Greater Hartford Transit District
Climate Action Plan

Our Commitment to Promoting a Greener Tomorrow

April 15, 2022

Greater Hartford Transit District

UNION · STATION · HARTFORD ·

Contents

1. Introduction

PLAN PURPOSE

The Greater Hartford Transit District (the District), recognizes that public transportation plays a critical role in Climate Change. In order to help mitigate the impacts from transportation on Climate Change, and in response to President Biden's goal of achieving a 50% reduction in greenhouse gas (GHG) emissions from 2005 levels by 2030, the District has committed to FTA's Sustainable Transit for a Healthy Planet Challenge.

This Climate Action Plan will serve as a blueprint to achieve the District's goals of:

- Reducing GHG emissions
- Reducing fuel consumption
- Reducing the District's Carbon Footprint
- Exploring and incorporating environmentally friendly options when procuring both direct transit and transit-related support equipment for our facilities

SCOPE OF WORK

In 2019, the transportation sector was identified as the largest source of total emissions in the United States, accounting for 29% of all GHG emissions. Additionally, over 90% of fuel used in transportation was reported to be petroleum based, primarily gasoline and diesel fuel (*FTA Transit Leaders Climate Change Roundtable, 2021*). Additionally, in 2019, buses accounted for roughly 1.2% of transportation GHG emissions, while rail (including freight), accounted for 2.2% of GHG emissions (*FTA Transit Leaders Climate Change Roundtable, 2021*). In Connecticut, the transportation sector is responsible for 38.1% of economy-wide greenhouse gas (GHG) emissions, and more than 66% of nitrogen oxides, a harmful component of smog and other hazardous air pollutants (CT DEEP Press News Release, 2020).

The Greater Hartford Transit District, the largest ADA Paratransit bus service in CT (and the third largest in New England), is committed to making changes in order to reduce these figures. The overall plan is to gradually introduce electric paratransit vehicles into our fleet, with the goal to eventually replace the entire fleet. By converting the paratransit fleet from gasoline and diesel to electric, the District will be able to reduce GHG emissions, fuel consumption and operating costs, and in doing so will support President Biden's 2030 Greenhouse Gas Pollution Reduction Target.

The District's vehicle fleet consists of a total of 165 paratransit buses, all of which are currently gasoline and diesel chassis. As a first step to "go green" with our vehicle fleet, the District, with the support of the Connecticut Department of Transportation (CTDOT), is collaborating with the Greater New Haven Transit District (GNHTD) on a grant proposal through FTA's Bus and Bus Facilities Program and the Lo-No Emission Vehicle Program. If awarded, the funding would support the purchase of electric paratransit vehicles and charging stations as a pilot program to test their performance and determine if they are a viable option for future vehicle purchases/replacements. The intent at this time is to purchase a total of ten (10) small electric paratransit vehicles (Ford E-Transits) converted for wheelchair accommodation and ten (10) Electric Vehicle Charging Stations. Of the ten vehicles purchased, the Greater Hartford Transit District would receive six (6) vehicles and the GNHTD would receive four (4) vehicles.

PLAN DEVELOPMENT

In order to develop the District's Climate Action Plan, we first reviewed all of the current and future initiatives that support the overall goal of reducing our carbon footprint and GHGs. The plan's development was a collaborative effort between the District's administrative staff and the third-party operator of ADA Paratransit Service delivery, First Transit.

The District utilized the FTA's Climate Action Page as well as other transit agencies' Climate Plans for information on goal setting, targets, emission levels, and monitoring.

To determine which existing gas and/or diesel vehicles will be replaced by new electric paratransit vehicles, the following factors will be considered:

- Age of vehicles being replaced
- Mileage
- Condition

AGENCY INCORPORATION OF THE PLAN

The District's GHG Climate Action Plan will aid in serving as a guide to help ensure our organization keeps on task with meeting the targeted goals for the project(s) identified. First Transit manages the District's ADA Paratransit operation and the vehicle fleet and will play a key role in monitoring the data elements of our plan. This plan is one that will be evolving in nature, as we anticipate incorporating future eco-friendly projects to expand the District's efforts to reduce GHGs.

2. Agency Overview

The District is a quasi-municipal corporation operating under the authority of Chapter 103a of the Connecticut General Statutes. There are currently sixteen-member towns represented by appointees who collectively form the Board of Directors. The District is a transit-related industry having broad powers to acquire, operate, finance, plan, develop, maintain and otherwise provide alternate forms of land transportation and related services, including the development of transportation centers and bus parking facilities. The agency serves as a conduit for federal and state funding of transit-related capital projects: provides ADA Paratransit Services, owns/operates Hartford Union Station (including the adjacent Spruce Street Parking Lot) and the ADA Paratransit Operations and Maintenance Facility in East Hartford. Our commitment is to provide high quality transportation and transit- related support services to the greater public by prioritizing public transportation investments that ensure public safety, restores the infrastructure to a state of good repair, improves the customer experience, promotes economic development, and improves quality of life for residents and visitors.

SERVICE AREA AND PROVISION OF TRANSIT SERVICES

In compliance with the Americans with Disabilities Act (ADA), the District provides transportation services for individuals who, because of their disability, are unable to travel on the fixed route public transit service operated by CTtransit which encompasses the Greater Hartford and Greater New Britain region. The District is the largest provider of ADA paratransit services in the State of Connecticut. Our paratransit service delivery is uniquely designed to provide those persons with disabilities equal access to public transportation. ADA Paratransit services are provided within a ¾ mile radius surrounding the CTtransit fixed route service. The District's service area includes all of East Hartford and Hartford, and portions of Avon, Berlin, Bloomfield, Bristol, Cromwell, Ellington, Farmington, Glastonbury, Kensington, Manchester, Meriden, Middletown, New Britain, Newington, Plainville, Rocky Hill, South Windsor, Tolland, Vernon, West Hartford, Wethersfield, Windsor and Windsor Locks. The District typically provides over 500,000 paratransit trips annually to approximately 10,000 clients (Pre-COVID numbers). The ADA Paratransit service operates during the same days and hours as the fixed route public transit service. Trips can be reserved for any purpose and there are no limits to the number of reservation requests that can be made.

FACILITIES

The District's administrative offices operate from our main facility, Hartford Union Station Transportation Center Complex, which is located at One Union Place, Hartford, Connecticut. Located in the heart of downtown Hartford, this facility is an intermodal hub of transportation that currently serves Amtrak rail, CTrail, intercity and intra city bus services, taxi services (including Uber and Lyft), and public parking (via the Spruce Street Lot). The Union Station Transportation Center is a mixed-use facility that includes: ticketing booths for bus and rail travel, tenant occupied office space on three levels, and food/beverage vendors.

In 2017, the District opened its state-of-the-art ADA Paratransit Operations and Maintenance Facility, located at 148 Roberts Street in East Hartford, Connecticut. The East Hartford facility is over 37,000 square feet and is situated on approximately 5.6 acres, making it one of the largest paratransit operations in New England. Our 165-paratransit vehicle fleet is housed at and operates

from our East Hartford facility. In addition to housing offices for management, the operations area consists of a training room, dispatch area, reservations area, scheduling area, conference room, server and communication rooms, quiet room for drivers, lunch room, restrooms/ locker room (with shower access), and a fitness room. The maintenance area consists of four maintenance bays, a storage area, parts room, mechanics room, wash bay with water/oil separator, vehicle parking, restrooms/locker room (with shower access), and a fueling station. The District's East Hartford location is managed by our ADA Paratransit Service delivery provider, First Transit. The District incorporated various environmentally friendly solutions in the building's design, including but not limited to:

- Permeable pavement parking lot
- Oil water separator
- Retention Pond
- Many windows creating natural lighting throughout most of the facility year-round

AGENCY FINANCIAL INFORMATION

The District serves as a conduit for both Federal and State funding to administer transit-related capital projects and transit-related support services. The District adopts an annual budget which serves as the District's financial planning and control. The District is in fundable status with the FTA, has adequate financial systems in place, has experience in administering FTA grants, and is currently overseeing a number of FTA grants for both itself and miscellaneous subrecipients.

3. Emissions Inventory

GHTD Bus Fleet Annual Emissions Demographics (Gasoline & Diesel-Powered Buses)

Year 2020 Emissions inventory calculations were derived from information collected from 30 diesel and 135 gasoline-powered buses for a total of 165 vehicles. This District intends to monitor emissions annually and expects to see decreases in emissions levels as these vehicles are replaced with electric.

	Year	Diesel Bus MY 2007-2018		Gasoline Bus	
		gallons	VMT	gallons	VMT
Fleet Energy Usage	2020	75,279	801,896	510,929	3,796,391

Mileage Based Emission Factors	Diesel Bus MY07-18	Gasoline Bus (MY18)*
	g/mi	g/mi
Methane (CH4)	0.0095	0.0326
Nitrous oxide (N20)	0.0431	0.0082

**The emission rates for gasoline buses vary each model year. See the Climate Registry default emissions source (URL listed below) for emission rates for earlier model years*

Volume Based Emission Factors	Diesel Bus MY07-18	Gasoline Bus (MY18)*
	g/gallon	g/gallon
Carbon dioxide (CO2)	10,210	8,780

**The emission rates for gasoline buses vary each model year. See the Climate Registry default emissions source (URL listed below) for emission rates for earlier model years*

Annual Emissions

	Diesel Bus MY07-18	Gasoline Bus (MY18)*
CH4 Emissions (grams)	7,618	123,762
N20 Emissions (grams)	34,562	123,762
CO2 (grams)	768,601,551	4,485,956,620

	Diesel Bus MY07-18	Gasoline Bus (MY18)*	**Fleet Total**
CH4 Emissions (grams) to MTCO2e	0.21	3	**4**
N20 Emissions (grams) to MTCO2e	9.16	33	**42**
CO2 (grams) to MTCO2e	768.60	4,486	**5,255**
Annual MTCO2e	777.97	4,522	**5,300**
Annual MTCO2e per VMT	0.000970168	0.001191189	**0.001152645**

Conversions:

139.3	standard cubic feet/diesel gallon equivalent (source: https://afdc.energy.gov/fuels/equivalency_methodology.html)
28	Methane GWP (IPCC Fifth Assessment Report (2013) (AR5)
265	N20 GWP (IPCC Fifth Assessment Report (2013) (AR5)

Source Notes:

Source of all emission factors, including GWP factors, is the May 2021 Climate Registry default emission factors: https://www.theclimateregistry.org/wp-content/uploads/2021/05/2021-Default-Emission-Factor-Document.pdf

Source of standard cubic feet to diesel gallon equivalent: https://afdc.energy.gov/fuels/equivalency_methodology.html

4. Past and Current Initiatives

GREATER HARTFORD TRANSIT DISTRICT'S TOP INITIATIVES

1.) As the largest ADA Paratransit bus service in Connecticut, the District realizes that it has a responsibility to reduce GCG emissions by obtaining funding and procuring low or no emissions vehicles. With the support of the Connecticut Department of Transportation (CTDOT), the Greater Hartford Transit District (GHTD) and Greater New Haven Transit District (GNHTD) are collaborating on a "green" vehicle initiative to pilot for paratransit agencies in the state of Connecticut. As the applicant for FTA funds, the District will purchase 10 small electric paratransit vehicles (Ford Transit types) that are converted for wheelchair use. GHTD will receive 6 vehicles and GNHTD will receive 4 vehicles. This grant will also be used for the purchase and installation of Electric Vehicle (EV) charging stations.

The Districts will test the performance of the electric vehicles in the paratransit market and assess if these are a viable option for future vehicle purchases/replacements. The existing vehicles are gasoline and diesel chassis. GHTD's fleet consists of 165 paratransit buses and GNHTD's fleet has 86 paratransit buses. Switching to electric will reduce operating costs, greenhouse gas emissions (GHGs), and will support President Biden's GHG goal to reduce GHG pollution by 50% by 2030. GHTD and GNHTD recognize the health and environmental benefits of converting their fleets to electric, and have signed the pledge to join FTA's Sustainable Transit for a Healthy Planet Challenge.

Funding this pilot program to purchase electric paratransit vehicles in Connecticut is the first step in getting the paratransit districts to "go green" and convert our entire fleets to electric.

2.) A recent initiative completed by the District was a project to upgrade the EV charging station located in our Spruce Street parking lot (the main parking lot used by visitors to Hartford Union Station.) For this project, the District collaborated with two organizations - Oasis Charger Corporation/Juice Bar (equipment design) and AmpUP (EV software configuration) - to offer an enhanced charging experience for EV drivers. The electric vehicle charging station we installed is Oasis Charger Corporation/Juice Bar's third generation mini bar double commercial grade network-ready 1.6J electric vehicle charger with two (2) connectors and cellular 4G capability. It should be noted that the EV charging station is brand agnostic and supports charging for all vehicle makes and models. A featured perk of the newly enhanced system is that EV drivers are now afforded the opportunity to make advanced reservations for vehicle charging sessions to coincide with their scheduled appointments and/or recreational activities in the area. This feature helps to alleviate time spent driving around the city in search of parking. The newly installed charging station equipment and software also allows the District to collect revenue from patrons who utilize the service as well as allows for the marketing of events and/or promo specials concerning the Spruce Street Lot or tenants of Union Station. The latter concept is new as the formerly installed EV charging station did not permit the District's collection of revenue nor did it afford a platform for service/promotional marketing.

3.) In 2021, the District exhausted efforts to implement a solar roof project at the Roberts Street Facility. The District had applied for and were awarded a contract through Eversource for the Zero Emission Renewable Energy Credit (ZREC) Program. After developing a Request for Proposals for a Solar Power Purchase Agreement (PPA) where the contractor would arrange for the design,

permitting, financing, installation and maintenance of the solar energy system on the District's property at zero cost to the District, it was determined that the project was not feasible at that time. This plan was put on hold indefinitely, but the District hopes to be able to implement this in the future to reduce our dependence on nonrenewable energy sources and reduce air pollution.

4.) The District is currently working on a project to replace a lot of the antiquated HVAC equipment at Hartford Union Station. One of the goals is to reduce energy consumption, burning less fossil fuel and reducing GHG emissions.

STATE AND LOCAL INITIATIVES

The transition to electric vehicles is a strategy that is promoted and supported by the State of Connecticut's Department of Transportation and through the State's EV Commitment, which outlines a myriad of initiatives that the state has undertaken to promote "cleaner, healthier, and more sustainable communities to achieve state-wide clean air goals" (CT Department of Energy and Environmental Protection, EVconnecticut Program).

The initiative that most notably relates to the promotion of electric vehicles is the Multi-State Medium and Heavy Duty Zero Emission Vehicle MOU. "On July 14, 2020, Connecticut took a significant step forward in its effort to address the climate crisis and the health impacts of air pollution as it joined 14 other states and the District of Columbia in signing a Memorandum of Understanding (MOU) to work collaboratively to advance and accelerate the market for electric medium- and heavy-duty vehicles. Under the MOU, signatory states agreed to work toward ensuring that 100% of all new medium and heavy-duty vehicle sales be zero emission vehicles (ZEVs) by 2050 with an interim target of 30% ZEV sales by 2030. The vehicles included in the MOU include large pickup trucks and vans, delivery trucks, box trucks, school and transit buses, and long-haul delivery trucks" (CT Department of Energy and Environmental Protection, EVconnecticut Program).

Additional initiatives under the EVconnecticut Program that impact the District include:

- **Electric Vehicle Roadmap**
    - Rolled out April 22, 2020 (Earth Day)
    - A strategy aimed at promoting deployment of EV's in the State of Connecticut
- **Comprehensive Energy Strategy**
    - "An assessment and strategy for all residential, commercial, and industrial energy issues, including energy efficiency, industry, electricity, natural gas, and transportation. The CES was first developed in 2012 and has been updated periodically with the latest revision occurring in 2018" (CT Department of Energy and Environmental Protection, EVconnecticut Program).
    - "A key goal of the latest CES is to reduce transportation greenhouse gas emissions by accelerating adoption of low- and zero-emission vehicles and strengthening CT's alternative-fueling infrastructure" (CT Department of Energy and Environmental Protection, EVconnecticut Program).
- **Multi State ZEV Task Force**
    - "On October 24, 2013, the governors of eight states (CA, CT, MD, MA, NY, OR, RI, VT), joined by a ninth (NJ) on May 3, 2018 and a tenth (ME) on November 20, 2019, signed

a memorandum of understanding (MOU) committing to coordinated action to ensure the successful implementation of their state ZEV programs" (CT Department of Energy and Environmental Protection, EVconnecticut Program).

- "Collectively, these states are committed to having at least 3.3 million ZEVs operating on their roadways by 2025. The MOU identifies joint cooperative actions the signatory states will undertake, and additional actions that individual jurisdictions are considering, to build a robust market for ZEVs" (CT Department of Energy and Environmental Protection, EVconnecticut Program).

- "In 2018, the alliance revised their collaborative Multi-State Action Plan to develop the infrastructure, coordinate policies, codes and standards to facilitate 3.3 million ZEVs on the road by 2025" (CT Department of Energy and Environmental Protection, EVconnecticut Program).

5. Emission Reduction Goals and Targets

The District is committed to meeting the goals and targets below through the initiatives described in Section 4.

- Decrease total GHG emissions from transit fleet by 25% by 2030
- Achieve zero emissions by 2045 in transit fleet
- Decrease total energy use by 10 percent for the District's facilities by 2030

Connecticut's transportation sector accounts for roughly 38% of greenhouse gas (GHG) emissions. Connecticut's Global Warming Solutions Act (GWSA) requires the state to achieve economy-wide GHG emission reductions of at least 10% below 1990 levels by 2020, and 80% below 2001 levels by 2050. In 2018, the GWSA was amended by Section 7 of Public Act 18-82, An Act Concerning Climate Change Planning and Resiliency, to include a mid-term GHG reduction target of 45% below 2001 levels by 2030.[1] In 2018, a report was published by the Governor's Council on Climate Change (GC3) titled, Building a Low Carbon Future for Connecticut: Achieving a 45% Reduction by 2030, which concluded that in order for the state to achieve the GWSA's 45% GHG emission reduction target, Connecticut must aim to reduce its transportation sector emissions 29% below 2014 levels by 2030.[2] The District will continually assess current state/federal initiatives in the development and on-going monitoring of our emissions reduction plan and/or targets to ensure our plan aligns with both state and federal emission reduction goals.

[1] See Connecticut Gen. Stat. § 16-244w.

[2] Building a Low Carbon Future for Connecticut, Achieving a 45% GHG Reduction by 2030. DEEP. December 2018. Retrieved July 30, 2019 from https://www.ct.gov/deep/lib/deep/climatechange/publications/building_a_low_carbon_future_for_ct_gc3_recommendati ons.pdf

6. Strategies and Actions

Goal #1: Decrease total GHG emissions from transit fleet by 25% by 2030

Strategy	Actions	Metric to Track Progress	Timeframe	Responsible Office
Electrify Buses	Submit application for Lo-No/Bus and Bus Facilities funding for the acquisition of the Ford E-Transits (paratransit) and Charging Stations.	Y/N application submittal date	May 31, 2022	GHTD
	Complete driver/maintenance staff training on the operation & maintenance of EV buses	Y/N training complete	November 2023 and as needed for new hires	First Transit
	Develop long-term budget plan to support the transition of existing fleet to EV buses	Y/N plan developed	December 2023	GHTD
	Upgrade Operations & Maintenance facility to accommodate electric buses (i.e. installation of EV support equipment, charging stations)	Y/N facility updated	December 2023 and ongoing	GHTD
	Purchase Electric Buses	Y/N Vehicles in Service	June 2024	GHTD
	Complete electric bus pilot/testing	Y/N pilot complete	December 2024	First Transit and GHTD
	Purchase Electric Vehicles annually until fleet is 25% electric (approximately 40 vehicles)	Number of buses purchased	December 2030	GHTD

Goal #2: Achieve zero emissions by 2050 in transit fleet

Strategy	Actions	Metric to Track Progress	Timeframe	Responsible Office
Electrify Entire Bus Fleet	See actions in Goal 1 as first steps.			
	Conduct quarterly bus fleet emissions inventory to track emission reduction progress	% reduction in emissions measure	On-Going Qtrly	GHTD Facility & Operations Manager and First Transit
	Transition entire fleet of vehicles from gasoline to electric. (165 vehicles)	# of buses purchased	December 2045	GHTD

Goal #3: Decrease total energy use by 10 percent for the District's facilities by 2030

Strategy	Actions	Metric to track progress	Timeframe	Responsible Office
Research and Procure More Efficient Systems for Facilities	Replace antiquated and inefficient HVAC system components at Hartford Union Station	Y/N facility updated	June 2023	GHTD
	Identify and make additional efficiency improvements to Roberts Street Facility and Union Station	Y/N facility updated	December 2028	GHTD
	Explore the implementation of a photovoltaic system at Roberts Street location	Y/N facility updated	December 2030	GHTD

7. Implementation and Monitoring

Implementation and monitoring of the District's Climate Action Plan will be a learning process, especially in regard to electric vehicles, retrofitting the facilities, and data collection/tracking. The State of Connecticut and the Federal Transit Administration are committed to reducing GHG emissions and supporting the purchase and implementation of electric vehicles in transit fleets. This support will be critical in funding the initiatives that are described within this plan.

The roll-out of the District's EV pilot program will require staff training for the District and First Transit on the components, operation, and maintenance of these vehicles. Furthermore, it will assist the team in developing protocols and procedures. A task force will be developed, consisting of District staff and key employees of First Transit, for the on-going monitoring of our pilot program and data elements associated with tracking progress towards achieving our emission reduction goals. The task force will also be responsible for reviewing current state and federal guidelines to ensure compliance with the most up-to-date initiatives and for reviewing and revising our EV operational plan as needed to ensure that it aligns with these guidelines. The benchmarks established in section 3 above, through the development of the District's initial emissions inventory, will serve as a baseline for data collection and monitoring for reporting and/or tracking purposes. This Climate Action Plan will be one that is evolving in nature and we anticipate incorporating future eco-friendly projects to expand upon the District's efforts in support of a greener planet.

All across the US, transit agencies are "going green" and developing exciting and new projects for implementation, methods for tracking and data collection, and recording their insights. The District intends to continue participating in webinars, conferences, and other efforts in order to stay abreast on the newest information in this continuously growing and evolving industry.