



## TOWN OF CARRBORO

**TRANSMITTAL**

**Manager's Office**

**DELIVERED VIA:**  *HAND*  *MAIL*  *FAX*  *EMAIL*

**To:** Richard J. White III, Town Manager

**From:** Laura Janway, Environmental Sustainability Coordinator  
Patricia McGuire, Planning Director

**Date:** October 5, 2021

**Subject:** Implementation Update: Energy and Climate Protection Plan (2014)  
& Community Climate Action Plan (2017)

### Summary

The purpose of this memo is to provide the Council with a progress report on implementation of the Energy and Climate Protection Plan (ECPP), adopted May 28, 2014, and the Community Climate Action Plan (CCAP), adopted January 24, 2017. Both plans were updated in 2020 with an 80% reduction goal in per capita greenhouse emissions by 2030. Town staff are examining and pursuing several initiatives to reach the emissions reductions goals.

Staff have continued to implement the ECPP through the Facilities Rehabilitation and Renovation Project and greenhouse gas (GHG) emissions inventories.

Recent CCAP implementation measures include progress on the installation of two electric vehicle (EV) charging stations on Town property and the submission of two proposals to the Orange County Community Climate Action Grant Program. The proposals requested funding for solar photovoltaic panels and a green roof for the 203 Project as well as funding for a part-time staff member to monitor organics collection at the Carrboro Farmers' Market.

Additionally, staff are working to implement the green neighborhoods grant program and a transportation demand management project as well as finalizing guidelines and protocols for an independent invasive species removal volunteer program. Staff have also completed an update to the Town Code to allow for Managed Natural Landscapes and will perform outreach for this initiative.

### Energy and Climate Protection Plan

#### Facilities Rehabilitation and Renovation

- *Policy Connections:* ECPP Section 2.B.i: Building Assessments and Ratings

Jim Spencer Architects, PA and Sud Associates, PA provided reports to the Town Council in spring 2021 with information regarding proposed conditions for Town Hall, the Century Center, and Public Works facilities, as well as the energy analysis and preliminary recommendations

regarding moving these facilities toward net zero. After incorporating feedback from the Town Council and staff, they will revise and present the final report to the Council.

### **Municipal and Community Greenhouse Gas Inventories**

- *Policy Connections:* ECPP Section 4 (Measurement, Inventory, Assessment, and Reporting).

University of North Carolina graduate student Jacob Becker recently worked to update Carrboro’s municipal and community greenhouse gas inventories for his Master’s Project. To ensure consistency, he utilized the software program used by students to complete the 2012 inventory. The software program, ClearPath, employs the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), developed by ICLEI along with the World Resources Institute and the C40 Cities Climate Leadership Group.

The results from Mr. Becker’s analysis comparing municipal and community emissions from 2009, 2012, and 2019 are shown in Table 1 below. Greenhouse gas (GHG) emissions were measured in metric tons of carbon dioxide equivalent (CO<sub>2</sub>eq).

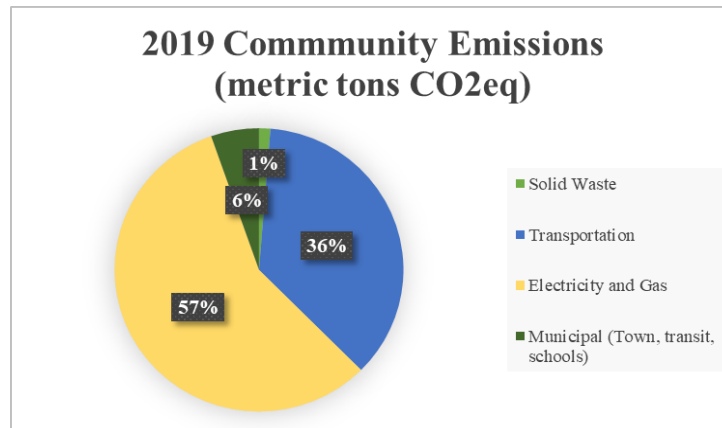
#### *Emissions 2009-2019*

<b>Community Emissions</b>	<b>2009 Emissions (metric tons CO<sub>2</sub>eq)</b>	<b>2012 Emissions (metric tons)</b>	<b>2019 Emissions (metric tons)</b>	<b>Change 2012 to 2019</b>	<b>% Change 2012 to 2019</b>
Solid Waste	1,678	3,034	1,336	(1,697)	-56%
Transportation	31,576	31,183	38,342	7,159	23%
Electricity and Gas	71,645	70,355	60,433	(9,921)	-14%
<b>Total Community</b>	104,899	104,572	100,112	(4,459)	-4%
Per Capita	5.27	5.31	4.72	(0.59)	-11%
Municipal Emissions (Town + Schools)	8,718	7,382	5,682	(1,700)	-23%

Total community emissions have decreased 4% since 2012. There has been a 11% decrease in per capita emissions since 2012 and municipal emissions have decreased 23% in this time period. Vehicle emissions increased 23% due to an increase in miles driven in Carrboro. Emissions from electricity and natural gas decreased by 14% due to changes in the electric grid, however, overall energy usage increased by 6% due to an increase in natural gas usage.

In each of the three inventoried years, residential and commercial electricity use are responsible for most GHG emissions, followed by transportation and gas heat. At the municipal level,

emissions from electricity usage and gas heat produce the most emissions, followed by transit and vehicle use. Emissions from solid waste account for ~1% total GHG emissions.



In addition, Mr. Becker performed an analysis to account for fugitive methane emissions created from the entire lifecycle of natural gas production, transmission, storage, and downstream distribution. Methane (CH<sub>4</sub>) is a more potent greenhouse gas than carbon dioxide. Using research by Dr. Robert Howarth on estimated methane leak rates, Mr. Becker found that the additional methane emissions for 2019 are equal to 8,650 metric tons CO<sub>2</sub>eq.

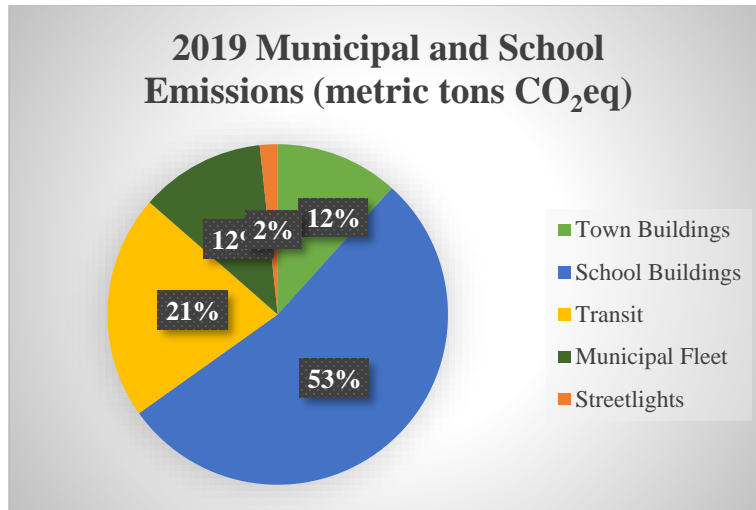
These emissions are classified as Scope 3 emissions using the GPC. The GPC distinguishes between emissions that physically occur within the city (scope 1), from those that occur outside the city but are driven by activities taking place within the city’s boundaries (scope 3), from those that occur from the use of electricity, steam, and/or heating/cooling supplied by grids which may or may not cross city boundaries (scope 2). Staff are also working to finalize a report which quantifies additional scope 3 emissions related to dietary habits of Carrboro residents.

Staff utilized Mr. Becker’s analysis to further explore emissions in Carrboro.

#### Municipal and School Emissions (metric tons CO<sub>2</sub>e)

	2012 CO <sub>2</sub> Emissions	2019 CO <sub>2</sub> Emissions	Change in Emissions	Percent Change
Town Electricity + Natural Gas	658	781	123	19%
School Electricity + Natural Gas	4,639	4,011	-628	-14%
Transit	954	1,598	644	68%
Municipal Fleet	693	890	197	28%

After the streetlight change out to LED lights was completed in late 2019, average monthly energy usage dropped from 65,000 kWh/month to 30,000 kWh/month, resulting in approximately 54% reduction in streetlight emissions.



Departmental Fuel Use Emissions (metric tons CO<sub>2</sub>e)

Source	2012	2019
Police Dept.	292	320
Public Works	305	447
Fire	81	110
Planning	8	8
Parks and Recreation	4	4
Town Manager	1	0
Information Technology	2	1
Total	<b>693</b>	<b>890</b>

### Town Fleet Alternative Fuels Exploration

- *Policy Connections:* ECPP Section 2.C (Fleet Replacement and Efficiency)

Town staff will work to utilize \$100,000 in the FY21-22 budget on a study to evaluate alternatives and options to convert the Town fleet to a new fuel source to reduce greenhouse gas emissions. Staff have planned an initial meeting with a small group of employees and will move to a larger group as scoping continues. Staff will review examples from other communities and create a preliminary draft Request for Proposals (RFP). Staff will bring the draft RFP to the Council for scoping this winter.

### Community Integration

### Climate Action Team (CAT)

- *Policy Connections:* CCAP Community Integration Recommendation #5: Expand Capacity

The Town Council adopted a Town Code Amendment to create the Climate Action Team on October 20, 2020. The Town Clerk is promoting open seats and collecting applications for this advisory board. Per direction from Town Council members, the Town Clerk will bring applications to the Council for consideration when diversity among applicants is addressed.

### **Green Neighborhoods Grant Program**

- *Policy Connections:* CCAP Community Integration Recommendation #3: Create Participatory Green Neighborhood Budgeting Program to Reduce Carbon Emissions, Build Community, Save Money, and Reallocate Savings to New Green Project Initiatives

Staff have incorporated comments from the Town Council into the program and are currently planning to move forward with an outreach campaign this fall. Environmental Advisory Board members discussed the program during summer meetings and provided input on outreach strategies. Staff plan to utilize approaches employed by the Town during the development of the Comprehensive Plan. Staff are also working to finalize financial documents for the program.

### **Modules Project**

- *Policy Connections:* CCAP Community Integration Recommendation #5: Expand Capacity

Staff have been working with members of the community to create a library of modules to share with the public and local partners. Four modules have been reviewed by the Environmental Advisory Board and edited by volunteers and staff. These modules discuss transportation, ecosystems, composting, and food choices.

### **Orange County Community Climate Action Grant Program**

- *Policy Connections:* CCAP Buildings Recommendation #1: 80% Challenge; Ecosystem Recommendation #3: Accelerate/Expand Organic Waste Collection/Composting; ECPP Recommendation 3.C: Renewable Portfolio

Staff submitted two proposals to this program in July 2021 to fund several projects, involving solar photovoltaic panels and a green roof for the 203 Project, as well as staffing the Carrboro Farmers' Market organics collection/composting. Staff expect notification of proposal status this fall.

## **Building Energy Efficiency Measures**

### **Energy Efficiency Revolving Loan Fund (EERLF)**

- *Policy Connections:* Buildings Recommendation #1: Reduce Emissions Attributed to Carrboro Buildings by 80% by 2030, #2: Energy Audit/Performance Rating; Community

Integration Recommendation #4: Integrate Climate Action with Local Living Economy,  
#6: Facilitate Low Cost Financing for Energy Efficiency & Renewable Energy Projects

Staff have held meetings and discussions regarding the planned updates to this program. Staff are now working to draft new program guidelines and will also examine opportunities to leverage this funding with larger-scale Federal programs.

### **Housing and Community Services**

*Policy Connections:* Buildings Recommendation #1: Reduce Emissions Attributed to Carrboro Buildings by 80% by 2030

Last year, the Town supported five new projects, homes owned by low-income seniors in Carrboro. The repairs were emergent in scope. They addressed: non- or poorly-operating HVAC systems, severe plumbing and electrical issues, poorly fitting doors, and critical modifications to allow the homeowner to age in place.

The Town also supported the rehab of 12 apartment units owned by Empowerment, Inc. The majority of the work was focused on renovating kitchens and bathrooms, including replacing older plumbing fixtures with low-flow fixtures, installing shower and toilet shut off valves, and installing water efficient toilets.

Finally, the Town supported the rehab of 1700 North Greensboro St. This house will provide 7 units of permanent supported housing in Carrboro. Energy efficient features include:

- LED lighting and occupancy sensors in each room.
- Replace windows with low-E windows.
- Update insulation from R-30 to R-38.
- Energy star appliances in the kitchen and laundry room.
- Low flow plumbing fixtures.

## **Transportation**

### **Volkswagen (VW) Settlement Phase 1 – Level 2 Charging Station**

- *Policy Connections:* ECPP Goals; CCAP Transportation Recommendation #1: Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 80% by 2030.

The North Carolina Department of Environmental Quality has offered all applicants an extension on agreements for electric vehicle (EV) charging stations. Staff are working to finalize station installation and ensure all grant requirements are met. Stations will be operating by spring 2022.

## **EV Charging Stations Priority Analysis**

- *Policy Connections:* ECPP Goals; CCAP Transportation Recommendation #1: Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 50% by 2025.

Staff are working with employees from other local jurisdictions to discuss a county-wide Geographic Information Systems (GIS) analysis to prioritize locations of EV charging stations in order to ensure a well-planned network of stations around Orange County. This analysis will allow staff to be prepared for future funding opportunities. Town staff have discussed performing a Carrboro-specific analysis as well.

## **Transportation Demand Management (TDM) Grant – Fresh Starts Project**

- *Policy Connections:* CCAP Transportation Recommendation #4: Further Promote Walking, Biking, Transit

Project partners held a kickoff meeting for this project in July 2021. The Center for Advanced Hindsight (CAH) created surveys for all partners to assist with alignment on project goals, timeline, and data. CAH has initiated their ethics process by providing a description of the project to their Institutional Review Board (IRB). The IRB will ensure the research is well-thought-out from an ethics perspective and that any data is secured and participants are aware of the process. The project will proceed in six stages; welcome boxes will be delivered in February 2022 and field data will be collected March-May.

## **Contribution to Piedmont Electric Membership Corporation (PEMC) for Electric Vehicle (EV) Charging Station at Carrboro Plaza**

- *Policy Connections:* ECPP Goals; CCAP Transportation Recommendation #1: Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 50% by 2025.

The Town finalized a payment contributing towards PEMC's match for the grant in June 2021.

## **Walking School Bus**

- *Policy Connections:* CCAP Transportation Recommendation #4: Further Promote Walking, Biking, Transit

Planning Department staff are working to organize a walking school bus for local students. Staff held an initial meeting with parents on September 23, 2021. The first Walking School Bus is planned for October 6<sup>th</sup> in conjunction with National Walk to School Day.

## **Land Use Ordinance Text Amendments**

On June 8, 2021, the Town Council approved an ordinance to amend the existing parking standards in Article XVIII of the Land Use Ordinance to establish requirements for EV charging stations and EV-capable infrastructure.

## Ecosystem Protection and Enhancement

### NC Urban Forest Council Grant

- *Policy Connections:* Ecosystem Recommendation #4: Tree Preservation, Protection and Conservation; Ecosystem Recommendation #6: Pursue Watershed Restoration Actions to Protect Local Streams from Changes in Rainfall Due to Climate Change

Staff submitted the final project report in April 2021 and are currently finalizing related outreach materials. Staff will continue to monitor the health and condition of the trees and other plantings and replace and maintain vegetation as necessary.

### Bee City USA, Mayors' Monarch Pledge

Staff held an outreach event at the Carrboro Farmers' Market over the summer to promote National Pollinator Week. Staff distributed educational materials related to pollinators and native plants and held a milkweed seed giveaway for residents in conjunction with the Mayors' Monarch Pledge.

In addition, staff organized a virtual movie showing of the film, *A Ghost in the Making: Searching for the Rusty-Patched Bumble Bee*. The rusty-patched bumble bee (*Bombus affinis*) pollinates wildflowers and crops such as apples and cranberries and is one of more than 4,000 bee species native to North America.

Rusty-patched bumble bees once ranged in grasslands throughout the east and upper midwestern U.S., but have declined by 87% in the last 20 years as a result of habitat loss, disease, intensive farming, pesticide use, and climate change. Due to this decline, the rusty-patched bumble bee was the first bee species in the continental U.S. to be listed on the Endangered Species List.

In March 2021, Mayor Lavelle joined the Mayors' Monarch Pledge. Staff are working to implement the program's monarch habitat and education commitments. In September 2021, Mayor Lavelle proclaimed October 2, 2021 as Mayors' Monarch Pledge Day and encouraged all residents to learn about and celebrate monarch conservation.

### Invasive Species Volunteer Events

- *Policy Connections:* Ecosystem Recommendation #5: Improve Regulations and Community Capacity to Discourage Invasive Plants and Encourage Native Plants

The Town's Environmental Sustainability Coordinator has continued to supervise small monthly meet-ups at Wilson Park to control invasive species. Public Works staff have also worked to coordinate pickups to remove the vegetation.

Staff have developed a new volunteer program for independent volunteer work. This program will require volunteers to submit an application and hold an initial meeting with staff to discuss



project work area(s), plant identification, safety requirements, and communication procedures. Each instance of unsupervised project work will be approved by staff in several departments before volunteers can proceed. Volunteers will be required to purchase insurance in order to participate in the program and will need to submit reporting forms to staff after completing project work. Guidelines and requirements will be posted on the Town website for volunteers this fall.

On September 25<sup>th</sup>, the Carrboro High School Football Team volunteered to remove invasive species in Henry “Hank” Anderson III Community Park. Staff and additional resident volunteers worked with the team to successfully removed privet (*Ligustrum sinense*) and tree-of-heaven (*Ailanthus altissima*) from behind fields 1 and 2, piling the vegetation near the parking lot for Public Works staff. Staff wish to extend a thank you to all participants!

### **Composting Bin Sales**

- *Policy Connections:* Ecosystem Recommendation #3: Accelerate/Expand Organic Waste Collection/Composting

Town staff have launched composting bin sales and are working with the Town’s Communications Director to promote the sales and perform additional outreach with a composting how-to video.

### **Managed Natural Landscape Ordinance**

- *Policy Connections:* Ecosystem Recommendation #5: Improve Regulations and Community Capacity to Discourage Invasive Plants and Encourage Native Plants

Town staff incorporated comments from the North Carolina Botanical Garden and New Hope Audubon Society as requested by the Town Council in October 2020. A new draft ordinance can be found as a consent item in the October 5<sup>th</sup>, 2021 agenda. Staff will perform outreach about the ordinance to Carrboro residents as part of Bee City USA and Mayors’ Monarch Challenge implementation.

## **Food Choice Measures**

### **Vegan Retirement Gathering**

- *Policy Connections:* CCAP Food Choice Recommendation #1: Food Choice Recommendation #1: 80% Challenge

Town Human Resources staff held a farewell gathering for former Town Manager David Andrews. The menu at the event consisted entirely of vegan options, reducing the emissions associated with the meal. Approximately 80-90 employees and guests attended the event.

## **Build Dietary Greenhouse Gas (GHG) Emissions Profile**

- *Policy Connections:* CCAP Food Choice Recommendation #2: Develop Local Dietary Consumption and Associated GHG Profile

Using the 2019 CCAP survey's annual self-reported meat and dairy consumption among Carrboro residents, the Town's Environmental Sustainability Coordinator worked with Doctoral Candidate and Environmental Advisory Board (EAB) member Chrissie Schalkoff to perform an analysis of associated greenhouse gas emissions. Staff are currently working to discuss and finalize the report.