



reimagining SUSTAINABILITY

COTA SUSTAINABILITY PLAN 2022

executive SUMMARY

IN PARTNERSHIP WITH:



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COTA's mission is to provide solutions that **CONNECT PEOPLE TO PROSPERITY THROUGH INNOVATION, DEDICATION, AND TEAMWORK**. As sustainability is pursued within central Ohio, COTA recognizes its responsibility to embrace its role in the coming transition to a more equitable world. This plan identifies multiple goals, centered on sustainability, and a framework within which to pursue them. This framework is built upon the recognition that COTA's ability to achieve these goals is dependent upon collaborative interdepartmental engagement on the activities that will impact the metrics by which they are measured.



JOANNA M. PINKERTON
CEO/President

1.1. SUSTAINABILITY PLAN FRAMEWORK

This framework is comprised of three primary components:



PERFORMANCE CATEGORIES

The focal points for improvement in sustainability and reflect those initiatives being engaged and embraced by other organizations and society



GOALS

Quantifiable improvement objectives that will be pursued within each Performance Category



MANAGEMENT AREAS

Interdepartmental teams whose overlapping responsibilities, when combined, bring to the table all the parties necessary to effectively promote the changes necessary for success

Working within this framework, this plan will serve as a living document to help guide COTA as it progresses towards achievement of 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 ENERGY 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 to ensure successful implementation 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. While COTA's plan is being adopted in 2022, COTA has already engaged in numerous sustainable initiatives, upon which this plan is built. The following sections present the goals, metrics, achievements, and next steps for each performance category.



1.1.1. EQUITY, DIVERSITY, AND INCLUSION (EDI)

GOALS AND METRICS

- Expand access to underserved individuals and communities.
- Determine EDI metrics and begin tracking progress.
- Work towards internal 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

- Establishing EDI, surrounded by COTAs four guiding principles, as the central characteristic of its strategic plan.

NEXT STEPS

- Expand access to underserved communities through increased accessibility to critical destinations and affordability.
- Increase participation and engagement of employee resource groups in implementation of the sustainability plan.
- Expand access to economic opportunity for minority, female, LGBTQ, disabled, and veteran owned businesses by intentionally increasing spend with these businesses in both COTA capital projects and operational needs.

1.1.2. EMISSIONS—GREENHOUSE GAS AND POLLUTION

GOALS AND METRICS

- Net-Zero Green-House Gas (GHG) Emissions by 2045.
- Net-Zero Particulate Matter 2.5 (PM2.5) Emissions by 2045.

ACHIEVEMENTS

- Reduced GHG emissions per vehicle mile by 11% since 2013.
- Reduced PM2.5 per vehicle mile, a local pollutant, by 73% since 2013.
- Pollution reductions fostered more than \$10 million dollars in community savings through avoided work disruptions and medical costs within Franklin County.
- Collaborative engagement in regional development through LinkUS, Columbus Downtown Development Corporation, and other initiatives.

NEXT STEPS

- Continue phasing out diesel vehicles. To maximize the CNG investment, investigate the benefits and risks of purchasing renewable energy supplies for electricity through supplier contracts or Renewable Energy Certificates (RECs) and natural gas through acquisition of Renewable Natural Gas (RNG).
- Define the fueling strategy for electric buses, on route charging locations, and number of chargers required for the transition to battery electric buses (BEBs). Continually monitor the capabilities and trade-offs to a 100% electric fleet makeup.
- Install the maximum number of charging cabinets that can be currently accommodated at both McKinley and Fields. Study alternative electric transmission and distribution line upgrade options, on-site energy reduction, on-site energy generation, and on-site storage options to increase electric charging capacity.
- Implement system to capture performance of COTA BEBs to recognize the fluidity of the current plan to adopt to 100% BEBs by continuing to record vehicle performance and investigate new technologies.
- Determine energy efficiency measures to implement at facilities, on-site generation capabilities, and clean energy procurement strategies.





1.1.3. RIDERSHIP GOALS AND METRICS

- Aspirational pursuit of annual increase of 2% for COTA's internal ridership Performance Incentive Compensation metric of annual unlinked passenger trips per total payroll hours.
- 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 rapid transit lines by 2030.
 - Implementation of at least 5 high-capacity rapid transit lines and up to 8 by 2050.

NEXT STEPS

- Assess aspirational ridership goal and adopt or revise the targeted annual increase based upon that engagement.
- Generate a mode shift factor for use in capturing 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.



1.1.4. WASTE GOALS AND METRICS

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



ACHIEVEMENTS

- Revenue is generated from scrap metal and paper and cardboard recycling.
- Several recycling and waste diversion programs are already in place including recycling of yard waste, waste oil, transmission fluids and oil filters, wooden pallets, and fluorescent lamps. Tires are recycled through a contract with Goodyear.

NEXT STEPS

- Work with local stakeholders like SWACO to identify any support or grant opportunities that would support waste related activities and their application timetable.
- 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 GOALS AND METRICS

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

ACHIEVEMENTS

- Installation and use of water reclamation and recycling for the vehicle wash systems at both bus facilities.

NEXT STEPS

- Establish a water end use breakdown that identifies each portion of water usage across the building portfolio by the function it supports.
- Update interim goal to be a technically and financially achievable percent reduction from the 2013 baseline as informed by the end use breakdown analysis.
- Establish protocols to capture and record all facility water use.

1.1.6. RESILIENCY AND BUSINESS CONTINUITY GOALS AND METRICS

- COTA will 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

- Resiliency management is already in place through COTA's Business Continuity Plan (CBCP)
- Creation of the Safe and Secure COTA for All Task Force

NEXT STEPS

- Support existing business continuity planning and incorporate the needs of this sustainability 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 climate change adaptation planning.
- Continually collect information on long-term trends that could threaten COTA's operations.

1.2. KEY FINDINGS

Through the course of developing 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 sustainability plan serves as a framework to guide COTA in pursuit of sustainability 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 climate change solutions. Activities are under way to generate information to guide decisions that achieve progress in the near term. While longer term aspirational trajectories have been identified for investigation and pursuit, new information and changing economics may foster adjustments to planning and should be leveraged 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 zero-emission fleet vehicles and facility operations is required. While in the long term this will include every vehicle in COTA's portfolio, the near-term engagement will differ between portions of the fleet. Below are presented the basis for the strategy currently being pursued for the vehicle fleet and the facility portfolio.

1. BUS FLEET

- a. Produces 71.1% of COTA's GHG emissions.
- b. Are the area of greatest opportunity and are primary focus in the immediate term, including the current study to inform on-route charging and facility capacity expansion strategies.

2. MOBILITY FLEET

- a. Produces 7.3% of COTA's GHG emissions.
- b. Currently there are no vehicle replacement options for this fleet that meet the certifications required by the FTA. While manufacturers have been engaged and will continue to be monitored, pursuit of zero-emission vehicle solutions for this portion of the fleet are on hold until solutions reach the market.

3. NON-REVENUE VEHICLES

- a. Produces 0.6% of COTA's GHG emissions.
- b. While not prioritized due to their small contribution to overall GHG emissions, staff will monitor availability of zero-emission replacements and acquire them when it can be facilitated. As charging infrastructure is built out, compatibility with facility charging equipment will be a critical consideration to minimize required fueling infrastructure. In the near term, hybrid vehicles are being pursued to achieve reductions during the existing equipment replacement cycle. Because of the high public visibility of specific non-revenue vehicles, prioritization of zero-emission replacements may be desirable in those cases.

4. FACILITY ELECTRICAL USE

- a. Produces 11.4% of COTA's GHG emissions.
- b. Opportunities for reducing GHG emissions related to electricity use is currently under investigation. This will result in a capture or identification of facility improvements that maximize energy efficiency. This investigation will also include on-site renewable energy, storage, off-site renewable energy, and emission free supplier contracts. In the long term, success will require a combination of these options in conjunction with the GHG reductions occurring within the electricity grid itself.

5. FACILITY NATURAL GAS USE

- a. Produces 8.6% of COTA's GHG emissions.
- b. Natural gas energy efficiency opportunities are also being investigated. It is expected that in the long-term natural gas equipment will need to be replaced with equivalents that consume emission free electricity. Pursuit of this transition is not an immediate priority.

6. EMPLOYEE TRAVEL

- a. Produces 1.0% of COTA's GHG emissions.
- b. While capture of employee GHG emissions for travel will be improved, this contribution to organizational emissions serves as an opportunity for employee engagement and education around emission reduction initiatives. Strategies for reducing and eliminating these emissions will be developed over time.

1.2.3. SOURCING EMISSION-FREE ENERGY SUPPLIES

Even with the acquisition of alternative vehicles and the equipment to fuel them, to achieve zero-emission 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 would need to use renewable natural gas. One common pathway to achieve this for either utility source is through 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. Interestingly, COTA's CNG buses and fueling equipment have positioned COTA to be in position to leverage this portion of the fleet into the market created by the Renewable Fuel Standard (RFS). This could result in the ability to claim emissions reductions, monetize the trade of these credits through Renewable Identification Numbers (RINs), or some proportion of both. The average value of the RINs associated with COTA's CNG fuel use between 2018 and 2021 is just over \$4 million dollars annually.

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 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 vehicle.
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

1.2.5. VEHICLE ELECTRIFICATION, CHARGING, AND CAPACITY STUDIES

During the development of the emissions section of this sustainability plan, various analyses were identified as critical to inform the strategies and next steps for COTA in elimination GHG from its operations. Consequently, funding was acquired to conduct the necessary studies to address these needs in advance of completion of this plan and were referenced as underway within the plan itself. Below is a summary of the various analyses currently being pursued to inform development of an electric vehicle charging strategy for battery electric buses.

1. Analysis of current routes and blocks to identify optimal locations for on-route high-speed charging using pantographs. This will include dialogue with utility partners to inform beneficial locations for grid interconnection.
2. Analysis of facility electrical capacity and opportunities that will allow for increased depot charging by increasing the number of depot cabinet chargers that can be installed at bus maintenance facilities including:
 - Investigation into additional electrical capacity at the distribution circuits facilities where facilities have existing interconnection.
 - The cost of installing additional interconnections to facilitate additional electrical vehicle charging at bus facilities.
 - Assessment of hourly load profiles at bus facilities to understand electrical load and identify periods when additional capacity is available for charging.
 - Increasing available capacity by facility energy use through implementation of energy efficiency measures.
 - The potential impact of on-site renewable energy assets, like solar panels, and a quantification of the benefit they might provide.
 - The potential impact of on-site electricity storage and a quantification of the benefit they might provide.

¹<https://www.apta.com/wp-content/uploads/Resources/resources/hottopics/Documents/APTA%20VZN%20Transit%20Safety%20Brief%208.2018.pdf>