

CHATTANOOGA

**Climate
Action**
Plan





City of
Chattanooga

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Preamble on Protecting Individual Freedom, Personal Liberty and Privacy

The Chattanooga Climate Action plan shall impose no binding commitments on the City of Chattanooga.

The Chattanooga Climate Action Plan shall make no recommendation of any sort that would violate individual privacy or freedom of movement.

The Climate Action Plan shall make no recommendation that imposes any regulation on driving or transit choices of residents, even as it seeks to expand and better integrate public transit, pedestrian, and bicycle infrastructure across the city to provide more transportation options especially to those who cannot drive by themselves, like the poor, young, and elderly.

The Climate Action Plan shall not restrict residents in any way, regardless of their preferred means of transportation, where they live, or length of commute.

The Climate Action Plan shall not make any recommendations that violate or undermine the City of Chattanooga's home rule status as outlined by state law and the city charter, including by any national or international non-governmental organizations.

The Climate Action Plan shall be in full compliance with the requirements and the liberties provided by the United States Constitution and the constitution and laws of the State of Tennessee.

The Climate Action Plan shall ensure that community input and engagement remain at the core of the plan to increase economic prosperity and opportunity for Chattanooga residents in every neighborhood, regardless of their race, gender identity or expression, sexual orientation, political affiliation, income, or where they live.

The Climate Action Plan shall be adopted with the express intent and purpose of improving the quality of life for all Chattanooga residents by investing in economic opportunity, conserving our natural resources, and attracting the jobs of the future.

1. Commitment

1.1 Vision

Chattanooga's story is one of renewal. We've come a long way from the days of billowing smoke stacks and air pollution so thick that drivers had to turn on headlights during the day. Today, the air is cleaner, our riverfront is alive and vibrant, and we're emerging as a leader in the green energy economy, home to Volkswagen's all electric SUV and the nation's first domestic manufacturer of clean battery materials.

Sustainability is at the core of our brand, driving our economic growth, improving public health, and increasing residents' quality of life. But long-standing disparities still exist across our community, with the potential to be further exacerbated by the impacts of a changing climate and aging infrastructure. And while we must continue to grow and attract the workforce of the future, we must also be vigilant to preserve the natural resources we treasure. **That's why it's critical to chart a path forward**

that will ensure a sustainable future for *all of us*, as we work together to build ONE Chattanooga.

The Climate Action Plan sets six ambitious yet achievable goals for the next several decades, which together will ensure we:

- Chattanooga will reduce disparities among socially and economically vulnerable communities
- Chattanooga will become a net zero-carbon community
- Chattanooga will become a zero-waste community
- Chattanooga will build a more sustainable city
- Chattanooga will preserve and improve natural resources integrity
- Chattanooga will be a leader in the green economy

Chattanooga's history has been shaped by visionaries who helped transform dying, polluted neighborhoods into more sustainable, resilient communities. Our future prosperity relies on our ability to carry it forward, for the benefit of all who call Chattanooga home.

1.2 Background

State of Chattanooga's Climate

In the 14 years since the City of Chattanooga produced its first Climate Action Plan in 2009, the region has experienced a rapid increase in volatile and extreme weather events and patterns. From an historic tornado outbreak (2011), to droughts and wildfires (2017), to record rainfall years (2018), to a year in which Chattanooga saw double the annual average of 90+ degree days¹ and back-to-back 100-degree days in October (2019), to the Easter tornado in 2020, the reality and impact of a shifting climate where the extreme has become the norm is now more than evident.²

All the while, Chattanooga has continued to attract new residents and grow the economy. The region provides abundant natural resources and an innovative fiber optic broadband network that allows for accelerated manufacturing, business processes and remote work opportunities. Between 2008 and 2018, Chattanooga's population grew by over 14% and economy continued to grow and thrive, during which time, the collective community contribution to GHG emissions was reduced by over 25%³. This reduction is due in large part to efforts of the Tennessee Valley Authority (TVA) to reduce its carbon footprint by over 70%, with a current non-carbon generation portfolio approaching 60%.

¹ National Weather Service, NOAA

² Chattanooga Regional Resilience Report

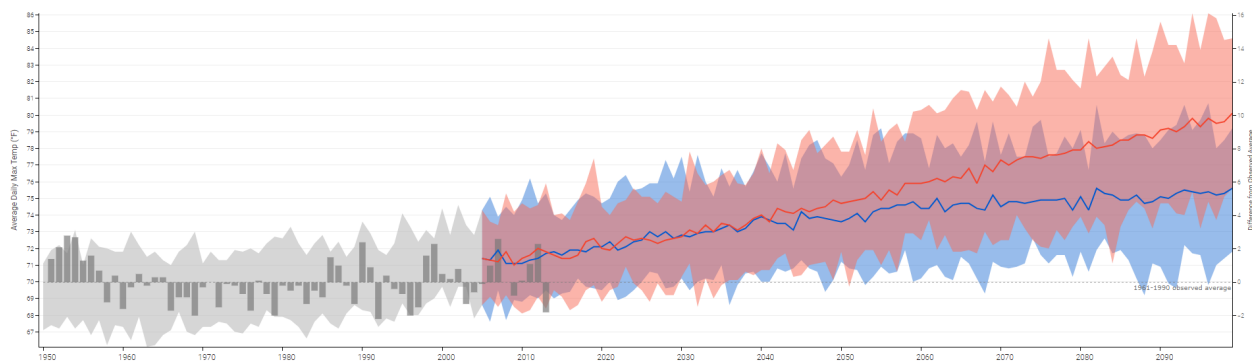
³ green|spaces commissioned greenhouse gas (GHG) inventory by Blue Dot, 2018



Tennessee Valley as viewed from Sunset Rock on Lookout Mountain (above)



Projected average daily temperature increase in Chattanooga based on higher and lower emissions scenarios (below)



Source: U.S. Climate Resilience Toolkit and Climate Explorer, National Environmental Modeling and Analysis Center

Summary of Chattanooga's Progress to Date

The City of Chattanooga and a wide range of community partners have already made a substantial amount of progress addressing both the drivers and the effects of a changing climate.

The 2011 Revisiting Chattanooga's Climate Action Plan (reCAP) report cited that over 88% of the 47 initially recommended actions of the 2009 Climate Action Plan had been either partially or fully implemented. Since the 2012 baseline, the City has reduced annual electricity consumption in its municipal buildings and plants by over 25% (the equivalent to power over 1,700 average Tennessee homes⁴) and has reduced energy use intensity by 36% (i.e. energy efficiency based on a relative per square foot, occupancy, and use-type framework). These efficiency improvements have reduced the City's utility costs by over \$2 million annually.

In 2018, the City became the first and only Tennessee city to become designated by the USDOE Sunshot initiative as a [SolSmart](#) city with "gold" status. This program was designed to reduce the soft costs of solar installations through streamlining of permitting, zoning reviews, and other barriers to solar adoption. In 2021, the City was awarded a Volkswagen Diesel Mitigation grant by the Tennessee Department of Environment and Conservation (TDEC) to replace medium- and heavy-duty diesel vehicles with battery electric vehicle (BEV) powered and alternative fuel vehicles. This award has spurred assessment and planning efforts to establish permanent alternative fueling infrastructure and greater adoption of these technologies across the City's fleet, which will substantially reduce associated tailpipe emissions in Chattanooga communities and the City's overall GHG emissions.

Likewise, a substantial amount of progress has been achieved by the City of Chattanooga government and the wide range of community partners to address both the drivers and the effects of a changing climate.

The Electric Power Board (EPB), the City's own municipal electric and fiber optic utility, has saved residential,

commercial and industrial customers millions of dollars in reduced power interruptions with its Smart Grid system. EPB also offers free home energy check-ups, a community solar program and over 600 wrap around home energy improvements through the Home Uplift Program (HUP) in partnership with TVA. Nonprofit organizations like green|spaces, Chattanooga Neighborhood Enterprise (CNE) and Habitat for Humanity have provided free energy saving workshops (Empower) and affordable, energy-efficient housing options for thousands of residents, helping to ease their financial strain.

Looking Ahead

Chattanooga stands poised to establish itself as a regional and national leader in the new green economy. Volkswagen has launched electric vehicle (EV) manufacturing. Novonix will be manufacturing clean EV battery components. The City has also received substantial federal grants for brownfield remediation, transportation infrastructure repair, and an integrated EV transportation management system, with the potential to secure even more funding as a future technology and innovation hub.

Chattanooga's focus on sustainability has created a strong avenue for economic growth and talent retention. Still, the City must unite to address the impacts of climate change and aging infrastructure, so that we can preserve our greatest assets, ensure smart and inclusive growth across communities, and continue building a thriving green economy for future generations. Throughout, the City and partners will work with residents, communities, businesses, churches and all stakeholders to build trust through continuous collaboration and input, without sacrifice of individual privacies and freedoms.

We have the resources and will to meet the challenges of this moment and become a model for "green" cities around the world. To truly achieve this will require collaboration from government and community partners at every level. The 2023 Climate Action Plan will allow us to put our collective resources into a structured and collaborative framework, catalyzing long-lasting change in the years to come.

⁴ Energy Information Administration (EIA)



Hunter Museum of American Art, downtown Chattanooga. (top)

EPB building, downtown Chattanooga. (center)

An electric vehicle charging station stands outside the Chattanooga Choo Choo in 2021. Times Free Press staff photo. (bottom)



★ **The Chattanooga Climate Action Plan makes no recommendations for any sort of surveillance** or any change whatsoever that would violate the privacy of city residents, and the City of Chattanooga opposes any such changes.

★ **The Climate Action Plan does not recommend any regulation on driving**, but seeks to expand and better integrate public transit, pedestrian, and bicycle infrastructure across the city to provide more transportation options especially to those who cannot drive by themselves, like the poor, young, and elderly. If successful, these improvements would reduce traffic for those that do drive by themselves.

★ **Community input and engagement remain at the core of this plan**, and will engage neighborhoods about how to make their communities more livable and sustainable.



2. History

As documented over the last several decades, the City of Chattanooga has a distinct and storied history of reinventing itself following the decline of the steel industry in the late 1960's. Air and water quality reached critical levels, and the federal government forced factories to reduce their impacts or be shuttered. Following decades of civic engagement and leadership to reimagine the downtown area and Tennessee Riverfront from liabilities into community-building assets through public-private partnerships and major financial investments, the late 1990's and early 2000's gave rise to a collective recognition that Chattanooga's natural resources and environmental integrity were fundamental to its success and lasting quality of life.

2.1 Major Milestones

Mayors Climate Protection Agreement - In 2006, Mayor Ron Littlefield signed the U.S. Conference of Mayors Climate Protection Agreement, committing the City of Chattanooga to completing its first greenhouse gas (GHG) inventory, setting targets to reduce those emissions, and “enacting a number of specific actions aimed at achieving that goal.”

2009 Climate Action Plan - In 2007, Mayor Littlefield appointed a 14-member Green Committee to guide the city through a public engagement and planning process, resulting in the city's first Climate Action Plan in 2009, with 47 recommendations in 17 categories. In 2011, the city completed a progress report, the “reCAP”, which assessed that 88% of CAP objectives, 72% of action items and 41% of public recommendations had been met or were in progress.

Tennessee River Park pedestrian and bike path passes former steel plants and future site of brownfield redevelopment



2012 Executive Order - Before the end of his term, Mayor Littlefield enacted an executive order which identified additional goals to:

1. reduce energy consumption by 30% (2020 relative to 2010 levels)
2. reduce GHG emissions across all city operations by 20% (2020 relative to 2011 levels)
3. reduce water consumption by 20% (2020 relative to 2010 levels); and
4. divert 25% of solid waste away from the area landfill (2020 relative to 2012 levels).

Additionally, the order committed the city to a number of energy efficiency tactics:

- Adhering to LEED standards for all new construction and major renovations of existing buildings;

- Benchmarking utility use (electric, gas and water) via the EPA Portfolio Manager platform, performance of GHG inventorying according to the 2010 *Local Governments Protocol*;
- Procurement of *Energy Star* rated products;
- Procurement and self-generation of renewable energy (8% each by 2020);
- Procurement of 50% of new city vehicles to include alternative fuel models by 2020;
- Creation of a Sustainability Task Force; and
- Assistance and cooperation from each department to achieve the goals above.

U.S. Department of Energy Better Buildings Challenge

- In 2015, during the administration of Mayor Andy Berke, the City of Chattanooga signed on to the U.S. Department of Energy's (USDOE) [Better Buildings Challenge](#), committing the city to reduce its energy use intensity



(EUI; i.e., energy efficiency based on a relative per square foot, occupancy and use-type framework) a minimum of 20% by 2025. The City has reduced its EUI by 36% in approximately two million square feet of city-owned and operated facilities, being recognized as the top local-government performer and third in all categories at the 2019 US DOE *Better Buildings Summit*.

The City continues to benchmark and report annually to the USDOE, while pursuing operational improvements and capital projects. Projects undertaken as a result of participation in the Better Buildings Challenge include:

- LED lighting retrofits in over 60 facilities;
- Installation of a 4-megawatt solar array that now provides over 10% of power to the Moccasin Bend Environmental Campus (MBEC), which accounts for over half of the city's municipal power demand;



LED lighting project, Downtown Chattanooga Library

- Replacement of the 40-year old HVAC system and over 800 fluorescent lighting fixtures with just 108 LED fixtures at the downtown library. This project was featured as the City's first *Better Buildings "showcase project"*, with current calculated annual electricity savings of over 46% exceeding initial estimates.
- Partnership with the Electric Power Board (EPB) to design and construct an electric power microgrid in order to provide continuous, uninterrupted power to the city's public safety headquarters (Police and Fire departments);
- Installation of a behind-the-meter solar array in conjunction with the forthcoming roof replacement of the City-County Development Resource Center.

In 2023, the City plans to transition from the *Better Buildings* program to the USDOE’s *Better Climate Challenge*, which will require a commitment to reduce GHG emissions by 50% within 10 years.

Integrated Community Sustainability Plan / GHG Inventory - In 2019, on the tenth anniversary of the 2009 Climate Action Plan, local nonprofit green|spaces completed an “*Integrated Community Sustainability Plan*” (ICSP). This plan was generated with the input of over one hundred active community members and practitioners to identify an array of values, goals, and strategies to address both physical and societal networks and resources that do not currently meet the needs of Chattanooga’s communities in an equitable fashion. It also included the GHG inventory referenced in the introduction. The ICSP provides for an abundance of opportunities for the community to respond to and generate unique solutions to ecodistrict-level challenges. The values and goals of the ICSP are shared with and helped to inform this Climate Action Plan. Together, Chattanooga will collectively benefit from the frameworks established in both plans and should continue to seek ways to leverage one for the other.

City of Chattanooga Regional Resilience Report - In 2020, the city embarked on a “*Regional Resilience*” planning effort to assess the region’s risks associated with increasing climate change and other hazards. The effort gathered input from Chattanooga leaders, stakeholders, and surrounding jurisdictions to better understand collective regional concerns in the face of climate, seismic, and pandemic driven threats. The ability to provide critical services to residents throughout more frequent, extreme, and at times concurrent stressor events is now more important than ever. These events can have wide-ranging regional impacts, and the ability to support surrounding communities in a coordinated manner will increasingly become a necessity.⁵ The resilience report identifies a large number of strategies to ensure essential functions can withstand the impacts of these stressor events. This Climate Action Plan includes implementation of the Chattanooga Regional Resilience Report to the greatest extent practicable in order that strategic capital commitments can prepare for the challenges of the coming decades.

⁵ Hamilton County Hazard Mitigation Plan





One Chattanooga Plan - In the spring of 2021, Mayor Tim Kelly came into office with a new vision of “One Chattanooga”. This vision was outlined in the “[One Chattanooga](#)” plan, which includes seven overarching goals and forty key priorities. The plan underscores the belief that Chattanooga’s success is tied to shared prosperity and common purpose, and that the challenges of the day can be met when the City acts together to solve them. It is intended to be a starting framework, with opportunities for annual accountability and input to better inform the plan for future and ongoing implementation. The “One Chattanooga” plan directly stares down the stark reality of “two Chattanooga’s”, where decades of racism and inequitable policies resulted in the two realities of Chattanooga’s “haves and have nots”, most notably along racial lines. As such, the City is placing intentional focus on reversing these trends through more favorable policies, programs and capital investments that can help bring the potential of the American dream and middle class closer to all people across the city. As it pertains specifically to sustainability, climate resilience and community health, One Chattanooga offers several initial key priorities which have helped to inform this Climate Action Plan.

The One Chattanooga plan will continue to inform and help prioritize implementation of the Climate Action Plan, and the City will use the outcomes of the ongoing One Chattanooga input process to inform and update the Climate Action Plan in the years ahead.



3. Plan

The Climate Action Plan has six major Goals, each with associated Strategies and Actions. Many of the Goals, Strategies, and Actions fall within the purview of the City's municipal operations, while others will require the City and broader community work together to accomplish them. The Goals, Strategies, and Actions are detailed in the following pages.

1. Chattanooga will reduce disparities among socially and economically vulnerable communities
2. Chattanooga will become a net zero-carbon community
3. Chattanooga will become a zero-waste community
4. Chattanooga will build a more sustainable city
5. Chattanooga will preserve and improve natural resources integrity
6. Chattanooga will be a leader in the green economy



Avondale Community
Center *LOVE* mural
by the Artist SEVEN.
Photo credit: J. Adams





3.1 Goal:
Chattanooga will reduce disparities among socially and economically vulnerable communities

The Climate Action Plan is a key component of implementing the One Chattanooga strategic plan. The One Chattanooga plan recognizes and takes actions based on the fact that there are still two Chattanoogaes. There are disparities that separate the lived experiences of Chattanoogaes based on race and income. One in four children are living and growing up in poverty in Chattanooga. Black Chattanoogaes are four times as likely to die from

hypertension and hypertensive renal disease than white Hamilton County residents. The healthiest community in Tennessee, Look-out Mountain, sits just above the Alton Park neighborhood, with health outcomes that are the second worst in the state.⁶ Communities across Chattanooga lack access to affordable, healthy food, and housing prices in Chattanooga have increased significantly faster than median incomes, leaving more Chattanoogaes “housing-burdened” and struggling to afford rent and everyday essentials.

⁶ One Chattanooga Strategic Plan

These disparities have been worsened by the impacts of the changing climate. More hot days and cold nights increase utility costs. Extreme weather increases insurance costs and can displace people who cannot afford to rebuild. Poor air quality worsens health outcomes. The actions identified in the Climate Action Plan will address those disparities, but in order to impact the people most affected by them, the actions must be deliberately and equitably planned to do so.

The overarching goal of the Climate Action Plan is its first goal - to reduce disparities among socially and economically vulnerable communities by equitably implementing the Climate Action Plan. This goal infuses every other goal, strategy, and action across the plan. To ensure that

all of the actions that arise from this plan are reducing disparities across Chattanooga, equitable implementation plans will be created for all goals, strategies, and tactics. Above all, the plan will center on Chattanoogaans, particularly those who have been most impacted by the effects of climate change and who experience the disparities most acutely. Their voices will shape the implementation of this plan so that the impacts are felt most directly by them.



CARTA electric bus and free electric shuttle in downtown Chattanooga.



G1

Quick Reference Table

◆ **GOAL: Chattanooga will reduce disparities among socially and economically vulnerable communities**

★ **STRATEGY** ▲ **ACTION**

★ **1.1 Apply equity lens and principles across all strategies and actions of the Climate Action Plan**

▲ 1.1.1 Establish City Government Sustainability Team represented by every department and division, with a focus on representing employee diversity

▲ 1.1.2 Establish community health and resilience assessments for all strategies and actions

★ **1.2 Focus community-wide implementation of the Climate Action Plan in areas of greatest health, income, and other disparities**

▲ 1.2.1 Establish process for continual and sustained public input and engagement

▲ 1.2.2 Establish a scoring matrix of publicly funded projects that incorporates social determinants of health (SDOH)

★ **1.3 Develop and implement Community Resilience & Response Plans for at-risk populations**

▲ 1.3.1 Establish Community Resilience Hubs in publicly accessible facilities

▲ 1.3.2 Establish community-wide emergency response and communication plans to ensure safety, communication, and continuation of necessary services

▲ 1.3.3 Establish evacuation routes for at-risk neighborhoods and population centers

▲ 1.3.4 Establish public water fountain/bottle refill stations in key areas such as heat islands, parks, unshaded streets and sidewalks, etc.

★ **1.4 Develop and implement resilient and energy-efficient affordable housing plans**

▲ 1.4.1 Establish housing directory and annual report to provide insights into quality, quantity, and affordability of housing

▲ 1.4.2 Site and design affordable housing developments within resilient, interconnected communities

▲ 1.4.3 Implement programs to ensure affordable housing developments remain in perpetuity





3.2 Goal: Chattanooga will become a net zero-carbon community



There is an undeniable link between human activity, rising earth-warming carbon emissions, and resultant environmental and climatic changes which will ultimately result in human and ecological hardship.⁷ To mitigate the impacts of climate change and adapt to the extreme weather events Chattanooga is already experiencing as a result, the City must develop and enact operational and capital

plans which reduce carbon emissions, build resiliency, reduce costs for Chattanoogaans, and continue providing excellent service to all Chattanoogaans.

Specifically, in order to help prevent the most dangerous scenarios (i.e. in order to maintain average warming of global surface temperatures below 1.5°C by 2050), the City of Chattanooga is committing to achieving **net-zero carbon emissions throughout all of its municipal operations by 2040**. Additionally, the City of Chattanooga is committing to achieving a **net-zero carbon community footprint by 2050**.

⁷ Intergovernmental Panel on Climate Change (IPCC) within the [Sixth Assessment Report \(AR6\)](#) Working Groups

Accomplishing these challenging but imperative goals will require a whole-of-government, as well as whole-of-community effort to define concrete, actionable actions to reduce carbon emissions. This plan identifies numerous strategies and tactics specific to municipal operations and facilities to address municipal contributions to greenhouse gas emissions. These strategies and actions are based on working knowledge of existing facility and fleet conditions, available technologies, extensive prior interviews with City staff regarding climate risk and

hazard assessment through the Chattanooga Regional Resilience Report, and publicly available resources such as the [EPA Energy Star Building Upgrade Manual](#).

The following are brief descriptions of the primary strategies and actions to accomplish the zero carbon goal. Callouts are provided to underscore key Priority Projects that have been identified to accelerate action which is expected to have the greatest impact.



4 megawatt solar array at the Moccasin Bend Environmental Campus (regional wastewater treatment plant).

G2

Quick Reference Table

◆ GOAL: Chattanooga will become a net zero-carbon community

★ STRATEGY ▲ ACTION

Chattanooga will achieve a net zero-carbon Municipal footprint by 2040

★ 2.1 Establish baseline, measure and report on progress

- ▲ 2.1.1 Conduct a GHG inventory every 2 years
- ▲ 2.1.2 Join the [Better Climate Challenge](#)

★ 2.2 Maximize energy efficiency of all City owned and operated facilities

- ▲ 2.2.1 Invest in the establishment and expansion of a robust facility and energy management team
- ▲ 2.2.2 Complete portfolio-wide energy efficiency and host-site solar feasibility study, in coordination with the Facilities Maintenance Plan
- ▲ 2.2.3 Implement energy efficiency retrofits
- ▲ 2.2.4 Implement staff recommendations from the Regional Resilience Plan

★ 2.3 Establish water use intensity reduction goals and implementation plan (energy-water nexus)

- ▲ 2.3.1 Complete baseline assessment of water use across all operations including assessment of rainfall runoff treatment intensity
- ▲ 2.3.2 Determine correlating energy and carbon intensity of treated water used
- ▲ 2.3.3 Develop hard and soft/green infrastructure improvements to meet reduction plan goals

★ 2.4 Maximize host-site solar capacity at City facilities

- ▲ 2.4.1 Conduct feasibility study for on-site solar installation, in coordination with the Facilities Maintenance Plan
- ▲ 2.4.2 Explore additional partnership opportunities with EPB for microgrids and grid resilience
- ▲ 2.4.3 Implement photovoltaic solar installations

★ 2.5 Complete plan to establish Moccasin Bend Environmental Campus (MBEC) as a self-powered campus

- ▲ 2.5.1 Implement the complete suite of operational energy-efficiency projects currently being evaluated
- ▲ 2.5.2 Complete anaerobic digestion and thermal hydrolysis process
- ▲ 2.5.3 Install compressed natural gas/renewable natural gas fueling station
- ▲ 2.5.4 Eliminate all gas flaring
- ▲ 2.5.5 Support pump station network with distributed energy resources technology

* STRATEGY	▲ ACTION
* 2.6 <i>Design all new City facilities to be net-zero/negative</i>	<ul style="list-style-type: none"> ▲ 2.6.1 Explore regenerative design for select locations ▲ 2.6.2 Incorporate electric vehicle (EV) charging infrastructure in all new City facilities
* 2.7 <i>Decarbonize City fleet</i>	<ul style="list-style-type: none"> ▲ 2.7.1 Create and implement an electrification plan for light-duty vehicles ▲ 2.7.2 Create and implement an electrification plan for all service equipment ▲ 2.7.3 Create and implement an alternative fuel plan for medium- and heavy-duty vehicles (short term) ▲ 2.7.4 Create and implement an electrification plan for medium- and heavy-duty vehicles (long term) ▲ 2.7.5 Create and implement an EV charger and alternative fueling infrastructure plan ▲ 2.7.6 Establish microgrid and/or backup power systems to support fleet fueling stations and critical EV charging locations
* 2.8 <i>Modify purchasing requirements and procedures to require and incentivize net zero-carbon and carbon offset of City contracts, inclusive of sustainably sourced, low-impact and minority-owned businesses</i>	
* 2.9 <i>Incentivize alternative transportation for City employees' commutes</i>	
<i>Chattanooga will achieve a net zero-carbon Community footprint by 2050</i>	
* 2.10 <i>Establish baseline, measure and report on progress</i>	<ul style="list-style-type: none"> ▲ 2.10.1 Conduct a GHG inventory every 2 years ▲ 2.10.2 Conduct commercial building energy-efficiency inventory, baseline, and reporting
* 2.11 <i>Encourage energy efficiency improvement in privately owned buildings</i>	<ul style="list-style-type: none"> ▲ 2.11.1 Establish Commercial Property Assessed for Clean Energy + Resilience (C-PACER) program ▲ 2.11.2 Invest in and incentivize existing and new home energy-efficiency, weatherization, and workforce development programs for low-income and vulnerable communities ▲ 2.11.3 Establish an energy-efficiency standard for rental housing to increase affordability ▲ 2.11.4 Establish utility cost disclosure program for rental housing ▲ 2.11.5 Establish a resource hub for owners and renters to access energy efficiency information and programs
* 2.12 <i>Update building code standards to improve energy efficiency of new buildings</i>	<ul style="list-style-type: none"> ▲ 2.12.1 Update building code ▲ 2.12.2 Create a phased plan for all new buildings to be net-zero/negative ▲ 2.12.3 Update SolSmart certification with Zoning Code Update and City code revisions

* STRATEGY	▲ ACTION
* 2.13 Decarbonize transportation sector	
TRANSIT	
▲ 2.13.1	Improve and expand CARTA service
▲ 2.13.2	Increase density along CARTA corridors, identify opportunities for and implement Transit Oriented Development in conjunction with frequent transit
▲ 2.13.3	Electrify CARTA fleet
▲ 2.13.4	Partner with Hamilton County Schools to electrify school bus fleet
▲ 2.13.5	Explore creation of circular connector
MULTIMODAL	
▲ 2.13.6	Expand pedestrian and bicycle infrastructure, especially in high mode-shift potential areas and low-income and underserved neighborhoods
▲ 2.13.7	Encourage and incentivize non-motorized vehicle trips - establish Transportation Demand Management incentives and policies
INFRASTRUCTURE	
▲ 2.13.8	Implement the Regional Transportation Plan and Federally-required GHG Reduction Plan
▲ 2.13.9	Complete system-wide traffic signalization assessment
▲ 2.13.10	Implement complete traffic signal system coordination and response overhaul to reduce idle times and provide congestion mitigation
▲ 2.13.11	Build out microgrid network for key signalized intersections to maintain functionality of primary surface roads during periods of electric power disruptions
▲ 2.13.12	Establish equitable network of publicly available EV charging locations
▲ 2.13.13	Optimize existing roadway infrastructure by minimizing expansion of existing and new roadways
▲ 2.13.14	Incentivize opportunities to maintain local vehicle traffic on surface routes to reduce congestion on primary regional highway routes, especially during emergency response events
▲ 2.13.15	Explore potential for car-free zones
PERSONAL VEHICLES	
▲ 2.13.16	Encourage and incentivize EV adoption
▲ 2.13.17	Require and incentivize EV charging infrastructure as part of new development (inclusive of parking lots and garages)
▲ 2.13.18	Establish and report on mode-shift goals
▲ 2.13.19	Implement policies to support autonomous vehicle growth

* STRATEGY	▲ ACTION
	COMMERCIAL VEHICLES
	▲ 2.13.20 Encourage and incentivize EV and alternative fuel vehicle adoption
	▲ 2.13.21 Require and incentivize EV charging infrastructure as part of new development
	▲ 2.13.22 Reduce commercial vehicle trips and idling off of designated truck routes
	▲ 2.13.23 Establish low- or no-emission zones
	RAIL
	▲ 2.13.24 Increase operational resilience of rail yard facilities
	AIR
	▲ 2.13.25 Implement Chattanooga Metropolitan Airport resiliency projects
* 2.14 Decarbonize community-scale power distribution and supply	
	▲ 2.14.1 Identify opportunities for distributed energy resources in coordination with EPB
	▲ 2.14.2 Encourage and incentivize home and business solar array installation
	▲ 2.14.3 Identify ways to participate in TVA Green Invest

Priority Project: GHG Inventory

As will be discussed in greater detail in the Ongoing Reporting portion of this plan, a GHG inventory is a crucial first step in implementing the Climate Action Plan. To achieve a net zero-carbon municipal and community footprint, the size and composition of the existing carbon footprint must be defined. A GHG Inventory will rigorously define the sources of carbon in Chattanooga, from electricity and gas utility use, transportation and fleet-related emissions, landfill decomposition, wastewater treatment and other sources. It will identify the most impactful ways to reduce carbon emissions, and it will create specific benchmarks for ongoing reporting of progress towards the carbon reduction goals.

A GHG inventory was completed for 2008 as a part of the 2009 Chattanooga Climate Action Plan and for 2018 as part of green|space’s Integrated Community Sustainability Plan. Overall, carbon emissions have declined since the earlier baselines, but it is important that this information is regularly updated to provide reliable information about the progress being made and to calibrate further actions to reduce carbon emissions. Additionally, this effort will be coordinated with the Regional Transportation Planning Organization (TPO) to meet federal GHG Reduction Plan reporting requirements. Lastly, the data and findings of the City’s GHG inventory will be incorporated into a global recognized reporting framework such as the Carbon Disclosure Project (CDP).

The City will undertake a new GHG Inventory, with recurring updates every two years.

✦ Priority Project: Energy-Efficiency and Host-Site Solar Feasibility Assessment

City facility energy usage is one of the City's largest utility costs and a major contributor to the City's carbon footprint. The GHG inventory conducted as part of the 2009 Climate Action Plan found that City buildings contributed over 70% of the City government's carbon footprint. Significant progress has been achieved in reducing the City's raw consumption of electric power, totalling a 25% reduction since 2012. This has reduced the City's annual electric utility expenditures over two million dollars. Still, due to the age, intermittent and changing uses of certain facilities, and backlog in maintenance, substantial opportunity for further reducing daily energy consumption remains through strategic facility improvements, consolidation and optimization of operations, and expansion of the use of building automation systems. Energy-efficiency remains the most cost-effective way to reduce carbon emissions and allows for proper right-sizing when incorporating building automation systems, renewable energy, battery storage, and other strategies.

Based on the scale and timeline needed to implement a strategic facilities improvement plan, external partners will be necessary for certain tasks. One such task is the performance of a portfolio-wide energy-efficiency and related maintenance feasibility study. Paired with the Department of Public Works's long-term Facilities Maintenance Plan, the City will conduct an energy-efficiency assessment

to inventory the existing condition of facilities and identify which energy-efficiency projects will be most impactful. A complementary on-site solar assessment will determine which facilities are best suited for solar panel installation, which will further reduce energy costs. Inputs from the Regional Resilience Report will also be incorporated into the energy-efficiency assessment. Together, this plan will position the City to effectively and competitively take advantage of forthcoming federal funding opportunities through the Bipartisan Infrastructure Law and Inflation Reduction Act.

In order to best execute these opportunities, this plan calls for the establishment and expansion of a robust facilities and energy management team. Without the existence of a team with core competencies in this focus area and the ongoing support to fulfill their duties, implementation and oversight of strategic projects will be difficult. Building this team requires investment in adequate and ongoing training, and it should also include an emphasis on hiring local residents, with an eye toward creating opportunities for low income and disenfranchised Chattanooga residents. The recently established Building and Construction Workforce Center aims to fill the void in available workforce for the local construction sector, and should serve as an example for the City to elevate employment opportunities for local residents to help fulfill facility improvement needs.

Priority Project: Fleet Conversion Plan

The previous GHG inventories identified transportation as a major contributor to the City’s carbon footprint. The City’s fleet is an essential part of delivering City services and ensuring public safety, but with vehicles running all day, every day across every neighborhood in the City, it is a notable source of air pollution. Transitioning the fleet to electric and alternative fuel vehicles will reduce the cost of operating and maintaining it, with cost reductions in fuel and maintenance. Transitioning the fleet will also have an immediate impact on Chattanooga residents. City garbage trucks, brush trucks, police cars, and more drive through neighborhoods everyday. Reducing the emissions in those neighborhoods will improve air quality, make neighborhoods cleaner, and create better quality of life for all Chattanooga residents.

Additionally, the City must prepare for changes to the vehicle market driven by manufacturers. Most major light-duty vehicle manufacturers have announced plans to transition to producing electric vehicles. Chattanooga is benefiting from this transition directly with Volkswagen expanding production of electric vehicles in their plant here, and the City’s

fleet can be a model for the intersection of City services and the green economy of the future.

The fleet conversion plan builds on the City’s ongoing experience converting light-, medium- and heavy-duty vehicles. In 2021, Chattanooga was awarded a \$950,000, TDEC-administered Volkswagen Diesel Settlement grant to replace existing diesel vehicles to all-electric and alternative fuel vehicles. Implementation of the grant is building knowledge and core competency in City staff in the employment of electric and alternative fuel vehicles for Citywide services. The grant is also supporting the establishment of infrastructure needed to power and fuel those vehicles, and is a starting point for continued expansion of electric and alternative fuel vehicles within the City’s fleet.

The City will create a plan and timeline for conversion of all light-duty vehicles to electric vehicles and all medium- and heavy-duty vehicles to alternative fuel. The plan will consider the useful life of existing vehicles and existing schedules for replacement, and will include education and training on vehicle usage and maintenance for fleet staff and drivers.



✦ Priority Project: Water Use Assessment

The intent of this strategy is to address the energy-water nexus, the relationship between the water the City uses and the correlating energy it takes to treat the water from its raw form at intake into a potable condition. The City consumes an immense amount of water across its operations, from facilities and fleet, to parks, to the largest consumer, the Moccasin Bend Environmental Campus. In addition to reducing water use for the sake of operational and fiscal efficiency, it is equally important that the City consider its consumption in the context of a regional resource that is required for downstream communities, ecological purposes, navigation and hydroelectric generation. While the city itself may not single-handedly cause a catastrophic result for any of these areas, it is important to operate within

a regional systems-based framework in order that all who depend on it may do so reliably in the face of rainfall-scarce fluctuations from year to year.

It is therefore essential that the City establish a baseline of portfolio-wide water consumption, determine the correlating energy consumption and GHG emissions, and establish a plan to meet an appropriate water-intensity reduction goal across all operations. This assessment should also consider the cost and GHG impact of treating rainfall runoff, and it should consider the ability to create opportunities for onsite water retention, groundwater infiltration, and enhanced ecological function throughout city properties through green or 'soft' infrastructure.

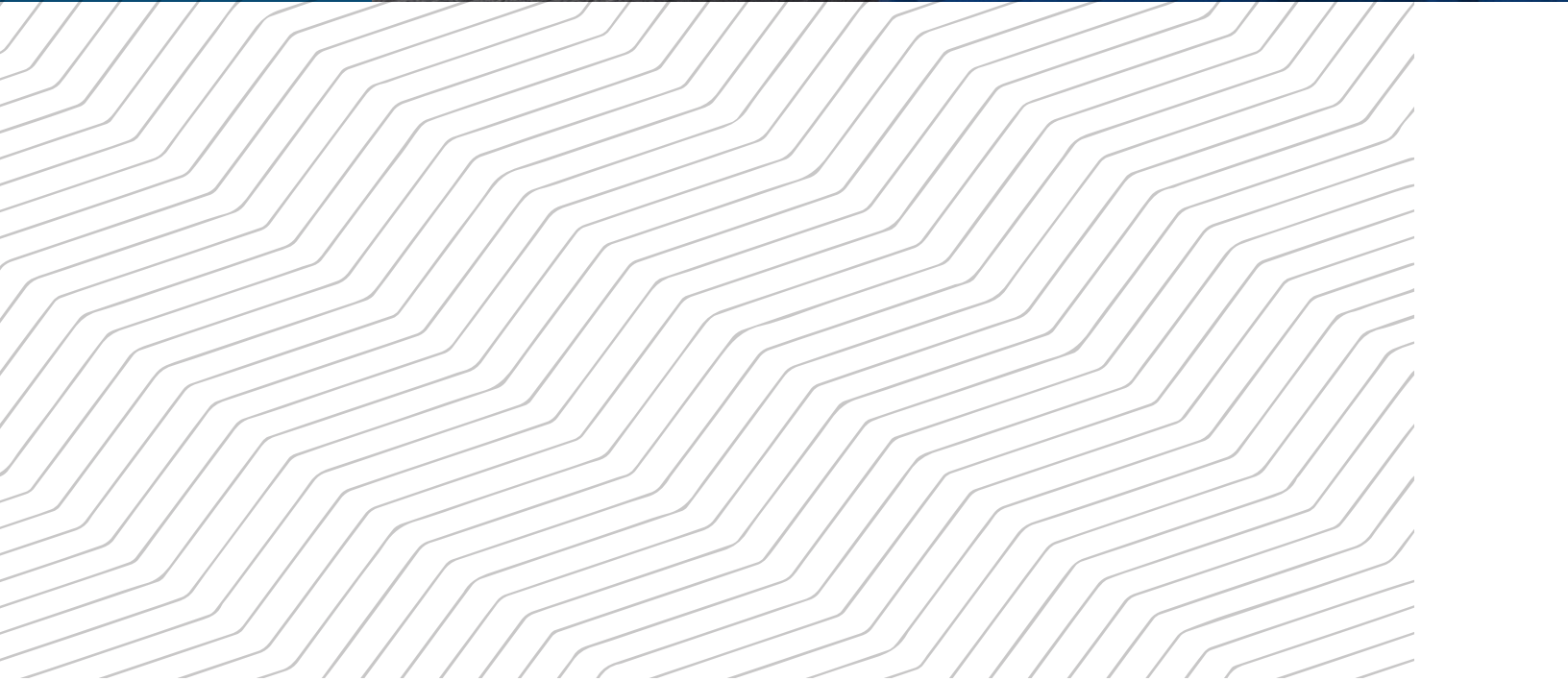
✦ Priority Project: TVA Green Invest

Another major factor in reducing the City's carbon footprint is shrinking the carbon-intensive sources of energy generated for consumption in Chattanooga. TVA's energy generation portfolio includes more than 50% from nuclear, hydro, wind, and solar, and the percentage of renewable energy generation can be increased by participating in TVA's Green Invest Program, which works with cities, local power companies and businesses to build new-to-the-world renewable energy projects.

Knoxville Utilities Board recently made a commitment through Green Invest to bring over 500 MW of solar energy online. This equates to providing

20% of the power provided to KUB ratepayers with new-to-the-world solar generation. Businesses and educational institutions across the region are also participating to expand solar generation in partnership with TVA, such as the Jack Daniels Distillery and Vanderbilt University.

The City will convene a public- and private-sector group with TVA to determine the feasibility and potential scope of a Green Invest contract. Feasibility factors will include scale of carbon offset, length of commitment, and location of new renewable energy generation projects within Chattanooga.





3.3 Goal: Chattanooga will become a zero-waste community

While the GHG inventories completed by the City for 2008 and commissioned by green|spaces for 2018 reflect that organic waste contributes a relatively small portion of the total community GHG emissions, the most recent inventory showed that the percentage increased from 0.4% to 0.5%, reflective of a growing population. Waste continues to be a concern as expressed by the community in many forums, and there are opportunities to reduce its share of overall GHG emissions.

Reducing waste can also limit the need for expansion of existing landfills, reduce associated emissions and operational cost of transferring materials by refuse trucks and increase opportunities for building a more circular and sustainable economy. All of the various waste streams (e.g. manufactured products, construction materials, office supplies and furniture, electronics, organic materials, etc.) contain an embedded carbon footprint, and contribute to GHG emissions. Lastly, each of these waste streams present an unintended potential for entering natural ecological systems, potentially impacting both aquatic and terrestrial systems and lifeforms.

Therefore, as part of this Climate Action Plan, the City is committing to achieving a **zero-waste municipal footprint by 2040**, and a **zero-waste community footprint by 2050**.

Because the issue of waste is extraordinarily complex, it will require not only the identification and implementation of best practices by the City government, it will also require the involvement of an array of community stakeholders, including residents, private businesses, property owners, manufacturers, industry, state and local government leaders, waste haulers, traditional material recovery facilities, agricultural partners, innovators, and entrepreneurs.



Warner Park Recycling Convenience Center signage (left).



G3

Quick Reference Table

◆ GOAL: Chattanooga will become a zero-waste community

★ STRATEGY ▲ ACTION

Chattanooga will achieve a zero waste municipal footprint by 2040

★ 3.1 **Establish baseline, measure and report on progress**

▲ 3.1.1 Conduct a waste stream audit every 2 years

★ 3.2 **Reduce material usage**

▲ 3.2.1 Create and implement department-specific material reduction plans

▲ 3.2.2 Implement digital and reduced-paper office procedures

▲ 3.2.3 Modify purchasing requirements and procedures to require or incentive zero-waste provisions in City contracts

★ 3.3 **Increase material and equipment reuse**

▲ 3.3.1 Create and implement department-specific material reuse plans

▲ 3.3.2 Perform biennial audits of equipment and supply reuse

★ 3.4 **Increase recycling**

▲ 3.4.1 Create short- and long-term plan for recycling citywide

▲ 3.4.2 Create coordinated public communication campaigns about recycling

▲ 3.4.3 Encourage and incentivize department recycling

★ 3.5 **Reduce organic waste entering the landfill**

▲ 3.5.1 Establish municipal-scale composting

▲ 3.5.2 Implement on-site, natural breakdown and nutrient uptake processes on City parks and public lands where possible

★ 3.6 **Reduce solid waste entering the landfill**

▲ 3.6.1 Consolidate reduction, reuse, recycling, and compost plans into an overarching landfill diversion plan

★ 3.7 **Increase efficiency of wastewater processing**

▲ 3.7.1 Create zero-waste and waste-to-energy systems

★ STRATEGY ▲ ACTION

Chattanooga will achieve a zero-waste community footprint by 2050

★ 3.8 **Establish baseline, measure and report on progress**

▲ 3.8.1 Conduct a waste stream audit every 2 years

★ 3.9 **Reduce material usage**

▲ 3.9.1 Encourage and incentivize material usage reduction

▲ 3.9.2 Identify ways to reduce single-use plastic consumption citywide

▲ 3.9.3 Encourage and incentivize material reuse programs

★ 3.10 **Increase recycling**

▲ 3.10.1 Encourage and incentivize recycling

▲ 3.10.2 Work with material recovery facility (MRF) and industry partners to identify waste stream capture and upcycling

★ 3.11 **Reduce organic waste entering the landfill**

▲ 3.11.1 Reduce original source food waste and eliminate food waste from landfill destination

▲ 3.11.2 Establish municipal-scale residential composting

▲ 3.11.3 Encourage and incentivize commercial composting

★ 3.12 **Reduce solid waste entering the landfill**

▲ 3.12.1 Incentivize waste reduction and/or charge for waste produced

▲ 3.12.2 Incentivize material recovery and reuse during construction and demolition projects

▲ 3.12.3 Explore construction and demolition recycling

▲ 3.12.4 Partner with Hamilton County Schools to develop education, research, advocacy and operational programs for waste reduction

★ 3.13 **Reduce refrigerant release**

▲ 3.13.1 Develop community-wide refrigerant audit

▲ 3.13.2 Develop community-wide refrigerant plan to manage and reduce existing sources

★ 3.14 **Invest in a circular economy**

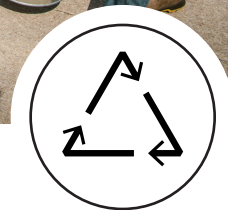
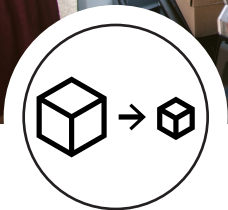
▲ 3.14.1 Establish committee formed of private industry, government, financial institutions, academia to identify and implement opportunities for creating a circular economy

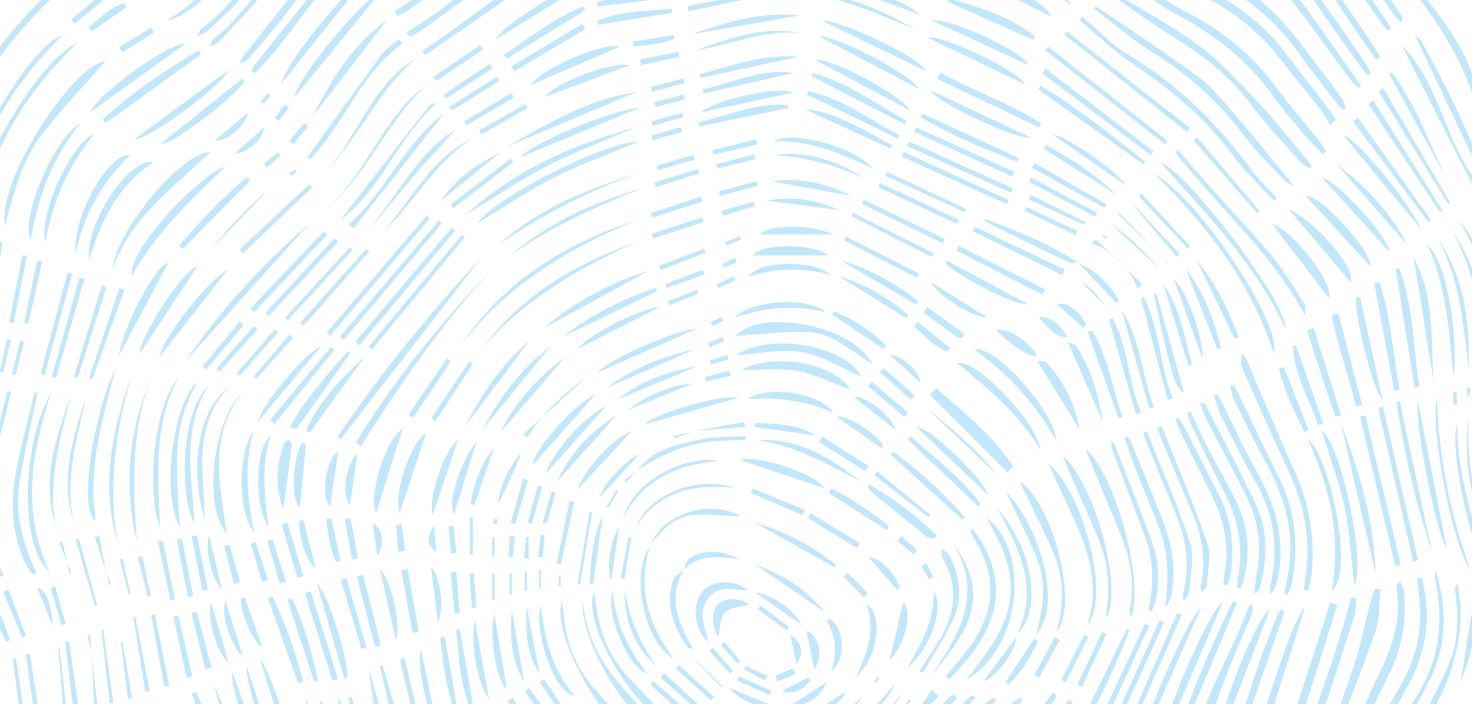
Priority Project: Waste Stream Audit

A waste stream audit is an essential first step in achieving the goal of becoming a zero-waste community. Similarly to the GHG inventory, the size and composition of the City’s waste stream must be quantified in order to know the best ways to reduce waste. A waste stream audit will rigorously define the sources and end points of Chattanooga’s waste stream, from wastewater, industrial uses, waste going to landfills, or being recycled, and it will help identify the most impactful ways to reduce waste and increase reuse and recycling.

There are ways that the City can change its own waste stream, but just as importantly, there are changes that every Chattanoogaan can make to reduce the waste they produce. As the City adapts to changes in the global recycling industry, it will also look for potential ways to divert products from the landfill, including composting, reducing material usage, and creative reuse.

The City will conduct a waste stream audit with recurring updates and regular communication about how Chattanoogaans can reduce waste going to landfills.







3.4 Goal: Chattanooga will build a more sustainable city

The Chattanooga region continues to grow and is an increasingly popular tourist destination. To meet the demands of existing and future growth, Chattanooga must create new homes and economic opportunities. To care for that population and to remain a magnet for visitors, that growth must also be balanced with the integrity of the City's natural resources. Through long-range vision and intentional planning, Chattanooga can create a more resilient community with future land uses that optimize resources and improve quality of life for everyone.

Development and land use decisions shape the City and impact everything from where and how people travel to which areas are preserved. For example, disconnected street networks with many dead end streets can lead to increased congestion and GHG emissions as vehicles are required to utilize the same road to travel between destinations. Neighborhoods with limited access in and out may be cut off from emergency and other services if the street is closed or during extreme weather events. Interconnected street networks reduce congestion, create more options for people to move around without a car, improve transit service, and are more resilient to natural disasters and extreme weather.

Clustering land uses such as daily shopping needs, offices, schools, and higher density housing enables people to bundle trips, reduces the distance people travel for daily needs, reduces vehicle emissions, and allows people to travel more easily without a car. Concentrating land uses allows for more efficient use of limited City resources, with streets, sidewalks, street lights, trees, and other infrastructure targeted to specific areas instead of spread across a broader area. Proactively planning for land uses also enables preservation of sensitive or protected natural areas.

Changing Chattanooga’s existing land uses and street networks cannot happen overnight. The City has taken shape over many decades, and it will take years to make changes. Proactive, long-range planning through the creation of plans such as the Regional Transportation Plan and Area Plans can create the framework for changes that will help accomplish the goals of the Climate Action Plan. Area Plans create a vision for how, when, and where new growth, redevelopment, and preservation should occur in a particular area. Anchored in the “Centers and Corridors” approach, the Area Plans guide the location of growth and redevelopment throughout Chattanooga and Hamilton County. The “Centers and Corridors” approach recommends clustering uses in major centers and along corridors. Translating the Area Plans’ land use recommendations into reality will require updating the City’s zoning code, recommending rezoning of particular areas, and updating the City’s development regulations to ensure new buildings and redevelopments incrementally create a more sustainable built environment.

Ultimately, land use, street networks, and development standards shape the City. Intentional planning assists in accomplishing many of the Climate Action Plan goals and supports many of the strategies across the plan, including reducing GHG emissions, building greater infrastructure and community resiliency, improving energy efficiency of buildings, preserving natural resources, and reducing disparities between communities across Chattanooga.

South Broad Redevelopment District (top).



Parks and Outdoors Plan public input meeting, Avondale Community Center (right).

Nightfall, Miller Park (opposite).



G4

Quick Reference Table

◆ GOAL: Chattanooga will build a more sustainable city

★ STRATEGY ▲ ACTION

★ 4.1 *Align land use planning, zoning, and development regulations to accomplish the goals of the Climate Action Plan*

★ 4.2 *Adopt and implement a comprehensive Smart Growth Policy*

▲ 4.2.1 Build density in appropriate locations to promote walkable communities that support transit or other mobility options

▲ 4.2.2 Establish Transit Oriented Development (TODs) in appropriate locations

▲ 4.2.3 Encourage and incentivize brownfield and greyfield development

▲ 4.2.4 Implement Area Plans through targeted Plan Implementation Projects (PIPs) that feature parks, public space, tree plantings, etc.

★ 4.3 *Adopt and implement a Centers and Corridors Policy*

★ 4.4 *Incorporate new development standards that include sustainable approaches as part of the Zoning Code Update and the City's Development Review process*

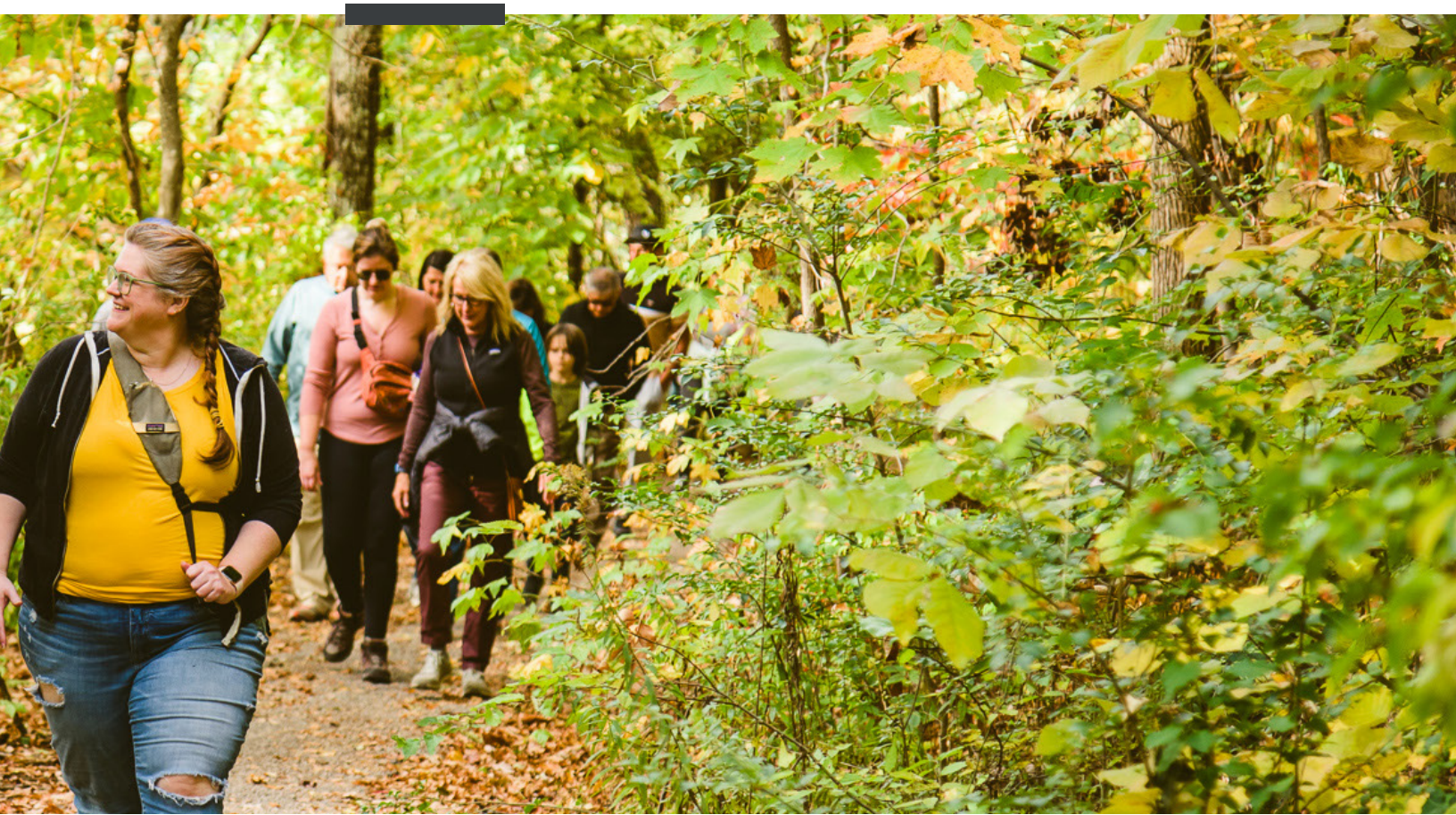
▲ 4.4.1 Create special review districts or overlays that set standards for a required percentage of open space to limit development impacts within sensitive natural resources areas

▲ 4.4.2 Study existing codes to identify ways to better connect green spaces, trails or community spaces to add features that accommodate pedestrian facilities or bikeways, while also promoting places for increased wildlife habitat

▲ 4.4.3 Review and amend the requirements of developments to incorporate sustainability measures that address water quality issues, energy use and generation, greening, electric vehicle charging infrastructure, site management, etc.







3.5 Goal: Chattanooga will preserve and improve natural resources integrity

Chattanooga is well known as a nature-based tourist destination, with accolades such as “Best Town Ever”, and it is home to a wide array of world-class outdoor activities in close proximity to downtown.⁸ All of these exist not by accident but by decades of recovery and stewardship by City residents and advocates, philanthropy, regulations, land owners and

⁸ Source: Outside Magazine

developers, academia, and support from the full range of government entities. Chattanooga’s public-private partnerships have helped establish and preserve Chattanooga’s most unique places, and have also paved the way for major outdoor events and improvements in overall public health.

Chattanooga is home to an incredibly diverse array of wildlife. Whether it be the Chickamauga and Chattanooga National Military Park, State Forests and other managed lands, City and County parks, public streetscapes, and private yards, there is a network of interconnected habitats which foster not only recreational opportunities, but greater connectivity to the broader swaths of intact ecosystems

surrounding Chattanooga. The presence and relative stability of terrestrial habitats found within the confluence of the Cumberland Plateau and Ridge and Valley physiographic regions also help to retain and filter rainfall runoff, creating wetland habitats and improving aquatic conditions to support healthy habitats for a wide range of animal, insect and fish populations.

While many of the region’s wildlife populations have experienced substantial recovery, others including endangered fish, mussel and crustacean species hang on within the tenuous balance of human impacts and resource demands. Areas such as Chattanooga’s largest intact floodplain forest of Chattanooga Creek, remain impacted by historic and present-day sources of pollution, limiting their potential, as well as presenting health threats to wildlife and the surrounding communities. Although the City has an overall 49% tree cover canopy coverage, tree coverage is not evenly distributed across the City. Trees can mitigate heat island effect, improve water quality and air quality, and reduce energy use, and where absent, result in the opposite effect.

As such, it is critical and incumbent on the City of Chattanooga to lead the effort in implementing the strategies and actions included within this goal to take a more detailed stock of the vitality of the region’s air, water, land and biodiversity, measure its benefit, and plan for the preservation of its integrity, so that these special characteristics remain in perpetuity for the benefit of all. With this foundation in mind, the City and all its stakeholders and partners can make the informed decisions necessary to do so.



G5

Quick Reference Table

◆ GOAL: Chattanooga will preserve and improve natural resources integrity

★ STRATEGY ▲ ACTION

Chattanooga will preserve and improve air quality

- ★ 5.1 Establish air quality baseline, measure and report on progress
- ★ 5.2 Fully implement the Carbon Reduction Plan as overseen by the Transportation Planning Organization (TPO)
- ★ 5.3 Fully implement all strategies and actions of goal 2 (net zero-carbon goal)
- ★ 5.4 Expand air quality monitor network with support of EPA Funds
- ★ 5.5 Invest in the Appalachian Carbon Exchange managed by TN River Gorge Trust (TRGT)

Chattanooga will preserve and improve water quality

- ★ 5.6 Establish water quality baseline, measure and report on progress
 - ▲ 5.6.1 Publish inventory of all known and listed streams, civilian corps constructed conveyances, and associated hydrologic determinations on a publically available GIS map
 - ▲ 5.6.2 Publish status of associated stream health determinations
 - ▲ 5.6.3 Evaluate increased risks to water quality due to climate driven factors
- ★ 5.7 Eliminate combined sewer overflows in accordance with EPA Consent Decree
- ★ 5.8 Restore recreational use to all major tributaries
 - ▲ 5.8.1 Establish Watershed Protection and Management Plans for all major Tennessee River tributaries
 - ▲ 5.8.2 Coordinate with TDEC and EPA on "Resident Water Quality Complaint" program
 - ▲ 5.8.3 Establish Community Creek Keeper Coalitions for all major tributary systems
 - ▲ 5.8.4 Support community cleanups
 - ▲ 5.8.5 Facilitate coordination across community and jurisdictional boundaries
 - ▲ 5.8.6 Increase funding for construction stormwater inspection positions to keep pace with development
- ★ 5.9 Establish and incentivize stream buffer easements for both publicly and privately held lands to greatest extent possible
- ★ 5.10 Establish connected green/blueway trail systems for all major tributaries
- ★ 5.11 Identify and establish conservation easements for non-isolated wetlands
- ★ 5.12 Incentivize commercial and residential indoor and outdoor water conservation and runoff improvement programs

*** STRATEGY** ▲ ACTION

- * 5.13 *Expand education and outreach for septic tank maintenance where stormwater improvements are not practicable*
- * 5.14 *Incentivize green infrastructure design and installation on private development*
- * 5.15 *Explore establishment of a green bond program to support conversion of impervious to pervious surfaces and construct new green infrastructure projects*
- * 5.16 *Continue to fund and execute the Clear Chattanooga program at Moccasin Bend Environmental Campus*
- * 5.17 *Explore application and verification in the FEMA Community Rating System to reduce flood risk, insurance premiums, and foster greater comprehensive floodplain management*
- * 5.18 *Explore adjustment of property tax rates and sewer/stormwater fees based on cost of service, density, etc. in order to adequately fund necessary improvements and treatment capacity*

Chattanooga will preserve and improve quality of land, flora, and fauna

STAFFING

- * 5.19 *Build a City workforce with core competencies for achieving strategies and actions of goal 5 (natural resources preservation and improvement)*
- * 5.20 *Operationalize the effectiveness of the Landscape Management Working Group across City operations through development of standard operating procedures and policies*
- * 5.21 *Work with area schools and universities to create a pipeline for horticultural and natural area management professionals*
- * 5.22 *Establish City-staff and resident led committees for individual focus areas*

NATURAL TOPOGRAPHY

- * 5.23 *Strengthen City code to reduce development of steep slopes and disturbance of natural contours and topography that define Chattanooga*
- * 5.24 *Adopt a Natural Resources Policy focused on the nexus of land use and natural resources preservation*

PARKS & PUBLIC LANDS

- * 5.25 *Adopt the Parks and Outdoors Plan*
- * 5.26 *Explore certification of Chattanooga as a National Parks City*
- * 5.27 *Create a system of lands owned by the City for inclusion in an urban ecology network to bring nature to every neighborhood*
- * 5.28 *Encourage adoption of natural processes in management of City parks and other public lands managed by the City*
- * 5.29 *Establish education programs focused on identification, understanding and preservation of natural ecologies*

Children enjoying Southside Community Park playground (opposite).

★ STRATEGY ▲ ACTION

HABITAT

- ★ 5.30 *Establish baseline, measure, and report on habitat preservation*
- ★ 5.31 *Establish a habitat corridor and connectivity plan*
- ★ 5.32 *Inventory and prioritize forested tracts with high ecological and recreational value for preservation and/or acquisition.*
- ★ 5.33 *Preserve established conservation easements for existing upland and riparian habitats, threatened and endangered habitats, and greenfields*
- ★ 5.34 *Establish wildlife pass-through corridors and support systems to greatest extent possible where transportation and built environment intersect with wildlife habitats*
- ★ 5.35 *Establish invasive species management plan for all public landscapes managed by the City*
- ★ 5.36 *Utilize land cover analysis to implement early detection and rapid response (EDRR) to newly forming and encroachment of invasive species*
- ★ 5.37 *Incentivize removal of invasive species on private lands in coordination with other agencies*
- ★ 5.38 *Create and implement a vegetation master plan that includes considerations for extreme climate conditions*
- ★ 5.39 *Adopt a "native plants only" planting prescription for all public landscapes owned by the City*
- ★ 5.40 *Incentivize preference for native plantings in private development standards through local codes and ordinances*
- ★ 5.41 *Create a campaign with local nurseries and retail plant sale outlets to promote the sale of native plants and trees and discouragement of non-natives, invasives, neonicotinoids, etc.*
- ★ 5.42 *Establish a Native Vegetation Certificate for landscape projects*
- ★ 5.43 *Establish Native Plant Rescue Team to identify and extract select native flora on development parcels for donation to the City's native plant nursery and/or public*



* STRATEGY ▲ ACTION

TREE CANOPY

- * 5.44 *Commit to funding a high resolution land cover analysis every two years, in partnership with Hamilton County*
- * 5.45 *Establish and implement master community forestry and tree canopy plan*
- * 5.46 *Increase funding and staffing to support implementation of the tree canopy plan and City Forester*
- * 5.47 *Focus tree planting on current low-density canopy and heat island areas, particularly in low-income and underserved neighborhoods*
- * 5.48 *Establish outstanding old growth and 'champion' tree inventory and database*
 - ▲ 5.48.1 *Publish report celebrating and elevating champion tree importance to the community landscape*
 - ▲ 5.48.2 *Develop and adopt protective ordinances for old growth and champion trees*
- * 5.49 *Strengthen and clarify the existing protective tree ordinance for City-owned trees*
- * 5.50 *Explore codified protections and incentives for preservation of privately-owned trees*
- * 5.51 *Fund and support both City- and partner-led tree planting initiatives*
- * 5.52 *Maintain Chattanooga's "Tree City USA" status*

BIODIVERSITY

- * 5.53 *Establish Chattanooga as a zero-extinction zone*
- * 5.54 *Establish a crowd-sourced species observation app to map occurrence of protected and non-protected flora and fauna species*
- * 5.55 *Inventory and catalog E-Bird hotspots within City limits*
- * 5.56 *Publish report for all known, observed protected and non-protected species within Chattanooga city limits*
- * 5.57 *Incentivize backyard habitat restoration and protection program*
- * 5.58 *Work with public and private partner organizations to increase reach and impact of new and existing programs aimed at habitat and species diversity preservation*
- * 5.59 *Evaluate implementation of the National Audubon Society's "Lights Out Program" to aid in migratory songbird preservation*

FOOD RESOURCES

- * 5.60 *Establish a baseline of local food production (e.g. urban farms, community gardens, etc.)*
- * 5.61 *Encourage and incentivize local food production*
- * 5.62 *Develop a comprehensive community garden program nested within the public park system*
- * 5.63 *Support community efforts to establish and advance access to reliable, sustainable, and healthy food sources*
- * 5.64 *Performance of a Regional Food Systems analysis*



Moon River music festival in Coolidge Park (above).



South Chickamauga Creek Greenway (below).





3.6 Goal: Chattanooga will be a leader in the green economy

Chattanooga was once known as “the Pittsburgh of the South,” based on the similar landscape of plateau escarpments, rolling hills, abundant forests, and steel mills that dominated the local economy for decades. Long-term investment in cleaning the region’s air, land, and water has transformed Chattanooga into the thriving, growing city it is today. That transformation has also laid the foundation for Chattanooga to be a leader in the 21st century

economy. EPB’s ubiquitous 25-gigabit speed fiber optic broadband network and smart grid attract companies and individuals from around the world to start and grow businesses and to work remotely among the region’s natural beauty and great quality of life. Chattanooga is also a hub for the future of global manufacturing with Volkswagen’s investment in electric vehicle production, the associated vehicle manufacturing supply chains, Nippon Paint, a company with clear environmental, social, and governance goals, and Novonix’s establishment of graphite refinement required for electric vehicle batteries.

Chattanooga has experienced record low unemployment, record job growth, and GDP growth. Still, Chattanooga remains a “tale of two cities”, and the benefits of this economic growth have not reached all equitably, and many not at all. Over 30% of Chattanooga remains within poverty conditions, and over 40% of Chattanoogaans are in economically distressed conditions. Many of the socioeconomic barriers that created this disparity remain today: limited access to education, capital, housing, transportation, healthcare, and employment. These disparities are the reason that the One Chattanooga plan focuses so heavily on dismantling these barriers, and building opportunity for every Chattanoogaan.

The global economy is continuing to change, to focus more on reducing carbon emissions and building resilience to the uncertainty of global events. Chattanooga must proactively change as well, leveraging proactive climate policies to attract new businesses and ensuring that the workforce of the future is trained and wants to move and stay here. By training City employees and Chattanoogaans broadly with the skills needed to use

and repair electric and alternative fuel vehicles and equipment; build, retrofit, and manage energy efficient buildings; incorporate ecologically-friendly landscape practices, and more, Chattanoogaans will have the skills for tomorrow’s jobs. Chattanooga can simultaneously attract the world’s top employers while growing the middle class, lifting children out of poverty, and closing gaps between the two Chattanoogaans.

The strategies and actions identified in this goal focus on building the workforce of the future, growing the economic opportunities for all Chattanoogaans, and attracting employers to utilize the region’s cutting-edge workforce in conjunction with the other Climate Action Plan goals.



The Build it Green training program by GreenSpaces Chattanooga provides energy-efficient construction industry training to young adults from low-income neighborhoods.

G6

Quick Reference Table

◆ GOAL: Chattanooga will be a leader in the green economy

★ STRATEGY ▲ ACTION

★ 6.1 **Ensure City employees are prepared to work within the green economy**

- ▲ 6.1.1 Identify and train City staff whose work will be impacted by the changing economy
- ▲ 6.1.2 Identify green economy apprenticeship programs within City departments
- ▲ 6.1.3 Create and modify City positions to accomplish all identified strategies and actions of the Climate Action Plan

★ 6.2 **Utilize City contracts to incentivize business investment in the green economy**

- ▲ 6.2.1 Modify purchasing requirements and procedures to require and incentivize green economy components of City contracts

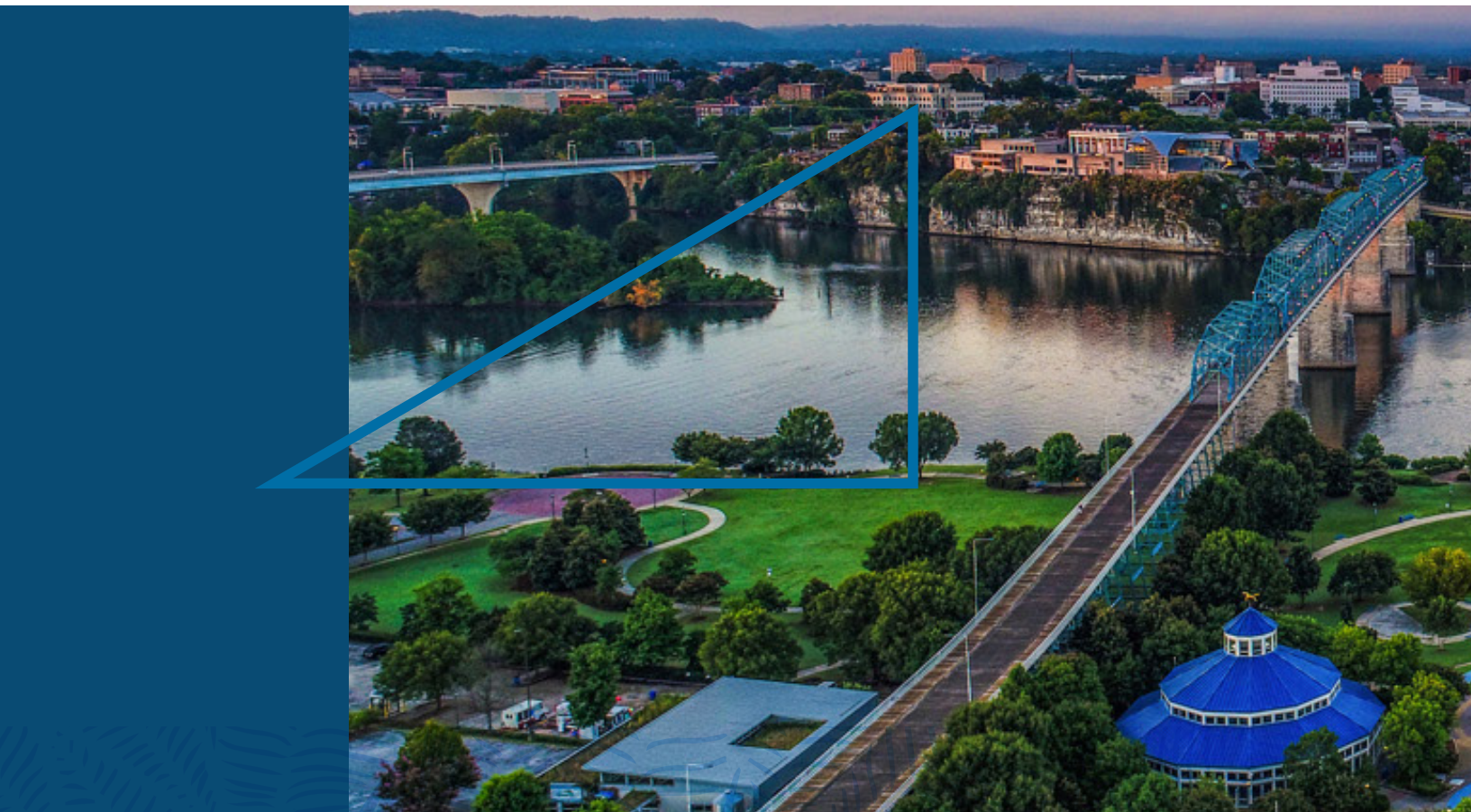
★ 6.3 **Utilize economic development to incentivize growth of the region's green economy**

- ▲ 6.3.1 Establish a committee formed of private industry, government, financial institutions, and academia to identify and implement green economy-related economic development opportunities
- ▲ 6.3.2 Target economic development incentives to business in the green and circular economy

★ 6.4 **Ensure Chattanoogaans are prepared to work within the green economy**

- ▲ 6.4.1 Partner with HCDE, higher education, and businesses to create green economy workforce development opportunities
- ▲ 6.4.2 Partner with TN Dept of Economic Development, Southeast TN Development District, TDEC Office of Energy Programs and others to establish local and regionally supporting networks of green economy opportunities
- ▲ 6.4.3 Establish a Civilian Conservation Corps







3.7 Ongoing Reporting & Updating the Plan



A greenhouse gas (GHG) inventory of municipal operations and community-scale emissions is critical to transforming this Climate Action Plan into an actionable roadmap with science-based targets. Historically, a GHG inventory has only been performed twice for the City of Chattanooga with varying levels of detail. The first occurred in 2008 during the development of the 2009 Chattanooga Climate Action Plan. This inventory was focused on both municipal operations and community-scale emissions. The second was commissioned by

green|spaces in 2018 during the development of the Integrated Community Sustainability Plan. While both of the efforts have been important in deepening the understanding of the region’s most significant contributors to GHG emissions, it is imperative that the City of Chattanooga, through adoption of this plan, commit to ongoing performance of GHG inventories at a minimum interval of every two years.

These GHG inventories will establish a reliable baseline and shared understanding of what must be done to meet the net zero-carbon goals, as well as enable tracking of progress

toward those goals. Further, the inventories will be used to document the City of Chattanooga’s progress across all applicable sectors within a globally recognized framework. With each subsequent inventory, the Climate Action Plan, and all relevant implementation plans (fleet, facilities, purchasing, etc.) will be reassessed for progress to-date, and they will be revised accordingly should implementation efforts not be keeping pace with the ultimate net zero-carbon goals.

Similarly, in order to establish a baseline and set appropriate progress milestones for zero-waste municipal operations, as well as achieve a zero-waste community goal, waste audits will need to be conducted on a biennial basis. The City of Chattanooga generates multiple waste streams, from office paper and electronics products, to furniture, automotive parts, hazardous waste, cleaning products, and more. Proper identification and accounting of these waste streams will require rigorous inventory and evaluation, and will require the support of both full-time staff and external contractors and consultants. These recurring audits will help measure progress and identify critical areas for process improvement.

From a community perspective, a city-wide zero waste goal will require even greater participation from community leaders, businesses, industry, residents, waste management services providers, and the entrepreneurial community to help track and solve this challenge. Special focus will be placed on developing multiple lanes of a circular economy to incentivize the uptake of locally produced products and materials.

The following strategies will be used to track and report on progress towards achieving the Climate Action Plan goals. (*The City and all partners will ensure throughout that individual privacy and data collection and reporting processes will follow all applicable local, state and federal laws.)

- ★ **Strategy: Key performance metrics and reporting - Key performance metrics will be established and reported for all goals, strategies, and actions in the Plan, in addition to the GHG inventories and waste audits.**
 - ▲ *Key performance metrics will be reported on the City’s website, to City Council, City employees, and through other methods, and they will be incorporated in and used to inform future versions of the Plan.*
 - ▲ *Emphasis will be placed on ensuring equity and community health are top priorities when determining key performance metrics, as well as additional strategies and actions where needed.*

- ★ **Strategy: Chattanooga Climate, Sustainability and Resilience (CSR) Committee - The City commits to collaboration with the committee to facilitate the cooperation and participation of community stakeholders and entities to inform these processes, as well as share the outcomes of the inventories and audits.**

- ★ **Strategy: Annual reporting - The City will share results of the GHG inventories, waste audits, and annual summary of updates to the Climate Action Plan with City employees and the community at large and encourage Chattanoogaans to undertake actions to accomplish the Climate Action Plan goals.**

- ★ **Strategy: Annual plan updates - The City will commit to receiving relevant feedback in order to update the Climate Action Plan on an annual and ongoing basis.**



Miller Park, downtown Chattanooga.



4. Partners

Chattanooga's greatest successes, whether they are the revitalization of the downtown core, re-establishment of the riverfront from Ross' Landing to Coolidge Park, to the Tennessee River Park and South Chickamauga Greenway Connector, to preservation of Stringers Ridge, have all been rooted in a collaborative effort between a multitude of community stakeholders. Visionary leadership, invested community members and organizations, and a willingness to commit the necessary financial resources and time to bring bold visions to reality have been critical to this success. The same will be true in approaching the challenges of addressing climate risks and an economy that is also adjusting to a new set of realities. But in this moment, there is great opportunity to yet again recommit the City to a better, more equitable and more sustainable future where the successes of this plan are more equally shared with all Chattanoogans.

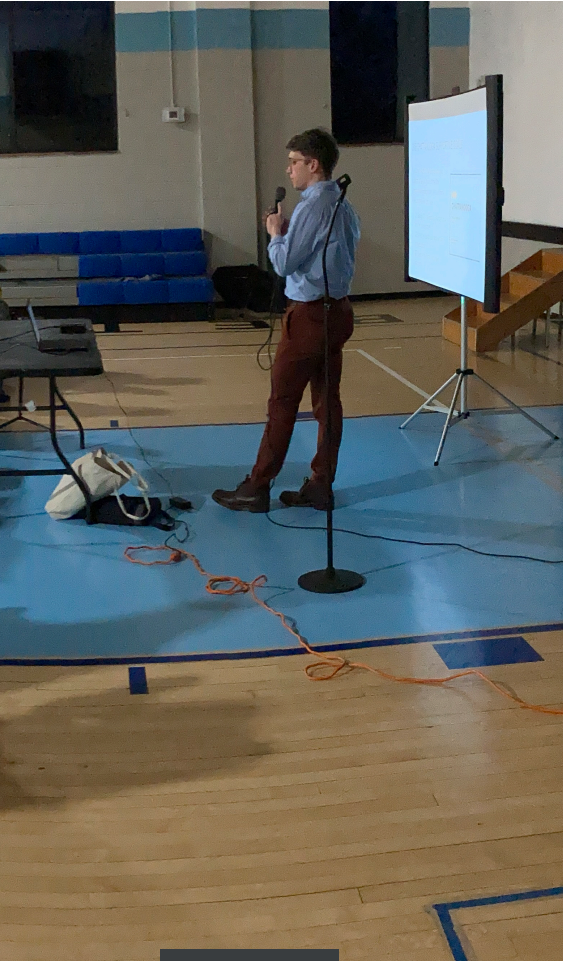
4.1 Partnerships & Collaboration

The City of Chattanooga must lead by example, use economies of scale, and incentivize greater public participation and adoption of new technologies and best practices through policy and example. Doing so requires working inside and outside of City government. In order to affect these changes, the administration of Mayor Tim Kelly has prioritized that every City department adopt sustainable practices and representation across their operations. To ensure consistent implementation and collaboration across City departments, an Internal Climate Action Plan Implementation Committee will be formed to gather key staff from every department to prioritize and facilitate implementation of the goals, strategies and actions of this plan, as well as participate in ongoing evaluation of the feasibility and effectiveness of actions, and inform any necessary changes to the plan moving forward. Department administrators and staff will also support this effort through the definition and reporting of key performance indicators, all of which will help to inform ongoing progress monitoring and biennial GHG inventory efforts.



Although external to City operations, Chattanooga’s many philanthropic, nongovernmental organizations and civically led entities, be they neighborhood associations, houses of worship, conservation or business focused groups share the goals and values of this plan. Additionally, utilities, regulatory agencies, academic institutions, and healthcare providers can also bring significant research, insights and resources to bear. Ultimately, external partners and stakeholders reflect the diversity of backgrounds and talents of Chattanooga, and they can best tailor their unique skills and resources to help identify challenges and provide solutions related to climate change mitigation, adaptation, and resilience in their respective communities.

To leverage that diversity, experience, and expertise, during the first week of October, 2022, the Office of Mayor Kelly convened a ‘Climate Adaptation Workshop’, funded by the National Science Foundation and facilitated by EcoAdapt in partnership with Virginia Tech University. While the Workshop was focused on climate change adaptation in three specific areas (Transportation, Housing, and Natural Resources), an exhaustive approach was taken to garner input from community leadership organizations including City department administrators, transportation authorities, housing authorities, design and construction representatives, utilities, academia, regulatory agencies, nonprofit and conservation organizations, philanthropic entities, and public health authorities.



Climate Action Plan community input meeting, Bethlehem Center.

The Climate Action Plan is intended to organize City operations and to motivate and coordinate community wide actions. To best understand how to do so, City staff from every department, Climate Adaptation Workshop participants, and previous planning efforts (ICSP, Regional Resilience Report, and others) have informed this plan, and recommendations from them have been incorporated into the strategies and actions that will be undertaken.

Moving forward, the following strategies will be used to organize and expand implementation of the Climate Action Plan.

- ★ **Strategy: Convene a Chattanooga Climate, Sustainability and Resilience (CSR) Committee - The focus of the CSR Committee will be on ongoing challenges that the collective community representatives can train their eyes and resources on.**

- ★ **Strategy: CSR Focus Groups - Focus groups will be established to address both the unique needs of the various communities, as well as tailored to match the skill sets available to address those needs. Focus groups may include but will not be limited to the following:**
 - Environmental Justice
 - Housing
 - Commercial Real Estate
 - Land use and development
 - Community Transportation Networks
 - Community Health Networks
 - Community Natural Resources
 - Workforce Development
 - Waste Reduction
 - Circular Economy
 - Renewable Energy
 - Electrification

- ★ **Strategy: Encourage adoption and implementation of Climate Action Plans throughout the region through the Regional Mayor's Council.**



5. Next Steps

The goals identified in this Climate Action Plan are ambitious yet achievable. Full implementation of the plan will require consistent, dedicated effort by the City of Chattanooga and partners across the city throughout the next three decades.

City staff are already making steady progress toward many of these goals with existing projects already underway, including:

- Energy-efficiency projects in multiple City buildings, including installation of solar panels on the Development Resource Center as part of a forthcoming roof replacement
- Reductions in the size of the City's diesel fleet
- Installation of electric vehicle chargers and other alternative fuel infrastructure for City vehicles and the public
- Planning for expansion and improvement of the City's park system with the Parks and Outdoors Plan

Staffing and Resources

Within the City's Department of Planning, the Office of Sustainability is staffed with two full-time City employees, a Director of Sustainability and Principal Planner, and has assistance from other Planning staff as needed. They work closely with all City departments and the many staff across the City who are already involved in implementation of the Climate Action Plan goals as a part of their daily work.

To expand that reach in 2023, the Office of Sustainability will launch the Internal Climate Action Plan Implementation Committee. This committee will consist of staff from across City departments who will work together to:

- Share best practices between departments
- Identify ways to adapt City operations to be more efficient and more closely aligned with the plan goals

- Ensure departments are implementing sustainability practices that align with the Climate Action Plan
- Identify the departments and individuals who will manage specific projects, and track key performance indicators.

The Climate Action Plan also opens an unprecedented opportunity to capitalize on new federal funding sources. The Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law), Inflation Reduction Act, annual federal appropriations, and private philanthropies have made billions of dollars available for cities to address climate change.

With the release of the Climate Action Plan, the City will receive increased amounts of existing and new program funds, such as the Energy Efficiency and Conservation Block Grant program, Carbon Reduction Program, and others.

The City is also eligible to apply for discretionary funds through multiple expanded and new programs. Chattanooga has already started receiving some of these funds, including the \$25 million RAISE grant to replace the Wilcox Blvd. bridge, increased brownfield funding through EPA grants and loans, and over \$4.5 million for an integrated electric vehicle transportation management system.

The City will maximize all opportunities for program funds in the coming years and will continue to apply for discretionary funds to ensure new funds align with the plan goals to the maximum extent possible.

All funds directed towards the Climate Action Plan will be utilized to achieve multiple bottom lines - improving the lives of Chattanoogaans, mitigating the impacts of climate change, and saving tax-payer resources. Recent energy-efficiency upgrades to City facilities exemplify this strategy by improving facility operation and resilience, reducing energy usage, and collectively saving the City over \$2 million dollars annually in operational costs.

Community-wide Engagement

Even with these increases in resources, the City cannot accomplish the goals of the Climate Action Plan alone. The longer-term, overarching goals will require that businesses, other government agencies, community groups, and individuals take action.

In 2023, the Chattanooga Climate, Sustainability, and Resilience (CSR) Committee will be convened to identify and accomplish together those strategies and actions that the City cannot achieve on its own. Composed of representatives from across Chattanooga, the CSR Committee will marshal the collective efforts and resources of the community to collectively accomplish the Climate Action Plan goals.