SEAP

STRATEGIC ENERGY ACTION PLAN

CITY of CHARLOTTE

Annual Report

2022

INTRODUCTION

In June 2018, the Sustainable and Resilient Charlotte by 2050 Resolution was unanimously passed by the City Council. It set ambitious municipal and community-wide greenhouse gas (GHG) emissions reduction goals for Charlotte. Specifically, it strives to have city fleet and facilities be fueled 100% by zero-carbon sources by 2030. It also set a community-wide goal for Charlotte to become a low-carbon city by 2050 by reducing GHG emissions to less than two tons of carbon dioxide equivalent per person, annually. Lastly, it called for a Strategic Energy Action Plan (SEAP) to determine how Charlotte would reach these two goals. The SEAP was developed in partnership with city staff and community stakeholders and was unanimously adopted by City Council in December 2018.

With three years of foundational work complete, 2022 was a year of policy alignment and implementation toward the goals outlined in the SEAP as well as a continued commitment to the following mission:

Charlotte will lead as a global city by continuously improving, protecting, and preserving the environment, its community, and economy, while ensuring equity and resilience - for today's and future generations.

The 2022 annual report demonstrates a commitment to embedding the principles of the SEAP into the fabric of our organization by aligning policies and ordinances and setting in motion data-driven systems and practices as a principle. In addition, the city leveraged partnerships to innovate and expand the reach in the community. Community-facing partnerships and initiatives will continue to be a focus into 2023 in order to scale impact and create momentum toward a healthy, resilient and low-carbon community.

In addition to this report, which captures highlights, progress and updates of SEAP-related work, a transition to reporting on progress through a data dashboard is underway. Phase 1 of this effort, focused on energy performance benchmarking, will launch in conjunction with this report.

Strategic Energy Action Plan (SEAP) Highlights

Budgeting for and Financing the SEAP

Finance

- The city and Bank of America expanded our virtual payables program from 16 city vendors to over 200 vendors and to an enrolled spend of over $50 million, which has allowed the city to lower its carbon footprint through reduction of both the printing and mailing of paper checks.
- Charlotte continued to expand Environmental, Social and Governance (ESG) disclosure in our bond offering documents. ESG information was included for the first time in our bond offering documents for Airport and Water/Sewer Revenue Bond issuances.

Budget Highlights from Fiscal Year 2023

- City Council made almost $16 million in direct SEAP investments between FY 2021 and FY 2023, with an investment of $7.1 million in FY 2023 to focus on energy efficiency, electrification and innovation that can lead to scaled solutions. Examples of some of those investments include:
  - First all-electric fire station and fire truck – one of the first in the country!
  - Continued investment in solar arrays (three).
  - Funding for putting energy benchmarking data to use for energy efficiency improvements.
- Additionally, the FY 2023 budget included planned vehicle electrification firsts such as first sworn electric patrol vehicles and first Ford F-150 electric pickup trucks.

Design for the first fully electric fire facility, which will house the first all-electric fire truck, includes:

- Electric fire engine charging.
- Electric vehicle charging and additional readiness.
- Geothermal HVAC.
- All-electric hot water and bay heating.
- Rooftop solar PV system.

TRANSPORTATION: FLEET

TRANSPORTATION: SUSTAINABLE AND RESILIENT FLEET

Strive toward 100% zero-carbon energy for municipal fleet by 2030

In 2022, the city worked around delays in vehicle manufacturing due to COVID-19 and global supply chain shortages and continued to advance electrification and GHG emissions reduction efforts. This included training and education, specifically developing an EV 101 training for city staff, and partnering with Centralina Clean Fuels Coalition to do an EV Ride and Drive, First Responder EV Training. At the same time, implementing the Sustainable and Resilient Fleet Policy (SFP) enabled a focus on purchasing the lowest-emitting vehicle depending on usage, operational needs and technology, and additional carbon-reduction measures, such as idle reduction and fleet rightsizing.

Charging Infrastructure

The primary focus in 2022 continued to be supporting the electrification of our fleet.

- The city currently has a total of 121 total electric vehicle (EV) charging stations with 205 ports. Fifty stations and 93 ports are available to the public. The city also has 17 battery electric bus (BEB) chargers with 31 ports.
- City-owned EV charging stations charged 2,153 unique drivers' vehicles, meaning 2,153 different vehicles charged at least one time at a city-owned station.

Fleet Statistics

- Vehicle idle hours avoided through anti-idling efforts in 2022 totaled 1,016 hours. These anti-idling efforts avoided 10,004 pounds of carbon.
- The city currently **has a total of 90 EVs in service or preparing to go into service**. There are an additional 72 EVs ordered, planned, or budgeted for, which will bring the total number to 162.
- Total fleet carbon dioxide emissions: **72,114 metric tons**
- Total fleet carbon dioxide avoided: **1,727 metric tons**

1 metric ton of Carbon Dioxide
=
***2,564* miles driven by an average gasoline-powered passenger vehicle**

TRANSPORTATION: SUSTAINABLE AND RESILIENT FLEET

Strive toward 100% zero-carbon energy for municipal fleet by 2030

2022 FLEET DEMOGRAHICS

Fuel Type	Light Duty	% of Total Light Duty	Medium Duty	% of Total Medium Duty	Heavy Duty	% of Total Heavy Duty	Total # of Vehicles in Each Category	% of Each Fuel Type
*Electric	61	2.0%	1	0.3%	28	3.0%	90	2.1%
*Hybrid Electric	56	1.8%	0	0.0%	68	7.2%	124	2.8%
*Compressed Natural Gas	0	0.0%	0	0.0%	40	4.2%	40	0.9%
*Propane Bi-fuel	122	3.9%	8	2.6%	0	0.0%	130	3.0%
Total Alternative Fuels	239	7.7%	9	3.0%	136	14.3%	384	8.8%
Gasoline/Diesel	2,861	92.3%	293	97.0%	813	85.7%	3,967	91.2%
TOTAL VEHICLES	3,100		302		949		4,351	-

*Denotes alternative fuel.

***Additional information*:**

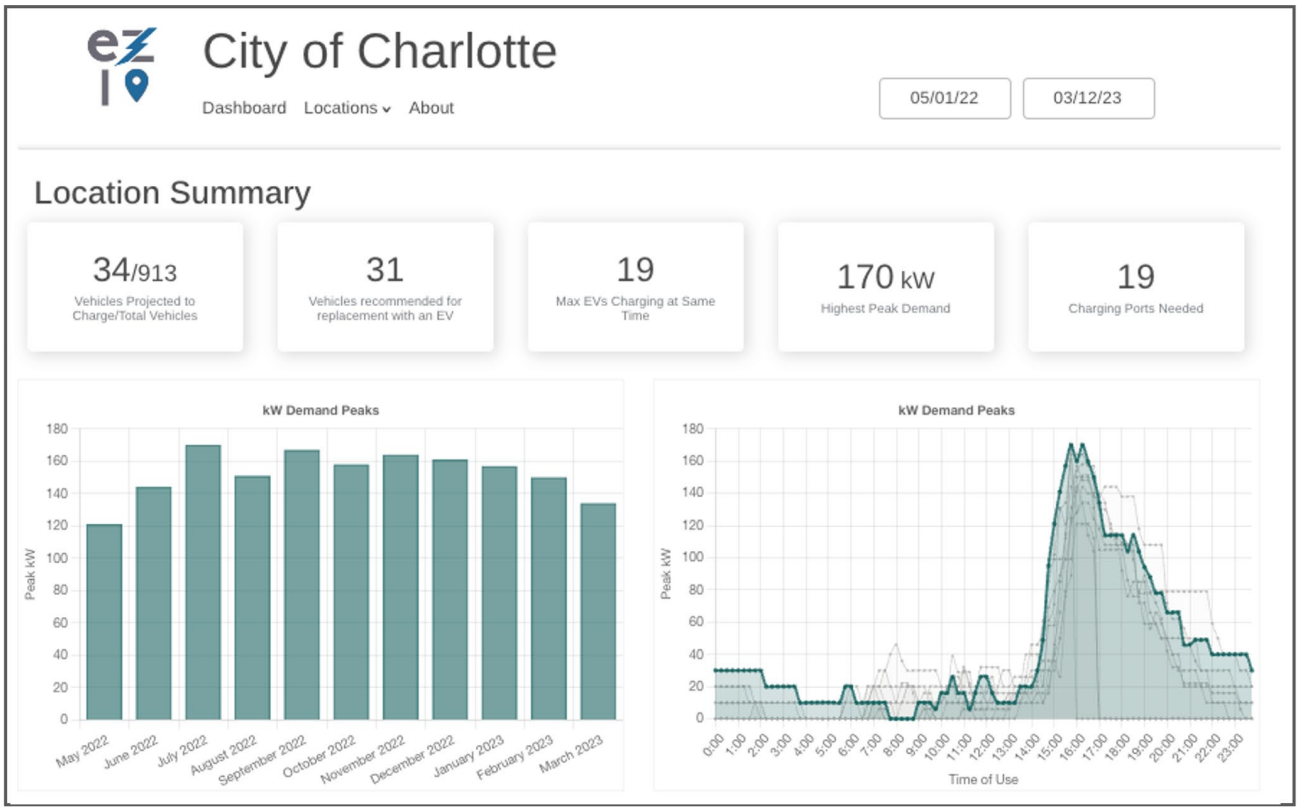
- Number of Alternative Fuel (Compressed Natural Gas) Refuse Vehicles: 40
- Percentage of Refuse Fleet: 25%.
- In 2022, Aviation and CATS both added additional BEBs, bringing the electric portion of the bus fleet to 6%.
- Ten percent of sedans are electric; Seventeen percent of non-patrol sedans are electric.

DATA-DRIVEN DECISION-MAKING TO DRIVE RIGHTSIZING AND ELECTRIFICATION

Lowering the carbon emissions of our fleet includes reducing numbers of fleet vehicles for certain uses, repurposing or decommissioning underutilized vehicles, and reducing idling.

Continued deployment of Automatic Vehicle Locators (AVLs) provides data that identifies vehicles for electrification, underutilized vehicles, and the best locations for EV charging infrastructure. By using mileage and AVL data, city staff were able to identify 24 vehicles for decommissioning and 20 underutilized vehicles that will be cascaded to other departments or used for a satellite motor pool.

Building on a pilot fleet telematics study with Sawatch, the city is now putting all AVL data into the Sawatch platform. In addition to EV suitability assessments, Sawatch analytics use minute-by-minute operational data to project vehicle charging load and aggregates that data to show how EV charging will impact peak demand at each facility, for every day of the year. This allows better planning of EV charger installations and implementation strategies to avoid energy demand charges and energy draw on the grid that at peak times can result in Duke Energy needing to bring on more carbon-intensive energy.



Sawatch data dashboard using AVL data

Light- and Medium-Duty Electrification Highlights

2022 Brought Deliveries of our First All-Electric Ford Mustang Mach-E, Ford F-150 Lightning, and Aebi Schmidt eSwingo 200+ Bike Lane Street Sweeper.

The City of Charlotte was the first local government in North Carolina to take delivery of two Ford F-150 Lightnings. With the addition of our new models, the city has a total of 10 different electric models in the fleet. City staff continue to be called on to share their expertise and experience by the NC Department of Transportation, the NC Clean Energy Technology Center and others as we all strive to reach our electrification goals.

SEAP Champion: Charlotte Department of Transportation

As vehicles are replaced and manufacturers improve truck specifications through improved technologies, there is an opportunity to consider rightsizing and typing. This is another great way to reduce emissions, fuel consumption, maintenance and unnecessary costs. CDOT has replaced nearly all backhoes and diesel class 6 and 7 single-axle dump trucks with smaller, more affordable excavators paired with gasoline-powered crew cabs, class 5 dump trucks, and smaller trailers. Doing so decreases capital equipment costs, operating expenses and emissions while enhancing operations, effectiveness and efficiency.


Gasoline/Electric F-150 & Enclosed Trailer Replaces Diesel F-450

Engaging the Community in the Transition to Zero-Carbon Vehicles through Partnerships

Decal Competition

In April, the City of Charlotte and Mecklenburg County announced that Asher Queen, a student at UNC Charlotte, was the winner of the "Leading the Charge" EV decal design competition. The first-time competition was open to local college students in Mecklenburg County.

Queen's design was placed on all city and county low-emission vehicles and he was awarded $5,000 for his work. In his design, titled "C a Cleaner Future," Queen angled a stylized green leaf upward at 30 degrees to signify the city's aspiration to create a zero-carbon fleet by 2030 and the county's goals to transition its fleet to net-zero carbon energy sources by 2035.

The new design made its official debut across the city of Charlotte and Mecklenburg County at the 2022 Thanksgiving Day parade.

Buildings & Energy Generation

Buildings: Strive Toward 100% Zero-Carbon Buildings by 2030 and Low-Carbon City by 2050

Municipal Buildings

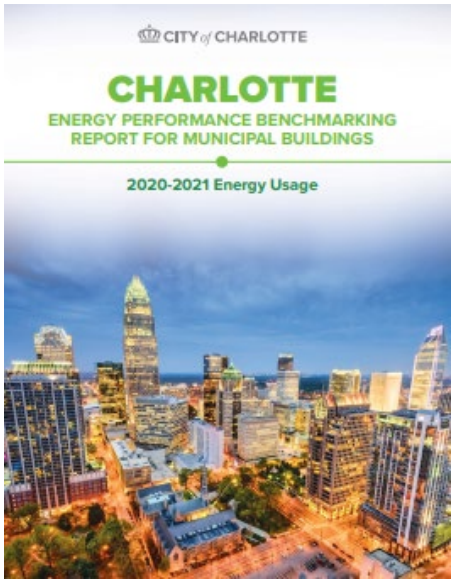
- In 2022, Charlotte publicly benchmarked energy use in its buildings for the first time - a best practice among climate-focused cities across the globe. The City Council adopted an updated Sustainable Facilities Policy (SFP) that set forth a requirement that all occupied city-owned and city-managed buildings greater than 5,000 square feet share their EUI on an annual basis in an effort to drive energy efficiency. This ensures transparency in the city's sustainability work.

- In year one of this effort, the city utilized benchmarking outcomes to identify the facilities to target specific actions for improving the energy performance of those buildings.

- This data-driven approach institutionalizes a process by which city buildings most in need of energy performance improvements are targeted and prioritized for capital investments based on available funds.

- Based on this process, energy audits, envelope testing, retrocommissioning and air compressor testing were performed on several buildings, leading to projects that will directly influence energy use. Examples include LED installation, building weatherization and HVAC replacements, as well as enhanced scheduling of building systems.

- Summary results from 2022 will be available in the 2022 Energy Performance Benchmarking report and data dashboard.



In the Community

In 2022, city staff worked with community stakeholders to prepare a voluntary building energy performance benchmarking program for the entire Charlotte community called **Power Down the Crown**. The program, set to launch spring 2023, will have a program-wide goal of reducing the energy use of its participants by at least 10% by 2030. It will use the city process as a model and invite community building owners to join the city in reducing greenhouse gas emissions; taking action to save energy and lower operating costs; sharing case studies; and tracking progress toward goal achievement.

POWER DOWN THE CROWN

Buildings: Strive Toward 100% Zero-Carbon Buildings by 2030 and Low-Carbon City by 2050

Energy Generation
City Council has invested in onsite solar energy over the past three budget cycles. Based on an increased focus in policy and investments, currently there are:

- 1,003 kW of operational solar photovoltaic (PV) at 10 city facilities.
- 1,032 kW under construction at 14 city facilities.
- An additional 160 kW under design at three city facilities.

Once all the systems are completed, **the city will have a total of 2,195 kW of solar PV in operation**. That's enough solar capacity to power approximately 14 fire stations.

Energy Efficiency in our Streets

*In 2022, nearly **6,000** street lighting fixtures were retrofitted to LED, reducing energy use of those fixtures by approximately 90%.*

Charlotte Douglas International Airport

Charlotte Douglas International Airport's Central Energy Plant achieved two Green Globes® for new construction certification, recognizing sustainability efforts for resource efficiency and reduction of environmental impacts. The certification affirms the airport's continued commitment to current and future building operations best practices, occupant health and wellness, and reducing carbon emissions.

Community Spotlight: Charlotte-Mecklenburg Police Department Independence

CMPD Independence is Silver-certified by Leadership in Energy and Environmental Design (LEED), which was created by the U.S. Green Building Council and is the world's most widely used green building rating system.

Designed under the previous Sustainable Facilities Policy, Charlotte's Independence Division 14,200-square-foot police station was designed such that law enforcement officers could bring CMPD's mission and values to life.

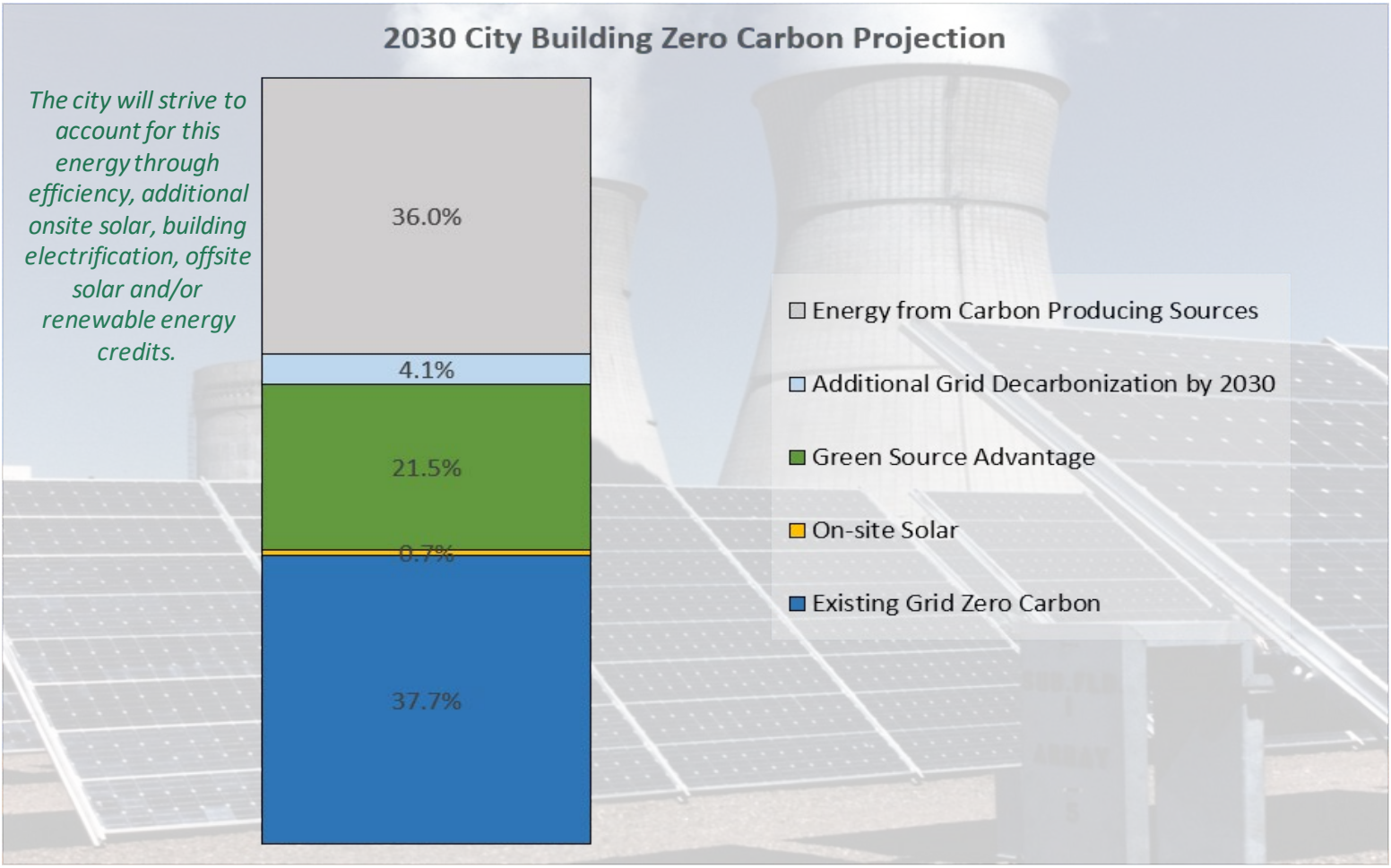
The collaborative process and the final building design, which houses office and training spaces for the division, were driven by CMPD's mission to strengthen its relationship with the community. In addition to considering the health and wellness of the officers it serves, the design of the building also considers its impact on the natural environment. Insulated concrete forms in the exterior envelope are estimated to reduce the energy required for heating by 44% and cooling by 32% while strengthening the structure and increasing its resiliency.

In addition, sustainable design features include 25 geothermal wells under the parking lots, EV charging stations, LED lighting, occupancy sensors, and green building signage that was installed to educate occupants on the project's commitment to sustainability. Constructed on a previously developed site, two large portions of the site were restored with a variety of new plantings and will be preserved as tree-save areas. Indoor potable water use is projected to be cut by 30% through the use of low-flow plumbing fixtures. Enhanced, monitoring-based, and envelope commissioning services were implemented during and after construction to further support building performance efforts. Indoor air quality was tested after construction and prior to occupancy. Permanent entryway systems, sufficiently exhausted spaces, MERV 13 filters and carbon dioxide monitors will further improve indoor air quality.

With Council's additional sustainable infrastructure investment in FY21, 28.8kw of solar is being installed that will offset approximately 25% of its energy usage.

Zero-Carbon Buildings – 2030 Projection

The below chart depicts the projected zero-carbon energy sources for the city's municipal building energy use in 2030. The city consumed approximately 318,674 MWh of energy in municipal buildings in 2022. This is an increase in energy use of 7.5% over 2021. Note that 2022 was the first year where COVID restrictions were no longer impacting building occupancy at scale.



Definitions

- Energy from Carbon-Producing Sources: Energy sources that emit carbon that the city will strive to account for through the five stages to zero-carbon energy or offset by 2030 to reach SEAP goals.
- Additional Grid Decarbonization by 2030: Energy that Duke Energy currently plans to decarbonize by 2030 based on its own stated goals and projections, updated annually for the local grid.
- Green Source Advantage Program: Planned 35 megawatt utility scale solar system that produces clean energy.
- On-Site Solar: Existing, planned for and budgeted future on-site municipal solar that is not yet operational.
- Existing Grid Zero-Carbon: Energy produced by Duke Energy that is already zero-carbon, which includes solar, hydro, and nuclear.

Note:

The above chart makes the following assumptions:

1. Total energy use will grow by 1% annually from 2022's energy use;
2. The electric and gas use mix will be the same as 2022;
3. No additional solar is accounted for beyond what is currently planned and budgeted for; and
4. Future energy efficiency projects are not accounted for.

*The city continues to refine data collection, reporting and update assumptions as information becomes available. For example, this year's total has been refined to remove fleet charging data and other non-building energy usage.

IN PARTNERSHIP TOWARD A LOW CARBON FUTURE

Highlights from the Charlotte Area Transit System (CATS)

CATS works to lower carbon emissions by reducing the need for single-occupancy vehicle trips through safe and sustainable transit options. CATS is also committed to lowering carbon emissions through internal actions throughout the region and communities served. Actions include:

Fleet and Facilities – Strategy and Operations

- CATS began development of its comprehensive **Zero-Emission Vehicle Transition Plan** to guide its journey to a zero-emission CATS fleet, which is slated to wrap up in late 2023. This plan will guide CATS in its mission to meet the SEAP goal of striving to be fueled by zero-carbon sources.

- CATS launched its first battery electric bus (BEB) pilot program in April 2022 on Earth Day and is currently operating one of the largest active BEB fleets on the east coast.

- Replacing 18 diesel buses with BEBs results in removing 1,584 metric tons annually of CO2e from the atmosphere, which is the equivalent of 4,060,661 miles driven by an average gasoline-powered passenger vehicle. (Source: United States Federal Transit Administration's Greenhouse Gas Emissions Estimator Tools and U.S. EPA Greenhouse Gas Equivalencies Calculator)

- Additionally, CATS completed the LED retrofit of all 92 CATS-owned Green/Gold pole lights along the Rail Trail, resulting in the use of 90% less energy with a 25% longer life span.

Workforce Development

- eSERVE Academy: CATS developed a first-of-its-kind training program for vehicle technicians. The program was designed to upskill current employees and produce a new generation of EV specialists to work in EV production, repair and maintenance. The training program covers comprehensive topics through lectures and hands-on workshops in advanced electric car theory and practice.

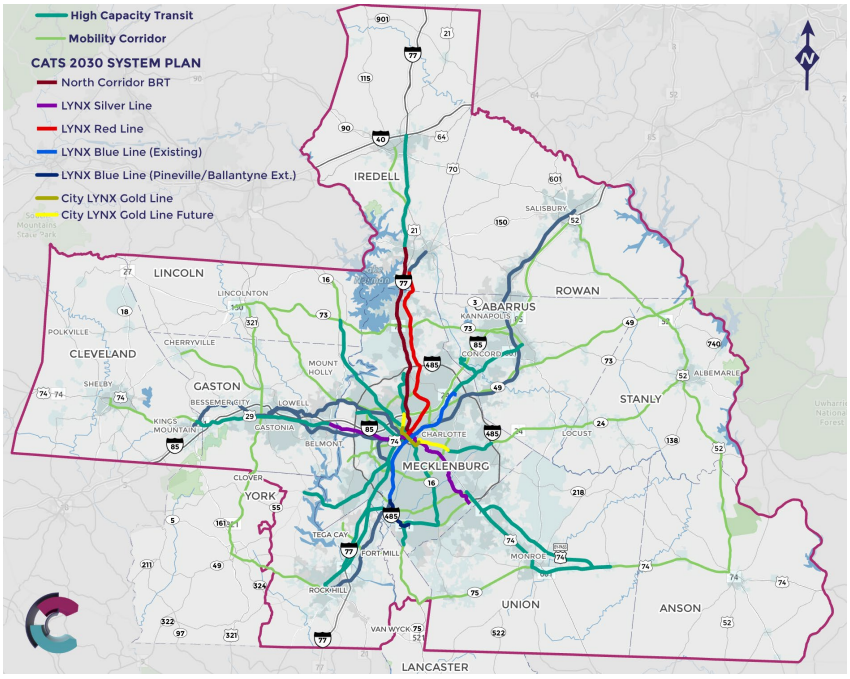
HIGHLIGHTS FROM THE CHARLOTTE AREA TRANSIT SYSTEM (CATS)

SEAP Strategy: Facilitate Rapid Uptake of Sustainable Modes of Transportation

Advancing Bus, Rail and Micromobility

EQUITABLE TRANSIT-ORIENTED DESIGN STUDY: CATS and the Charlotte Planning, Design & Development Department were awarded a $405,000 grant from the Federal Transit Administration's pilot program for transit-oriented development to conduct equitable TOD planning along the Silver Line corridor that will focus on community engagement and the development of an equitable framework to guide future growth and investments in transit station areas.

SOUTH END STATION: The Metropolitan Transit Commission adopted the location for the new light rail station along the LYNX Blue Line between the East-West and New Bern stations. Environmental studies and design will continue in 2023. The project team plans to use the Envision framework, which is a tool to help infrastructure stakeholders implement more sustainable, resilient, and equitable projects, to guide the development of a sustainable and resilient design for the station infrastructure.



ADVANCING THE 2030 TRANSIT CORRIDOR SYSTEM PLAN: CATS continued its efforts to advance the 2030 Transit Corridor System Plan and implement rapid transit in key transportation corridors to provide time-competitive alternatives to automobiles. CATS continued work on the LYNX Silver Line design and environmental study and completed the 15% design phase. Additionally, the City Council approved a contract to begin work on the Gold Line phase 3 design and environmental study, and the Metropolitan Transit Commission approved funding to advance design for the Red Line. Both the Gold Line 3 and Red Line studies will kick off in 2023.

MICROMOBILITY – ENVISION MY RIDE: The Metropolitan Transit Commission adopted the recommendation from the Envision My Ride effort, which is CATS' first system-wide approach to modernize and holistically improve bus services and amenities. The plan, when fully implemented, will include 23 high frequency bus routes serving mobility hubs throughout Mecklenburg County that connect to microtransit on-demand services. To help support implementation efforts, CATS was awarded a $750,000 grant through FTA's route restoration program.

CONNECT BEYOND: Following the October 2021 MTC adoption of the CONNECT Beyond recommendations, CATS and the Centralina Regional Council developed a scope and identified funding to start the next phase of the region's first coordinated transit plan. A consultant team was selected in late 2022. The Advancing the Plan Committee that is leading the effort will be working through the next phase throughout 2023.

GRANTS

Volkswagen funds phase 2: CATS was awarded $2,263,748 through the newly combined VW phase 2 and CMAQ grant opportunity. These funds will go toward the purchase of two battery electric buses

SEAP
STRATEGIC ENERGY ACTION PLAN
CITY of CHARLOTTE

Strategic Energy Action Plan (SEAP) Highlights

Highlights from the Charlotte Department of Transportation (CDOT)

SEAP Strategy: Facilitate Rapid Uptake of Sustainable Modes of Transportation

Adoption of Strategic Mobility Plan (SMP)

- The SMP was adopted by City Council on June 27, 2022.
- Adoption of the SMP is tied directly to the SEAP and will have a significant impact on carbon reduction by supporting the shifting of modes of travel away from predominantly single-occupancy vehicles. The plan's aspirational goal is for **one-half of all trips citywide to be made by a means other than a single-occupancy vehicle**.
- Here in Charlotte, transportation is a significant contributor to the greenhouse gas emissions that lead to climate change. Approximately 40% of community-wide greenhouse gas emissions in Charlotte come from the transportation sector.
- While the aspiration is to achieve a 50-50 mode share, the outcomes include reducing greenhouse gas emissions, maintaining travel times, improving transportation equity, improving public health and maintaining our economic competitiveness.
- The SMP organizes the goals of safe and equitable mobility around six objectives: safe, sustainable, connected, prosperous, equitable and innovative.
- The three policies intended to advance the sustainable objective include:

1. Shifting mode choices and access by increasing the share of walking, biking, and transit trips and supporting transportation demand management.
2. Supporting asset stewardship by maintaining mobility infrastructure in good repair.
3. Minimizing environmental impacts by reducing vehicle miles traveled and emissions and implementing sustainable street design.

Supporting Documents

- The Unified Development Ordinance was adopted by City Council on Aug. 22, 2022
- The Charlotte Streets Map and Charlotte Streets Manual are key technical supporting documents that the UDO references to further the goal of creating safe and equitable mobility through private development regulation.

Highlights from the Charlotte Department of Transportation

2022 Sidewalk and Bicycle Program Achievements

- Sidewalk program funding: Charlotte voters approved the 2022 transportation bonds, which more than tripled the amount of funding for sidewalks from $15 million to $50 million.
- Miles of sidewalk installed: The city set a goal to construct a minimum of 5 miles of sidewalk each year. Over the past seven years, approximately 100 miles of sidewalk have been built, averaging a little over 14 miles per year.
- Miles of bike facilities installed: The city is focused on creating an All Ages and Abilities (AAA) bike network and transforming Charlotte into a world-class bicycle city. In 2022, approximately 4 additional miles of bike facilities were constructed, resulting in the following AAA network statistics:
    - 18.5 total AAA miles.
    - 6.8 miles of separated bike lanes.
    - 11.7 miles of shared-use paths.

2022 Bike Lane and Streetscape Improvements

Uptown CycleLink: Enhancements were completed along 2.5 miles of two-way separated bicycle facility connecting three major bike and pedestrian corridors – Cross Charlotte Trail/Little Sugar Creek Greenway, Irwin Creek Greenway and the Rail Trail – creating an overall network of over 40 miles of AAA facilities.

Cross Charlotte Trail: An additional 0.3 mile segment of the Cross Charlotte Trail (XCLT) between Cordelia Park and Jordan Place was constructed, filling in an important gap between the Villa Heights neighborhood and the 25th Street LRT station.

5 Points Plaza and intersection improvements: One of the first protected intersections in the city for bicyclists, connecting bike lanes along Fifth Street, Beatties Ford Road, and Rozzelles Ferry Road to the plaza and the Gold Line streetcar was constructed along with a vibrant community open space in the same area.

16th Street streetscape: 16th Street was reconstructed with a more pedestrian- and bicycle-friendly environment, including wider sidewalks, bike lanes, planting strips, street trees and pedestrian-scale lighting, creating a safer and more attractive connection for pedestrians and bicyclists between North Tryon Street and Parkwood Avenue.

Craven Thomas Road/Robert Helms Road streetscape: This project constructed 1.5 miles of shared-use paths along Craven Thomas Road and Robert Helms Road in the Prosperity Village community and included many amenities such as benches, street trees, trash receptacles, open space plazas and public art, creating an enjoyable and attractive environment for residents, including an enhanced CATS express bus service stop with amenities.



Highlights from the Charlotte Planning, Design & Development Department

Unified Development Ordinance - Embedding SEAP Principles

The SEAP calls for city planning processes to incorporate the mission of becoming a low-carbon city. The Charlotte Future 2040 Comprehensive Plan is a shared, comprehensive vision to guide the Queen City's growth over the next 20 years. The plan is the foundation for strategic policy, equitable investment in infrastructure and regulatory tools such as the Unified Development Ordinance. Charlotte's UDO, adopted in August 2022, simplifies, consolidates and updates the regulations that guide Charlotte's development into a single document. Some examples of SEAP-supportive elements and actions embedded in the Charlotte Future 2040 Comprehensive Plan and the UDO include:

Vehicle Electrification in the Community

- With the adoption of the UDO, the city adopted its first ever EV charging requirement, which supports EV charging or the capability to install EV charging at parking lots and parking structures for multi-dwelling residential and mixed-use developments. This supports the market transition to electric vehicles, which lowers our citywide emissions.

Additionally, here is a snapshot of several other SEAP-aligned changes adopted in the UDO:

- Added height bonus menu options for High Performance Construction to increase energy efficient buildings and renewable energy.
- Added height bonus menu options for additional electric vehicle charging infrastructure above the minimum requirement.
- Added height bonus menu option for Affordable Housing Equitable Energy Efficient Home Rehab Projects: Fee Program to drive low-carbon investments in affordable housing.
- Enhanced safety and accessibility of transit, bike lanes and sidewalks to promote micromobility.

UDO
UNIFIED DEVELOPMENT ORDINANCE

CHARLOTTE FUTURE 2040 COMPREHENSIVE PLAN

Highlights from the Charlotte Planning, Design & Development Department and the Department of General Services

Charlotte's tree canopy acts as a carbon sink, meaning it helps to reduce net GHG emissions of carbon dioxide globally. As of 2018, the tree canopy in Charlotte, comprising approximately 89,433 acres, absorbs approximately 447,610 tons of carbon dioxide equivalent per year. The city's 2019 carbon emissions inventory calculated Charlotte's total emissions at 10,109,000 tons of carbon dioxide equivalent; approximately 4.4% of those emissions are absorbed by Charlotte's canopy. In addition to direct carbon sequestration, Charlotte trees provide significant shading, which reduces solar heat gain, resulting in lower energy usage and associated carbon emissions, as stated in the SEAP.

The city continues to plant and maintain trees in the right-of-way, as well as enforce tree canopy regulations in the land development permitting and conditional rezoning processes. New, innovative ideas and policies have been piloted and implemented to protect tree canopy in the past year:

- Canopy Care was implemented in three neighborhoods to help residents assess and care for large trees on their properties.
- The adopted UDO includes regulation of large trees on private property.

Charlotte has continued to show commitment to its tree canopy. In 2022, Charlotte:

- Achieved 43rd year as Tree City, USA.
- Inventoried an additional 70,000 street trees.
- Created Tree By Tree, the official inventory of trees in Charlotte, populated directly by residents.
- Had its Tree Canopy Preservation Program acquire additional land and create new protected public spaces as part of the Urban Arboretum Trail.
- Maintained arboretum status at Elmwood Cemetery in Uptown.

Highlights from the Charlotte Planning, Design & Development Department

In 2022, the Charlotte Urban Design Center placemaking grant program, with a pool of approximately $208,000, provided funding and technical support for projects that create and enhance community vibrancy, safety and identity. Project types include:

- *Activation of leftover and/or underutilized spaces.*
- *Streetscape improvements.*
- *Art and beautification efforts.*
- *Creation of community gathering spaces.*

In partnership with the Office of Sustainability and Resilience (OSR), additional funding was made available for projects that demonstrated an additional ability to achieve carbon reduction goals, provide education on environmentally sustainable practices, address climate change and/or advance the SEAP. While 16 grants were awarded, the two projects that received additional OSR funding included:

- **Living Pillar project in the Historic West End**
- **The bus stop benches project in Derita.**

Many projects were created in conjunction with members of the Charlotte Urban Design Center's pool of artists, who were commissioned to create original compositions.

Highlights from the Economic Development Department

Renewable Energy and Energy Efficiency Workforce (RENEW)

Green Workforce Development

- In 2022, 33 participants were trained through the RENEW program. To date, **121 training participants have successfully graduated** the RENEW training program. This partnership with the Urban League of Central Carolina and Goodwill provides participants with paid training and hands-on learning in the HVAC and electrical trades with a focus on energy efficiency and renewable energy. Participants graduate with relevant industry certifications and receive job placement assistance. New cohorts will be kicking off in 2023.

Highlights from Charlotte Water

Sustainability Framework

Charlotte Water developed a sustainability framework as the foundation for developing and implementing a sustainability plan focused specifically on their needs. The framework goals are to align with the city's SEAP and with Charlotte Water's strategic plan by identifying sustainability activities, connecting individual efforts under a common goal, and providing direction and priorities for decisions and budgeting. The framework provides the platform to support a circular economy philosophy. The key components include resource recovery, energy management, workforce development, fleet management, and smart technologies.

Zone 4 Operations Center

Charlotte Water has four field operations zone facilities. The zone 4 field operations center is currently under construction and will be completed this summer. The facility will house approximately 270 employees, both field operations and Charlotte stormwater. The facility, located off Tyvola Road West, will be a state-of-the-art LEED-certified facility. A solar array will be constructed onsite as part of the project. The building is approximately 64,000 square feet of administration and operations space and 44,000 square feet of outbuildings (warehouse, fueling station, vehicle wash, raw material bunkers).

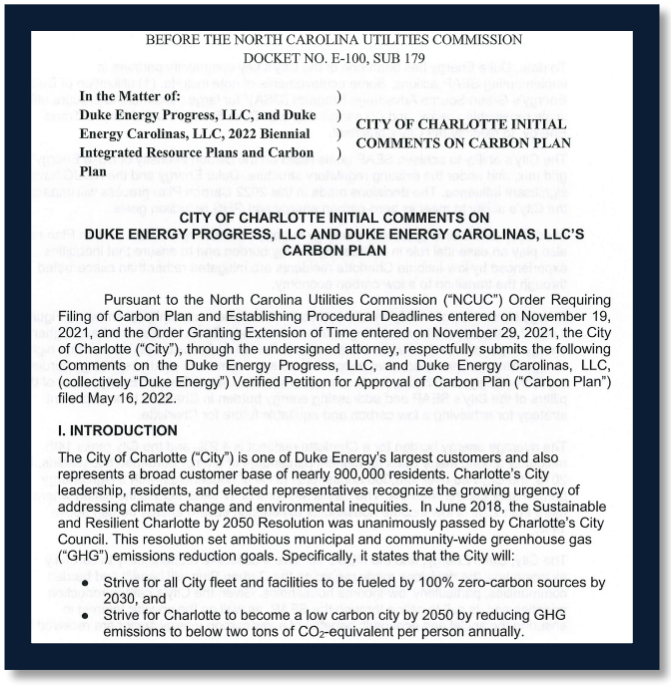
CHARLOTTE WATER

Fleet Electrification Study

Charlotte Water has completed a feasibility study for the electrification of its fleet to assess the ability and cost of implementing a 100% electrical fleet by 2030. The study was initiated to align with the city's commitment to SEAP action area number 6. The effort included an overall fleet assessment as related to EV, as well as a site-specific phase 2 considering all 17 Charlotte Water facilities and including a high-level preliminary electrical infrastructure design and cost estimate. New facilities such as zone 4 operations are being built or upgraded with infrastructure for EV for maximum buildout and to meet the anticipated fleet vehicle needs.

Engaging with the North Carolina Utilities Commission Toward a Zero-Carbon Future

- Charlotte engages in the broad spectrum of opportunities, from partnering with Duke Energy directly to participating in formal proceedings at the regulatory level.
- City participation with the North Carolina Utilities Commission (NCUC) is a part of the strategy for achieving 2030 and 2050 climate and equity goals outlined in the SEAP.
- The NCUC rules on hearings directly relevant to the city's climate and equity SEAP goals. When staff regularly engage with the NCUC on matters relevant to SEAP goals, the city's voice makes a difference.
- HB951, the bipartisan energy legislation signed into law by Governor Cooper on Oct. 13, 2021, required NCUC to take steps needed to get the state to a 70% reduction in carbon emissions by 2030 and carbon neutrality by 2050. It also required engagement in the subsequent carbon planning process.
- As a result, the City of Charlotte participated in the carbon plan by submitting formal comments.



BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 179

In the Matter of:
Duke Energy Progress, LLC, and Duke Energy Carolinas, LLC, 2022 Biennial Integrated Resource Plans and Carbon Plan

CITY OF CHARLOTTE INITIAL COMMENTS ON CARBON PLAN

CITY OF CHARLOTTE INITIAL COMMENTS ON DUKE ENERGY PROGRESS, LLC AND DUKE ENERGY CAROLINAS, LLC'S CARBON PLAN

Pursuant to the North Carolina Utilities Commission ("NCUC") Order Requiring Filing of Carbon Plan and Establishing Procedural Deadlines entered on November 19, 2021, and the Order Granting Extension of Time entered on November 29, 2021, the City of Charlotte ("City"), through the undersigned attorney, respectfully submits the following Comments on the Duke Energy Progress, LLC, and Duke Energy Carolinas, LLC, (collectively "Duke Energy") Verified Petition for Approval of Carbon Plan ("Carbon Plan") filed May 16, 2022.

I. INTRODUCTION

The City of Charlotte ("City") is one of Duke Energy's largest customers and also represents a broad customer base of nearly 900,000 residents. Charlotte's City leadership, residents, and elected representatives recognize the growing urgency of addressing climate change and environmental inequities. In June 2018, the Sustainable and Resilient Charlotte by 2050 Resolution was unanimously passed by Charlotte's City Council. This resolution set ambitious municipal and community-wide greenhouse gas ("GHG") emissions reduction goals. Specifically, it states that the City will:

- Strive for all City fleet and facilities to be fueled by 100% zero-carbon sources by 2030, and
- Strive for Charlotte to become a low carbon city by 2050 by reducing GHG emissions to below two tons of CO_2-equivalent per person annually.

More Zero-Carbon Energy

Reduction of Energy Burden (Equity)

Increased Programs for Electric Vehicles

Coal Retirement

Increased Focus on Efficiency

Local Government Opportunities and Programs

Community Spotlight: Engaging the Community in the Transition to Zero-Carbon Vehicles through Partnerships

Spotlight on PoleVolt
In February, an EV charging station was deployed at the Ritz at Washington Heights park in the Historic West End. This charger uses pioneering technology that could provide a solution for people that lack the off-street parking needed for home charging systems.

PoleVolt uses existing streetlight infrastructure to reduce the costs associated with installing charging stations by as much as 50%. In Charlotte, much of the streetlight infrastructure uses overhead wiring. By connecting to those circuits, additional wiring is not needed underground.

The project was a partnership between the Energy Production and Infrastructure Center at UNC Charlotte, the City of Charlotte, Centralina Regional Council and Duke Energy.

In addition to testing new technology and providing access to charging along the Beatties Ford Road corridor, the charging location became a host to a purple air quality monitor and was the focal point for an educational event called EV's for Equity, hosted by CleanAIRE NC, Historic West End Green District, the Centralina Clean Fuels Coalition and PoleVolt project partners. This event allowed residents to come out and learn about sustainable transportation and local electrification efforts.

A second location will be deployed in 2023.

UNIVERSITY OF NORTH CAROLINA CHARLOTTE
DUKE ENERGY®
CENTRALINA REGIONAL COUNCIL

AWARDS, RECOGNITIONS, & GRANTS

Strategic Energy Action Plan (SEAP) Highlights

In partnership with UNC Charlotte and Duke Energy, the city received the **Diversity, Equity and Inclusion in Cleantech award** from the Research Triangle Cleantech Cluster for the PoleVolt initiative to develop curbside charging stations in the Corridors of Opportunity. The first station was installed at the Ritz at Washington Heights.

In November 2022, the city, in partnership with Centralina Regional Council and Southern Alliance for Clean Energy, launched a new **EV carsharing program** that will be deployed at five affordable housing developments across the city. The program is part of a nationwide Affordable Mobility Platform (AMP) funded by the U.S. Department of Energy and managed by Forth Mobility. The purpose of AMP is to increase access to electric transportation by making low-cost EVs available to underserved communities. Out of the 10 participating cities in the U.S., **Charlotte is the only one in the Southeast**.

As a signatory to the Global Covenant of Mayors, the city reports its climate actions and planning through the CDP (formerly called the Carbon Disclosure Project). CDP is a nonprofit that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts. In 2022, **the city received an A-**, the highest grade to date. The score exemplifies the city's efforts in addressing climate change and demonstrates progress.

In October 2022, the City of Charlotte was **awarded a VW mitigation grant** from NCDEQ to purchase a new class 8 semi-truck for use by CDOT. The new truck, an all-electric semi-truck, will replace an existing class 8 truck. This would be the first nontransit class 8 heavy-duty vehicle the city would replace with an electric version. The truck that will be replaced operates daily with a duty cycle of approximately eight hours a day. The truck to be replaced is located at Northpointe location, which is in a designated corridor of opportunity.

SEAP

STRATEGIC ENERGY ACTION PLAN

CITY of CHARLOTTE

Charlotte will lead as a global city by continuously improving, protecting, and preserving the environment, its community, and economy, while ensuring equity and resilience - for today's and future generations.