trip length and route selection are all useful to informing planning decisions.

Ridership intersects with regional needs in several critical ways. COTA's current contribution to regional emissions is very small. At the same time, COTA's potential to impact regional emissions, particularly by facilitating low- and zero-emissions transit through increased ridership, will likely play a pivotal role in the achievement of the city's goals. We refer to individuals selecting public transit, walking or biking over single occupancy vehicles for their transportation needs as mode shift. Increasing mode shift will require strategic engagement to provide residents and communities currently choosing to use single passenger vehicles to embrace the benefits of mass transit service. As the region grows, as is projected in the coming decades, collaboration with regional planning entities could make the difference between turning the tide on transportation emissions in the region or allowing existing practices to facilitate a continuation of current practices. Population projections for Central Ohio estimate a population of 3.15 million residents by 2050, compared to 2.42 million in 2020. A trend of these forecasts can be seen in the figure below. Franklin County, specifically, is expected to grow 26% over the same timeline.

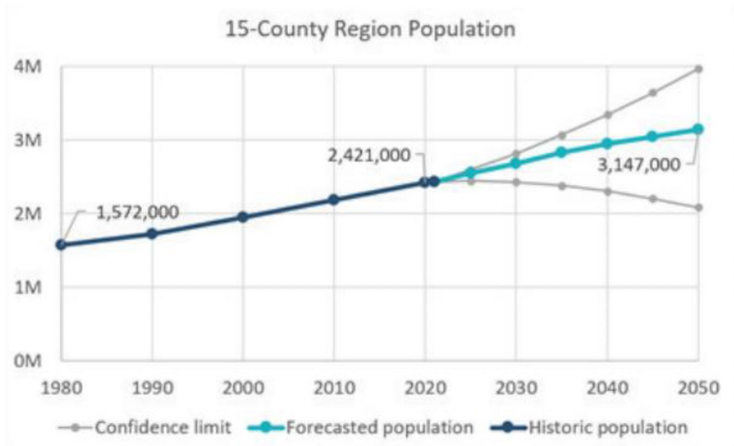


Figure 5: **PROJECTED CENTRAL OHIO POPULATION GROWTH[4]**

COTA's vision is to move every life forward and its mission is to provide solutions that connect people to prosperity through innovation, dedication and teamwork. COTA is a customer centric organization that seeks to provide safe and efficient transportation services for its customers.

[4] morpc.org/wordpress/wp-content/uploads/2023/02/Population_Growth_Forecast_2024-50.pdf

Riders of COTA are the heart of Columbus and Franklin County and backbone of the regional economy. They are a wide variety of customers, with some that rely on COTA as their sole mode of transportation, some that have chosen to be a one car family and use COTA out of convenience and some that use COTA as their primary commuting method to work weekly. Recognizing that COTA exists for its riders and is an essential part of solving for the transportation sector's role in addressing emissions impacts to the earth, COTA needs to both retain existing and attract additional riders to support GHG emissions reductions in the region. While doing this, COTA needs to solve for challenges and changes in where people need to move to, how they hope to get there and what they expect from their public transportation provider. In the coming post-pandemic period, this will also require a greater understanding in how work location might have shifted for existing and potential riders, particularly the working core.

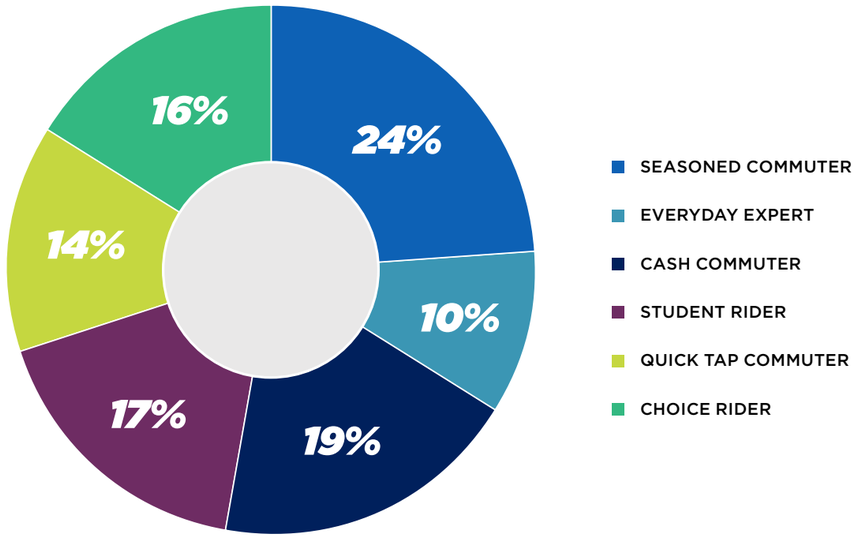


Figure 6: **RIDERSHIP PERSONAS (2023 ORIGIN AND DESTINATION STUDY)**

RIDERSHIP PERSONA DEFINITIONS

The Seasoned Commuter

- The majority of these riders are African American males over the age of 40. They utilize COTA 6–7 times a week to commute for work. They usually pay using a paper pass and their access to a vehicle is extremely low.
- This rider values transit because it gives them an affordable way to get around and is an essential part of their routine.

The Everyday Expert

- The majority of these riders are African American males over the age of 40. They utilize COTA daily for a mix of reasons such as appointments, social events and errands. They usually pay using a paper pass and their access to a vehicle is low.
- This rider values transit for its convenience but it's also essential for these riders to maintain their everyday life.

The Cash Commuter

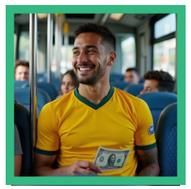
- The majority of these riders are African American males over the age of 40. They utilize COTA 5 times a week to commute for work. They pay with cash and their access to a vehicle is low.
- This rider prefers paying in cash and values the service since public transit is essential for getting to work on time and staying connected with their community.

The Student Rider

- The majority of these riders are African American males under the age of 30. They utilize COTA 3–5 times a week to commute for school or work. They usually pay with an OSU or CCS student ID or another kind of educational pass and their access to a vehicle is moderate.
- This rider values digital services that streamline their experience. And this service allows students who don't have a vehicle to get to class, work and social events.

The Quick Tap Commuter

- The majority of these riders are African American males under the age of 40. They utilize COTA 5 times a week to commute for work. They pay using the Transit app or Smartcard and their access to a vehicle is moderate.
- This rider values transit for its efficiency and convenience. This service allows riders to commute to work and avoid the hassles and cost of parking.

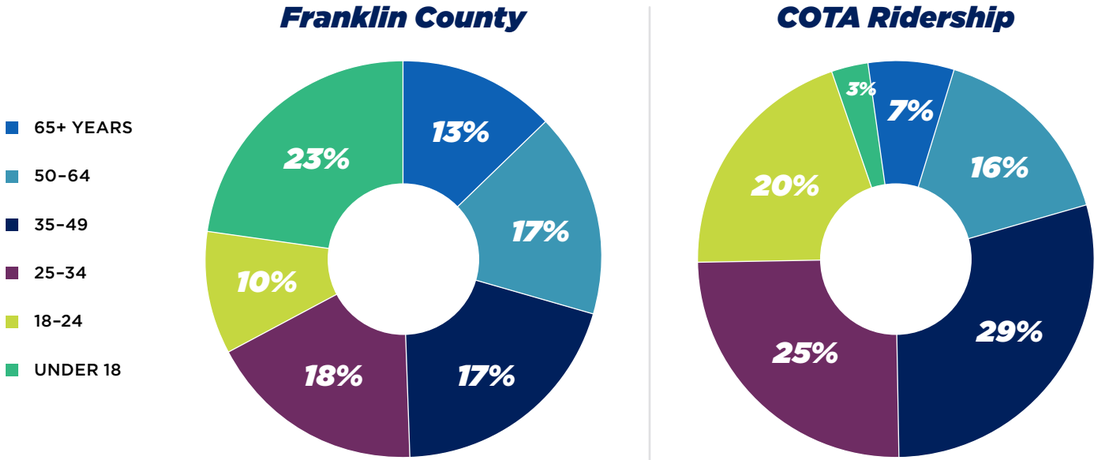


The Convenience Rider

- The majority of these riders are African American males over the age of 40. They utilize COTA 3 times a week or less for a mix of reasons such as commutes, appointments, social events and errands. They usually pay with cash and their access to a vehicle is moderate.
- This rider values a seamless experience and prioritizes direct routes with minimal transfers. This service allows riders to get places without having to deal with parking and traffic.

COTA's ridership demographics reflect the demographics of Central Ohio and Franklin County. COTA riders are majority minority and represent a higher representation of people of color (POC) than the surrounding community. This demonstrates the disparity between the 93% of Franklin County residents with access to a car as compared to COTA riders, 60% of whom have access to a car. Demographics by age of Franklin County and COTA ridership, below, reflect the reasons public transit is used and demonstrate that COTA is a preferred choice of transportation across all ages.

Figure 7: **FRANKLIN COUNTY AND COTA RIDERSHIP BY AGE** (2023)



Demographics by age are distributed across all age categories. An outsized demographic of 18- to 29-year-old riders likely exists because of OSU. 25- to 49-year-old riders also represent higher ridership percentages than their percent of Franklin County residents.

Increasing ridership at COTA and more deeply engaging with current ridership will help secure a steady customer base and will provide COTA with the security to increase capacity as the population increases in Central Ohio. This coupled with replacing the fleet with low- and zero-emissions vehicles will support both COTA and the region's efforts to decarbonize. A strategy to engage on policies, prepare for future development, route planning and service increases will position COTA to increase ridership while continuing to improve service options for existing ridership.

COTA's ability to influence and drive additional ridership is directly impacted by regional policies, development plans, cooperation with local governments and participation/partnerships with area employers and institutions. Aligning with and influencing the direction of regional planning efforts will shape COTA's ability to drive additional ridership. There are ongoing efforts at COTA to better understand COTA ridership, and the plan is one piece of a broader strategy to drive additional ridership at COTA.

The pandemic has had a significant impact on base ridership and has significantly reduced the number of daily riders for COTA and other transit agencies. NTD data indicates a drop in unlinked passenger trips between 2019 and 2020 of roughly 45%. Short- and long-term projections indicate a sustained change in working habits and behavior that will continue to impact daily rides for COTA and other public transit agencies around the country. The shift to remote working and hybrid working becoming the norm reduces the number of daily riders and results in a lower number of monthly pass holders given the corresponding changes in commuting habits. Responding to these changes in working and commuting habits is essential for COTA's future viability. In 2024, the number of unlinked passenger trips continued to remain low at only 60% of 2019 levels.

Significant regional initiatives and development plans will dramatically impact COTA's ability to grow and increase riders including efforts such as LinkUs Columbus which strives to create more accessible and efficient connectivity to accelerate economic growth in Central Ohio. The LinkUs Strategic Framework highlights the need to invest in critical regional corridors that connect employment to housing and other amenities to serve the growing central Ohio region. It recognizes that with a population growth of a projected nearly 30% by 2050 that a region with over 3 million people requires transportation options inclusive of a vibrant public transportation system.[5] In the near-term, design and implementation of multiple BRT lines is expected. With these additions, more frequent service along high-capacity corridors should improve transit availability and attract increased ridership.

Another initiative that intersects with ridership is Vision Zero.[6] Vision Zero is a strategy to eliminate all traffic fatalities and server injuries, while increasing safe, healthy mobility for all. The City of Columbus has engaged with and is pursuing this vision of what could be.[7] A study from APTA indicates that cities where residents average higher annual transit trips have roughly 50% less traffic fatalities than cities with lower transit use[8]. Further, COTA continually monitors reports on this topic and has noted that a 1.5-3% shift from single occupancy vehicles to transit has been shown to reduce traffic fatalities by 10-40%.[9] This is particularly important since youths have about twice the traffic fatality rate when compared to the total population.

Participating in shaping policies and programs that help to drive additional support for and use of public transit is essential for COTA to realize its goals on increasing ridership. This requires COTA to continue to research best practices, adopt these practices by modeling them internally and promote these practices through public policy and adoption by major employers.

- ***Research*** — identify strategies being successfully implemented in other regions, transit authorities and major employers to drive additional public transit use, such as employee benefit programs that include free transit passes for employees.
- ***Adopt*** — deploy appropriate strategies and programs within COTA and/or with partners to test the strategies.
- ***Promote*** — upon successful implementation of policies and programs, help to bring them to scale through public policy and adoption more broadly with major employers, institutional partners.

[5] morpc.org/wordpress/wp-content/uploads/2023/02/Population_Growth_Forecast_2024-50.pdf

[6] visionzeronetwork.org/about/what-is-vision-zero

[7] vision-zero-columbus.hub.arcgis.com

[8] apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/APTA-Hidden-Traffic-Safety-Solution-Public-Transportation.pdf

[9] APTA, FHWA

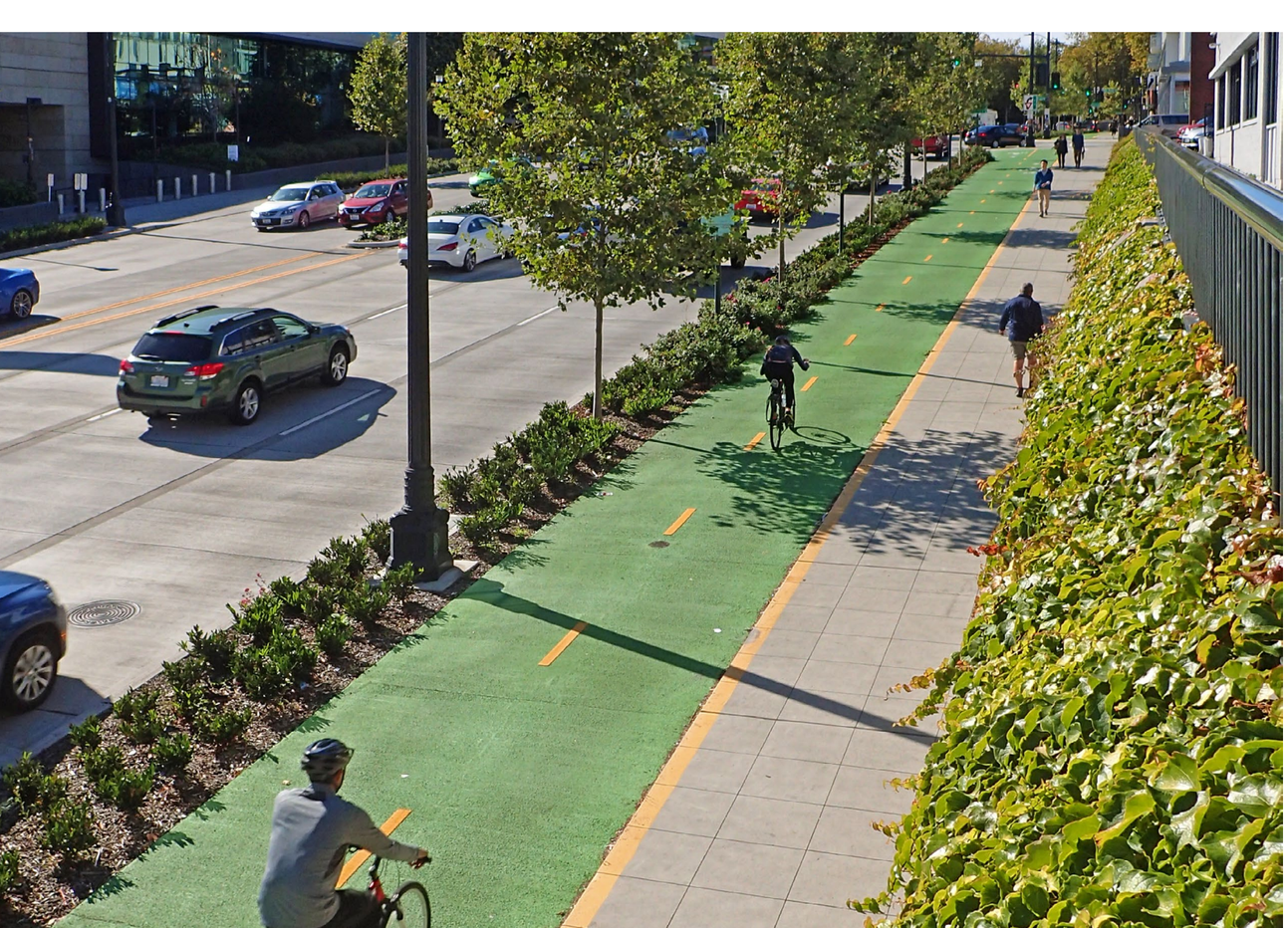
4.1.2. GOALS – LONG AND INTERIM

Increasing ridership and expanding COTA's customer base will enable COTA to support the regional efforts to decarbonize, support regional economic development and increase access and equity for all. A strong public transportation system is an essential part of creating a fair economy and society.

With the pandemic reducing the number of daily riders and creating long-term and sustaining changes in commuter behaviors due to the changes in working habits, COTA is resetting its expectations for ridership and how it contributes to the need to reduce emissions from the transportation sector. COTA can do its part by both decarbonizing its fleet and operations and by working to increase sustained ridership in support of regional goals to decarbonize.

Currently COTA tracks ridership as total boardings divided by total payroll hours. Annually goals are set around this Ridership Performance Incentive Compensation (PIC) metric for pursuit by the team. In addition to COTA's ridership metric, the Columbus CAP tracks ridership through annual passenger miles traveled. Consequently, we recommend adopting the existing performance metric and goals within this plan as well as the CAP metric.

- Pursue internal PIC metric, which is revised annually.
- Support the City of Columbus Climate Action Plan goals.



The PIC is revised annually. The PIC Ridership Committee would need to be included to update the goal annually and provide data to track this changing target. The planning team indicated a desire to link the plan goals to the PIC metric, the strategic plan and the City's CAP.

Alignment with the Columbus Climate action plan provides an opportunity for COTA to support regional efforts to decarbonize. Within that plan are three primary areas of support that COTA can implement to support reducing emissions and expanding the ridership base for COTA. It is important to note that achievement of these regional goals will require an evolution in regional planning which falls outside of COTA's jurisdiction. Consequently, while regional goals will be pursued, their success will require collaborative engagement and action of regional partners. A summary of pertinent goals from the City of Columbus Climate Action Plan can be seen below:

1. Employ Comprehensive Multi-Modal Network

- **Initiatives** — Support and implement LinkUS efforts to create high-capacity rapid transit, bicycle and pedestrian connections.
- **Goals**
  - Implement 3 regional high-capacity rapid transit lines by 2030
  - Implement 8 regional high-capacity rapid transit lines by 2050

2. Increase Transit Use

- **Initiatives** — Continue to improve customer experience, safety and amenities to drive additional ridership. Include expanded hours of service for high demand routes.
- **Goals**
  - Increase passenger miles traveled by 20% by 2030
  - Increase passenger miles traveled by 50% by 2050

3. Support Active Transportation Infrastructure

4. Support micro-mobility options, safe walking and biking infrastructure surrounding public transit infrastructure to connect riders to home and office and to complete the last mile.

- **Goals**
  - 20% increase in walkscore and bikescore by 2030
  - Mobility hubs within 1/2 mile from all residents (in high density areas) by 2050

As the CAP is updated, we recommend connecting with the City of Columbus team to align goals and metrics. This is particularly important for the LinkUS team who is directly involved in supporting these initiatives. Having COTA's voice heard in regional planning discussions will be important for the development of the Central Ohio region and for the role public transit is expected to play in that development.

These regional efforts stated in the City of Columbus CAP, when achieved, should increase the percentage of transit riders relative to residents using single occupancy cars. Establishing a mode shift factor quantifies how increases in ridership can be used to estimate the resulting emission reductions within the region as residents choose transit over driving[10]. Collaboration with MORPC would likely be beneficial as they may already collect some of the data required to generate a mode shift factor.

[10] apta.com/wp-content/uploads/Standards_Documents/APTA-SUDS-CC-RP-001-09_Rev-1.pdf

4.1.3. METRIC

In order to support internal efforts and the City of Columbus Climate Action Plan (CAP), multiple metrics will be tracked in support of this plan. They will be:

- **COTA's internal ridership** Performance Incentive Compensation (PIC) metric of annual unlinked passenger trips per total payroll hours.
- **Climate Action Plan's** target metric of annual passenger miles traveled.

The PIC metric is updated annually and tracked internally. Its metric of annual unlinked passenger trips per total payroll hours is a measure of the efficiency of ridership and service. Though we support the alignment of the plan with this metric because of its prominence within COTA, this measure may be at odds with some ridership initiatives, such as increasing service hours and increasing coverage area. Both these initiatives are in support of community engagement initiatives but may hurt the PIC. As nighttime ridership is lower, the riders per hour would drop. Increasing service hours has an immeasurable impact on the community, particularly minority communities who rely on public transit to commute to and from work and may not work typical office hours. The planning team also pointed out the ridership coverage split. Currently, 70% of coverage serves dense urban areas and 30% serves suburban areas. The team indicated they would be revisiting that split and potentially increasing service to more areas, much of which would be lower ridership, suburban zones that currently do not have COTA access. The short-range transit plan, which adjusts service, will be updated this year and will influence ridership through routes and scheduling.

The COTA team indicated that annual passenger miles traveled is not a metric commonly used within COTA to measure ridership. We recommend collaborating with the City of Columbus CAP team as they update their plan throughout 2025 to come up with the applicable metrics and achievable goals for the region where COTA is identified as the lead agency or implementing partner. It will be important for COTA and the City to collaborate to increase ridership and reduce regional emissions, regardless of the ridership metric selected.

Discussions and engagement within this performance category should include any additional metrics COTA tracks that can support this initiative or inform decision making. Additionally, given the many factors outside of COTA's control that influence these metrics, aspirational objectives should be revisited regularly to ensure they are promoting improvement while not setting unreachable goals. Such metrics should be identified by the teams pursuing ridership goals.

4.1.4. SCOPE

Ridership for the City of Columbus CAP is captured in submissions to the National Transit Database. The PIC Ridership Committee sets the annual ridership goal within COTA and it is tracked internally.

4.1.5. MEASUREMENT AND REPORTING

COTA measures and reports on ridership data to a variety of regulatory bodies that help to determine future funding levels for COTA with the Federal Department of Transportation as well as local and regional entities.

4.1.6. RECENT TREND AND CURRENT STATUS

Measures for ridership should capture the frequency at which people use COTA as a form of transportation and the capacity of the coaches or routes. Increasing regional ridership is a needed solution for total transportation emissions. There is a wide range of ways to capture ridership, and the plan will build upon existing data and best practice measures like average daily ridership. Within NTD submissions, standard metrics that are reported include passenger miles, unlinked passenger trips and vehicle miles recent trends for which can be seen in the figure below.

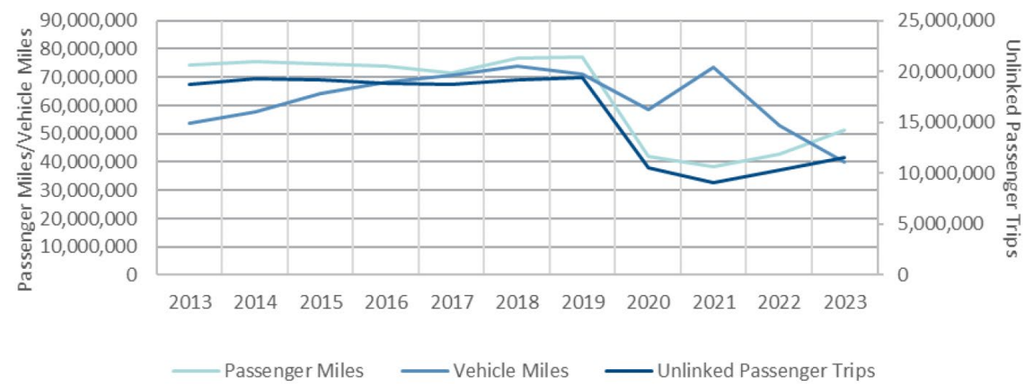


Figure 8: **RECENT NTD RIDERSHIP METRIC TRENDS**

From these trends the incredible impact of the pandemic is clearly illustrated in passenger miles and unlinked passenger trips. While these metrics have fallen compared to pre-pandemic, there has been growth since 2021.

Less quantifiable ridership measures whose importance garner consideration include convenience of use and access to values such as employment, healthcare, food and customer satisfaction. Projects such as the recent shelter improvements may help with customer satisfaction. These factors impact the desirability of public transit as an alternative to other transportation options and will be critical to achieve increases in ridership.

The LinkUS initiative is already expected to impact ridership in positive ways while at the same time fulfilling some of the goals laid out in the City of Columbus Climate Action Plan. Three high-capacity transit lines are in the design phase. Of these, construction is projected to start in 2026 for the West Broad BRT line.

The teams impacting ridership highlighted the exciting improvements such as nicer shelters, increased service hours, service area expansion considerations and community engagement but noted challenges around changing the car-oriented mindset and focusing on transit-oriented development. The teams also noted concern about vehicle availability, particularly with the BEBs, as they often face maintenance issues and are therefore unable to perform the required route duties. This highlights the need to invest in solutions for the existing BEB fleet so that they can adequately serve the community.

4.1.7. TECHNICAL AND ECONOMIC VIABILITY

Predicting the timetable of recovery from the unprecedented impact of the COVID-19 pandemic is difficult while society still struggles to transition into a new normal. Of particular importance is whether traditional work commute habits will return or whether paradigms, like work-from-home or use of distributed shared offices spaces replaces previous practices.

Regardless of what the future holds, COTA will continue to apply best practices as it always has when designing and implementing new services or revising existing offerings. Those procedures account for the necessary contingencies required in growing and evolving COTA's transit services. To do this COTA must position itself to be able to participate and acquire existing and future funding mechanisms that will be rolled out to support transit initiatives. This will include the monitoring and pursuit of grants to support further service development that will yield increased ridership and engagement.

4.1.8. ACTIONS AND RECOMMENDATIONS

Pursuit of COTA's ridership goals will include the following actions:

1. Assess aspirational ridership goal for alignment with the current use of that metric and adopt or revise the targeted annual increase based upon that engagement.
2. Develop or collaborate with an external entity such as MORPC to develop a mode shift factor to capture the impact of increased ridership on regional emissions goals.
3. Continue engagement in collaborative engagement in regional development through LinkUS, Columbus Downtown Development Corporation and other initiatives.
4. Assist in completion of 3 regional high-capacity rapid transit lines developed within LinkUS to support City's Climate Action Plan Goals.
5. Foster strategic relationships with the City of Columbus, Franklin County, MORPC and other entities to support the development of density corridors of residential opportunities, employment and other land use directives with a vision for their interconnection using existing or new public transit routes.
6. Collaborate with the City of Columbus as they update their Climate Action Plan to better shape the CAP where COTA plays a leading role.

4.2. EMISSIONS

4.2.1. BACKGROUND AND CONTEXT

As society has increased its focus on eliminating emissions, transportation agencies across the nation have identified the need to de-carbonize operations. This is because transportation comprises 28% of total U.S. greenhouse gas emissions.[11] While public transportation is only one part of the transportation sector, agencies will need to establish emission free operations to eliminate their contribution to climate change. Furthermore, to achieve transportation emission reductions across society, regional governance, planning and resources will be needed to support the expansion of existing transit services to meet regional goals and facilitate net-zero emissions mobility for all citizens.

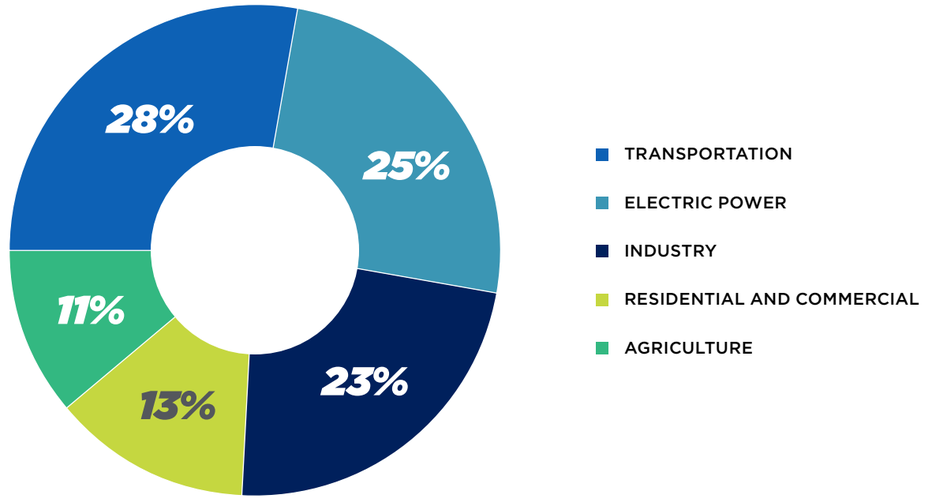


Figure 9: **EPA SUMMARY OF U.S. GREENHOUSE GAS EMISSIONS BY ECONOMIC SECTOR IN 2022**

A primary focus of minimizing impacts to the earth for transit agencies is the decarbonization of their vehicle fleets. This reflects the goals and initiatives of city governments and transit agencies across the country. Consequently, emissions reductions will likely be the primary way that COTA's progress will be measured by regional stakeholders and other interested parties. COTA's 2045 target to pursue net-zero emission goals aligns with other regional entities while allowing for the unknown.

Moreover, the city of Columbus is currently working on an update to their Climate Action Plan[12], the original being released in December of 2021. The final version of the current plan established 2013 as the baseline upon which progress will be measured.

[11] epa.gov/ghgemissions/sources-greenhouse-gas-emissions

[12] columbus.gov/files/sharedassets/city/v/1/utilities/sustainability/cap/columbus-climate-action-plan_final.pdf

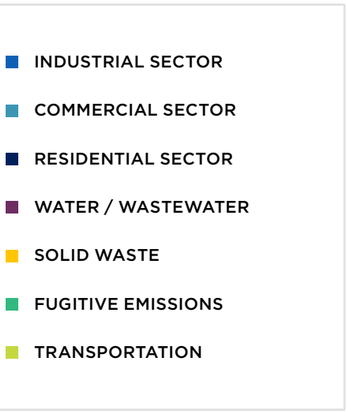


Figure 10 shows the breakdown of emissions from the City of Columbus's 2021 Climate Action Plan report which attributes 33.4% of the 2013 emissions to regional transportation during the baseline year. The emissions baseline breakdown indicates that transportation is a major component of the City's own community emissions reduction goal and engagement.

Figure 11 presents the 2023 Columbus Greenhouse Gas Inventory[13] which indicates that transportation has increased to make up 43% of the city's emissions, a 25% increase in its proportion of the overall emissions since 2013. To give that increase context, the Columbus Climate Action Plan Progress Report 202414 states that from 2013 to 2022, community scale transportation emissions increased by 47.3%. This means that transportation emissions are an increasing percentage of a growing total of emissions within the city.

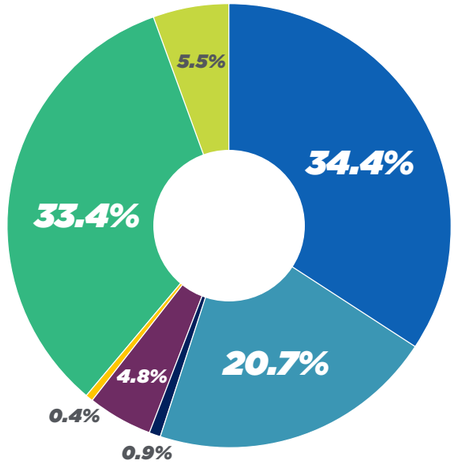


Figure 10: **CITY OF COLUMBUS 2013 SECTOR EMISSIONS BASELINE[5]**

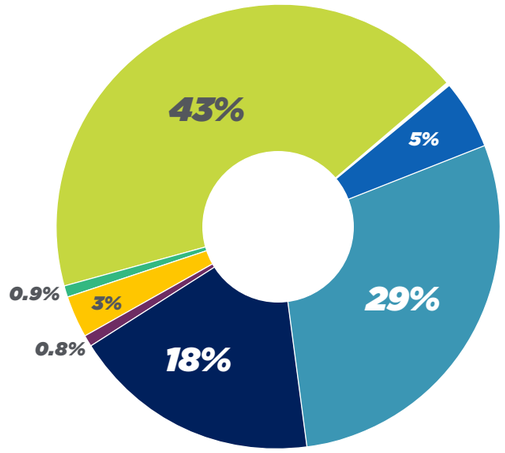


Figure 11: **COMMUNITY-SCALE – SECTOR PERCENTAGE OF TOTAL EMISSIONS | 2023**

[13] columbus.gov/files/sharedassets/city/v/1/sustainable/columbus-2023-ghg-inventory-report.pdf

[14] columbus.gov/files/content/city/v/6/services/columbus-water-power/about-columbus-water-power/office-of-sustainability/columbus-climate-action-plan/digital-8.15-2024-cap-progress-update.pdf

As stated in the original climate action plan, COTA's contribution to regional emissions was previously identified as roughly 1% of regional transportation emissions, or 0.33% of the community's emissions. To achieve reductions in regional emissions for the City of Columbus, COTA will need to both transition to net zero emission operations while at the same time expanding its services and ridership. That is to say, COTA's own emissions are of relatively small concern to Columbus; however, COTA's ability to reduce the City's transportation sector's emissions is critical to lowering emissions in the region.

It is currently unclear what percentage of Columbus residents are able to transition to electric or hybrid vehicle use. It is also likely that the cost of privately owned hybrid or all electric vehicles or other zero tailpipe emission technology, may be prohibitive for some of the population to achieve these reductions on their own.

As a result, COTA is a critical piece if the City is to address its transportation emissions and COTA should engage the city on what support is needed from the region for COTA to provide the key piece to this portion of the emissions challenge.

4.2.2. GOALS — LONG AND INTERIM

Goals within the emissions performance category are centered around two primary components, greenhouse gases (GHG) and other local pollutants. These emissions areas capture critical impacts on the community resulting from COTA's operations. GHG will be used to refer to climate changing emissions including carbon dioxide, methane and other gaseous compounds most frequently associated with fossil fuels and their combustion. The GHG metric will focus on carbon dioxide equivalent (CO_2e), which is the combined impact of the various GHGs in common units based upon the climate change impact of carbon dioxide. Pollution will be used to refer to non-GHG emissions closely tied to vehicle operations that have adverse impacts on the populations within the service area. Particulate matter 2.5 (PM2.5) will be the metric measured as a pollution goal, which is defined as fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.[15] Other pollutants include NOx, SOx and VOCs will also be tracked for use in measuring community impact.

COTA will compare its efforts against other transit agencies and work with supporting entities to achieve a goal of net-zero GHG emissions by 2045. Continual identification of technical and economic barriers to progress will need to become standard practice to achieve this goal. A key step in reaching net-zero emissions is transitioning COTA's fleet to low-emission and zero-emission vehicles, ensuring the fuel being sourced for these vehicles come from renewable sources, and transitioning all support operations to be powered by clean energy. Long term, sourcing carbon free electricity through RECs or onsite generation and any natural gas use from RNG will be critical. Assessing the price for sourcing responsible utility supplies should be a regular activity to facilitate updated understanding of any additional costs that may be required.

Within the transit sector, PM2.5 emissions are directly tied to fossil fuel combustion. This pollution directly affects the health of riders, the planet and community of Central Ohio. Due to PM2.5's adverse impact on public health, and in alignment with COTA's focus on access to transit, a parallel goal of net-zero particulate matter 2.5 within COTA operations by 2045 has been set. To achieve this goal, elimination of all fossil fuel use will be required by the 2045 target date.

[15] epa.gov/pm-pollution/particulate-matter-pm-basics

In order to transition operations in alignment with internal and societal objectives addressing emissions, COTA has:

- Set a goal of net-zero green-house gas (GHG) emissions by 2045.
- Set a goal of net-zero particulate matter 2.5 (PM2.5) emissions by 2045.

4.2.3. METRIC

Emissions metrics include:

Measuring and tracking GHG emissions in pounds (lbs) of CO2e, and lbs CO2e/revenue vehicle mile

Measuring and tracking PM2.5 emissions in grams (g) PM2.5, and g-PM2.5/revenue vehicle mile

The emissions goals are to be measured with two metrics, one for GHG emissions by measuring pounds of CO2e and one for pollution that effects local air quality by measuring pounds of PM2.5. Both will capture progress towards elimination of emissions from operations and will be normalized by annual revenue vehicle miles which is already tracked for the National Transit Database (NTD). Normalization is needed because both tracked emissions metrics vary with the transit services offered and COTA will continue to evolve its services to meet internal and regional needs in the coming decades. This will allow COTA to measure progress towards elimination of emissions regardless of what changes in services may occur.

GHG is tracked by pounds CO2 equivalent per revenue vehicle mile (lb-CO2e/mile) as recommended by APTA's method for "Quantifying Greenhouse Gas Emissions from Transit."[16] The calculation can largely be generated from data currently tracked for submission to the NTD including the use of fuel, electricity and natural gas. Of particular importance is the current ability to capture fuel use that comes from electricity and natural gas. This is currently feasible because the compressed natural gas fueling equipment has its own electric and natural gas utility meters that can be totaled separately from facility utility use. Total service vehicle miles are currently captured for the revenue fleet for NTD reporting. The procedures for tracking this metric are built upon the existing NTD reporting requirements and COTA's existing data collection.

The metric for tracking pollution is grams PM2.5 per revenue mile (g-PM2.5/mile). This will allow COTA to leverage the same data necessary for GHG tracking to be used for tracking pollution. While the metric will be based upon PM2.5, this metric will include other pollutants identified by the EPA including NOx, SOx and VOCs. Vehicle pollutants can be estimated using the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool17 created by Argonne National Laboratory. The pollution calculation will include direct emissions, such as combustion of natural gas and vehicle exhaust, as well as indirect emissions from utility use.

[16] apta.com/research-technical-resources/standards/sustainability/apta-suds-cc-rp-001-09

[17] greet.es.anl.gov/afleet_tool

4.2.4. EMISSIONS CATEGORIES (SCOPE)

GHG emissions are currently categorized into three scopes for the purposes of facilitating engagement. This is done to differentiate between the varying levels of control an organization has over the emissions associated with their operation. The figure below presents a visualization of the three scopes.

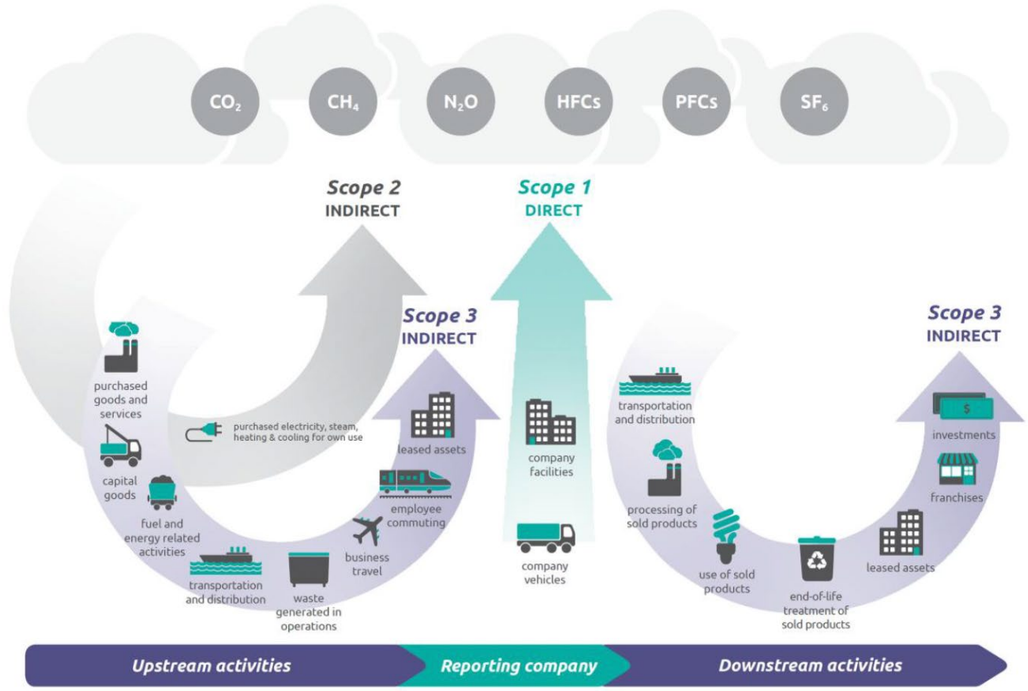


Figure 12: **OVERVIEW OF GHG PROTOCOL SCOPES AND EMISSIONS**[18]

Tracking will focus on Scope 1 and 2 emissions, which are the areas COTA can directly engage to reduce emissions. As the figure shows, Scope 1 emissions are emissions associated with direct use within COTA's facilities or vehicles. Scope 2 are the emissions tied to purchased utilities, which for COTA is their electricity consumption. Table 1 shows Scope 1, 2 and 3 emissions sources for COTA.

[18] epa.gov/climateleadership/scope-1-and-scope-2-inventory-guidance

Table 1: **OVERVIEW OF GHG FROM COTA OPERATIONS BY SCOPE**

Emissions Categories			Scope		
Action Area			**1**	**2**	**3**
Fleet	Buses	Diesel Buses	☑		☑*
		CNG Buses	☑		☑*
		BEB Buses		☑	☑*
	Mobility Fleet	Diesel	☑		☑*
		Gasoline	☑		☑*
	Nonrevenue Vehicles		☑		☑*
Facilities	Electricity			☑	
	Natural Gas		☑		
Employee Travel					☑
*** Scope 3 emissions for vehicles are tied to their contructions and parts**					

For the purposes of tracking emissions, we suggest adopting the recommendation from the "Quantifying Greenhouse Gas Emissions from Transit."[9] This means only Scope 1 and 2 emissions would be quantified and tracked within this goal. The only exception to this will be the incorporation of employee travel to and from work, which directly relates to COTA's mission. Including the emissions associated with employee travel in the emissions goal and metric will incorporate user perspectives and promote greater awareness of this initiative across the organization. Excluding the remaining Scope 3 emissions insulates COTA from emissions related to decisions by external vendors and manufacturers.

While COTA will account for GHG contributions across the organization, understanding the contribution from different sources will help in navigating prioritization of investment. The figure below presents the breakdown of GHG emissions from 2023.

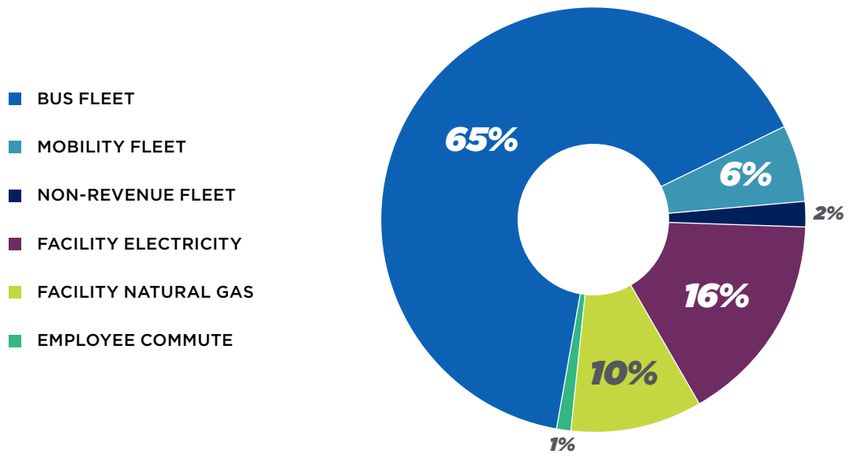


Figure 13: **BREAKDOWN OF COTA'S ANNUAL GHG EMISSIONS IN 2023**

This breakdown shows that the majority of COTA's current emissions are associated with its bus fleet (65%), facilities second (26%) and the mobility fleet third (6%).

Over the lifetime of the plan, the importance of including Scope 3 emissions may change. Consequently, when conducting the "reassessment" phase of the engagement cycle every five years, COTA will maintain awareness of evolving practices within the transit sector.

4.2.5. MEASUREMENT AND REPORTING

The recommended emissions measurement methodologies were designed for both GHG and PM 2025 emissions to use data already required within current reporting requirements for the NTD. This allows tracking to be easily integrated with already existing reporting requirements.

During this update a few revisions were implemented in the metric charts that result in differences from the original report. These changes are outlined below:

- In the original plan, smaller vehicles like vans and cutaways were modeled as "Passenger trucks" in the Afleet tool, which should refer to more standard pickup trucks. Moving forward they will be modeled using the corrected reference, "Light Commercial Trucks."
- In the original plan, revenue vehicle miles were modeled based upon fuel consumption and an average vehicle fuel efficiency for each vehicle type. At the time, this was done to facilitate the more complicated forecasting that was initially required. Moving forward, the revenue vehicle miles reported to the NTD will be directly used to assess metrics as it greatly simplifies the process.
- Finally, in 2023 it was identified that there were some discrepancies in the COTA's NTD reporting. In particular, the revenue vehicle fleets reported mileage, and fuel was flagged as incorrect. For reporting between 2021 and 2023, this report uses correct information obtained directly from the COTA team.

When reviewing the metric charts, the primary takeaway should be that progress is being made in these categories but that some benefits, particularly from the battery electric buses, are not yet being realized due to challenges in their operation. Resolving these issues should result in positive impacts on the bus fleet's emissions contributions.

4.2.6. RECENT TREND AND CURRENT STATUS

By applying the methodology presented above, progress towards the emissions goal can be captured through 2023 for both the GHG and PM2.5.

As can be seen in Figure 14, COTA's existing efforts towards transitioning the bus fleet away from diesel vehicles assisted in achieving organizational GHG reductions of 13.7% since the baseline year of 2013. This achievement includes fleet GHG reductions, increases in facility and non-revenue fleet GHG emissions, and electrical grid GHG reductions that occurred between 2013 and 2020. While GHG reductions have been achieved since 2013, these achievements are behind the trajectory needed to achieve a 2045 net-zero emissions goal.

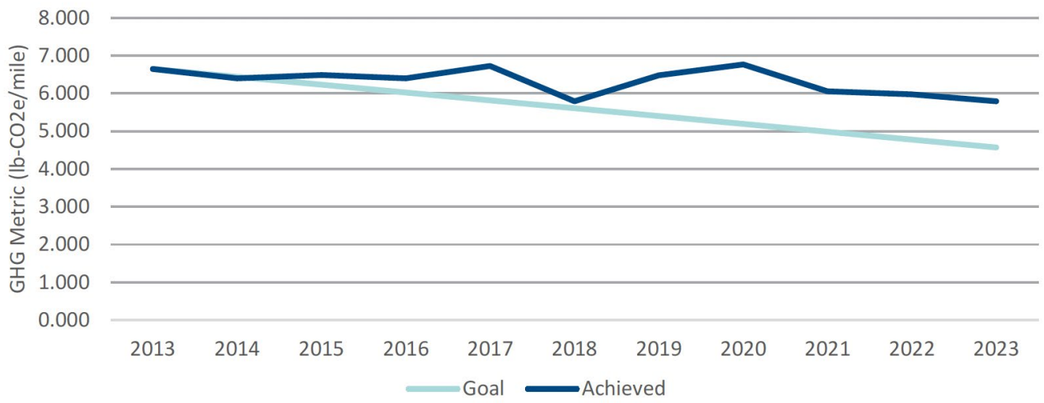


Figure 14: **CURRENT STATUS OF COTA'S GHG GOAL**

Several changing factors both helped and hurt COTA's progress towards the 2045 target since 2013. These include:

1. **GHG Challenges**
   a. Facility GHG emissions have increased 9% as a result of expanding services and capabilities to support operations, including meeting safety requirements necessary to support CNG vehicles.
   b. The long-term impacts of the COVID-19 pandemic on commuter habits, working from home and other societal practices are still being felt.
   c. The battery electric buses have experienced technical challenges, described in Section 4.2.7.1 Fleet Transformation, that have resulted in additional downtime and support needs since their adoption.
   d. Emissions from the non-revenue fleet have increased by 111% compared to the baseline year (2013), primarily due to improvements in rider experience and security. While the emissions for non-revenue vehicles saw a significant increase, their contribution to COTA's total emissions only changed from approximately 1% in 2022 to 2% in 2023.

2. **GHG Successes**
   a. The revenue vehicle fleet has achieved a 31% reduction in GHG emissions since 2013, largely due to the transition to CNG vehicles.
   b. For the portion of the electrical grid where COTA operates, there has been a 40% reduction in GHG emissions from energy production, driven by the addition of renewable energy and the closing of older, emissions-intensive power plants.[19]
   c. GHG reduction opportunities.
   d. Cost benefit analysis of renewable energy sourcing for both electricity and natural gas utilized as vehicle fuels and facility energy should be an ongoing activity to achieve reduced GHG emissions. This has already been implemented for the CNG buses through integration of a RNG contract in 2025.

Relative to the pollution metric of g-PM2.5/mile, the impact of transitioning the bus fleet away from diesel vehicles has been even more impactful. The currently achieved reductions far exceed the progress required to meet net-zero PM2.5 emissions by 2045. Since 2013, g-PM2.5/mile has been reduced by 61%. That said, continued engagement with pollution will be necessary to eventually achieve long term goals. Fortunately, COTA's pursuit of the goal set for GHG will address the primary challenges remaining for the pollution metric.

Benefits from these pollution reductions can be quantified using the EPA's Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool, called COBRA.[20] Using the tool to run scenarios for Franklin County, using a 7% discount rate, more than $16 million dollars were saved through avoided work disruptions and medical costs within Franklin County since 2013.

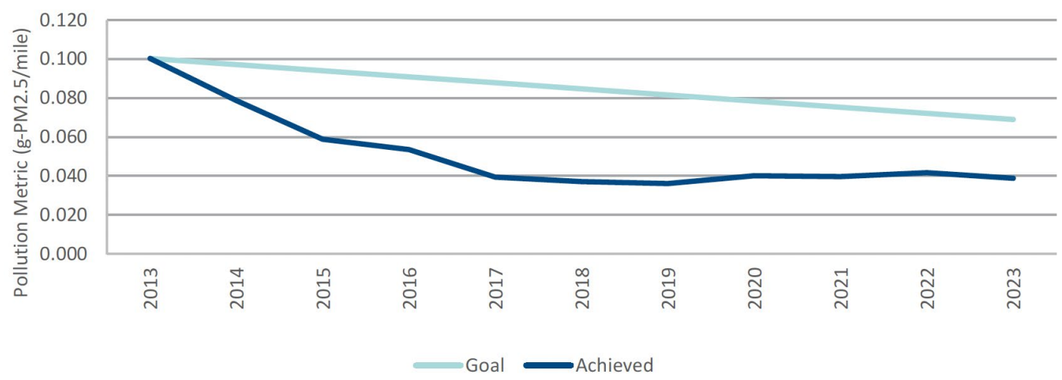


Figure 15: **CURRENT STATUS OF POLLUTION GOAL**

As can be seen, after large reductions during the transition away from diesel vehicles, the pollution metric has levelized over the past 5 years. It is important to note that the change in modeling for light duty vehicles, increased non-revenue fleet operation and reduced revenue vehicle miles in recent years all contributed to the change in the trend of the pollution metric.

[19] *noting there is no source for 19 in the provided doc*

[20] epa.gov/cobra

4.2.7. TECHNICAL VIABILITY

The full transition to a net-zero emissions operation requires the pursuit of a portfolio of low-emission vehicles, zero-emission vehicles and renewable energy sources to support facility operations and fueling. This includes those vehicles used for non-revenue vehicles, mobility services and bus services that support the rest of the fleet's operations. It also includes stationary assets in the form of facilities that house the staff who service and support COTA's mission. Based upon the emissions breakdown illuminated in Figure 13, the greatest contributor to GHG emissions, and thus a focus of engagement, lies with transitioning the bus fleet.

4.2.7.1. FLEET TRANSFORMATION

While the immediate focus for reducing emissions is not the mobility and non-revenue vehicles, COTA's team will continue to monitor available replacement technologies for these vehicles. Low and zero emission vehicle options for the mobility fleet are still just starting to become available and are not yet fully commercialized. COTA will need to continue to re-evaluate mobility vehicle options on a regular basis. Non-revenue vehicles contributed 2% of COTA's GHG emissions in 2023. Due to its small contribution, it should not become a focus of engagement at the current time.

As previously presented in Figure 13, COTA's bus fleet is the primary contributor of GHGs within COTA's operations. The bus fleet is currently comprised of CNG, battery electric buses (BEBs) and 3 diesel buses which will be retired in the next year. To transition the bus fleet, it will be important to fully leverage the already built out CNG infrastructure through its end of life, which is 15 years, all while pursuing opportunities to obtain zero emission vehicles. Planning for a bus fleet portfolio that supports current and future service plans, as well as the Business Continuity Plan, will be critical.

The initial plan envisioned a full transition to battery electric buses while recommending continued evaluation of electric vehicles and other alternative bus technologies. Over the past five years, COTA has experienced a wide range of challenges while integrating electric buses into its fleet which are listed below.

1. Challenges

a. Charging reliability: Some battery electric buses have experienced charging issues — specifically, buses may stop before reaching full capacity. This problem has introduced extra operational complexity, as staff must frequently monitor charging progress overnight to ensure buses are ready for service.

b. Hardware and software malfunctions: COTA has encountered several technical issues in adopting BEBs, including corrosion at charging ports, overheating of charging cables and unexpected system shutdowns. These issues compromise both reliability and safety.

c. Electric interconnection requirements: BEBs require substantial amounts of energy and power from an already capacity-constrained distribution grid. This is especially relevant for both depot and en-route charging.

d. Operational range constraints: BEBs take considerably longer to recharge compared to conventional fossil fuel buses. As a result, additional planning is required to ensure an uninterrupted service. Route planning must also align with vehicle's range, and en-route charging infrastructure must account for the time needed to deliver the necessary amount of energy.

2. Opportunities

a. Battery electric buses are a mature technology: Despite the operational challenges experienced by COTA, battery electric buses represent a mature technology, with extensive fleets operating around the world.[21] European cities such as London, Amsterdam, Rotterdam and Oslo have integrated battery electric buses in their transit systems. Similarly, cities in Latin America — including Santiago de Chile (200 buses), Medellin (64 buses), Bogota (1400 buses) and Mexico City (81 buses) — have demonstrated the viability of this technology.

b. Expansion of electric vehicles to other fleet segments: BEB manufacturers are diversifying their offerings by developing vehicles of varying sizes and capabilities.[22] This trend presents an opportunity for COTA to incorporate electric vehicles into other segments of its fleet, including mobility services and non-revenue vehicles.

c. Evaluation of other low-emission and zero-emission technologies: COTA is scheduled to integrate ten hydrogen cell buses into its operational fleet in 2029. Together with battery electric buses, this diversification will provide valuable insights into the operational requirements and benefits of different zero-emission technologies, supporting COTA's goal of achieving a fleet of low and zero emission vehicles by 2045.

3. Next steps

a. Strengthen partnerships to address operational challenges: We recommend that COTA continue advancing the adoption of zero-emission technologies by working closely with bus manufacturers and charging infrastructure providers. Collaborative efforts will be essential to resolve the operational issues identified, enabling the integration of BEBs technology into COTA's normal operation.

b. Develop en-route charging infrastructure: To extend the operational range of BEB, COTA should ensure the availability of en-route fast charging options and compatibility with their electric buses. This initiative requires coordinated planning with the local distribution network operator to address siting, interconnection and power requirements.

c. Monitor the grid capacity at depot charging: COTA should actively monitor the available electrical capacity at McKinley and Fields facilities to ensure both current and future BEBs charging demands.

[21] sustainable-bus.com/electric-bus/electric-bus-public-transport

[22] ride.co/transit-buses

The following charts present the current vision for the bus fleet transition from the baseline year through 2030. As can be seen, later this decade COTA will pursue the addition of a few hydrogen buses to assess their fit within the bus fleet.

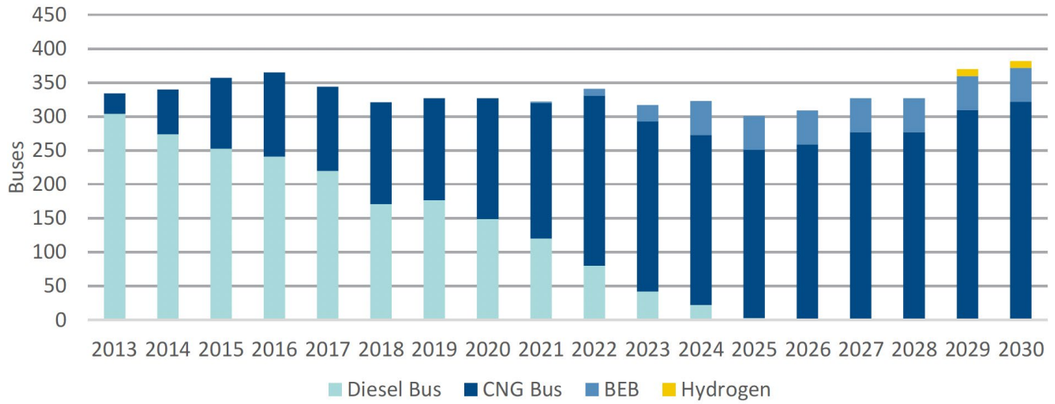


Figure 16: **BUS PORTFOLIO BREAKDOWN BY VEHICLE TYPE**

As recommended in the original plan, it will be important for COTA's team to continue monitoring the changing vehicle technology landscape. Vehicle costs, technology limitations and solutions and the associated systems needed to fuel buses will continue to experience dynamic evolution throughout the rest of the plan timeline.

4.2.7.2. FACILITY TRANSFORMATION FEASIBILITY

COTA's facilities are another area of critical engagement to achieve emission goals. In Figure 17, total energy use trends for both the electric and natural gas utilities for all COTA facilities show an increase over the past ten years. Many factors that contribute to this are an increase in electric and natural gas meters as well as operational and equipment changes during that period. It is important to note that differences in annual weather can also contribute to variations in facility heating and cooling needs, which are not accounted for in this trend.

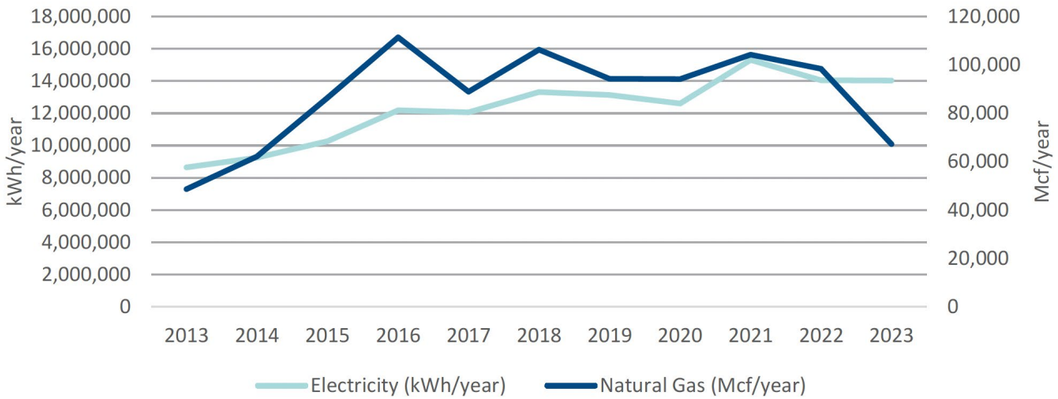


Figure 17: **FACILITY UTILITY USE TRENDS**

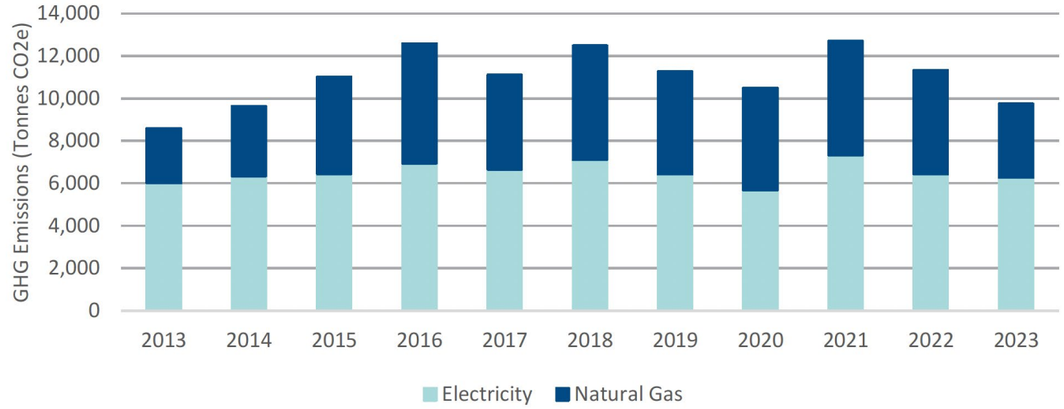


Figure 18: **FACILITY GREENHOUSE GAS EMISSIONS TREND**

Energy use data can be used to translate electricity and natural gas facility usage into facility emissions which can be seen above.

Figure 19 and Figure 20 show a breakdown of COTA's electricity and natural gas use by site.

Figure 19: **2023 FACILITY ELECTRICITY ANNUAL USE BREAKDOWN**

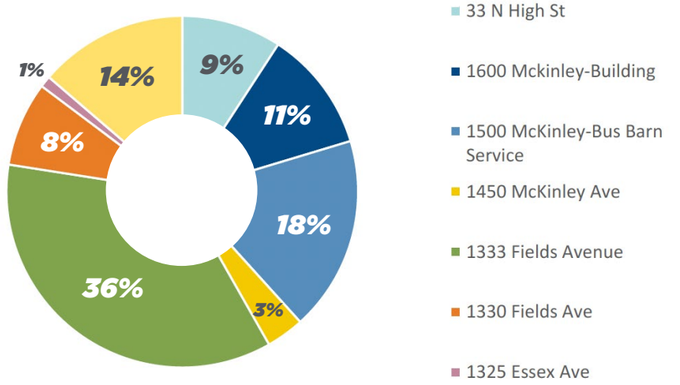
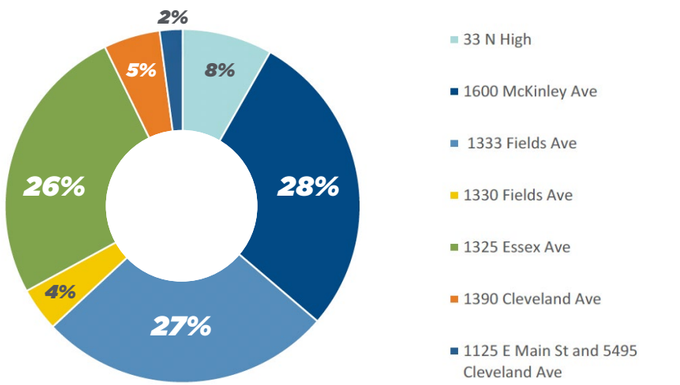


Figure 20: **2023 FACILITY NATURAL GAS ANNUAL USE BREAKDOWN**



While COTA has been active in its effort to minimize facility energy use and cost, the net-zero emission goals will require a more advanced pursuit of energy efficiency within its facilities. Across the country there are examples of zero energy buildings which illuminate the pathway towards super-efficient buildings and building design opportunities. As new buildings are added, renovations are conducted and equipment replacements occur, including emissions as a design constraint will ensure that COTA's facility portfolio is optimized around this initiative. Incorporating onsite renewable generation is also a path for reducing electricity related GHG emissions while providing some on-site power capabilities. While it is unlikely that large COTA facilities can be self-sustaining using only on-site renewables, adding on-site assets is another path for reducing utility needs while increasing the proportion of zero-emissions electricity used. Pairing on-site renewables with storage could further add to COTA's resilience.

4.2.7.3. SOURCING RESPONSIBLE ENERGY SUPPLIES

As COTA continues its journey to adopt a net-zero emission fleet and eliminate emissions from its facilities, one option to achieve GHG reductions is to contract energy supplies for both natural gas and electricity from renewable sources. For electricity, we recommend evaluating on-site renewable energy and off-site options for renewably sourced electricity. This may take the form of purchasing renewable energy certificates (RECs), which convey to their holder the ability to claim the use of renewable energy.[23]

In 2025, COTA began leveraging its CNG fueling equipment and fleet, by participating in RNG markets and the opportunity presented by the renewable fuel standard (RFS). The contract that was entered into is from February 2025 through January 2028, with two one-year options that can be used to extend the contract. The current arrangement transfers the natural attributes of the RNG to COTA as well as receipt of a monetary benefit for the Renewable Identification Numbers (RINs) sold through the RFS program. At the time of this report the first two months of the contract show an average revenue benefit of $80,000 per month and a reduction in CO2e of 728 metric tons per month.

Over time, COTA will need to continue to assess the economic benefit from this contract as well as monitor the future of the RFS. Depending upon what occurs in future years, there may be opportunities to continue to gain beneficial revenue and GHG reductions through the generation of RINs. Alternatively, if the RFS and the associated RINs become less valuable, there may be an opportunity to purchase RNG as a fuel source.

While pursuing renewable energy sources is important, it is important to remember that the electricity grid for the region COTA is in, RFC West, has reduced GHG intensity and the pace of this transition will provide benefit to COTA while it is still contracting standard electricity from the grid. Since 2013, RFC west has seen a 40% reduction in GHG intensity within its electricity supply.

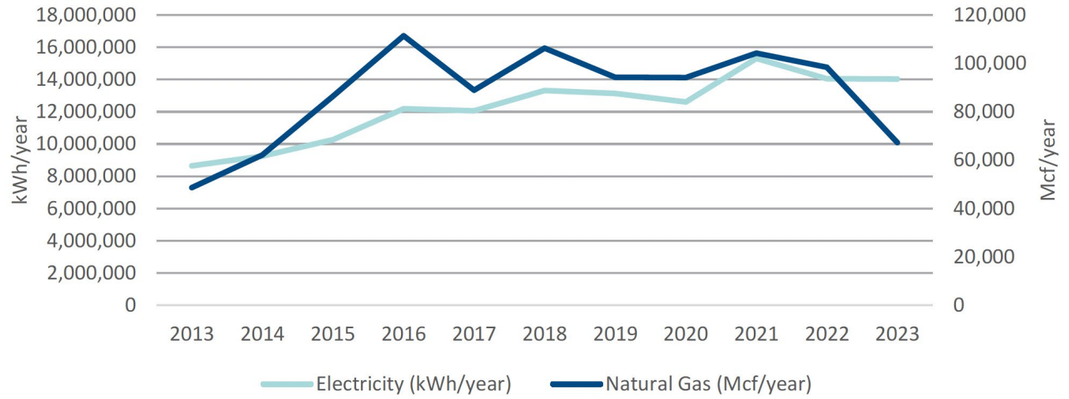


Figure 21: **ANNUAL RFC WEST GHG INTENSITY**

Purchasing renewable energy may come at a price premium or could save money. Consequently, evaluation of whether to leverage supplier contracts to remain "on track" should involve minimizing supplier contract costs to allow maximum capital to be available for vehicle purchase and facility improvements. In other words, it is better for COTA to spend available capital on low-emission vehicle and zero-emission vehicle purchases rather than renewable energy credits.

In the long term, achieving a net-zero emission fleet requires COTA to source 100% renewable sources for any fuels whether electricity, natural gas, hydrogen, or other options. While improvements are being made within the electrical grid, there is the option of sourcing renewable electricity within utility supplier contracts. The availability and cost of renewable energy supplies will be a dynamic market in the coming decades as emissions goals are being set and pursued across every sector. Consequently, ongoing assessments will be required to navigate whether COTA pursues emission goals through supplier contracts.

4.2.8. ACTIONS AND RECOMMENDATIONS

Pursuit of COTA's emission goals will include the following actions:

1. Work with the installers and manufacturers of the electric buses and charging equipment to resolve the charging issues that are currently limiting the use of these assets.
2. Work in advance of the installation of the en-route charging equipment to verify compatibility between the pantographs and the electric buses, as well as the level of charge and added range that can be provided to ensure it matches expectations.
3. Continue monitoring the market to identify emerging low-emission and zero-emission technologies that could be integrated into its system operation. Similarly, it is essential to explore low-emission and zero-emission alternatives for other vehicle segments, including mobility services and non-revenue fleet.
4. Monitor the benefits of participation in RNG markets for both the planned economic benefit as well as the long-term opportunity for incorporating benefits to the planet.
5. Consider establishing improved building guidelines and requirements to minimize or eliminate emissions at existing and new facilities during renovation, new construction and equipment replacement.

4.3. COMMUNITY ENGAGEMENT

Community engagement is at the core of everything COTA does and influences culture both inside its own walls and in the greater Columbus region to serve its purpose "to move every life forward." It's integrated into this plan both by intentionally advancing specific community engagement objectives and goals and with how COTA pursues achievement of other goals across the enterprise.

As we look at COTA's employees, operations, customers and the communities it serves, community engagement is foundational to its work and is integrated into its operations, strategic planning, procurement, hiring & human resources practices and community investment strategies. As outlined in the COTA strategic plan, community engagement is an underpinning strategy that connects everything that COTA does.

Specific measurable and actionable areas of impact include performance categories and metrics that advance community engagement at COTA and align with supporting the tenants of this plan. These initiatives and goals will elevate employee engagement, health & safety, economic development, community investment and support customer satisfaction.

Developing this plan included an approach to engaging with internal and external stakeholders to identify priority areas for COTA to focus on with developing the strategies, initiatives and goals to create a more fair and welcoming transit agency. This included meetings the leadership at COTA, Disadvantage Business Enterprises (DBE) program management, employee resource group (ERG) leaders, surveys of ERG membership and interviews with several external partner organizations. These engagements result in a better plan consistent with the values of COTA.

4.3.1. BACKGROUND AND CONTEXT

COTA and many organizations in the greater Columbus area are actively investing in and supporting community engagement initiatives. This focus on community reflects a broader understanding of the need to support communities disproportionately affected by mobility and issues our planet is facing.

COTA invests in community engagement initiatives to support its employees, customers, suppliers and the communities where they operate. Weaving community engagement into COTA's plan allows for better alignment with the plan's goals to support the creation of opportunity for minority and underserved individuals, families and communities to support creating a welcoming workforce with more opportunities for minority-owned DBE businesses in the region.

The figures below present excerpts from COTA's 2019–2024 strategic plan which lay out what community engagement means and how it places community engagement at the center of COTA's mission.

Community Engagement

Providing fair access, opportunity and advancement for all people in achieved by understanding and eliminating barriers that prevent full participation. Employee motivation is critically contingent on the incorporation of fairness.

By seeking to attract and retain individuals with a wide range of demographics COTA will derive value from individuals' differences of experiences, perspectives and thought processes.

Employees should feel valued, respected and supported. In establishing a strong culture, COTA can expect job satisfaction to increase among employees, resulting in maximum productivity.

Figure 22: **COMMUNITY ENGAGEMENT DEFINED**

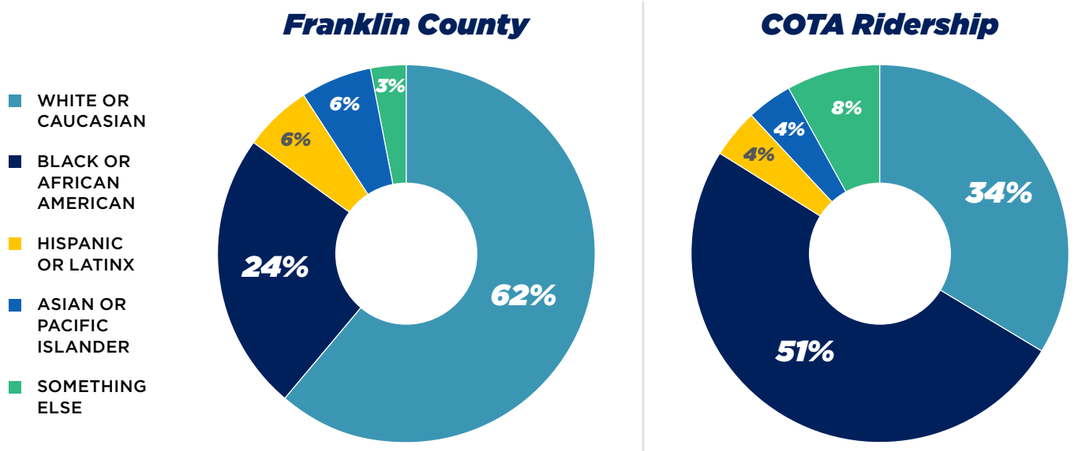
(Source: COTA Strategic Plan 2019–2024)

Figure 23: **COMMUNITY ENGAGEMENT POSITION IN COTA**

(Source: COTA Strategic Plan 2019–2024)

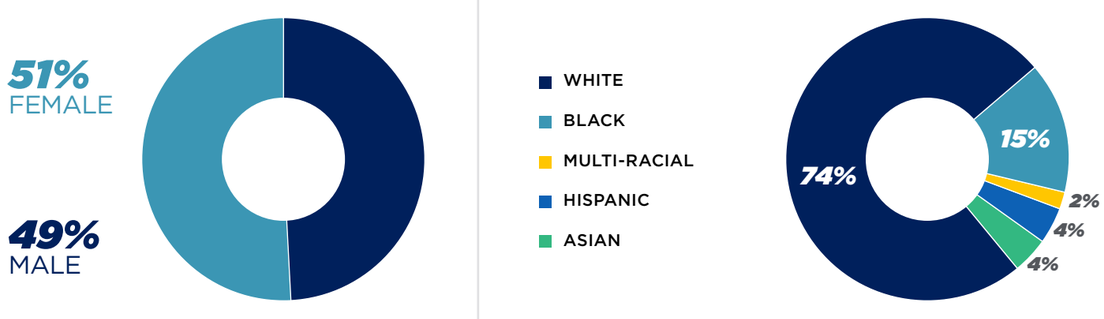
By elevating community engagement and including it into the strategy we are better able to align the plan in support of the ridership demographics of COTA. COTA's ridership is a majority minority customer base, which presents a terrific opportunity to engage with and educate on COTA's efforts and what COTA's customers can do to minimize impacts to the earth from transporation. The service to minority populations can be seen in Figure 24 which shows that while 62% of Franklin county's population identifies as white or Caucasian, COTA's riders are only 34% white or Caucasian.

Figure 24: **FRANKLIN COUNTY AND COTA RIDERSHIP DEMOGRAPHICS**
(2021 Q4 CUSTOMER SURVEY)



Further, a breakdown of workforce demographics within Franklin County generated by COTA in January of 2022, illuminates how well county demographics are reflected within the makeup of businesses within the region.

Figure 25: **FRANKLIN COUNTY BUSINESS DEMOGRAPHICS BASED ON GENDER AND RACE**



Advancing community engagement as part of this plan includes internal efforts within COTA, how COTA interacts and supports its customers and economic prosperity in the communities that COTA serves. COTA's approach to advancing community engagement is consistently evolving but can be categorized in three pillars in support of these areas of influence as part of this plan.

Table 2: **COTA SUSTAINABILITY EDI FRAMEWORK**

INSIDE COTA	COTA CUSTOMERS	ECONOMIC PROSPERITY
Improve employee engagement and development of community engagement through higher level of participation in employee resource groups (ERGs) and in community engagement activities being developed at COTA to further cultivate a welcoming working space at COTA.	Support individuals, households and communities that are bearing the greatest burden of the impacts of climate change by prioritizing customer initiatives for POC, LMI and households with limited access to vehicles.	Invest in and support minority, female, LGBTQ, veteran, disabled owned businesses in COTA's procurement practices in both capital projects initiated by COTA and in operational needs.
Proactively monitor and continue to seek out hiring of demographically different talent across the organization.	Evaluate routes and access to COTA services to communities, access to employment, services and amenities needed by the households that need COTA's services most.	Invest in community economic development and essential services that support minority, LMI and underserved individuals, households and communities.

COTA has a Disadvantage Business Enterprise (DBE) Program that adheres to the U.S. Department of Transportation's DBE regulations, 49 CFR Part 26. This program drives COTA's DBE policy to ensure that DBE's have an equal opportunity to receive and participate in US DOT - assisted projects. COTA's Chief Financial Officer has been delegated as the DBE Liaison Officer and is responsible for implementing the program. The DBE Liaison officer has direct, independent access to the Chief Executive Officer on all matters concerning the DBE program.

DBE certified businesses are small for-profit businesses that are at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged, and whose management and daily business operations are controlled by one or more socially and economically disadvantaged individuals. The DBE program seeks to provide further economic opportunities for DBE businesses in the greater Columbus region for both DOT-assisted projects and other spending at COTA.

Table 3: **SOCIALLY AND ECONOMICALLY DISADVANTAGED GROUPS** AS DEFINED BY COTA

Women (regardless of race)
African Americans
Hispanic Americans
Native Americans
Subcontinent Asian Americans
Any additional group whose members may be designated as socially and economically disadvantaged by the Small Business Administration (SBE).

COTA has also made significant progress elevating community engagement through engagement with employees, participation in the community, and supporting efforts to improve community engagement in the region. Part of this success is demonstrated by COTA's Employee Resource Groups (ERGs). COTA has five ERGs that support and engage employees on community engagement efforts across the organization. The five groups are Veterans Employee Resource Group (VERG), Parents Actively Collaborating Together (PACT), Black Employees Leading in Inclusion, Excellence, Vision & Education (BELIEVE), Women for Inspiration, Strength and Excellence (WISE) and People Respecting Individual Definitions Everywhere (PRIDE). With 469 employee members of the ERGs (39% of employees), COTA is actively engaging its workforce to better connect with and support the individual needs and interests of COTA employees. Both union and administrative employees are actively engaged in ERG efforts.

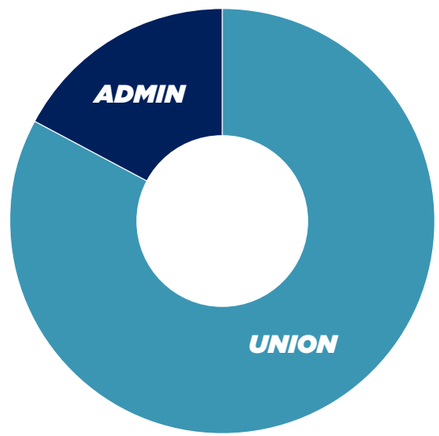


Figure 26: **ERG PARTICIPATION**

EMPLOYEE RESOURCE GROUPS

VETERANS EMPLOYEE RESOURCE GROUP (VERG)

is committed to serving Team COTA and the community partners through innovative programs and activities, including redesigning the bus shelters at the National Veterans Memorial an Museum (NVMM) and the Veterans Administration, flag installations for Memorial Day and managing the Veterans Honor Wall content refresh.

***In 2023,* VERG had 100 membership, up 10% from 2022's membership.**

PARENTS ACTIVELY COLLABORATING TOGETHER (PACT)

promotes a welcoming space for working parents and family structures through support, education, resources and outreach. PACT's signature event is Camp COTA, which allowed children of COTA employees a chance to experience a day in the life at COTA and explore future career opportunities.

***In 2023,* PACT had 46 members, up 87% from 2022's membership.**

BLACK EMPLOYEES LEADING IN INCLUSION, EXCELLENCE, VISION & EDUCATION (BELIEVE)

strives to break down barriers and dissolve systemic issues through advocacy, corporate events, employee activities, networking and community partnerships. In 2023, BELIEVE organized two out of the four annual COTA-led Food Drives, distributing more than 16,500 pounds of produce.

***In 2023,* BELIEVE had 120 membership, up 36% from 2022's membership.**

WOMEN FOR INSPIRATION, STRENGTH AND EXCELLENCE (WISE)

leads through an intentional, inclusive and intersectional lens that focuses on career development, wealth building and whole person living for all women across Team COTA. In 2023, WISE championed a new initiative volunteering with Dress for Success and planned COTA's first-ever activities for Breast Cancer Awareness Month in October.

***In 2023,* WISE had 65 membership, up 43% from 2022's membership.**

PEOPLE RESPECTING INDIVIDUAL DEFINITIONS EVERYWHERE (PRIDE)

strives to create and maintain a safe and supportive space for LGBTQIA+ employees and allies at Team COTA. PRIDE is committed to creating alliances and fostering connections that promote respect for all people. In 2023, PRIDE attended Stonewall Pride Parade with 40+ COTA employees and partners, kicked off their Pronouns Initiative and partnered with Marketing for a Pride Month campaign and 614 ad.

***In 2023,* PRIDE had 35 members, up 169% from 2022's membership.**

Figure 27: **ERG SUMMARY**

As COTA continues to focus on employee engagement and further cultivating a welcoming and supportive workplace, COTA anticipates expansion of its ERGs.

EMPLOYEE DEMOGRAPHICS

COTA's employees represent a cross section of individuals from the greater Columbus area. COTA's focus on community engagement has helped to attract and retain talent to the organization, which can be seen in its employee representation. The employee demographics at COTA are closely aligned with the demographics of COTA's ridership. Intentional focus on community engagement elevates the importance of this alignment and provides an opportnity to provide meaningful careers for individuals across the region. COTA will continue to keep community engagement at the center of everything it does.

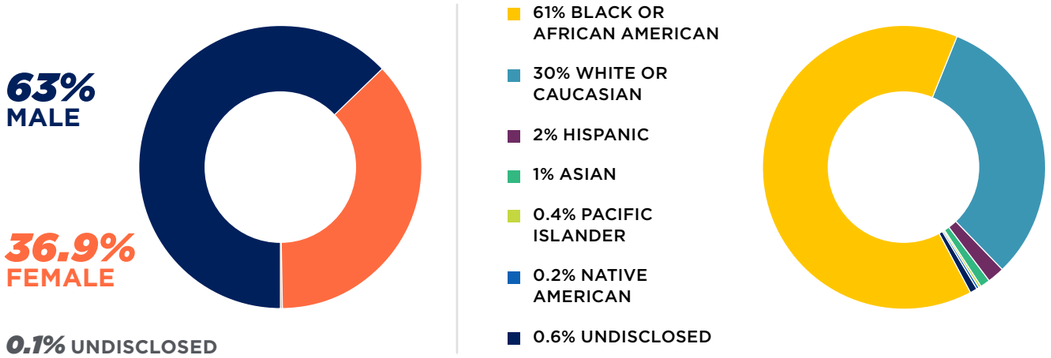


Figure 28: **TEAM COTA DEMOGRAPHICS ON GENDER AND RACE**

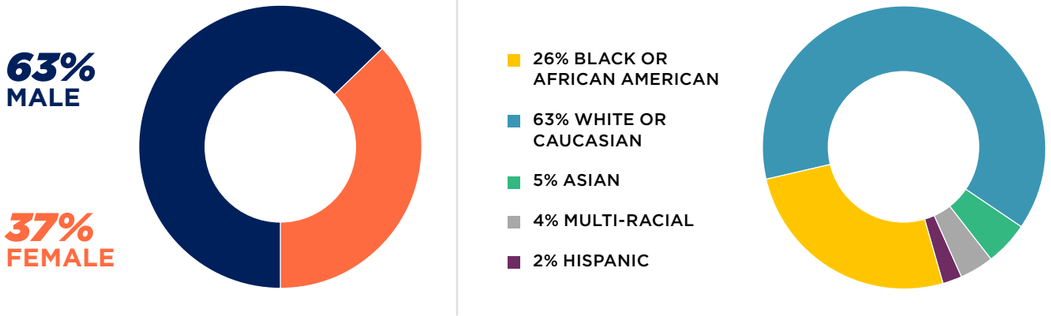


Figure 29: **TEAM COTA DEMOGRAPHICS ON GENDER AND RACE FOR MANAGERS AND ABOVE**

To further support women in the transportation industry, COTA has signed on to the Mobility XX initiative to increase the number of women in the transportation industry by 10% over the next 10 years.[24] Currently only 15% of the transportation workforce is comprised of women, and these numbers are even lower at the C-suite level nationally. However, COTA's own demographics show a higher representation of women. As part of the Mobility XX pledge, COTA commits to specific actions to increase women representation at the organization.

[24] theray.org/mobility-xx/#

4.3.2. GOALS – LONG AND INTERIM

To help mitigate the effects of transportation on the planet for those who are least equipped to implement their own mitigation efforts, COTA has incorporated community engagement as a factor in its planning efforts. COTA is currently undertaking significant actions as part of its strategic plan that fit within the plan framework and has identified the following goals.

1. Pursue 12% DBE spending goal.
2. Increase the number of women at COTA by 10% over the next 10 years in support of the Mobility XX initiative.

4.3.3. METRIC

The community engagement metrics are:

- **Percent DBE spending** per year
- **Percent of employees** who are women

These two metrics represent specific examples of how COTA's spend intersects with community members. The percentage of DBE spending per year is tracked and recorded by the finance team. Employee demographics are measured and recorded by the human resources team.

4.3.4. SCOPE

The scope of community engagement at COTA exists within three primary areas of impact, inside COTA with its employees, with the COTA customer base, and economically in the community through supply chain and expenditures.

4.3.5. MEASUREMENT AND REPORTING

For the purposes of advancing community engagement both within COTA and in Central Ohio, the efforts outlined within this strategy can be monitored annually and reported to COTA leadership on an annual basis. External progress will be reported and evaluated concurrently with the other metrics outlined within this plan.

4.3.6. RECENT TREND AND CURRENT STATUS

Even though community engagement exists as its own department, it is placed at the center of COTA's mission and extends to all departments and work at COTA. The team has taken great strides to improve data quality, incorporate community engagement initiatives and data tracking into other departments and expand workforce recruiting. Both of the existing goals have been decentralized from the EDI department and are now tracked through the finance team and the human resources team, respectively.

Progress is being made towards increasing the number of women at COTA. We use 2021 as the baseline year for tracking a 10% increase in women at COTA to reach 43% of employees being women by 2030. With the current trend of increasing women at COTA by approximately 1% per year, COTA is on track to meet this goal.

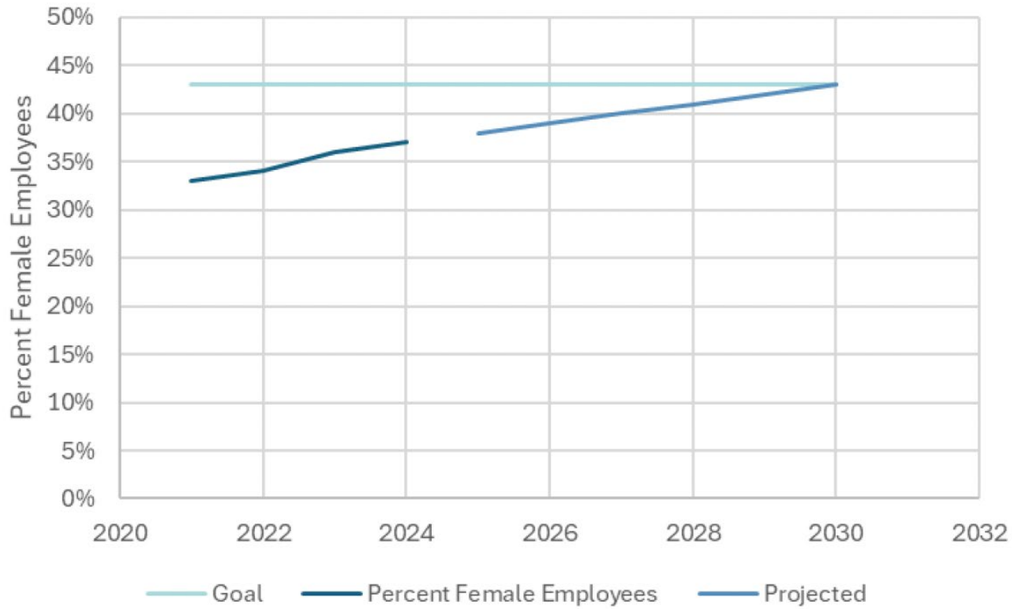
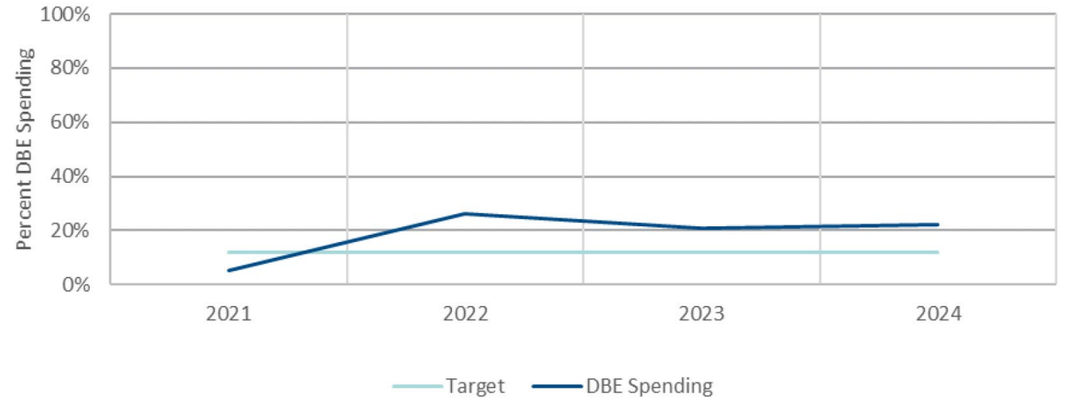


Figure 30: **PERCENTAGE OF WOMEN AT COTA**

The HR team cited improvements to compensation and policies related to work/life balance as drivers for attracting more female candidates, particularly those who have family considerations. Some specific examples the team highlighted were:

- Introduction of a 12-week paid family leave policy
- Increase in operator hourly wages allowing team members to better support their families and gain more access to childcare options
- Increased required down time between shifts to provide employees with additional flexibility with their time between shifts

The internal DBE goal has been exceeded every year since this became a goal with metric tracking in 2022. The team notes that skillset and contractor availability will influence outcomes in future years but that they would like to see these outcomes maintained.



Additional community engagement efforts and accomplishments that are not captured through measured data include:

- Identification of safety, empower, accountability, teamwork and service as core values to create a cohesive and intentional culture throughout COTA.
- Employee Resource Groups have been making a significant impact on COTA and in the community
  - Community engagement has increased visibility and increased the applicant pool for hiring.
  - Community impact was made through 44 community events across the 5 ERGs.
  - A new ERG, PRIDE, was founded to further engage and provide support for employees.
- Community engagement vision, principles, practices and metrics are being incorporated into other departments.
  - The HR department captures COTA's employee demographics.
  - The finance team records DBE spending.

4.3.7. ACTIONS AND RECOMMENDATIONS

Initiatives to advance and integrate community engagement into COTA while pursuing its goals include:

1. Capture efforts that increase access for underserved individuals and communities, using metrics for customer impact, and highlighting philanthropic initiatives that support the local communities COTA serves.
2. Drive greater participation and engagement in ERGs by focusing on how employees experience COTA's culture through the core values. Use this engagement as a key driver for retention, belonging and the development of a better workforce.
3. Intentionally increase procurement spend with minority-, women-, LGBTQ+-, disability- and veteran-owned businesses. Ensure these businesses have opportunities to participate in both COTA's capital projects and operational needs.

4.4. WASTE

4.4.1. BACKGROUND AND CONTEXT

Waste streams at COTA fall into two areas: operational waste from within COTA's operations and waste generated by riders and the public. Eliminating or diverting solid waste from COTA's operations can serve as a measurable and economic means of engaging staff and riders on this topic. Such an undertaking will involve implementing waste stream measurements, staff engagement such as no-waste training, as well as broader reduction targets in solid waste over time. To pursue conventional waste management methodologies, steps must be taken in the near term to establish quantification of operational waste streams.

Several organizations have waste management programming initiatives. For example, the EPA has conducted efforts to capture, monitor and support waste management programs nationally for more than three decades.[25] Their efforts, tools and programs largely capture waste streams in tons of material, a time trend of which can be seen in the figure below.

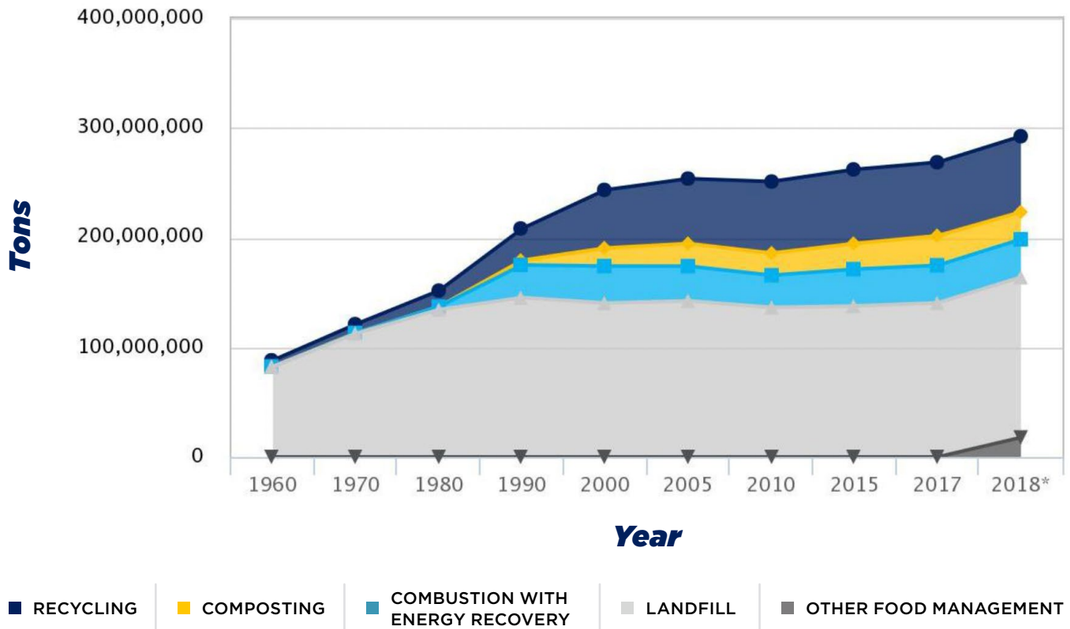


Figure 31: **MUNICIPAL SOLID WASTE MANAGEMENT: 1960–2018** (SOURCE: EPA)

[25] epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials

As can be seen, while there has been an increase in waste nationally, there has also been engagement to divert solid waste from landfills with engagement in practices like recycling and composting. These waste streams fall across various material types. The national breakdown of municipal solid waste (MSW) for 2018 can be seen in the figure below.

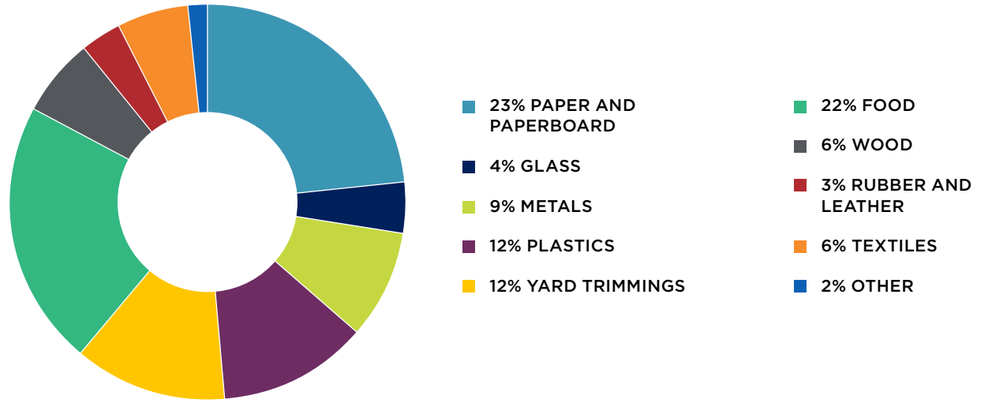


Figure 32: **TOTAL MUNICIPAL SOLID WASTE BY MATERIAL IN 2018** (SOURCE: EPA)

Nationally, many communities and organizations are pursuing waste goals as part of resource responsibility initiatives. In Ohio this includes Cincinnati, Columbus, Montgomery County and Cuyahoga County. For many organizations, this has meant pursuing a zero waste to landfill objective by organizations such as Subaru, Unilever, Proctor and Gamble, Google, among many others with many more adding their names to this list. The EPA provides a wealth of resources, tools and opportunities to assist on the journey including best practices for those taking the first steps.[26]

Locally, the Solid Waste Authority of Central Ohio has identified that 76% of materials thrown away can be recycled, and also offers numerous recycling and waste diversion resources, including waste assessment materials.[27] SWACO's resources should be leveraged as COTA establishes a benchmark of waste streams within its operations and to help guide activities in support of waste diversion from landfills.

The City of Columbus Climate Action Plan has the following waste reduction goals:

- **Organic waste: 50% reduction** of landfilled organic waste by 2030, 90% reduction by 2050
- **Recyclable materials: 40% reduction** of landfilled organic waste by 2030, 95% reduction by 2050
- **Supporting** a circular economy

Of course, not all waste is even landfilled today, but becomes litter in our community. The City of Columbus recently completed a Litter Index of the city[28] and has programming to clean litter from the community.[29] COTA's stops and shelters can become a focal point for litter. Currently, COTA places trash cans at all stops with a shelter. Having trash cans at stops can reduce litter in the community.

[26] www.epa.gov/smm

[27] swaco.org/368/Business-Recycling-Resources

[28] columbus.gov/publicservice/Keep-Columbus-Beautiful, see "Litter Index" link

[29] dispatch.com/story/news/local/2021/08/10/columbus-ymca-central-ohio-set-big-goals-litter-program/5433650001

Of course, not all waste is even landfilled today, but becomes litter in our community. The City of Columbus recently completed a Litter Index of the city[28] and has programming to clean litter from the community.[29] COTA's stops and shelters can become a focal point for litter. Currently, COTA places trash cans at all stops with a shelter. Having trash cans at stops can reduce litter in the community.

4.4.2. GOALS – LONG AND INTERIM

COTA is pursuing an aggressive zero-waste goal, also referred to as a zero-landfill goal, which has become common amongst many communities[30] and corporations. This objective does not mean that waste is not produced by an organization, but rather waste streams are diverted to places other than the landfill. Waste reduction can be part of a strategy to lower the amount of diverted waste and achieve improvements based upon a benchmark. The SWACO resources and tools will serve to guide COTA's long term strategy and identification of which methods and tools are most useful for immediate engagement. Additionally, some grant funding may be available from SWACO or other entities that support waste management initiatives[31] and dialogue with contacts there will be conducted to identify what grants best fit the steps that will be taken in the near term.

Facilitating waste capture at shelters promotes a clean and healthy planet while improving bus and shelter appeal to riders. Proper disposal of waste displays stewardship in COTA's system by keeping public areas free of litter. Metrics for tracking environmental waste management will align with efforts of the teams that maintain shelters to build upon existing resources. An additional step COTA can take to contribute to litter reduction would be to collaborate with SWACO and other regional stakeholders to increase trash capture at stops and shelters located in the "Littered" or "Extremely Littered" streets identified by the city's Litter Index, regardless of the number of riders per day at that stop.

The primary objective for COTA in reducing organizational waste is as follows:

Achieve a 100% waste diversion rate from landfills by 2045.

4.4.3. METRIC

Based upon a review of EPA's guidelines and common practices, waste is best tracked by its weight in tonnage. This will be captured as the ratio of tons of waste diverted from landfill over total tonnage of waste output by COTA.

Measuring and tracking waste in tons diverted/total tons generated.

Once all waste streams are captured by weight and tracked, the percentage of waste by weight that is diverted from the landfill can be calculated. The zero-landfill goal entails pursuing 100% diversion of all waste streams. This can often require the creation of alternative measurement strategies to those utilized by waste disposal providers. Based upon interviews with staff, COTA's current waste contractor does not include a quantification of waste removed by either volume or weight. As previously identified, there are numerous other waste streams COTA already captures by weight that can be used to generate the metric including cardboard, paper, scrap metal, tires and engine fluids.

[30] epa.gov/transforming-waste-tool/how-communities-have-defined-zero-waste

[31] epa.ohio.gov/get-funding

At the current time, the critical first step for this performance category is the identification of what metric best fits COTA's waste streams. Based upon our research into existing programs, tools and resources, capturing weight in tons is the common method for measuring waste streams and should be adopted. Most likely, COTA will need to either weigh its solid disposal to determine tonnage or visually assess the volume of waste in its containers prior to pick-up to determine cubic feet of waste. Collaborations with the waste disposal entity or waste contractor could be beneficial for these efforts.

4.4.4. SCOPE

COTA's zero landfill goal will include all facility waste generated as a result of their services. This will include waste streams from COTA offices, bus garages and maintenance areas. While many waste streams are currently monitored, COTA needs to conduct a waste assessment[32] to benchmark existing operations, needs and successes.

The zero-landfill goal will exclude the various trash receptacles available on fleet vehicles and at stops due to the lack of jurisdiction over public behavior and common activities contrary to the goal. Opportunities identified and applied to operational waste will be leveraged to improve the rider experience and promote better practices within the greater community.

4.4.5. MEASUREMENT AND REPORTING

Portfolio Manager is a free tool that COTA is already using to track facility energy use as required by City of Columbus Energy & Water Benchmarking Ordinance.[33] Waste can also be tracked using this tool and the EPA has built out waste tracking capabilities to support initiatives of this kind. Consequently, COTA will be incorporating waste stream capture for its operations into this tool to allow capture, monitoring and reporting of progress towards its zero-landfill goal over time. The immediate next step for this performance category is to identify all waste streams and establish a capture of them by weight or volume. This includes identifying which personnel will hold these responsibilities. This will allow understanding and pursuit of waste reductions within operations moving forward. It is worth noting that the Portfolio Manager Tool provides tonnage estimates for trash dumpsters based upon container size, frequency of pickup and percentage it is full at time of collection.

[32] epa.gov/smm/best-practices-wastewise-participants#01

[33] columbus.gov/sustainable/benchmarking

4.4.6. RECENT TREND AND CURRENT STATUS

While the full picture has not been recorded, COTA has tracked receipts for its cardboard and paper recycling as well as its scrap metal recycling. The figures below capture the tonnage for the waste streams for the data available. Note the figure was changed from tracking waste stream cost to tonnage. This change better aligns with the goal metrics and is more understandable since, in some instances, costs would switch to revenue depending on market conditions. Compilation of the available data can be seen below.

The cardboard waste stream trend is captured below from 2013 to 2024 while the paper waste has only been recorded from 2016 to 2021. In 2018, there was an increase in paper recycling because a significant amount of paper was recycled with the closure of the in-house printing department. A reduction in paper recycling followed as a result of the elimination of these operations.

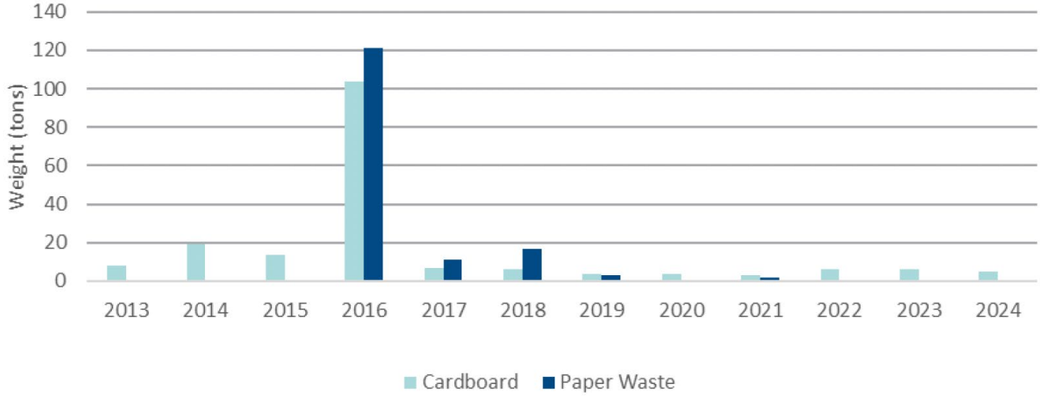


Figure 33: **CARDBOARD AND PAPER WASTE RECYCLING**

The scrap metal waste stream trend is captured below from 2013 to 2024. Five buses were scrapped in 2018 which accounts for the increase in scrap metal weight during that annual period. Note, the data from 2022 to 2024 (marked with an asterisk) is the yearly average of the aggregated tonnage from January 2022 to April 2025 and does not represent the actual annual value of these years. Disaggregated annual data for these years can be included in future updates when available for greater accuracy.

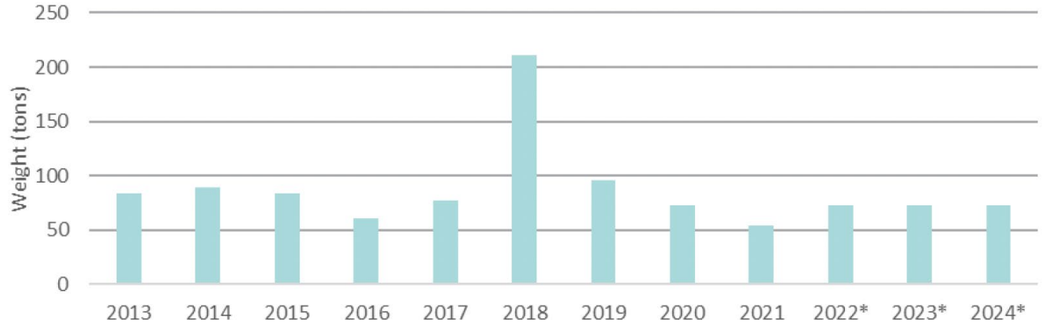


Figure 34: **RECENT SCRAP METAL WASTE TREND**

4.4.7. TECHNICAL AND ECONOMIC VIABILITY

To pursue the proposed strategies laid out in the plan, resources will need to be dedicated to this effort. While the activities recommended in the next section should provide additional direction on how to proceed, this effort will require the identification of the appropriate personnel to be responsible for data capture and compilation. This must include providing the necessary resources to support staff efforts. Due to the opportunity available through the incorporation of Portfolio Manager software, coordinating certain data activities through a single point person could yield efficiency returns. This may or may not be best addressed through the creation of a position specific to resource responsibility efforts.

4.4.8. ACTIONS AND RECOMMENDATIONS

Pursuit of COTA's waste goals will include the following actions, some of which might be incorporated into a consolidated study of waste within a facility or across the organization:

1. Identify priorities within the plan and determine resource availability to further waste efforts.
2. Work with local stakeholders like SWACO to identify any support or grant opportunities that would support waste related activities and their application timetable.
3. Conduct a waste assessment to identify all waste streams generated, quantify the streams in tons, record current management practices and select waste streams where opportunities for improvement should next be investigated.
4. Establish protocols to capture and record all waste streams and recycling tonnages in Portfolio Manager.

4.5. WATER

Water is a critical asset within every community and Ohio is fortunate to have an abundance of water available to support the health, businesses and recreation of its citizens. Responsibly caring for this resource includes intentional stewardship of waters availability paired with its thoughtful use towards the improvement of our lives and our community.

4.5.1. BACKGROUND AND CONTEXT

Recognizing water as a vital regional asset, responsible stewardship of local watersheds is essential for providing clean drinking water and safeguarding against issues like flooding. Current EPA regulations are in place to monitor and control watershed contamination. The 2022 plan aimed to achieve a 2% annual reduction in water intensity in terms of hundred cubic feet of water use per square footage of the facilities (ccf/ft^2) across all facilities. Capturing this effort is most effectively done by identifying a percentage reduction goal applied to the water use intensity of each facility.

The EPA has assisted many facilities in setting water conservation goals. Although many of COTA's facilities would not be categorized as a typical office building, this end use breakdown demonstrates how an end use breakdown illuminates the drivers of water use and informs where opportunities should be pursued.

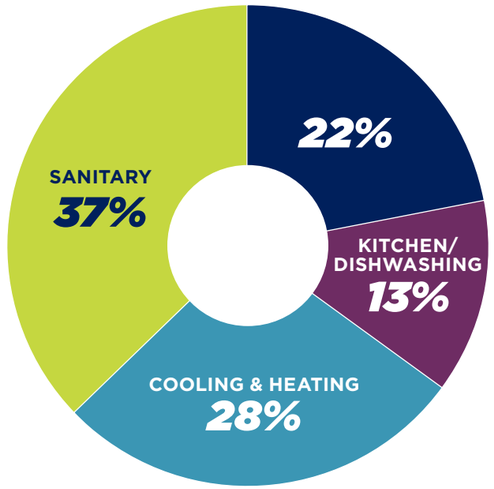


Figure 35: **TYPICAL OFFICE BUILDING END USES OF WATER**[34]

In addition, a significant contribution to regional water involves proactive stormwater management. The Columbus Climate Action Plan underscores the climate change-driven risk of increased stormwater impacting the community. The CAP seeks to identify areas with high vulnerability for stormwater impacts. In the 2023 plan update, COTA championed increased maintenance of stormwater drains to remove trash and debris due to more stringent stormwater management regulations. That said, as Columbus evaluates future stormwater threats, if those at-risk areas encompass COTA's properties, COTA will collaborate with regional partners leading that engagement to develop additional stormwater management actions at those locations.

[34] epa.gov/greeningepa/water-conservation-epa

4.5.2. GOALS – LONG AND INTERIM

Unlike other performance categories, a goal to eliminate use is an inappropriate target to set for water. Furthermore, a greater understanding of water use at facilities is necessary to inform what can and should be pursued. COTA will pursue a study to identify water use in its facilities and determine a realistic percent reduction goal based on technical and economic feasibility. In their 2020 report and implementation plan, the EPA has set 2% reductions per year in water intensity (gallons/GSF) for itself over the next two years.[35] This same objective will serve as COTA's interim goal as analysis is performed to determine a functional water reduction goal.

Continue to pursue an interim goal of 2% reductions per year in water intensity (ccf/gross square footage) for the next two years while investigations are conducted to maintain or adjust water reduction goals.

Normalization of water per building square footage is a common and useful measure in most building types. Because COTA's water consumption is primarily driven by bus washing, and therefore the number of buses in service, COTA may consider changing the water metric in the future to account for the amount of service COTA provides.

Consider piloting a 2% reduction in water use per bus or number of riders

4.5.3. METRIC

The EPA uses gallons per gross square footage (GSF) to measure and track water intensity.

Measuring and tracking water in hundred cubic feet of water use per facility square foot (ccf/ft^2).

Instead of gallons as the volumetric unit, we recommend tracking water in units of one hundred cubic feet (ccf) because it is the unit of measure on the water bills. This will allow for simplicity and consistency in progress tracking. To normalize for building acquisitions, additions and closures, hundred cubic feet of water use per facility square foot is appropriate to capture all facilities.

It may be necessary to create a water metric that normalizes water use to operations based on busing or ridership numbers.

- Normalizing water consumption to average number of active busses (ccf/active buses)
- Normalizing water consumption to number of rides in a month (ccf/hundred rides)

Further investigation should be done to determine the availability of data to calculate these metrics and whether insights from this metric are more valuable than a volume per square foot measure.

[35] epa.gov/sites/default/files/2020-10/documents/srip_fy20_508.pdf

4.5.4. SCOPE

All water usage at COTA facilities should be captured and included in the goal. Standard building usage will include sink and restroom use along with landscaping and cooling tower operation. The bus facilities will also have bus wash and undercarriage wash. Understanding water usage sources can determine what areas of improvement to focus on. The EPA recommends the following actions for water management.[36]

- Meter/ measure/ manage
- Optimize cooling towers
- Replace restroom fixtures
- Eliminate single-pass cooling
- Use water-smart landscaping and irrigation
- Reduce steam sterilizer tempering water use
- Reuse laboratory culture water
- Control reverse osmosis system operation
- Recover rainwater
- Recover air handler condensate

4.5.5. MEASUREMENT AND REPORTING

Water bill costs and usages are already captured in finance's tracking. These records are sufficient for high level water use tracking. We recommend using Portfolio Manager, a free tool that COTA already utilizes for the City of Columbus Benchmarking Ordinance, to track water consumption more easily. Further analysis such as an end use breakdown will help facility teams understand how water is used, which can guide actions and projects to have the most impact.

[36] epa.gov/greeningepa/water-management-plans-and-best-practices-epa

We suspect that some equipment may be eligible for a deduct meter. Deduct meters measure water that will not be going down the drain to the sewer, thus reducing costs on the sewer portion of the bill. Deduct meters are often seen on cooling towers, for irrigation systems and on boiler feed water. We recommend further investigation and coordination with the City of Columbus water department to see if a deduct meter can be applied to any water end uses at McKinley or Fields identified during any benchmarking efforts.

Understanding the impact of operational shifts and external events, such as pandemics, on COTA's water consumption requires a flexible approach to measurement. Therefore, we recommend investigating different metrics for analysis. Normalizing water usage against a consistent factor allows for adjustments that account for these influences. COTA staff noted an increase in the number of buses since the COVID-19 pandemic, making it a logical initial metric for normalization.

4.5.6. RECENT TREND AND CURRENT STATUS

Table 4 shows the water use and associated costs for 2024 across COTA facilities. This demonstrates the large water use and cost tied to the McKinley and 1333 Fields facilities, which are at least partly tied to the bus washing operations.

Table 4: **2024 WATER USE AND COST**

	ANNUAL WATER USE (CCF)	ANNUAL WATER COST ($)
1330 Fields	667	$8,224 8,224
1333 Fields	2,027	$66,026
33 North High St	1,349	$11,712
1325 Essex	87	$1,228

Recent trends of water data for the McKinley and 1333 Fields facilities are provided in Figure 36 and Figure 37. Water recycling for the bus washes became operational in 2020 at McKinley and 1333 Fields.

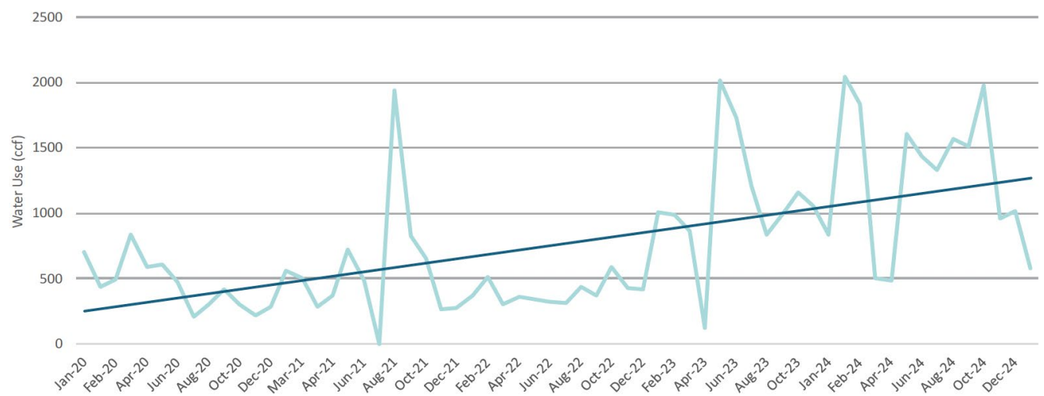


Figure 36: **MCKINLEY WATER USAGE**

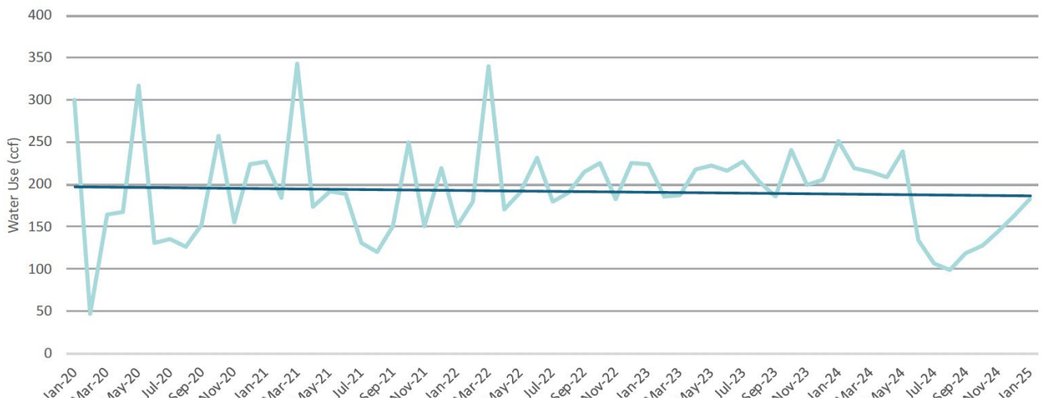


Figure 37: **1333 FIELDS WATER USAGE**

Water bills can vary in that one bill's metered use may have occurred over a different number of days than that of another. The data presented in the figures above is from Energy Star Portfolio Manager.

Keeping track of operational changes in water use will also provide insights into changes in water consumption. For example, the increase in the number of active buses has impacted the upward trend in water use at McKinely. Additionally, construction from 2021–2025 at McKinley may have led to non-typical water usage.

Immediate next steps are to complete an end use breakdown of facility water use, determine a new metric for water consumption tracking, implement new construction design standards to water efficient fixtures and revise the water reduction target based on new metrics.

4.5.7. TECHNICAL AND ECONOMIC VIABILITY

Similar to the waste performance category, to pursue the proposed strategies laid out in the plan, resources will need to be dedicated to this effort. While the activities recommended in the next section should provide additional direction on how to proceed, this effort will require the identification of the appropriate personnel to be responsible for data capture and compilation. This must include providing the necessary resources to support staff efforts. Due to the opportunity available through incorporation of Portfolio Manager software, coordinating certain data activities through a single point person could yield efficiency returns. This may or may not be best addressed through the creation of a position specific to resource responsibility efforts.

4.5.8. ACTIONS AND RECOMMENDATIONS

Pursuit of COTA's water goals will include the following actions, some of which might be incorporated into a consolidated study of waste within a facility or across the organization:

1. Determine priority given available resources to pursue this goal.
2. Continue tracking water use for all site using Portfolio Manager. This will help comprehensive capture of water use across the organization and is already required for the City of Columbus benchmarking ordinance.
3. Determine a metric to appropriately track water use and associated goal that is economically and technically feasible while considering the personnel requirements.

4.6. RESILIENCY

COTA has critical functions that require immediate execution or swift restoration in the event of interruption due to emergencies. Equally important is COTA's preparedness to navigate unplanned changes in community demand and service utilization. This necessitates the ability to adapt to both permanent shifts, such as significant increases in transit ridership, and acute events like natural disasters, grid failures, cyber security threats or road closures impacting routes. This adaptability, known as resiliency, is vital for sustaining business operations and reliably connecting passengers. COTA has an existing COTA Business Continuity Plan (CBCP) that details strategies for maintaining operations during disruptive incidents. COTA's current diversified fuel portfolio for its vehicles offers a degree of resilience, particularly against fuel supply issues and power outages. In the past resiliency planning has been demonstrated valuable by quickly responding to changes effectively and minimizing disruptions to riders.

Resiliency should be considered for every part of the plan. As technology advances, plan implementation will need flexibility to navigate future uncertainties. Maintaining and evolving the ability to provide uninterrupted services for vehicle fleets, facility operations and staff needs are pursuable measures of resiliency and should continue to be a component of the CBCP. Success in fostering operational resilience will also position COTA to provide services and support to the region during a crisis.

4.6.1. BACKGROUND AND CONTEXT

Engagement in resiliency planning is important for both COTA's internal and external interests. Internally, COTA has a clear business incentive to not only sustain its operations but also to proactively address recurring disruptive events and trends.

Externally, COTA plays a key role in the community's resiliency in several ways. In a general sense, COTA provides transportation to citizens without their own ability or means for mobility. The disruption of COTA's transportation services could trigger hundreds of personal acute and chronic crises, demonstrating the interconnectedness and potential for broader community instability if COTA operations are disrupted. COTA's operations also serve as a critical component in achieving regional goals, one example being transportation related goals within the City of Columbus Climate Action Plan. Achievement of the objectives envisioned in that document will require contributions achieved from significant increases in transit ridership.

A key tool and driver of organizational resiliency is the COTA Business Continuity Plan (CBCP). COTA has operations that must be performed, or rapidly and efficiently resumed in the event of an emergency. The CBCPs purpose is to prepare for, respond to and recover from emergencies affecting COTA's operations and depend upon the proficiency and well-being of COTA employees and the clarity of team leadership. This organizational plan creates goals for readiness and uninterrupted operations for its staff, vehicles, and facilities.

The CBCP is designed to be a dynamic and responsive plan that can help COTA to adapt to any challenges that may arise. The CBCP ensures that COTA:

- Can implement the CBCP with or without warning.
- Can perform essential functions no later than 12 hours after the event.
- Can maintain essential functions for at least 30 days.
- Provides for a regular risk analysis of current and alternate operating facilities.

Maintaining CBCP will require regular testing and training and apply to everyone within the organization. The plan will prepare for emergency events related to, but are not limited to:

- Information Technology disruptions.
- Building closure or inoperability.
- Utility outages effecting access to electricity or natural gas.
- Severe weather.
- Civil disturbances.
- Credible threats to facilities or staff.
- Major regional disasters such as tornados.

Some goals of the CBCP include quick organizational response, continuation of internal operations and support to customers, emergency management, response agencies and other agencies affected by the emergency. Consequently, the goals of this plan should be included in the considerations managed by the CBCP.

Ensuring organizational cyber security is an issue of growing importance for transit systems in recent years. COTA is actively engaged in this effort and has hired cyber-security professionals to facilitate increased cyber capabilities in recent years.

COTA is involved in a county level program facilitated through the DHS to help prepare communities for complex coordinated terrorist attacks (CCTAs). CCTAs are acts of terrorism that involve synchronized and independent teams at multiple locations sequentially or in close succession, initiated with little or no warning and employing one or more weapon systems. COTA is a regional participant in the planning and training in place to prepare the region should such an event take place.

Finally, in the summer of 2020, COTA staff created an initiative to create a task force to address community challenges impacting the safety and security of COTA passengers and employees. It is called the Safe and Secure COTA for All Task Force. It began with engagement from 18 founding agencies and over time has incorporated many additional organizations. The Safe and Secure for All Task Force seeks to improve customer experience and to support those facing challenges such as mental health, substance abuse and homelessness. Specially trained Strategic Response Specialists (SRS) identify solutions and help to connect those struggling with community resources.

This developing task force seeks to support engagement of the underlying issues that create challenges for and negative perspectives of COTA's services.

4.6.2. GOALS – LONG AND INTERIM

While resilience is already part of COTA's everyday operations, fueling considerations will need to be addressed. COTA's goal will continue to be aspirational to maintain planned services 100% of the time while fulfilling its CBCP. This includes maintaining uninterrupted fueling capabilities for all vehicle types and maintaining operator availability in all scenarios. As this first objective is achieved, COTA will be positioned to support a secondary goal of serving as an asset for regional entities during emergency events. In the event of an emergency, the resulting operational capabilities will allow COTA to assist government agencies in assisting the community and reducing negative outcomes.

COTA will incorporate vehicle and fueling planning into the CBCP to enable:

- Continuation of essential functions no later than 12 hours after the event.
- Maintenance of these functions for at least 30 days.

To do this vehicle and fueling transitions will be incorporated into the CBCP moving forward.

4.6.3. METRIC

Resiliency will be assessed through achievement of the CBCP goals. This will be conducted under the direction and discretion of the teams that manage that plan in collaboration with the vehicle teams.

4.6.4. SCOPE

COTA will apply these resiliency goals to all its services, including bus, demand response and the soon-to-be-added BRT.

4.6.5. MEASUREMENT AND REPORTING

As the CBCP is updated, that guiding document will drive the metrics tracked for resiliency. COTA currently tracks the number of disrupted routes and can report this in its Resource & Responsibility Report. Another option would be to look at time out of service per vehicle to assess its operational efficiency.

COTA should also engage with those organizations upon whose uninterrupted service is dependent, such as electrical utilities. This can take the form of internal tracking of electrical outages to the facilities or direct acquisition of outage information from the utility itself. Direct engagement with critical supply chain partners will be crucial to informing the fleet mix and fuel sources that will support COTA's resiliency and CBCP planning.

4.6.6. RECENT TREND AND CURRENT STATUS

COTA currently conducts some tracking of whether a scheduled route was completed which can be useful in tracking service resiliency. At the time of issue, currently used metrics and trends were unavailable for this report but should be considered for pursuit moving forward.

Currently, resiliency has been identified as a critical consideration in pursuing a net zero-emissions fleet. The proportion of battery electric buses (BEBs) that can be acquired and operated depend critically upon the ability to ensure their operation would not be impacted by common disruptions within electrical services or operational challenges. These considerations should be captured and communicated to the team that manages the CBCP. As COTA further develops its strategies for resiliency relative to the plan internally, other useful data should be identified for capture and monitoring to inform decision making moving forward.

The team identified two major challenges related to the resiliency for BEBs. First, it is impractical to store the amount of electricity required to charge these vehicles in the event of a power outage or other emergency, especially given COTA's objective of maintaining continuous operation for thirty days following a major calamity. Therefore, it is essential for COTA to coordinate the City's emergency response team and the utility company to designate COTA's facilities as a priority for service restauration. Additionally, we recommend evaluating on-site generation options that can meet BEB charging requirements. This could include renewable energy generation complemented by an emergency generation plant. Second, due to the technical challenges associated with BEB, as described in Section 4.7.2.1., it is crucial to collaborate with the BEB manufacturer to resolve the identified issues and ensure reliable operation.

In addition to vehicle uptime, rider safety has also been a resiliency and ridership topic to ensure safe and smooth utilization of public transit without disruption and protect operators, riders, facility and fleet assets. The following initiatives were highlighted as implemented safety measures to protect riders, operators and COTA facilities and vehicles.

- Line assessment: COTA Special Duty Officers (SDO's) rider various lines while in uniform so that there is a visible presence.
- Deployed of See Something/Say Something app (ELERTS).
- Increased Allied Universal Security (AUS) guards.
- Added a security desk at the Northland Transit Center.
- Reinstated an SDO posted in at 33 N. High Street.
- Added two new SRSs for a total of 10 team members.
  - On September 7, 2024, one of the SRS team members administered Narcan to an individual experiencing an overdose and brought the individual back to consciousness.
  - Connected 453 people to critical resources including temporary housing, food assistance, drug counseling and mental health services.
- Implemented an Active Shooter Training Platform.
- Completed the TSA Baseline Assessment and the Security and Emergency Preparedness Plan (SEEP).
- Installed cameras inside all COTA non-revenue vehicles.
- Currently replacing security cameras at the COTA facilities.
- Assigned a cyber-security training for all employees and contractors, 736 of whom have already completed the training as of June 2025
- In addition to required training, the cybersecurity team has implemented several tools and plans to prevent and recover from a cybersecurity threat while maintaining transit operations.
  - Integrated all assets supporting COTA operations into the IT Disaster Recover plan to support quick restoration of full operations.
  - Implemented a cloud-based Security Information and Event Management (SIEM) and Endpoint Detection and Response (EDR) tools to identify threats and enable quick containment.
  - Expanded single sign-on and condition-based multi-factor authentication to cloud applications.
  - Updated and tested disaster recovery plan which outlines roles and responsibilities and restoration priorities.
  - Measure resilience capabilities through continuous assessment of recovery readiness including semi-annual penetration testing that simulates real attacks, vulnerability scanning to identify potential security weaknesses and maturity assessments that measure improvement in recovery capabilities.

4.6.7. TECHNICAL AND ECONOMIC VIABILITY

At this time, the exact nature of the technical and economic challenges to COTA's Business Continuity Plan are not known. System improvements to support business continuity may encounter diminishing returns, wherein small gains in service maintenance can only be achieved at an extreme cost. For example, with a transition to BEBs, COTA will be reliant completely on electricity to fuel its buses. However, we know that central Ohio can experience extreme weather that can result in multi-day power outages. COTA is currently assessing the cost of upgrading its electrical system, while also assessing the reliability and redundancy of the electrical supply. This poses both technical and economic barriers to reliable electric supply in the current system, the goal of 100% uptime is an important variable of consideration in the conversion to other fuel types.

The COTA team was initially on a path for 100% BEB implementation. The current trajectory is for the fleet fuel source to be split in thirds, CNG, electric and a third technology, likely hydrogen, for redundancy and resiliency.

Investigations on how to create a resilient and reliable vehicle and fuel mix are already being pursued through additional analysis and research to inform current and future planning. Lessons learned from the existing BEBs are also being used to inform future vehicle purchases and a driver to explore other fueling technologies, such as hydrogen.

4.6.8. ACTIONS & RECOMMENDATIONS

Pursuit of COTA's resiliency goals will include the following actions:

1. Update the CBCP and align the plan to update the needs of this guiding document.
2. Engage the COTA staff who oversee the CBCP to:
   a. Identify and assign staff members to oversee the incorporation of plan objectives into the CBCP.
   b. Identify and coordinate the best steps for connecting the needs of this plan with the existing development and implementation of the CBCP.
3. Support existing business continuity planning and incorporate the needs of this plan into the CBCP, including:
   a. Continually evaluate strategies for building a resilient vehicle portfolio and ensuring fuel to support business continuity objectives.
   b. Develop an integrated back-up power plan. The integrated back-up power plan should consider on-site electric load management, on-site generation, on-site storage, electric feeds from different distribution circuits and ongoing engagement with the utility on circuit reliability.
   c. Proactively plan for climate change adaptation, especially in regard to road flooding and the potential of road blockages from severe storms. The City of Columbus is planning a vulnerability assessment of stormwater, which COTA could use to identify areas of concern for roadway flooding. As Ohio may experience more severe winter storms, discussion of snow clearing and road salting prioritization for COTA routes with the city.

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