



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Meeting Agenda Board of Aldermen



Tuesday, March 19, 2019

7:00 PM

Board Chambers - Room 110

7:00-7:10

A. POETRY READING, PROCLAMATIONS & ACKNOWLEDGEMENTS

1. [19-115](#) Charges Issued

7:10-7:15

B. ANNOUNCEMENT OF UPCOMING MEETINGS

7:15-7:20

C. REQUESTS FROM VISITORS AND SPEAKERS FROM THE FLOOR

7:20-7:25

D. CONSENT AGENDA

1. [19-116](#) Approval of March 12, 2019 Meeting Minutes
2. [19-111](#) Town Code Amendment for Determining Quorum for Stormwater Advisory Commission
PURPOSE: The purpose of this agenda item is revise the Town Code Section 3.24-15(f) provision related to establishing a quorum for the Stormwater Advisory Commission.

Attachments: [Attachment A - Resolution 03-19-2019](#)

E. OTHER MATTERS

7:25-7:45

1. [18-01](#) Cobblestone Drive Traffic Calming Request
PURPOSE: The purpose of this item is to provide the Board with information relating to a traffic calming request for Cobblestone Drive and to consider directing staff to implement traffic calming measures.

Attachments: [Attachment A - Resolution](#)
[Attachment B - Cobblestone Drive Petition](#)
[Attachment C - Cobblestone Drive Traffic Calming Report](#)

7:45-8:00

2. [19-110](#) Request-to-Set Public Hearing on Land Use Ordinance Amendments Relating to the Historic Rogers Road Neighborhood
- PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to consider setting a public hearing on a draft ordinance creating new zoning districts and associated performance standards for the Historic Rogers Road neighborhood, part of the Town's effort to implement the "Mapping Our Community's Future" report.
- Attachments:** [Attachment A - Resolution](#)
[Attachment B - Draft Ordinance](#)

8:00-8:35

3. [19-112](#) Energy and Climate Protection Plan and Community Climate Action Plan Implementation Update
- PURPOSE:** The purpose of this item is to update the Board on Energy and Climate Protection Plan and Community Climate Action Plan Implementation Efforts.
- Attachments:** [Attachment A - Resolution To Receive Update](#)
[Attachment B - Emissions Reduction Summary Table](#)
[Attachment C - ECPP and CCAP Update March 2019](#)

8:35-8:45

4. [19-118](#) Orange County Climate Change Committee Board of Aldermen Representative Selection

F. **MATTERS BY BOARD MEMBERS**



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number:19-115

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

Charges Issued



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number:19-116

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

Approval of March 12, 2019 Meeting Minutes



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number:19-111

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

TITLE:

Town Code Amendment for Determining Quorum for Stormwater Advisory Commission

PURPOSE: The purpose of this agenda item is revise the Town Code Section 3.24-15(f) provision related to establishing a quorum for the Stormwater Advisory Commission.

DEPARTMENT: Town Attorney, Town Clerk, Public Works

CONTACT INFORMATION: Robert Hornik, 919 929-3905; Catherine Dorando, 919 918-7309; Randy Dodd, 919 918-7341

INFORMATION: The Stormwater Advisory Commission was created and recruited in late 2017 and began meeting in early 2018. The Town Code provision (3.24-15) created 7 positions and those positions were all filled when the Commission initially began meeting. Subsequently, two members have moved out of town and resigned, and another member is contemplating resigning for personal reasons. There are no new applicants to the Commission currently. The language in the Town Code requires a majority of 4 members be present to comprise a quorum. The Commission has not been able to obtain a quorum at 4 of the last 7 meetings. To facilitate the ability of the Commission to achieve a quorum when there are vacancies, a text amendment has been drafted that defines a quorum as a majority of the members of the Commission, not counting vacant seats, but at no time shall a quorum be fewer than three voting members.

FISCAL & STAFF IMPACT: There is no fiscal or staff impact with this agenda item.

RECOMMENDATION: It is recommended that the attached resolution amending the Town Code be approved.

A RESOLUTION AMENDING THE TOWN CODE FOR DETERMINING A QUORUM
FOR THE STORMWATER ADVISORY COMMISSION

WHEREAS, the Town Code was amended to create a Stormwater Advisory Commission in 2017, and the Commission began meeting in early 2018; and

WHEREAS, the Town Code currently requires that four members be present to comprise a quorum; and

WHEREAS, the Commission has had difficulty achieving a quorum recently, and currently has two vacancies; and

WHEREAS, the Board of Aldermen has determined that it is desirable to allow the quorum to be set at three members when there are two or more vacancies on the Commission.

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen approve the draft Town Code amendment modifying the requirements for a quorum, as shown below, for the Stormwater Advisory Commission.

This is the 19th day of March in the year 2019.

.....

AN AMENDMENT TO SECTION 3-24.15 OF THE TOWN OF CARRBORO TOWN CODE
REGARDING THE CARRBORO STORMWATER ADVISORY COMMISSION

The Carrboro Board of Aldermen ordains:

Section 1. The Town Code Section 3-24.15(f) is amended to read as follows:

(f) Quorum and Voting.

- (1) A quorum of the Carrboro Stormwater Advisory Commission shall be a majority of the members of the Commission, not counting vacant seats, but at no time shall a quorum be fewer than three (3) voting members;

Section 2. All provisions of any Town ordinance in conflict with this Ordinance are repealed.

Section 3. This Ordinance shall become effective upon adoption.

The foregoing ordinance, having been submitted to a vote, received the following vote and was duly adopted this ____ day of _____, 2019.

Ayes: ____

Noes: ____

Absent or Excused: ____



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number: 18-01

Agenda Date: 3/19/2019

File Type: Agendas

In Control: Board of Aldermen

Version: 1

TITLE:

Cobblestone Drive Traffic Calming Request

PURPOSE: The purpose of this item is to provide the Board with information relating to a traffic calming request for Cobblestone Drive and to consider directing staff to implement traffic calming measures.

DEPARTMENT: Planning

CONTACT INFORMATION: Zachary Hallock, 919-918-7329, zhallock@townofcarrboro.org [<mailto:zhallock@townofcarrboro.org>](mailto:zhallock@townofcarrboro.org); Tina Moon, 919-918-7325, cmoon@townofcarrboro.org [<mailto:cmoon@townofcarrboro.org>](mailto:cmoon@townofcarrboro.org)

INFORMATION: The Town's Residential Traffic Management Plan (RTMP) provides a process for residents to petition for the installation of traffic calming devices. The process takes the following steps: Residents submit a traffic calming request form; staff analyze the request and provide an Area of Influence (AoI) map, a list of owners/addresses in the AoI, and the traffic calming petition form; residents complete the petition with at least 75% of the addresses responding to the petition; staff perform traffic counts, analyze the current conditions, and provide a staff report. Based on the results of this analysis, one of three things can happen:

- Not eligible for calming based criteria defined in the RTMP, no action taken.
- Only eligible for Stage 1 calming, staff will work to implement those treatments.
- Eligible for Stage 1 & 2, staff will implement Stage 1 treatments first, then re-evaluate the traffic conditions within 6 months to determine if Stage 2 treatments are needed.

The full document of the RTMP and the associated request forms can be found at:

[<http://nc-carrboro.civicplus.com/719/Transportation>](http://nc-carrboro.civicplus.com/719/Transportation).

Residents living along Cobblestone Drive completed traffic calming requests to Planning staff in October of 2017 and January of 2018, and a signed petition was received by Staff in April of 2018 (Attachment B). Upon receipt of the completed petition staff analyzed the existing conditions along Cobblestone Drive between Pathway Drive and Rockgarden Road based on the methodology outlined in the RTMP. Traffic counts upon which the analysis was based were collected at two locations along that road (approximate locations 130 Cobblestone Drive and 116 Cobblestone Drive). Collected data show that at both collected locations along Cobblestone Drive, indicate that traffic calming measures are warranted. A detailed description of this analysis can be found in the Staff Report (Attachment C).

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

Following the methodology outlined in the RTPM, staff can begin working to implement Stage 1 traffic calming measures on Cobblestone Drive. This will include deployment of the speed radar trailer, regular speed enforcement in the area, and coordinating between planning and police to hold a neighborhood meeting regarding neighborhood speeding concerns. Once these measures have been in place for at least 3 months, a second set of traffic counts will be performed within a 6 month window while these Stage 1 calming efforts are underway. In the event that this follow-up analysis indicates that the threshold for Stage 2 traffic calming efforts are met, additional investigate of those treatments may begin.

FISCAL & STAFF IMPACT: Additional police staff time will be necessary for Stage 1 measures such as setting up a speed radar sign and providing traffic enforcement, as well as planning staff time to facilitate neighborhood meeting and perform the follow-up analysis.

RECOMMENDATION: Staff recommends that the Board of Aldermen consider the attached resolution (Attachment A) to receiving this report and directing staff to implement Stage 1 traffic calming measures and perform a follow-up analysis, including collection of additional traffic counts within 6 months.

A RESOLUTION RELATING TO TRAFFIC CALMING ON COBBLESTONE DRIVE

WHEREAS, the Board of Aldermen adopted the Residential Traffic Management Plan (RTMP) in June of 1996 to provide “a process for identifying and addressing existing problems related to speeding, excessive volumes, and safety on town-maintained residential streets”; and,

WHEREAS, a valid traffic calming petition, in accordance with the RTMP, was received from residents of the Cobblestone Drive neighborhood in April 2018; and,

WHEREAS, traffic volume & speed data, bicycle and pedestrian count data, school & transit bus stop locations, and local pedestrian generators have been reviewed and analyzed under the structure outlined in the RTMP; and,

WHEREAS, the results of this aforementioned analysis show that both locations on Cobblestone Drive have met the threshold Stage 1 traffic calming measures and potential for additional investigation regarding Stage 2 measures;

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Board receives the traffic calming report for Cobblestone Drive, and directs staff to implement Stage 1 traffic calming measures and perform a follow-up traffic counts and analysis.

BE IT FURTHER RESOLVED that the Board provides the following additional comments:

This is the 19th day of March in the 2019

ZH
4/23/18**Attachment B – Neighborhood Petition Form (Page 1)**

Please fill out this form and return with attached sheets to:

Town of Carrboro
 Planning Department
 301 W. Main Street
 Carrboro, NC 27510
 FAX: (919) 918-4454

THE UNDERSIGNED AGREE TO THE FOLLOWING:

1. All persons signing this petition do hereby certify that they own property or reside within the following area:

Cobblestone Drive

2. All persons signing this petition do hereby agree to the following problem in the defined area:

Traffic traveling at excess speed (above
speed limit)
too much traffic (Cobblestone Drive functions
as a cut-through)

3. All persons signing this petition do hereby agree that the following contact person(s) represents the neighborhood in matters pertaining to items 1 and 2 above:

Name of key contact person # 1 (please print): David B. Resnik
 Address, City, and Zip Code: 119 Cobblestone Drive, Chapel Hill, NC 27516
 Telephone (day): _____ Fax: _____ E-mail: David.Resnik@ncsu.com
919 967 5634 landline 919 370 2702 cell

Name of key contact person # 2 (please print): _____

Address, City, and Zip Code: _____

Telephone (day): _____ Fax: _____ E-mail: _____

Please attach additional pages if necessary to discuss the request.

Date Submitted: 4/23/18

Attachment B – Neighborhood Petition Form (Page 2)

This petition is provided so that residents in a neighborhood may verify that there is a widespread concern for a speeding or traffic issue.

Town staff will identify an "area of influence" in the neighborhood. The area of influence includes properties abutting the street and properties on intersecting streets within a reasonable distance of the problem street. The Planning Department will provide a map and addresses for the area of influence.

The petition must be signed by at least 75 percent of the owners or residents of properties within the "area of influence." Each property is entitled to one signature. Valid signatures include those from (1) a property owner or spouse, (2) an adult head of household, or (3) an adult renting the property.

SIGNATURE AND PRINTED NAME	ADDRESS OF PROPERTY	DATE
<i>David B. Regan</i> David B Regan	114 Cobblestone Drive Chapel Hill, NC 27516	2/22/18
<i>Suzanne Hackett</i> Suzanne Hackett	122 Cobblestone Drive Chapel Hill, NC 27516	2/24/18
<i>Dianne Frazier</i> Dianne Frazier	116 Cobblestone Dr Chapel Hill, NC 27516	2/24/18
<i>Carole Klein</i> Carole Klein	112 COBBLESTONE DR. CHAPEL HILL, NC 27516	2-24-18
<i>Jon Rudolph</i> Jon Rudolph	108 Cobblestone Dr Chapel Hill, NC	2-24-18
<i>Kimberly Powers</i> Kimberly A. Powers	100 Cobblestone Dr Chapel Hill NC 27516	2/24/18
<i>Adrian Faulkner</i> ADRIAN FAULKNER	2300 PATHWAY DR - CH, NC 27516	2/24/18
<i>Jon Walton</i> Jon Walton	103 Cobblestone	2/24/18
<i>Matt Mackinnon</i> Matt Mackinnon	105 Cobblestone	2/24/18
<i>ROS M. MARLING</i> ROS M. MARLING	106 COBBLESTONE DR	
<i>MARK EVERSON</i> MARK EVERSON	109 COBBLESTONE	2/24/18
<i>Ann H. H.</i> Ann H. H.	117 Cobblestone Drive	2/24/18
<i>Ryan Mills</i> Ryan Mills	115 Cobblestone Dr.	2-24-18

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SIGNATURE AND PRINTED NAME	ADDRESS OF PROPERTY	DATE
Sandra Morris	113 Cobblestone Drive	2-25-18
Sandra Morris	Chapel Hill, NC 27516	
Steve Himmelberg	111 Cobblestone Dr	2-25-18
Steve Himmelberg	Chapel Hill NC 27516	
Jonathan Lees	107 Cobblestone Dr.	2/25/18
Jonathan Lees	Chapel Hill 27516	
JOSH DADOLF	102 COBBLESTONE DR.	2/25/18
J. Dadolf	CHAPEL HILL, NC 27516	
Johnny L. Carson	2238 Pathway Dr.	2/25/18
Johnny L. Carson	Chapel Hill, NC 27516	
MORTON JENSEN	2259 PATHWAY DR.	2/25/18
MORTON JENSEN	CHAPEL HILL, NC 27516	
A. Boyd Blackburn	105 Cobblestone Dr.	2/25/18
A. Boyd Blackburn	Chapel Hill, NC 27516	
JOHN MARLOW	2301 Pathway Dr.	2/25/18
JOHN MARLOW	Chapel Hill, NC 27516	
Ann M. Dean	2303 Pathway Dr	2/25/18
Ann M. Dean	Chapel Hill NC	
Michael Cronin	2308 Pathway Dr.	2/25/18
Michael Cronin	CH	
Mark Siegel	2403 Pathway Dr	2/25/18
Mark Siegel	CH NC 27516	
David Bishop	104 Cobblestone Dr.	2/25/18
David Bishop	Chapel Hill NC 27516	

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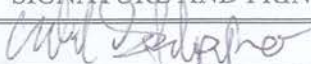

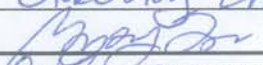
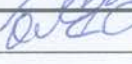



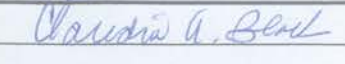
SIGNATURE AND PRINTED NAME	ADDRESS OF PROPERTY	DATE
<i>Stere Brantley</i> <i>Steven Brantley</i>	121 Cobblestone Drive Chapel Hill NC 27516	3-4-18
<i>Donna Parkre</i> <i>Donna Ponke</i>	118 Cobblestone Drive Chapel Hill NC 27516	3-4-18
<i>Martha B. Workman</i> <i>Martha B. Workman</i>	130 Cobblestone Dr CH NC 27516	03-04-2018
<i>RYAN REETZ</i> <i>Ryan Reetz</i>	132 COBBLESTONE DR. CH, NC 27516	3/4/18
<i>Sarah Ederle</i> <i>Sarah Ederle</i>	134 Cobblestone Dr. CH, NC 27516	3/4/18
<i>Ruben Bocanegra</i> <i>Ruben Bocanegra</i>	202 Cobblestone Dr.	3/14/18
<i>Jerry J. Boush</i> <i>Jerry J. Boush</i>	204 Cobblestone Dr.	3/4/18
<i>Boris Deniz</i> <i>Boris Deniz</i>	206 Cobblestone Dr	3/4/18
<i>Michael Papadogian</i> <i>Michael Papadogian</i>	214 Cobblestone Dr.	3/4/18
<i>Heather Iatrea</i> <i>Heather Iatrea</i>	215 Cobblestone Dr.	3/4/18
<i>Christina Coan</i> <i>Christina Coan</i>	213 Cobblestone Dr.	3/4/18

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SIGNATURE AND PRINTED NAME	ADDRESS OF PROPERTY	DATE
 Mikel Sanfilippo	211 Cobblestone Dr Chapel Hill NC 27516	3/4/18
Stephanie Wade ✓ Z H Wade	127 Cobblestone Dr CH, NC 27516	3-4-18
Geoffrey Taber 	125 Cobblestone Drive CH, NC 27516	3-4-18
GREGORY LANE 	100 BUCK TAYLOR TRAIL CHAPEL HILL NC 27516	3-18-18
 ORSANA ZARHAROVA	104 Buck Taylor Trail, NC	3-18-18
 Lucas M. Neas	106 Buck Taylor Trail, NC	3/18/18
 JOHN CHISHOLM	108 Buck TAYLOR TRAIL NC	3/18/18
Joe & Maureen Tyson	110 BUCK TAYLOR TRAIL	3/18/18
Sarah Clark-Farnell SC Clark Farnell	109 Buck Taylor Trl	3/18/18
Harry L. Watson Margaret Stein	107 Buck Taylor Tr.	3/18/18
Sharon Prochazka 	105 Buck Taylor Tr.	3/18/18
David A. Bend 	103 Buck Taylor Tr	3/18/18

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SIGNATURE AND PRINTED NAME	ADDRESS OF PROPERTY	DATE
<i>Karen Thornberg</i> Karen Thornberg	102 Cobblestone Pl Chapel Hill, NC 27516	3/18
<i>Alexandra Williams</i> Alexandra Williams	201 COBBLESTONE DRIVE CHAPEL HILL, NC 27516	3/25
<i>Praveen Singh</i> Praveen Singh	301 Rock Garden Rd Chapel Hill, NC 27516	3/25
<i>Donna Parker</i> Donna Parker	305 Rock Garden Rd Chapel Hill, NC	3/25
<i>George Stephen Rothwell</i> George Stephen Rothwell	101 WYNHAM DR Chapel Hill 27516	3/25
<i>FRANCES HAYASHI</i> FRANCES HAYASHI	102 WYNHAM CHAPEL HILL 27516	3/25
<i>JEAN WICK</i> JEAN WICK	104 WYNHAM CH 27516	3/25
<i>Rebecca Springer</i> Rebecca Springer	208 Cobblestone CH 27516	4/22
<i>Jami Burns</i> Jami Burns	212 Cobblestone Dr. Chapel Hill NC 27516	4/22
<i>Jason TATREAU</i> Jason TATREAU	215 Cobblestone Dr Chapel Hill NC 27516	4/22
<i>LEON SANFILIPPO</i> Leon Sanfilippo	205 COBBLESTONE DR CHAPEL HILL 27516	4/22
<i>Mark Seiler</i> Mark Seiler	401 Rock Garden Rd CH 27516	4/22



TOWN OF CARRBORO

NORTH CAROLINA

MEMORANDUM

DATE: March 19, 2019
TO: Town of Carrboro Board of Aldermen
FROM: Zachary Hallock, Transportation Planner
RE: Cobblestone Drive Traffic Calming Report

Summary of the Traffic Calming Request Process

Traffic calming requests in Carrboro are processed in accordance with the [Residential Traffic Management Plan \(RTMP\)](#).

The process defined in the RTMP proceeds as follows:

1. Residents who believe there is a traffic calming issue on their street, may submit a Traffic Calming Request form to the Town
2. Planning staff will assess the request, create an Area of Influence (AoI) map, a list of addresses within the AoI, and provide these to the resident.
3. Residents are to complete the petition with at least 75% of the addresses provided.
4. Planning staff confirm the receipt of the petition with 75% signatures and begin analysis as outlined in the RTMP.
5. The collected data is analyzed under the framework of the RTMP. Based on the results of this analysis, there can be one of three routes taken:
 - a. If the minimum threshold for Stage 1 traffic calming is not met, no further action.
 - b. If the minimum threshold for Stage 2 traffic calming is not met, Stage 1 treatments (which focus on behavior modification through education, outreach, and enforcement) can be implemented.
 - c. If the minimum threshold for Stage 2 traffic calming is met, staff will work to implement Stage 1 traffic calming treatments and perform a follow-up analysis within 3 to 6 months. Stage 2 traffic calming treatments are physical infrastructure improvements, thus (in general) it should be shown that Stage 1 treatments do not properly address the issue prior to beginning detailed work on Stage 2.

Background and Requests

During the fall of 2017, planning staff received requests for traffic calming measures along Cobblestone Drive from residents noting speeding on Cobblestone Drive and the desire for a traffic calming solution; such as speed bumps or tables. David Resnik submitted a formal request

through the RTMP related to these concerns on October 19th, 2017 and staff prepared an Area of Influence map for the Cobblestone Drive segment in question and associated address list. Staff received the completed petition with over 75% signatures from the affected properties on April 23, 2018 and began preparation to conduct counts once school resumed in the fall. While testing the traffic counting equipment over the summer, the counters were found to be defective; new counters were acquired allowing counts to be taken in November 2018. In August 2018, Stephanie Wade alerted staff that she would take over as the primary point of contact. The Town conducted traffic counts and peak period bike/pedestrian counts during the week of November 14, 2018. Planning Department staff met with Ms. Wade on December 7, 2018, to provide an update on the data collection efforts, to review the next steps in the process and to discuss the tentative schedule for moving forward.

On January 20, 2019 Ryan Oakes alerted staff of a car accident along Cobblestone Drive. Carrboro PD determined that speeding was not a factor in this incident.

Evaluation

This evaluation is based on count data collected during the week of November 14, 2018.

Traffic volume and 85th percentile speed

Town staff conducted two-way, 96-hour traffic and speed counts for two mid-block locations along Cobblestone Drive on November 14-17, 2018. These approximate locations are:

- 116 Cobblestone Drive
- 130 Cobblestone Drive

The speed limit on Cobblestone Drive is 25 mph.

The 85th percentile speed refers to the speed at which 85% of cars are traveling at or below. For each counter location, the travel direction that had the higher 85% percentile speed was used for the analysis. For both locations, the 85th percentile speed was approximately 37 MPH. The data indicates that on the north end (near 130 Cobblestone Drive) over 50% of vehicles are traveling above the posted speed limit, but on the south end (near 116 Cobblestone Drive) this percent rises to higher than 70%.

Cobblestone Drive is classified as a *subcollector*, which is a road that is designed to handle 200-800 vehicle trips per day and provides direct access for up to 100 residences; Cobblestone Drive provides access to approximately 70 residences. Traffic volumes collected along Cobblestone Drive did not exceed the 800 expected vehicles per day threshold for subcollector streets at either location.

The results from the traffic counters are included in the attachments.

Bicycle and Pedestrian Volumes

On Thursday, November 15, 2018 from 7:00-9:00am and 2:30-4:30pm Town staff conducted two-hour, peak period bicycle and pedestrian counts on Cobblestone Drive.

These results are included in the attachments.

Bus Stops

There are no Chapel Hill Transit routes or stops which operate along Cobblestone Drive.

Consulting the list of school bus stops from Chapel Hill-Carrboro City Schools, which was accessed at http://gps.chccs.k12.nc.us/live_chweb/webquery/, it was found that while there are school bus stops along Pathway Drive and Cates Farm Road, and school buses may drive along Cobblestone Drive, there are no stops along it.

Pedestrian Generators

This analysis determines the network distance (based on existing sidewalks and bike/ped facilities) from the two locations along Cobblestone Drive where count data was collected to parks and retail locations using the ArcGIS Network Analyst. The south end of Cobblestone Drive (approx. 116 Cobblestone) is within 0.6 Miles of Martin Luther King Jr. Park. The north end of Cobblestone Drive (approx. 130 Cobblestone) is not within 0.6 Miles of any parks or retail.

Scoring Summary

A summary of the measured data and assigned points for the traffic calming criteria at the two locations along Cobblestone Drive can be found in the table below.

Cobblestone Drive Traffic Calming Summary

Criteria	116-117 Cobblestone		130-131 Cobblestone	
	Measure	Points	Measure	Points
Traffic Volume (VPD)	554	0	558	0
85th % Speed (MPH)	37.86	26	37.67	26
Pedestrian Volume (Peak Hr)	32	3	32	3
Bicycle Volume (Peak Hr)	6	0	6	0
Bus Stops (School and CHT)	0	0	0	0
Ped Generator Proximity (mi)	0.6	1	>0.6	0
Volume and Speed Points	26		26	
Total Points	30		29	
Threshold for Stage 2 reached?	YES		YES	

Next Steps

While counts at both locations meet the RTMP criteria for Stage 2 traffic calming measures based on the points received for traffic volume and 85th percentile speed, staff recommend that Stage 1 traffic calming measures be implemented in the short term, with a follow-up counts and analysis performed in 3 to 6 months to determine their effectiveness. Stage 1 treatments aim to utilized education, outreach, and enforcement to modify behavior without the installation of physical infrastructure improvements.

Examples of Stage 1 Traffic Calming measures include:

- Placement of a speed radar trailer along Cobblestone Drive

- Regular enforcement efforts by Carrboro PD
- Neighborhood Meeting with town staff to discuss concerns
- Neighborhood Block Party to raise awareness and encourage use of the street by non-motorized transportation.

In the event that the follow-up analysis indicates that Stage 2 traffic calming is still warranted, a more detailed work on these devices could begin. Based on discussions among planning staff and conversations with residents, the following potential Stage 2 treatments have been identified:

1. Speed Bumps/Humps: **Resident requested treatment**
 - a. Pros: Observable impact on speeding traffic
 - b. Cons: Have limited area of effectiveness, impacts EMS response times, not recommended on grades over 8%, can impede stormwater
2. Chicanes
 - a. Pros: Easily testable with paint/traffic cones, facilitates creation of a Bike Boulevard along Cobblestone Drive, can be an opportunity to improve stormwater management
 - b. Cons: Residents not familiar with this device
3. Choker/Bulb-out/Neckdown
 - a. Pros: Easily testable with paint/traffic cones, facilitates creation of a Bike Boulevard along Cobblestone Drive, can be an opportunity to improve stormwater management
 - b. Cons: Residents not familiar with this device, may not reduce speeds as much as a Speed Bump based on FHWA research
4. Diagonal Diverter
 - a. Pros: Testable with paint/traffic cones; prevent speeders who are not part of the Cobblestone neighborhood from using to avoid traffic calming on parallel routes, facilitates creation of a Bike Boulevard along Cobblestone Drive
 - b. Cons: Specific location will need to be determined, will impact local residents routing out of the neighborhood, will focus traffic on Cates Farm Rd.

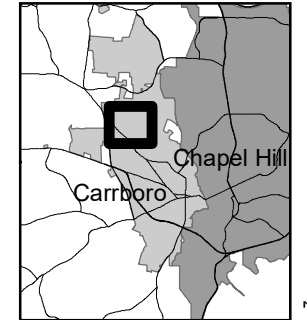
Possible Timeline



- Immediately: Begin Stage 1 traffic calming measures including: Work with PD to schedule additional targeted enforcement efforts based on the times during the day when speeding is more prevalent as well as placement of the speed radar trailer. Simultaneously work with neighborhood contact to facilitate outreach and education to Cobblestone Drive residents and schedule a neighborhood meeting.
- May: Neighborhood Meeting
- September: Recollect traffic volume and speed data, assess effectiveness of Stage 1 Measures, and provide an update to the Board. *If Stage 2 measures are determined to be needed, staff will begin to develop a Stage 2 design in the fall of 2019.*

Additional Notes

- Preliminary observations by the Police Department were taken in August 2017, around the time traffic calming requests were first received. At that time, police staff made the following observations about conditions on Cobblestone Drive:
 - Traffic is relatively light, so ramping up enforcement may not achieve the desired results.
 - Police received complaints indicating that residents believe cars are reaching speeds near 40 mph at the bottom of the hill.
 - The Cobblestone Drive location was placed on the RADAR sign rotation.
- Cobblestone Drive is 0.63 miles in length, the section being analyzed for traffic calming is 0.44 miles in length.
- Cobblestone Drive has multiple ingress/egress points to the arterial street system: one route to Homestead Road in the North (Rockgarden Rd to Cates Farm Rd to Autumn Dr, to Stratford Dr), and multiple routes to Hillsborough Road in the South (Pathway Dr to Cates Farm Rd or Parkview Ave or Spring Valley Rd).
- Cobblestone Drive is part of an interconnected network and is paralleled by Cates Farm Road.
- Cobblestone Drive serves approximately 70 residential properties in total.
- The road surface is 26 feet wide, the public right of way is 60 feet wide, there is a sidewalk along the east side of the road, and parking is allowed on both sides of the street.
- Wayfinding design work currently underway to encourage bike/ped route to CHHS and Smith Middle School to Phase 1B Multi-use Path via Cobblestone Drive.

Cobblestone DR: Area of Influence



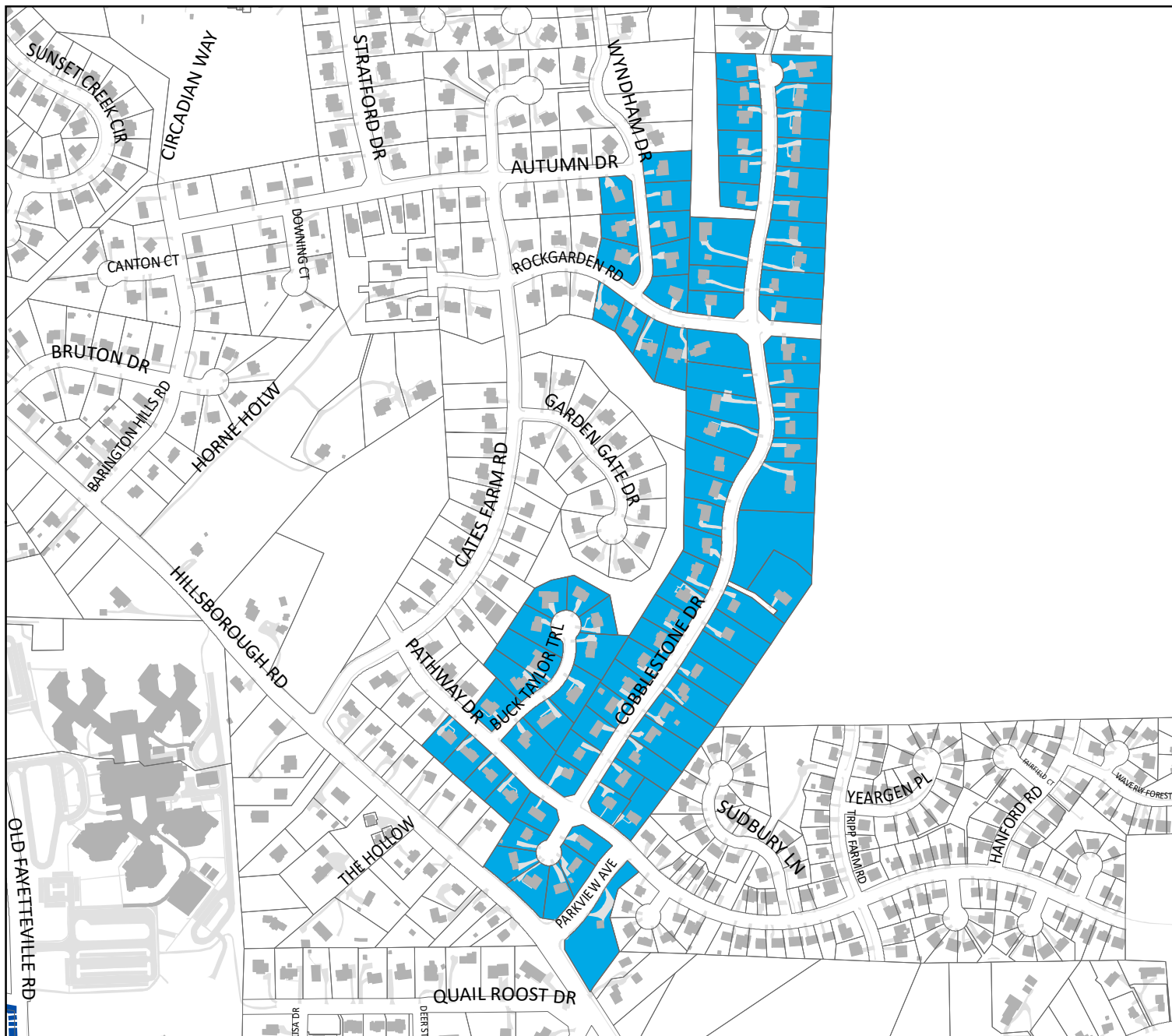
-  Buildings
-  Area of Influence

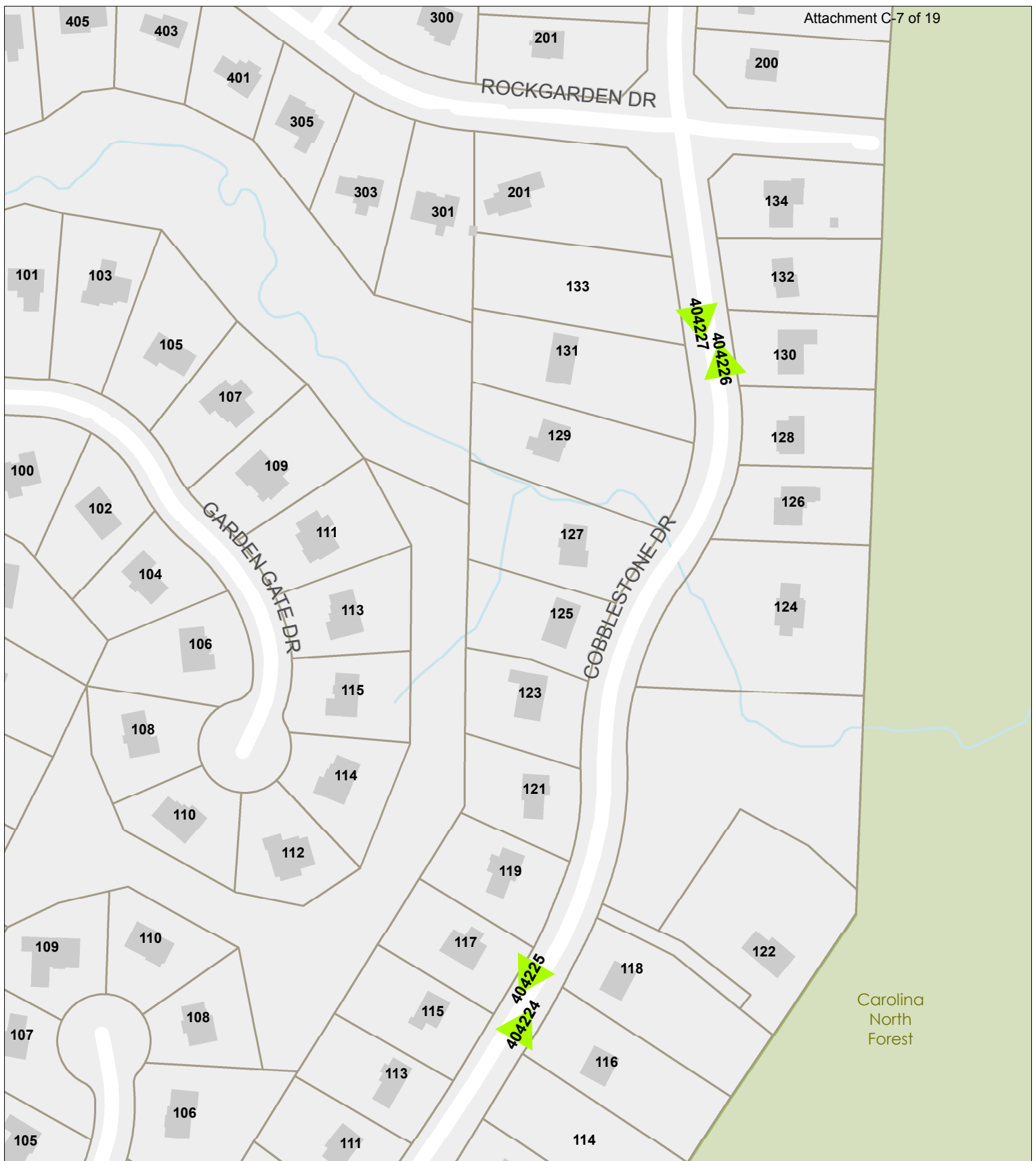
**THIS MAP IS NOT A CERTIFIED SURVEY
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TOWN OF CARRBORO
301 W. Main St.
Carrboro, NC 27510
Printed Feb. 15, 2018





TOWN OF CARRBORO
301 W. Main St.
Carrboro, NC 27510

Printed Nov 12, 2018

0 45 90 180
Feet
NC State Plane Coordinate System (NAD83)

**THIS MAP IS NOT A CERTIFIED SURVEY
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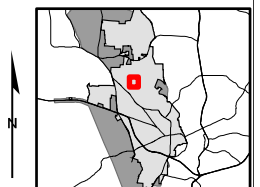
Cobblestone Traffic Calming Request - Count Locations

Collection Start:

Wednesday, 11/14/2018, 8:00 AM

Collection End:

Sunday, 11/18/2018, 8:00 AM



Location	Total Points	Volume/Speed Points	Eligible Stage
116 Cobblestone	30	26	Stage 1 and 2
130 Cobblestone	29	26	Stage 1 and 2

116-117 Cobblestone Drive
Traffic Calming Criteria

Attachment C-9 of 19

Criteria	Application	Collected Data	Points	Notes
<i>Traffic Volume</i>	Criteria - 5 points for every 20% of volume that exceeds the expected number of vehicles per day (vpd) on the street, based on the function of the street (75 vpd for minor streets, 200 vpd for local streets, and 800 vpd for subcollector and collector streets).	554	0	Cobblestone Drive is classified as a subcollector
<i>85th Percentile Speed</i>	Criteria - 2 points for every mph that the 85th percentile speed exceeds the posted speed limit.	37.86 MPH (NB)	26	Data from HDM counter
<i>Pedestrian Volume</i>	Criteria - 1 point for every 10 pedestrians if the street has a sidewalk, 5 points per 10 pedestrians if no sidewalk. Counts are made in either the peak traffic hour or the hour when students are traveling to or from school.	32	3	Street has sidewalk
<i>Bicycle Volume</i>	Criteria - 1 point for every 10 cyclists if the street has bike lanes, 3 points per 10 cyclists if no bike lanes. Counts are made in either the peak traffic hour or the hour when students are traveling to or from school.	6	0	Street does not have bike lane
<i>Bus Stops</i>	Criteria - 1 point for each transit stop and 2 points for each school bus stop on the street.	0	0	No transit or school bus stops
<i>Proximity to Pedestrian Generator (Retail and Parks)</i>	Criteria - 5 points if within .2 miles, 3 points if within .4 miles, 1 point if within .6 miles.	0.6	1	Based on network distance
<i>Speed and Volume Points</i>				26
Total Points				30
Eligible Traffic Calming Stages				Stage 1 and 2

130-133 Cobblestone Drive
Traffic Calming Criteria

Attachment C-10 of 19

Criteria	Application	Collected Data	Points	Notes
<i>Traffic Volume</i>	Criteria - 5 points for every 20% of volume that exceeds the expected number of vehicles per day (vpd) on the street, based on the function of the street (75 vpd for minor streets, 200 vpd for local streets, and 800 vpd for subcollector and collector streets).	558	0	Cobblestone Drive is classified as a subcollector
<i>85th Percentile Speed</i>	Criteria - 2 points for every mph that the 85th percentile speed exceeds the posted speed limit.	37.67 MPH (NB)	26	Data from HDM counter
<i>Pedestrian Volume</i>	Criteria - 1 point for every 10 pedestrians if the street has a sidewalk, 5 points per 10 pedestrians if no sidewalk. Counts are made in either the peak traffic hour or the hour when students are traveling to or from school.	32	3	Street has sidewalk
<i>Bicycle Volume</i>	Criteria - 1 point for every 10 cyclists if the street has bike lanes, 3 points per 10 cyclists if no bike lanes. Counts are made in either the peak traffic hour or the hour when students are traveling to or from school.	6	0	Street does not have bike lane
<i>Bus Stops</i>	Criteria - 1 point for each transit stop and 2 points for each school bus stop on the street.	0	0	No transit or school bus stops
<i>Proximity to Pedestrian Generator (Retail and Parks)</i>	Criteria - 5 points if within .2 miles, 3 points if within .4 miles, 1 point if within .6 miles.	0	0	Based on network distance
<i>Speed and Volume Points</i>				26
Total Points				29
Eligible Traffic Calming Stages				Stage 1 and 2

Speed and Volume Calculations - Cobblestone Drive Traffic Calming Evaluation

November 14-17, 2018

Cobblestone Drive classified as subcollector/collector for this analysis. Serves approximately 70 properties total.

Location	ADT			Expected VPD	% Diff	Points	85th Percentile (calc)		85th Percentile (HDM)		Speed Limit	Difference (calc)		Difference (HDM)		Points (calc)		Points (HDM)	
	NB	SB	Total				NB	SB	NB	SB		NB	SB	NB	SB	NB	SB	NB	SB
116 Cobblestone	247	290	537	800	-33%	0	36	34	37.86	34.57	25	11	9	12.86	9.57	22	18	26	20
130 Cobblestone	213	306	519	800	-35%	0	36	31	37.67	32.91	25	11	6	12.67	7.91	22	12	26	16

Date: November 15, 2018

Cobblestone Drive

7:00 am to 9:00 am AND 2:30 pm to 4:30 pm

AM Weather: 34 and Clear

PM Weather: 54 and Clear

Location: Cobblestone Drive just North of Pathway Drive

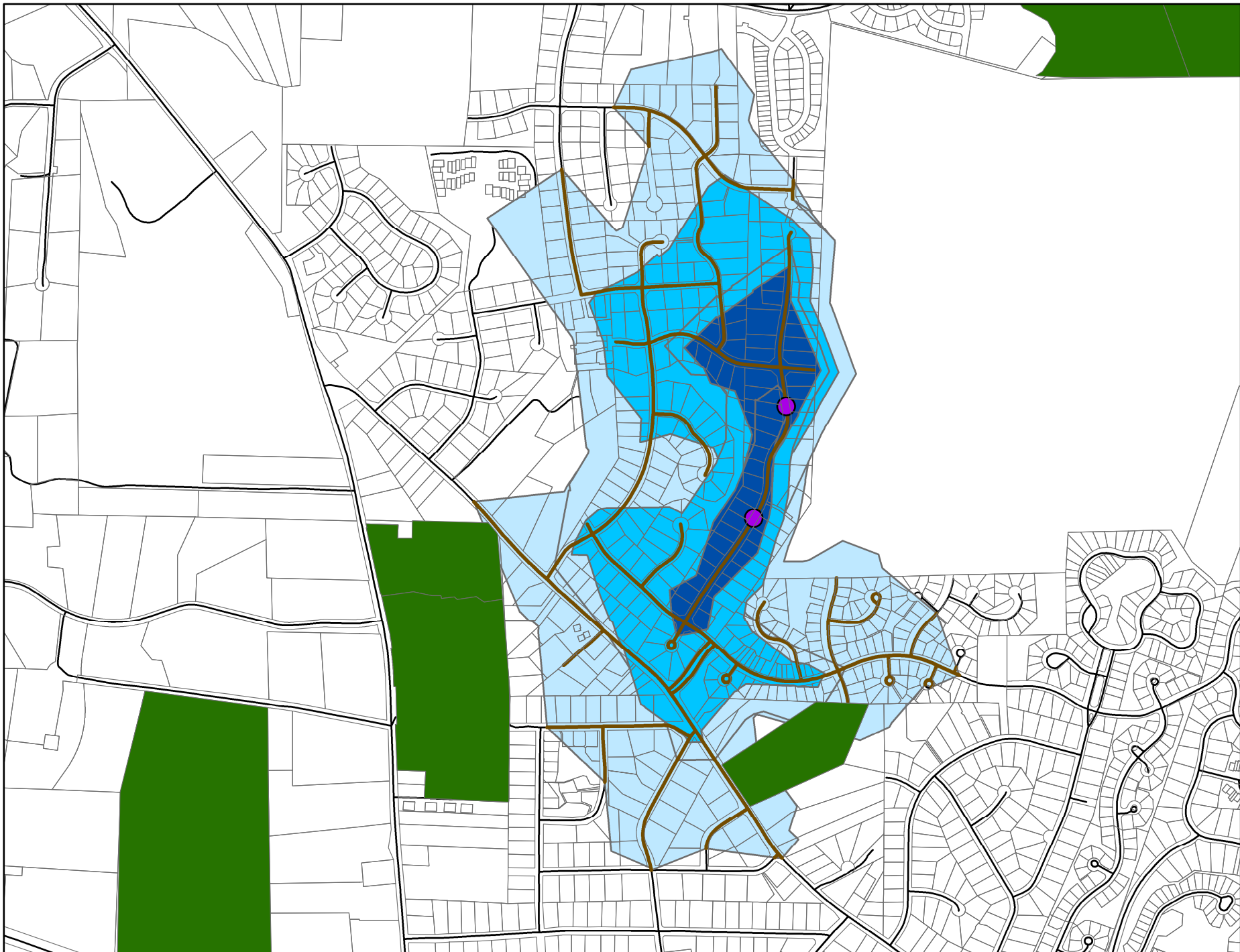
Counter: Zach Hallock

15-min Period	Bikes	Ped	Bike 1-Hr	Ped 1-Hr
7:00 AM	0	2		
7:15 AM	0	2		
7:30 AM	1	3		
7:45 AM	0	2	1	9
8:00 AM	0	4	1	11
8:15 AM	0	2	1	11
8:30 AM	2	2	2	10
8:45 AM	1	1	3	9
2:30 PM	5	11		
2:45 PM	0	12		
3:00 PM	0	4		
3:15 PM	1	5	6	32
3:30 PM	1	6	2	27
3:45 PM	2	5	4	20
4:00 PM	0	3	4	19
4:15 PM	0	1	3	15
AM Total	4	18		
PM Total	9	47		
Peak Hour	6	32		

Cobblestone Drive Traffic Calming Request: Pedestrian generator network analysis map: Parks

Attachment C-13 of 19

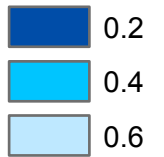
Legend



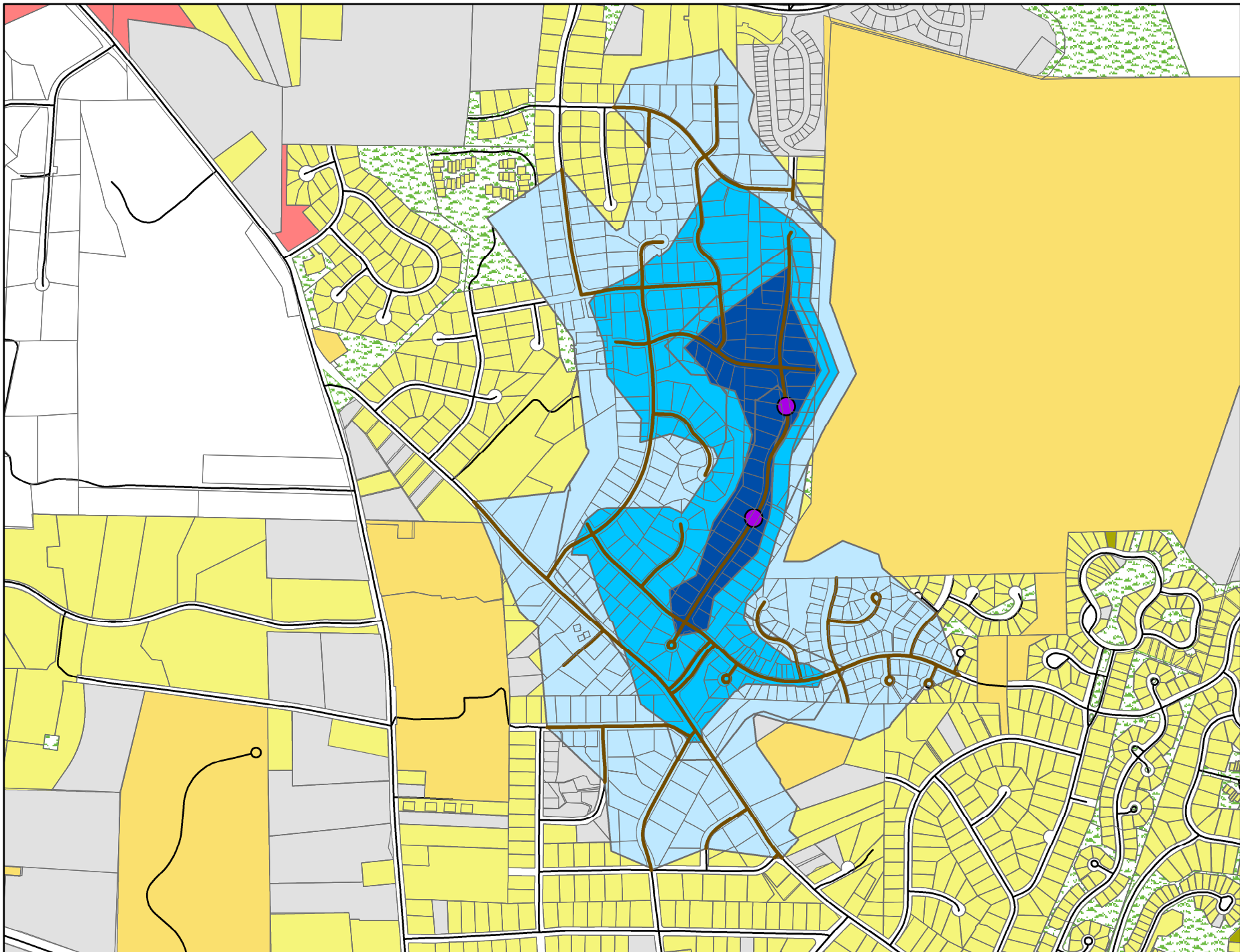
Cobblestone Drive Traffic Calming Request: Pedestrian generator network analysis map: Retail

Attachment C-14 of 19

Legend



Land Use



User Information:

Attachment C-15 of 19

Address: 116 COBBLESTONE DRIVE
Grade: 01
Program:

[Edit User Information](#)**Select a School:**

School Name	Sch Distance Walk	Sch Distance Drive	Eligibility Description	Grades
MCDOUGLE ELEM	0.56 mi.	0.56 mi.	Eligible because of hazard	01
CARRBORO ELEM	1.77 mi.	2.15 mi.	Eligible	01
SEAWELL ELEM	2.94 mi.	3.21 mi.	Eligible	01
NORTHSIDE ELEMENTARY SCH	3.32 mi.	3.32 mi.	Eligible	01
GLENWOOD ELEM	14.03 mi.	5.29 mi.	Eligible	01

Stop List : CARRBORO ELEM

Number	Stop Time	Stop Description	Distance To Stop	Bus Number	Route Number	School Bell Time	Frequency
1	07:14 AM	BARINGTON HILLS RD & BRUTON DR	0.81 mi.	111	111	07:50 AM	MTWUF--
2	07:20 AM	HILLSBOROUGH RD & SIMPSON ST	0.83 mi.	111	111	07:50 AM	MTWUF--
3	02:51 PM	PATHWAY DR & HANFORD RD	0.54 mi.	111	111	02:30 PM	MTWUF--
4	02:59 PM	STRATFORD DR & AUTUMN DR	0.58 mi.	111	111	02:30 PM	MTWUF--

[View the Map](#)

User Information:

Attachment C-16 of 19

Address: 116 COBBLESTONE DRIVE
Grade: 10
Program:

[Edit User Information](#)**Select a School:**

School Name	Sch Distance Walk	Sch Distance Drive	Eligibility Description	Grades
CARRBORO HIGH SCHOOL	N/A	3.94 mi.	Eligible	10
CHAPEL HILL HS	2.24 mi.	2.51 mi.	Eligible	10

Stop List : CARRBORO HIGH SCHOOL

Number	Stop Time	Stop Description	Distance To Stop	Bus Number	Route Number	School Bell Time	Frequency
1	07:51 AM	106 ABERDEEN CT	0.89 mi.	E60	E60	08:45 AM	MTWUF--
2	07:56 AM	OLD FAYETTEVILLE RD (PINEGROVE MHP)	1.16 mi.	E60	E60	08:45 AM	MTWUF--
3	04:18 PM	106 ABERDEEN CT	0.89 mi.	E80	E80	03:55 PM	MTWUF--
4	04:21 PM	OLD FAYETTEVILLE RD (PINEGROVE MHP)	1.16 mi.	E80	E80	03:55 PM	MTWUF--

[View the Map](#)

User Information:

Attachment C-17 of 19

Address: **116 COBBLESTONE DRIVE**
Grade: **10**
Program:

[Edit User Information](#)**Select a School:**

School Name	Sch Distance Walk	Sch Distance Drive	Eligibility Description	Grades
CARRBORO HIGH SCHOOL	N/A	3.94 mi.	Eligible	10
CHAPEL HILL HS	2.24 mi.	2.51 mi.	Eligible	10

Stop List : CHAPEL HILL HS

Number	Stop Time	Stop Description	Distance To Stop	Bus Number	Route Number	School Bell Time	Frequency
1	08:16 AM	PATHWAY DR & COBBLESTONE DR	0.19 mi.	44	44	08:45 AM	MTWUF--
2	08:15 AM	PATHWAY DR & WRENN PL	0.28 mi.	44	44	08:45 AM	MTWUF--
3	04:13 PM	PATHWAY DR & COBBLESTONE DR	0.19 mi.	247	247	03:55 PM	MTWUF--
4	04:13 PM	PATHWAY DR & WRENN PL	0.28 mi.	247	247	03:55 PM	MTWUF--

[View the Map](#)

User Information:

Attachment C-18 of 19

Address: 116 COBBLESTONE DRIVE
Grade: 01
Program:

[Edit User Information](#)**Select a School:**

School Name	Sch Distance Walk	Sch Distance Drive	Eligibility Description	Grades
MCDOUGLE ELEM	0.56 mi.	0.56 mi.	Eligible because of hazard	01
CARRBORO ELEM	1.77 mi.	2.15 mi.	Eligible	01
SEAWELL ELEM	2.94 mi.	3.21 mi.	Eligible	01
NORTHSIDE ELEMENTARY SCH	3.32 mi.	3.32 mi.	Eligible	01
GLENWOOD ELEM	14.03 mi.	5.29 mi.	Eligible	01

Stop List : MCDOUGLE ELEM

Number	Stop Time	Stop Description	Distance To Stop	Bus Number	Route Number	School Bell Time	Frequency
1	07:19 AM	W MAIN ST @ BERKSHIRE MANOR	1.04 mi.	76	76	07:50 AM	MTWUF--
2	07:20 AM	611 HILLSBOROUGH RD	1.05 mi.	E15	E15	07:50 AM	MTWUF--
3	02:43 PM	W MAIN ST @ BERKSHIRE MANOR	1.04 mi.	76	76	02:30 PM	MTWUF--
4	02:43 PM	611 HILLSBOROUGH RD	1.05 mi.	E15	E15	02:30 PM	MTWUF--

[View the Map](#)

User Information:

Address: 116 COBBLESTONE DRIVE

Grade: 06

Program:

[Edit User Information](#)**Select a School:**

School Name	Sch Distance Walk	Sch Distance Drive	Eligibility Description	Grades
MCDUGLE MIDDLE	1.34 mi.	1.34 mi.	Within walk distance of school	06
SMITH MS	2.74 mi.	3.01 mi.	Eligible	06

Stop List : SMITH MS

Number	Stop Time	Stop Description	Distance To Stop	Bus Number	Route Number	School Bell Time	Frequency
1	07:50 AM	CATES FARM RD & PATHWAY DR	0.37 mi.	19	19	08:20 AM	MTWUF--
2	07:51 AM	CATES FARM RD & AUTUMN DR	0.49 mi.	19	19	08:20 AM	MTWUF--
3	03:40 PM	CATES FARM RD & PATHWAY DR	0.37 mi.	254	254	03:10 PM	MTWUF--
4	03:32 PM	CATES FARM RD & AUTUMN DR	0.49 mi.	22	22	03:10 PM	MTWUF--

[View the Map](#)



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number:19-110

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

TITLE:

Request-to-Set Public Hearing on Land Use Ordinance Amendments Relating to the Historic Rogers Road Neighborhood

PURPOSE: The purpose of this agenda item is for the Board of Aldermen to consider setting a public hearing on a draft ordinance creating new zoning districts and associated performance standards for the Historic Rogers Road neighborhood, part of the Town's effort to implement the "Mapping Our Community's Future" report.

DEPARTMENT: Planning

CONTACT INFORMATION: Marty Roupe - 919-918-7333, Patricia McGuire - 919-918-7327, Christina Moon - 919-918-7325

INFORMATION: At the February 19, 2019 Board of Aldermen meeting, the Board received a presentation from Renaissance Planning on the series of community meetings held with residents in the Historic Rogers Road neighborhood on ways to implement the vision outlined in the "Mapping Our Community's Future" report. (Agenda materials may be found at the following link <https://carrboro.legistar.com/MeetingDetail.aspx?ID=679784&GUID=7D469578-03C6-4BC6-A6F7-DA8A23CD41D9&Options=&Search=>>) Renaissance Planning is one of two consultant firms hired by Chapel Hill and Carrboro to develop land use/zoning concepts based on the 2016 report and to facilitate meetings and drop-in sessions to seek additional input from community residents.

A draft ordinance (Attachment B) has been prepared that, if adopted, would establish two new districts, with provisions for slightly higher density, (up to three lots per acre), expanded home occupation choices, and a mixed use area with opportunities for flex space and office uses. Staff anticipates further refinements to the draft ordinance as it moves forward to a public hearing.

The Board of Aldermen must receive public comments before adopting amendments to the Land Use Ordinance. Orange County and Planning Board must also review, and the Board may wish to include the Transportation Advisory Board, Economic Sustainability Commission and Northern Transition Area Advisory Commission, or others, based on the respective purviews of these boards.

FISCAL & STAFF IMPACT: Public hearings involve staff time and public notice costs associated with advisory board and Board of Aldermen review.

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

RECOMMENDATION: Staff recommends that the Board of Aldermen consider the attached resolution, setting a public hearing for April 23, 2019 and referring the proposed amendment to Orange County and Town of Carrboro advisory boards.

A RESOLUTION SETTING A PUBLIC HEARING ON AN ORDINANCE AMENDING THE
CARRBORO LAND USE ORDINANCE RELATING TO THE HISTORIC ROGERS ROAD
COMMUNITY

WHEREAS, the Board of Aldermen seeks to provide ample opportunities for the public to comment on proposed amendments to the Land Use Ordinance;

NOW, THEREFORE BE IT RESOLVED that the Board of Aldermen sets a public hearing on April 23, 2019, to consider adopting “An Ordinance Amending the Carrboro Land Use Ordinance to Establish Historic Rogers Road Residential and Mixed Use Districts and Associated Development Standards.”

BE IT FURTHER RESOLVED that the draft ordinance is referred to Orange County and the Town of Carrboro Planning Board for consideration and recommendation prior to the specified public hearing date.

BE IT FURTHER RESOLVED that the draft ordinance is also referred to the following Town of Carrboro advisory boards and commissions.

☐

Appearance Commission

☐

Recreation and Parks Commission

☒

Transportation Advisory Board

☒

Northern Transition Area Advisory
Committee

☐

Environmental Advisory Board

☐

☒

Economic Sustainability Commission

☐

This is the 19th day of March in the year 2019.

AN ORDINANCE AMENDING THE CARRBORO LAND USE ORDINANCE TO
ESTABLISH HISTORIC ROGERS ROAD RESIDENTIAL AND MIXED USE DISTRICTS
AND ASSOCIATED DEVELOPMENT STANDARDS

****DRAFT 3-15-2019****

THE CARRBORO BOARD OF ALDERMEN ORDAINS:

Section 1. The Carrboro Land Use Ordinance is amended by adding a new Section, 15-136.1 Historic Rogers Road Districts Established, as follows:

Section 15-136.1 Historic Rogers Road Districts Established

- (a) The Historic Rogers Road districts, HR-R (residential) and HR-MU (mixed use), are established to implement the goals and recommendations of the *Mapping Our Community's Future* community planning effort, completed in May 2016. The intent of *Mapping Our Community's Future* and the HR Districts is to:
- 1) Create opportunities for long-term residents to continue living in the community and to age in place;
 - 2) Preserve the socioeconomic and cultural diversity of the neighborhood;
 - 3) Increase physical connections within the neighborhood, including for pedestrians and bicyclists;
 - 4) Respect and protect the natural character of the neighborhood;
 - 5) Ensure that new development is consistent with neighborhood character and the vision that residents have developed for its future;
 - 6) Provide greater residential housing choice, affordability, and diversity;
 - 7) Increase economic opportunities within the neighborhood;
 - 8) Increase recreational resources within the neighborhood; and
 - 9) Ensure that new development is adequately served by infrastructure, including streets, sidewalks, and utilities.
- (b) The HR-R zoning district is designed to protect and preserve the character of existing lower-density areas (minimum lot size 14,520 square feet, or no more than three lots per acre) within the neighborhood while providing for compatible new development, including new housing choice options, and increased home occupation opportunities for residents.
- (c) The HR-MU district is designed to provide for a broader range of housing and employment options by concentrating new development into nodes which will balance providing areas for desired new uses while protecting the overall neighborhood character. Uses appropriate in the HR-MU district include live-work units, flex space, and low-intensity neighborhood-serving establishments such as healthcare, assisted living, elder care, child care, and recreation facilities.

Section 2. Article II Section 15-15 Definitions of Basic Terms is amended by the addition of the following in appropriate alphabetical (and associated numerical assignment) order:

Flex Space. A building providing use flexibility for office and light industrial uses, such as printing, design, light assembly of products, artist space, or storage/warehousing. A flex space could also host a coworking center, where many individual small business owners or freelancers work alongside one another in common space, or a business incubator, where individuals working to launch new businesses can rent affordable space in which to perform office work and access shared resources such as printers, scanners, and other tools and services such as financial counseling and management training.

Home Occupation, Major. A Major Home Occupation is an accessory business use of a residentially-zoned property, that meets one or more of the following criteria: (i) employs up to six non-resident employees, who may work on site; (ii) utilizes outdoor storage of materials, supplies, products, or machinery; or (iii) generates noise, vibration, dust, odor, light, or glare that is visible from neighboring properties or the public right-of-way at any hour of the day. Examples of Major Home Occupations include: lawncare or landscaping services, woodworking shops, small engine repair, appliance repair, metalworking, and any home business with more than one non-resident employee. Examples of uses that shall not be allowed as Major Home Occupations include: hauling, and body shops for car, truck or motorcycle repair. Major home occupation uses are only permissible with a zoning permit in the HR-R and HR-MU districts, and are subject to the performance standards specified in Section 15-176.8.

Residence, Triplex. A three-family residential use in which the dwelling units share common vertical walls or horizontal floors/ceilings (including without limitation the wall of an attached garage or porch) and in which each dwelling unit has a living space on the ground floor and a separate, ground floor entrance.

Section 3. Section 15-146 (The Table of Permissible Uses) is amended by adding new use classification 1.350 entitled “Triplex” and by adding the letter “Z” opposite this use classification under the HR-R and HR-MU zoning district columns to indicate that this use is permissible in these districts with a zoning permit. This section is further amended by adding new use classification 1.910 entitled “Major Home Occupation” and by adding the letter “Z” opposite this use classification under the HR-R and HR-MU zoning district columns to indicate that this use is permissible in these districts with a zoning permit.

Section 4. Article XI, Supplementary Use Standards is amended by the addition of a new Section 15-176.8 Special Standards for Historic Rogers Road Districts, which reads as follows:

Section 15-176.8 Special Standards for Historic Rogers Road Districts.

- (a) All applicable provisions of the Carrboro Land Use Ordinance not specifically exempted or modified by this section shall apply to the HR-R and HR-MU districts.
- (b) The maximum size of any single-family dwelling constructed in the HR-R district after the effective date of this section shall be 2,000 square feet of heated floor area; the maximum size of any duplex or triplex dwelling unit constructed in the HR-R district after the effective date of this section shall be 1,200 square feet of heated floor area. Any dwelling unit in existence on the effective date of this subsection containing 2,000 square feet or greater of heated floor area may be increased by a maximum of 25% of the existing heated floor area. Any dwelling unit in existence on the effective date of this subsection containing less than 2,000 square feet of heated floor area may be expanded up to a maximum size of 2,000 square feet of heated floor area.
- (c) An undisturbed buffer, of no less than 30 feet, shall be maintained along the perimeter of the entire HR-MU district.
 - 1. The buffer shall consist of existing vegetation and/or new plantings to meet the requirements in Section 15-307(1) for an Opaque Type A screen.
 - 2. This area shall remain undisturbed except for the removal of noxious weeds and trees determined to be diseased by a Certified Arborist, and the installation of new plantings as required by the standards for a Type A screen described in subsection (c)(1) above.
- (d) Development within the HR-MU district shall be subject to the screening requirements of Section 15-306, to provide sufficient screening between uses, so long as a Type A screen is retained at the boundary line of any parcel in the HR-MU district where that parcel adjoins an adjacent property outside of the district.
- (e) As set forth in the Table of Permissible Uses, Major Home Occupations are permissible only in the HR-R and HR-MU districts, subject to the following standards:
 - 1. Major Home Occupations shall only be located on lots a minimum of one acre in size.
 - 2. No more than 50% of the heated square footage of the home shall be used for business purposes. This calculation does not include accessory structures in the total square footage calculation for the home.
 - 3. The maximum number of trips per day to or from the business shall not exceed 50.
 - 4. The on-premises sale and delivery of goods which are not produced on the premises is prohibited, except in the case of the delivery and sale of goods incidental to the provision of a service.
 - 5. No more than three business-associated vehicles shall be parked on-site.
 - 6. Business-associated vehicles shall be limited to vehicles allowed under a Class C license.
 - 7. Parking for vehicles associated with the business, including employee and visitor vehicles shall be provided on-site, pursuant to the requirements in Section 15-291.
 - 8. All business activities shall be a minimum of 40 feet from all lot lines.
 - 9. All noise, dust, vibration, odor, light, and glare-producing activities shall be located a minimum of 60 feet from all lot lines, and any activity that results in

noise, vibration, dust, odor, light, or glare shall only occur between the hours of 6 PM and 8 AM.

10. Any outdoor storage of materials, supplies, products, or machinery (excluding functional vehicles associated with the business) shall be screened with a Type A screen as described in LUO Section 15-307.

Section 5. Section 15-181 Minimum Lot Size Requirements, subsection (a) is revised with the addition of minimum lot size requirements for the HR-R and HR-MU zoning districts as follows:

<u>ZONE</u>	<u>MINIMUM SQUARE FEET</u>
HR-R	14,250
HR-MU	7,500

Section 6. Section 15-182 Residential Density, subsection (a) is revised with the addition of residential density requirements for the HR-R and HR-MU zoning districts, as follows:

<u>ZONE</u>	<u>Minimum Square Feet Per Dwelling Unit, Multi-Family, Triplex and Duplex</u>
HR-R	14,250
HR-MU	7,500

Section 7. Section 15-183 Minimum Lot Widths, subsection (b) is revised with the addition of minimum lot width requirements for the HR-R and HR-MU zoning districts, as follows:

<u>ZONE</u>	<u>Lot Width</u>
HR-R	100
HR-MU	50

Section 8. Subsection 15-184 Building Setback Requirements, subsection (a) is revised with the addition of setback requirements for the HR-R and HR-MU zoning districts, as follows:

<u>ZONE</u>	<u>Minimum Distance from Street Right of Way Line</u>		<u>Minimum Distance from Street Centerline</u>		<u>Minimum Distance from Lot Boundary Line</u>
	Building	Freestanding Sign	Building	Freestanding Sign	Building and Freestanding Sign
HR-R	40	20	70	50	20
HR-MU	40	20	70	50	30

Section 9. Subsection 15-185 (a) (1) is amended to read as follows:

- (1) No building in any of the following zoning districts may exceed a height of thirty-five feet: R-3, R-7.5, R-10, R-15, R-20, RR, C, B-5, M-2, WM-3, O, O/A, and HR-R.

Section 10. The table included in Subsection 15-185 (a) (2) is amended by the addition of information on the maximum building height for the HR-MU zoning district, as follows:

<u>ZONE</u>	<u>Maximum Height</u>
HR-MU	40'

Section 11. Article XVII Signs, Section 15-271 is amended by adding a new subsection (e) to read as follows:

- (e) Signs for home occupations and major home occupations shall be permitted subject to the following provisions:
1. A lot that houses a legally-established home-based occupation as an accessory use may have up to one wall-mounted sign with a maximum area of 4 square feet. In the HR-R and HR-MU districts, legally-established major home occupations may have up to one wall-mounted sign with a maximum area of 8 square feet.
 2. Signs must be non-illuminated.
 3. Signs shall comply with the standards of Sections 15-271, Permit Required for Signs, 15-275, Computation of Sign Area, and 15-282, Miscellaneous Requirements.

Section 12. Subsection 15-291 Number of Parking Spaces Required, 185, subsection (g) is revised with the addition of parking standards for Use 1.350, Triplex, and 1.910, Major Home Occupations, as follows:

<u>USE</u>	<u>PART I.</u> <u>PARKING REQUIREMENT (EXCEPT AS NOTED IN PART II OF THIS TABLE)</u>
1.350	2 spaces for each dwelling unit, except that one bedroom units require only one space
1.910	4 spaces for offices of physicians or dentists; 2 spaces for attorneys; 1 space for all others, plus one space for each non-resident employee

Section 13. All provisions of any town ordinance in conflict with this ordinance are repealed.

Section 14. This ordinance shall become effective upon adoption.



Town of Carrboro

Town Hall
301 W. Main St.
Carrboro, NC 27510

Agenda Item Abstract

File Number:19-112

Agenda Date: 3/19/2019

File Type:Agendas

In Control: Board of Aldermen

Version: 1

TITLE:

Energy and Climate Protection Plan and Community Climate Action Plan Implementation Update

PURPOSE: The purpose of this item is to update the Board on Energy and Climate Protection Plan and Community Climate Action Plan Implementation Efforts.

DEPARTMENT: Planning Department

CONTACT INFORMATION: Laura Janway, Environmental Planner, ljanway@townofcarrboro.org <<mailto:ljanway@townofcarrboro.org>>, (919) 918-7326; Patricia McGuire, Planning Director, pmcguire@townofcarrboro.org <<mailto:pmcguire@townofcarrboro.org>>, (919)-918-7327

INFORMATION: The purpose of this agenda item is to provide the Board with an update on the implementation of two climate action plans, the municipal Energy and Climate Protection Plan (ECPP) and Community Climate Action Plan (CCAP). Work on the ECPP has been underway since the Board's adoption on May 28, 2014. (A complete copy of the ECPP can be found at: <http://www.townofcarrboro.org/DocumentCenter/View/553/Energy--Climate-Protection-Plan-2014>). Progress on the CCAP has been ongoing since the Board's adoption of the plan in January 24, 2017. (A complete copy of the CCAP may be found at <http://www.townofcarrboro.org/DocumentCenter/Home/View/4116>). The most recent update on CCAP progress was provided on December 4th, 2018, available at: <https://carrboro.legistar.com/LegislationDetail.aspx?ID=3767416&GUID=27C8E937-35F1-493F-94FA-0A5680965005&Options=&Search=&> .

This update includes a summary table (Attachment B) followed by a more detailed report describing ECPP and CCAP implementation since the December update (Attachment C). The report also includes an analysis of the potential costs and emissions reductions associated with specific recommendations in the CCAP.

FISCAL & STAFF IMPACT: There is no fiscal or staff impact related to this update.

RECOMMENDATION: Staff recommends the Board consider the attached resolution to receive the report.

A RESOLUTION RECEIVING AN UPDATE ON THE CLIMATE AND ENERGY
PROTECTION PLAN AND COMMUNITY CLIMATE ACTION PLAN

WHEREAS, the Board of Aldermen has received a presentation regarding the Energy and Climate Protection Plan and the Community Climate Action Plan; and

WHEREAS, the Town of Carrboro has a number of emissions-reduction projects in process; and

WHEREAS, Town staff have requested Board input and approvals at key milestones; and

WHEREAS, staff have provided the Board with updates on particularly projects at regular intervals.

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board receives this update on the implementation of the Energy and Climate Protection Plan and the Community Climate Action Plan.

This the 19th day of March in 2019.

Emissions Reduction Summary Table

Attachment B - Page 1 of 4

Task ID	Recommendation	Cost	GHG Emissions Reduction (MTCDE)	Cost to Emissions Reduction Ratio	Community Emissions Reduction Impact	Comments/Staffing
CI1	Create Grassroots Partnerships to Engage Community	Staff time	Can be quantified for specific initiatives.			
CI2	Expand Public Partnerships to More Explicitly Consider Climate Action	Staff time	Can be quantified for specific initiatives.			
CI3	Create Green Neighborhood Program	\$54,000	Can be quantified for specific neighborhood projects.			Estimate from Cary , NC Green Neighborhood Initiative
CI4	Integrate Climate Action with Local Living Economy	Staff time	Can be quantified for specific initiatives.			
CI5	Expand Capacity for Sustainability Initiatives	Staff time	Can be quantified for specific initiatives.			EAB and Town staff Climate Action Committee
CI6	Facilitate Low Cost Financing for Energy Efficiency and Renewable Energy Projects	Qualified Energy Conservation Bonds or Property Assessed Clean Energy (PACE) financing	Energy emissions reductions for buildings calculated for buildings in BE1, solar projects in RE1.	See BE1, RE1		
CI7	Integrate Climate Action and Social/Equity Initiatives	Staff time	Can be quantified for specific initiatives.			
BE1	50% Challenge	\$109,908,095.81	37,769.50	\$3,004.72/MTCDE	33.70%	
BE2	Energy Audit/Performance Rating	ASHRAE Level 1: \$505,969.5, II: \$1,807,034, III: \$3,614,067.99	First step towards 50% Reduction Recommendation.			
BE3	Demonstrate/Pursue Energy Performance Beyond Minimum Requirements for New Development	Would require statutory authority or voluntary compliance from developers/builders	Emissions reductions can be calculated for specific developments.			

Emissions Reduction Summary Table

Attachment B - Page 2 of 4

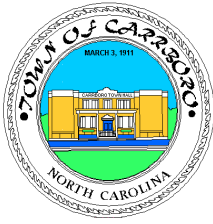
Task ID	Recommendation	Cost	GHG Emissions Reduction (MTCDE)	Cost to Emissions Reduction Ratio	Community Emissions Reduction Impact	Comments/Staffing
BE4	Create Rental Property Task Force and Process	\$132,500	Can be quantified for specific initiatives.			Cost Estimate from SSDN Grant: Addressing the Split Incentive Problem in Affordable Rental Units.
BE5	Create Rental Property Registry/Certification	\$112,500	Can be quantified for specific initiatives.			Cost Estimate from SSDN Grant: Addressing the Split Incentive Problem in Affordable Rental Units.
TM1	50% Challenge	Greenways: \$1,308.08/foot*, Electric Buses: \$691,000/bus*, EV Charging Stations: \$25,000 for Level 2 Station	16,415	Greenways: \$63,928.57/MTCDE*, Electric Buses: \$93,001.35/MTCDE*, EV Charging Stations: \$3,397.57/MTCDE*	14.65%	*Funding is available to cover 80-100% of transportation projects, reducing the cost to \$261.61/foot and \$12,785.71/MTCDE for greenways, and \$0.00 and \$0.00/MTCDE for electric buses and EV charging stations.
TM2	Enhance Transit Service	\$90.17 to extend 1 hour of service/year	0.005 MTCDE/hour of service	\$18,034/MTCDE		Emissions from transit service make up 0.8% of total community emissions.
TM3	Improve Vanpool/Carpool Options	Signs to identify vanpool and carpool parking areas	Can be quantified for specific initiatives.			Staff time would be required to work with GoTriangle and local businesses.
TM4	Further Promote Walking, Biking, Transit		Can be quantified for specific initiatives.			
TM5	Limit Idling in School Loading Zones	\$9,740.67	486.74	\$20.01/MTCDE	0.43%	
TM6	Improve Bicycle and Pedestrian Infrastructure	Greenways: \$1,308.08/foot*	0.02 MTCDE per foot of greenway constructed	Greenways: \$63,928.57/MTCDE*		*Funding is available to cover 80-100% of transportation projects, reducing the cost to \$261.61/foot and \$12,785.71/MTCDE for greenways
RE1	Pursue Community Solar Projects	\$151,284,884.80	32,524.50	\$4,651.41/MTCDE	30%	This total cost includes the 30% tax credit, which is reduced to 20% in 2020 and 10% in 2021, and will expire in 2022.

Emissions Reduction Summary Table

Attachment B - Page 3 of 4

Task ID	Recommendation	Cost	GHG Emissions Reduction (MTCDE)	Cost to Emissions Reduction Ratio	Community Emissions Reduction Impact	Comments/Staffing
RE2	Pursue Downtown Geothermal Heating and Cooling	\$1,800,000	599.76	\$3,001.20/MTCDE	0.54%	*Est. Costs from Orange County's geothermal project. Cost does not include savings in utility bills (30-50%)
RE3	Create Rental Property Task Forces and Process	See BE4				
ES1	Pursue Stormwater Utility	Currently collecting ~\$800,000 in annual revenue from new stormwater fees, which is being used for both operational expenses and capital projects/revenues	Resiliency measure, no easily-quantifiable emissions reduction.			
ES2	Evaluate Extent to Which the Deer Population and Climate Change affect Native Plant Ecosystems	\$10,000	Resiliency measure, no easily-quantifiable emissions reduction.			Potential study or UNC Student Capstone Project
ES3	Accelerate/Expand Organic Waste Collection/Composting	\$199,647.24 one-time cost, \$82,533.5 annually	236.88/year	\$5,706.20/MTCDE	0.21%	
ES4	Tree Preservation, Protection, and Conservation	\$25,000-\$50,000	Benefits can be measured using iTree program			Cost includes completion of tree inventory and development of Urban Tree Management Plan. Urban and Community Forestry Grant from the NC Forest Service
ES5	Improve Regulations and Community Capacity to Discourage Invasive Plants and Encourage Native Plants	Pursue grant funding	Resiliency measure, no easily-quantifiable emissions reduction.			

Task ID	Recommendation	Cost	GHG Emissions Reduction (MTCDE)	Cost to Emissions Reduction Ratio	Community Emissions Reduction Impact	Comments/Staffing
ES6	Pursue Watershed Restoration Actions to Protect Local Streams from Changes in Rainfall Due to Climate Change	\$353,393.00	Resiliency measure, no easily-quantifiable emissions reduction.			2009 NCDENR Section 319 NPS Pollution Control Grant: \$200,000.00, Town of Carrboro In-Kind Match: \$148,393.00, Cash Match - Friends of Bolin Creek: \$5,000.00
DM1	50% Challenge	\$75,569.00	\$13,475.78	\$5.61/MTCDE	7.80%	
DM2	Devlop Local Dietary Consumption and Associated GHG Profile	\$19,000	No direct emissions reduction. Required for benchmarking of 50% Reduction Challenge			This is the estimated cost of the Town's Biennial Citizen Survey. A Dietary survey will likely cost less as it will require less information from participants.



TOWN OF CARRBORO

NORTH CAROLINA

TRANSMITTAL

PLANNING DEPARTMENT

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

To: David Andrews, Town Manager
Board of Aldermen

From: Laura Janway, Environmental Planner
Patricia McGuire, Planning Director

Date: March 19, 2019

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

Summary

The purpose of this memo is to provide an update on progress since December 4, 2018 on the Energy and Climate Protection Plan, adopted May 28, 2014, and the Community Climate Action Plan (CCAP), adopted January 24, 2017. The Energy and Climate Protection Plan concentrates on lowering municipal greenhouse gas emissions and the CCAP establishes a 50% reduction goal in per capita greenhouse emissions by 2025. Town staff and residents are examining and pursuing several initiatives to reach the emissions reductions goals.

Town staff have scheduled the LED streetlight conversion project with Duke Energy. Project work will begin in May/June 2019 at a cost of \$35,395.00. Town staff are waiting for the Request for Proposals for the Volkswagen (VW) Emissions Mitigation Fund in order to begin writing a funding proposal for additional electric vehicle charging stations in Carrboro. Town staff have also completed 2018 reporting for the Bee City USA program, and have renewed Carrboro for participation in the program for 2019.

In February, staff and elected officials participated in a community discussion organized by a local resident at the Chapel Hill Public Library to discuss climate action, and have also worked to promote several proclamations and resolutions related to CCAP goals. Town staff have also re-initiated composting of coffee grounds at Town Hall and will attend the Climate Reality Leadership Corps training in Atlanta, Georgia with elected officials to learn leadership skills for community outreach related to climate action. Staff have been working with Chapel Hill, OWASA, and Chapel Hill-Carrboro City Schools (CHCCS) on a Mayors Water Conservation Challenge to promote water protection and conservation.

Public Works staff have installed an energy-efficient water fountain at Town Hall with a water bottle filling station to promote the use of reusable water bottles. In addition, Stormwater Utility

staff are working on an urban forestry public outreach project. The 2019 Comprehensive Bicycle Transportation Plan will also further the Town's efforts to achieve emissions reduction goals.

Planning Department staff have analyzed recommendations from the CCAP and have provided cost estimates and emissions savings for each recommendation, as well as a calculated cost-emissions savings ratio and a progress update on estimated total community emissions reduction to date.

Light-Emitting Diode (LED) Streetlight Conversion

- *Policy Connections:* Conversion of Town streetlights to LED lighting helps to fulfill Section 2A of the Energy and Climate Protection Plan (LED Outdoor Lighting). This section recommends conversion to LED streetlights as a high-priority action.

Public Works staff have been working with Duke Energy to implement the LED streetlight conversion. The project has been tentatively scheduled to begin in May/June 2019 and will take approximately 4 weeks to complete.

Summary Table

Total Transition Fee	\$35,395.60
Total Monthly Cost Savings	\$219.04
Estimated Town Emissions Reduction	10%

The streetlight fixtures will be changed while the poles will remain in place. The fixtures are American Electric Lighting Autobahn Series ATB2 and ATB0 and will be more amber in color than other LED lights, with a correlated color temperature of 3000K. They will be fully-shielded with no uplight and not more than 10% of the total lumens between 80-90 degrees. The 3000K temperature meets American Medical Association guidelines for lighting in outdoor installations and the streetlights also meet the requirements for the International Dark Sky Association's Fixture Seal of Approval Program.

Electric Vehicle Charging Stations

- *Policy Connections:* Installing additional EV charging stations helps to fulfill CCAP Transportation Recommendation #1: Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 50% by 2025.

The VW Emissions Mitigation Fund Request for Proposals has not been released. The NC Department of Environmental Quality has provided the following information:

Phase 1 Timeline

- Plan submission to trustee (August 2018)
- Release request for proposals (Winter 2019)-RFP will be open for 90 days
- Proposal evaluations (Spring 2019)
- Phase 1 project selections (Summer 2019)
- Phase 2 planning (Fall 2019/Winter 2020)

Staff will proceed with a funding proposal when the Request for Proposals is released, per the Board's direction in the last update on December 4, 2018.

Bee City USA

- *Policy Connections:* Membership in the Bee City USA program helps to fulfill CCAP Ecosystem Recommendation #5: Improve Regulations and Community Capacity to Discourage Invasive Plants and Encourage Native Plants.

Town staff completed the 2018 report for Bee City USA and renewed the Town's membership for 2019. Accomplishments for 2018 included: public outreach at the Carrboro Farmers' Market, maintenance of the pollinator garden at the corner of West Main Street and Hillsborough Road, design of pollinator gardens in Martin Luther King, Jr. Park, reading of a proclamation from Mayor Lavelle on June 5th, 2018, a Father's Day movie at the Carrboro Century Center, planting of pollinator-friendly plant species on Town properties, and the installation of two bee boxes in Wilson Park and Anderson Park.

Community Climate Action Meeting

- *Policy Connections:* The Community Climate Action Meeting helps to fulfill CCAP Community Integration Recommendation #1: Create Grassroots Partnerships to Engage Community and CCAP Community Integration #5: Expand Capacity to Pursue Sustainability Initiatives.

Local resident Mary Perry organized a discussion at the Chapel Hill Public Library for the Sierra Club's *Our Climate Resolutions* initiative. At the meeting, local government officials, climate action groups, and community members discussed local initiatives to reduce greenhouse gas emissions. The discussion was positive and productive, and participants made connections to organize and collaborate for future action. Participants also shared contact information with the Town for future CCAP implementation outreach.

Proclamations and Resolutions

- *Policy Connections:* Proclamations and Resolutions help to fulfill CCAP Community Integration Recommendations to engage the community.
- Proclamation Supporting the Reduction of Single-Use Plastics, October 16, 2018
 - Designated March 2019 as "Skip the Straw Month" in Carrboro
- Proclamation Recognizing February 25th-March 3rd, 2019 as "Carrboro Invasive Species Awareness Week, February 19th, 2019

Climate Reality Leadership Corps

Alderman Randee Haven O'Donnell, Alderman Sammy Slade, Planning Director Trish McGuire, and Environmental Planner Laura Janway are scheduled to attend a Climate Reality Leadership Corps training in Atlanta, Georgia from March 14th-16th. At the training, staff and

Aldermen will discuss climate science and obtained skills to organize, and motivate communities to take climate action.

Composting at Town Hall

- *Policy Connections:* Reinitiating composting of coffee grounds at Town Hall helps to fulfill CCAP Ecosystem Recommendation #3: Accelerate/Expand Organic Waste Collection/Composting.

Staff purchased two composting buckets from Orange County Solid Waste Management, and are collecting coffee grounds in the Town Hall break room and Inspections Department for composting through the partnership between the Carrboro Farmers' Market and Orange County Solid Waste Management. Coffee grounds will be weighed weekly to determine emissions reductions.

Mayors Water Conservation Challenge

- *Policy Connections:* Participation in the Mayors Water Conservation Challenge reduces the community's carbon emissions through energy savings related to delivering and cleaning wastewater. As a social media outreach campaign and partnership between Carrboro, Chapel Hill, OWASA, the University of North Carolina, and CHCCS, this initiative helps to fulfill CCAP Community Integration Recommendation #2: Expand Public Partnerships to More Explicitly Consider Climate Action.

The Town of Chapel Hill invited staff from Carrboro, OWASA, the University of North Carolina, and CHCCS to participate in a challenge to save water. The group created a unique Mayors Challenge for Carrboro and Chapel Hill to promote OWASA's new "Agua Vista" Metering Initiative. Agua Vista promotes water conservation by allowing customers to track their daily water usage and providing leak detection alerts.

Chapel Hill and OWASA staff are in the process of creating an online form where residents can pledge to participate in activities related to water conservation and protection. The activities will provide estimated water and cost savings, and the Town with the highest percentage of residents who take the pledge will win. After completing the pledge, participants will be directed to the OWASA's Agua Vista website. Staff will calculate greenhouse gas emissions savings based on reductions in the quantity of water treated due to pledged water savings from the challenge.

The overall campaign has been designed to:

- Reduce costs for consumers
- Reduce infrastructure and operating costs for municipalities
- Promote drought resiliency
- Protect watersheds and ecosystems

Installation of Energy-Efficient Water Fountain

- *Policy Connections:* The installation of a new energy-efficient water fountain helps to fulfill CCAP Buildings Recommendation #1: Reduce Emissions Attributed to Carrboro Buildings by 50% by 2025.

A new water fountain with a water bottle filling station has been installed at Town Hall. This water fountain uses half of the energy as the previous water fountain by minimizing water refrigeration during nighttime hours. The fountain also provides a count of plastic water bottles avoided each time a reusable bottle is filled. The emissions savings related to this initiative, including energy savings and avoided plastic, will be reflected in the upcoming Town's 2019 municipal greenhouse gas emissions inventory.

Urban Forestry Intern Project

- *Policy Connections:* The Urban Forestry Intern Project helps to fulfill CCAP Ecosystem Recommendation #4: Tree Preservation, Protection, and Conservation.

Stormwater Utility staff are working with an intern on an educational outreach project. The project includes a tree inventory in Downtown Carrboro and on Town-owned properties, as well as educational and outreach activities at Town events. Trees will be given "Tree Value Tags" to highlight the benefits from urban forestry. After completion, the project will be submitted to the Arbor Day Foundation for Growth Award consideration.

Comprehensive Bicycle Transportation Plan Update

- *Policy Connections:* The 2019 Update to the Comprehensive Bicycle Transportation Plan helps to fulfill CCAP Transportation Recommendation #4: Further Promote Walking, Biking, Transit, and Transportation Recommendation #6: Improve Bicycle and Pedestrian Infrastructure.

The 2019 update to the Comprehensive Bicycle Transportation Plan is underway and should bring renewed attention to biking for transportation and recreation. Recommendations from the update on new and improved infrastructure and education should further the Town's efforts to achieve greenhouse gas emissions reduction goals. The Town Environmental Planner and Transportation Planner are working to incorporate the climate action message into promotion of Bike Month 2019.

Green Neighborhood Initiative

- *Policy Connections:* The Green Neighborhood Initiative helps to fulfill CCAP Community Integration Recommendation 3#: Create Green Neighborhood Program.

An update on the Green Neighborhood Initiative is outlined below in the CCAP Implementation Costs and Emissions Reduction Analysis.

Community Climate Action Plan (CCAP) Implementation Costs and Emissions Reduction Analysis

Community Integration Recommendation (CIR) #1: Create Grass Roots Partnerships to Engage Community

This recommendation will require staff time to identify partners, bring groups together, and promote and sustain efforts to reduce emissions.

CIR #2: Expand Public Partnerships to More Explicitly Consider Climate Action.

This recommendation will involve staff time to expand existing and new partnerships to support improved building energy efficiency, transportation, renewable energy, composting, and environmental community goals.

CIR #3: Create Green Neighborhood Program

Through a green neighborhoods program, the Town can enlist and engage neighborhoods in efforts to reduce greenhouse gas emissions. The Town could provide education regarding local emissions reduction opportunities, and teach neighborhood residents how to reduce their carbon footprints. Residents in neighborhoods can collaborate on projects, track their energy use and emissions savings, and compete to win awards for successful reductions.

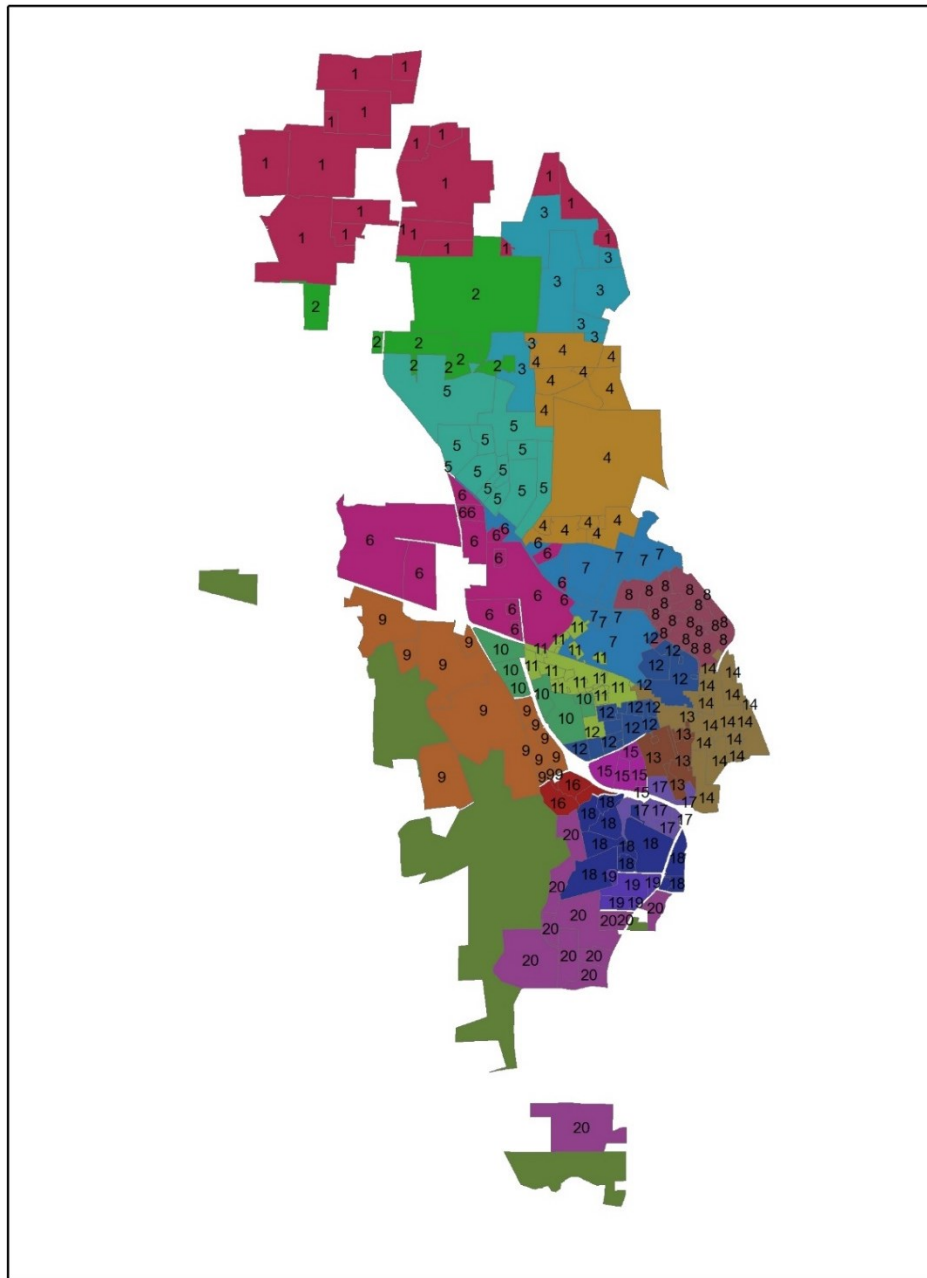
Program Cost

Carrboro could emulate the example set by the Town of Cary through the Cary Green Neighborhood Project (CGNP), which was initiated using a \$54,000 grant. This environmental stewardship project lasted for one year, ending in March 2017.

During this project, neighbors worked together over a twelve-month period to adopt green measures at their homes and throughout their neighborhoods. Initiatives focused on reducing an individual's environmental impact and restoring local ecosystems. Volunteers for the CGNP spent over 2,000 hours completing 37 community activities, including planting 200 live tree stakes for streambank stabilization. The project improved regional partnerships with the Town and neighborhoods and created a collaborative atmosphere for participants to address climate action.

In order to create neighborhood groupings for the Green Neighborhood Program, Town GIS staff divided the Town's jurisdiction into 20 subareas with roughly equal populations. Each subdivision/neighborhood was then assigned to the Green Neighborhood containing the center of the subdivision polygon. As proposed, each Green Neighborhood would contain approximately 1,077 residents.

Town of Carrboro Green Neighborhoods Map



TOWN OF CARRBORO

301 W. Main St.

Carrboro, NC 27510

Created on March 7, 2019

by Evan Crane

**THIS MAP IS NOT A CERTIFIED SURVEY
NO RELIANCE MAY BE PLACED IN ITS ACCURACY**

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CIR #4: Integrate Climate Action with Local Living Economy

CCAP recommendations include:

1) Include climate change mitigation in local living economy/locally owned marketing messaging 2) Encourage light manufacturing zone in Carrboro, 3) Set-up Property Assessed Clean Energy (PACE) financing program for commercial buildings to implement renewable energy.

CIR #5: Expand Capacity

Town staff will be bringing forward a Land Use Ordinance Text Amendment to modify the Environmental Advisory Board's title to more fully identify its role in CCAP implementation. Staff are also working to reactivate the interdepartmental Climate Action Committee, which will serve as a working group to pursue implementation of emissions-reducing strategies.

CIR #6: Facilitate Low Cost Financing for Energy Efficiency and Renewable Energy Projects

The main cost for this recommendation will be a debt burden for the Town. The CCAP recommends using Qualified Energy Conservation Bonds (QECB) to provide Carrboro and partners with access to low-cost financing for energy-efficiency projects. The second recommendation is to make this low-cost financing available for community projects using a revolving loan fund or PACE financing.

CIR #7: Integrate Climate Action and Social/Equity Initiatives

The CCAP includes recommendations on using federal grants, community programs, and Town initiatives/ordinances to make renewable energy more affordable for lower-income households to lower utility bills. Carrboro can use the example set by OWASA's Affordability Outreach Program, which uses six primary strategies to assist customers in management of OWASA bills through conservation and efficiency:

- Rates and Billing
- Information and Outreach
- Bill Assistance
- Water Efficiency Retrofits
- Leak Identification
- Partnership

Buildings Recommendation (BR) #1: Reduce Emissions from Buildings by 50%

Average costs and estimated emissions savings from the Carrboro Worthwhile Investments Save Energy (WISE) program were used to extrapolate the total cost and emissions savings for all Town buildings.

Estimated costs as determined by certified contractors that participated in the Chapel Hill- Carrboro Residential Retrofit program		
Retrofit Category	Type of Retrofits	Average Cost/Sq. Foot
Weatherization	Insulation, Caulking, Weather-stripping	\$4.95
Electric	CFL Lights, Thermostats	\$1.33
Replacements	Doors, Ducting, Appliances, Bath Fans, Windows, HVAC	\$11.33
Water Heaters	Solar, NG Tankless, Newer Model, Recirculating Pump, Hybrid	\$5.57
Crawlspace	Total Airsealing	\$5.70
Attic	Total Airsealing	\$5.26

Average Cost per square foot: **\$5.03**

Carrboro WISE Program Data: Average Energy and Cost Savings for Installed Measures			
Costs and Savings	Residential Average	Multi-family Average	Commercial Average
Retrofit Invoiced Cost	\$8,123.81	\$2,996.52	\$32,037.60
Annual Electricity Savings (kWh)	1,877.94	3,268.44	1,648.00
Annual % Electricity Savings (kWh)	13%	22%	15%
Annual Natural Gas Savings (Therms)	138.13	550	164.6
Annual % Natural Gas Savings	30%	89%	76%
Average Annual Cost Savings (\$)	\$363.12	\$361.24	\$359.15

Based on previous cost estimates and savings, performing the average retrofits from the WISE program on all buildings in Carrboro would not be enough to reach the entire community buildings emissions reduction goal. Additional retrofits must be completed in order to reduce building emissions by 50%.

To reach this goal, a total cost of \$706,000 is needed to retrofit all municipal buildings to reduce building emissions by 50%.

A total cost to residents of approximately \$122,390,000 is needed to reduce commercial and residential building emissions by 50%.

The average cost is \$3,365.29 per MTCDE in emissions reduction. Reducing emissions from buildings by 50% will reduce total community emissions by 33.7%.

To perform retrofits on commercial and residential buildings located within Carrboro, the estimated cost per person is \$2,098.65. To accomplish these goals and encourage energy-efficiency upgrades, the Town of Carrboro could coordinate and facilitate retrofits using a similar model to the WISE program.

Summary Table

Buildings	Total Estimated Costs (\$)	Emissions Savings (MTCDE)	\$/MTCDE	Emissions Savings Needed to Reach 50% Reduction Goal (MTCDE)	Additional Emissions Needed to Reach Goal (MTCDE)	Additional Cost to Reach Goal	Total Cost to Reach Goal
Commercial	\$2,350,860.53	5,962.15	\$394.30	13,418.00	7,455.85	\$2,939,822.63	\$5,290,683.17
Single-Family Residential (38% of total housing)	\$26,962,918.75	2,547.17	\$10,585.46	8,247.14	5,699.97	\$60,336,814.90	\$87,299,733.66
Multi-Family Residential (62% of total housing)	\$15,899,509.65	7,179.21	\$2,214.66	13,455.86	6,276.66	\$13,900,666.82	\$29,800,176.47
Town Buildings	\$387,348.35	1,452.13	\$266.74	2,648.50	1,196.37	\$319,125.66	\$706,474.01
Total	\$45,600,637.29	17,140.65		37,769.50	20,628.85	\$77,496,430.02	\$123,097,067.30

BR #2: Energy Audit/Performance Rating

In the Energy and Climate Protection Plan (2014), walk-through audits (ASHRAE Level I) are frequently priced at \$.02- \$.05 per square foot. Level II audits are frequently priced at \$.10-\$.15 per square foot. Investment grade audits (ASHRAE Level III) are frequently priced at \$.20-\$.30 per square foot. These estimates were adjusted to account for inflation.

Costs to Audit Town Buildings

Dept.	Current Existing Area (GSF)	ASHRAE Level I Audit	ASHRAE Level II Audit	ASHRAE Level III Audit
Total	77,026.00	\$2,911.58	\$10,398.51	\$20,797.02

Costs to Audit Residential Buildings

Building Type	Sq. Footage	ASHRAE Level I Audit	ASHRAE Level II Audit	ASHRAE Level III Audit
Single-Family Homes	7,500,000.00	\$283,500.00	\$1,012,500.00	\$2,025,000.00
Multi-Family Homes	4,800,000.00	\$181,440.00	\$648,000.00	\$1,296,000.00
Total	12,300,000.00	\$464,940.00	\$1,660,500.00	\$3,321,000.00

Costs to Audit Office and Retail Buildings

Source: CoStar. Provided to Town of Carrboro by Aspen Romeyn, TJCOG				
Building Type	2018 Sq. Footage	ASHRAE Level I Audit	ASHRAE Level II Audit	ASHRAE Level III Audit
Total	1,008,411	\$38,117.94	\$136,135.49	\$272,270.97

Total Cost to Audit all buildings in Carrboro

ASHRAE Level I Audit	ASHRAE Level II Audit	ASHRAE Level III Audit
\$505,969.52	\$1,807,034.00	\$3,614,067.99

Auditing is the first step to reducing energy emissions in Carrboro buildings, as it will provide direction for energy-efficiency retrofits. Duke Energy also offers to perform certain types of audits at no cost.

BR #3: Demonstrate/Pursue Energy Performance Beyond Minimum Requirements for New Development

This recommendation would require the Town to pursue statutory authority or voluntary compliance from developers/builders.

BR #4: Create Rental Property Task Force and Process, BR #5: Create Rental Property Registry/Certification

Mr. Jim Porto, former Carrboro mayor and founder of CommunityCAPS, Inc., submitted a Southeast Sustainable Communities Fund Grant through the Southeast Sustainability Directors Network (SESDN).

The grant's objective involved the development of a community-wide effort to remediate affordable rental units for energy efficiency without raising rents. This issue is known as the split incentive problem, as the financial structure of rental units does not create motivation for owners or renters to retrofit units for energy efficiency.

Item	Estimated Cost
Create Rental Property Task Force and Process	\$132,500
Create Rental Property Registry/Certification	\$112,500

Transportation Recommendation (TR) #1: 50% Challenge

Transportation-related emissions reductions can be calculated for specific projects. When submitting projects for federal Congestion Mitigation and Air Quality (CMAQ) funding, Town staff perform emissions reduction calculations.

Jones Creek Greenway Project

The greenway will be 650 feet in length and will create a 5,000 feet connection to neighborhoods such as Lake Hogan Farms and Fox Meadows, which contribute a significant component of the student population to Morris Grove Elementary. Estimates were made using walk and bike behavior from students at McDougale Elementary. After the greenway is complete, approximately 10% of students will be able walk or bike to school.

Estimated number of school-related greenway users per year: 6,480 trips per year

Vehicle miles avoided per year for school children: 32,400 miles

For this project, staff estimated 346.29 kg emissions reduced/year, or 0.35 MTCDE.

However, using the EPA's Greenhouse Gas Equivalencies Calculator, this avoided mileage is equal to 13.3 MTCDE in avoided emissions, or 0.02 MTCDE per foot of greenway constructed.

Example of Potential Project Cost

CMAQ costs (80% of project)	\$680,200
Cost to Carrboro (20% of project)	\$170,050
Cost per foot of greenway	\$1,308.08
Cost to Carrboro per foot of greenway	\$261.61
Total cost per yearly emissions reduction	\$63,928.57/MTCDE
Cost to Carrboro per yearly emissions reduction	\$12,785.71/MTCDE

Bicycle and pedestrian counts will be performed before and after construction of the greenway in order to confirm the accuracy of these estimates. This estimation method provides a framework to estimate emissions reductions from future greenways with school connections, as well as greenways connecting to other community destinations.

Electric Buses

Chapel Hill (CH) Transit is currently in the process of purchasing two electric buses through a grant from the Federal Transit Administration. Most of CH Transit's fleet uses diesel fuel. In the EPA's eGRID SERC Virginia/Carolina region, electric buses emit 67% less emissions than diesel buses.

The total transit emissions attributed to CH Transit in Carrboro in 2012 were 954 MTCDE. Operation of two electric buses will reduce this footprint by 1.56%. The cost for the buses is \$1.382 million, and the total cost per yearly MTCDE reduction for the project is \$93,001.35/MTCDE. However, CH Transit is using grant funding for this project, reducing the cost to solely staff time needed to writing the funding request and manage the project.

EV Charging Stations

A Level 2 charging station will cost approximately \$25,000, with an additional \$1,263.24/year in electricity costs. The Town Commons EV Charging station provides an emission reduction of 7.73 MTCDE in one year. The cost per yearly emissions reduction is \$3,397.57/MTCDE. However, staff will be pursuing funding to cover 100% of the costs of publicly-available EV Charging stations through the VW Mitigation Trust Fund, and this reduces the cost to solely staff time needed to writing the funding request and manage the project.

TR #2: Enhance Transit Service

In Chapel Hill Transit's FY17-18 Service Plan Update to the Transit Partners Committee, an estimate of \$200,000 is provided for a service expansion of 2,218 hours.

Greenhouse gas emissions for Carrboro's portion of Chapel Hill Transit ridership in the 2012 Capstone Report was calculated as 15%. Using this estimate and data from the 2005 Chapel Hill Mobility Report Card, there are approximately 880,800 rides taken by Carrboro residents each year, or 4.97 rides/hour.

Providing a service expansion of 2,218 hours would add approximately 11,023.46 rides in Carrboro. The total emissions attributed to CH Transit in the 2012 Capstone was 954 MTCDE, or 0.001 MTCDE per ride. Adding 2,218 hours of service would result in approximately 11.02 MTCDE in emissions reductions (0.005 MTCDE/hour of service).

At a cost of \$200,000 for 2,218 hours, the cost to add one hour of service is \$90.17, resulting in 0.005 MTCDE in emissions reductions. To reach 1 MTCDE of emissions reductions, it would cost approximately \$18,034.

TR #3: Improve Vanpool/Carpool Options

This initiative will require a partnership with GoTriangle and local businesses.

TR #4: Further Promote Walking, Biking, Transit

This recommendation involves staff time to promote Bike to Work Days, implement the Safe Routes to School Program, and promote other initiatives such as bike sharing and Open Streets events.

TR #5: Limit Idling in School Loading Zones*Idling Reduction Campaign*

According to the U.S. EPA, idling school buses for more than three minutes emits more particulate matter than restarting the engine. Emissions after a restart contain less carbon monoxide, nitrogen oxides, and other pollutants than if a school bus idled for ten minutes. Most of the costs related to initiating an Idling Reduction Campaign will be related to creating and printing public outreach materials and dedicated staff time in the Town of Carrboro and CHCCS.

Estimates

CHCCS operates 74 school buses for a minimum of 185 school days per year. If all buses reduce idling by 30 minutes per day, using estimates from the EPA, they will save 0.25 gallons of diesel fuel per bus per day.

School Bus Savings	
Gallons Gasoline saved/day	18.5
Gallons Gasoline saved/year	3,422.5
lbs CO2 saved/year	75,979.5
MTCDE saved/year total CHCCS	34.46
MTCDE saved/year Carrboro schools	10.68

Total CHCCS students	12,000
Bus riders	5,300
Driven to school*	4,467
Walk/Bike*	2,233

*Estimates using Safe Routes to School data.

Summary Table

Vehicle Type	Percentage	Fuel Economy (mi/gal)	Idling fuel use	# of vehicles	gal saved/car if reduce 10 min idling/car/day	Total Gal saved/day	Total Gal saved/school year	MTCDE saved/year
Passenger Vehicles	71.73%	23.3	0.0053 gal/min (or 0.32 gal/hr)	3204.18	0.05	169.82	31,416.98	276.46
Light Trucks	20.49%	17.1	0.0118 gal/min (or 0.71 gal/hr)	915.29	0.12	108.0	19,980.74	175.82

Totals	MTCDE Saved/Year
CHCCS	452.28
Carrboro Schools	140.16

Total MTCDE saved/year bus and cars	Estimated Outreach Cost	Estimated Staff Cost	Estimated Total Cost	\$/MTCDE Savings
150.89	\$4,740.67	\$5,000.00	\$9,740.67	\$64.55

Public Outreach

Source: Atkinson, et al., 2010

- Flyers
- Pledge cards
- Bumper stickers
- Keychains
- Posters

The EPA Idle-Free Schools Program recommends the following activities in the Idle Free Schools Toolkit.

- Pre-Campaign Observations
- Introduce Campaign, incorporate into classroom teachings
- Public outreach, distribute idling policies
- Pledge contest

- Driver Contact Event
- Mid- and Post-Campaign Observations

Ideas for continuing activities each year include periodic reminders, continued outreach, and continuing to teach air quality and pollution concepts in school.

TR #6: Improve Bicycle and Pedestrian Infrastructure

Estimates provided in a future update, including linear estimates of costs and greenhouse gas emissions reductions for sidewalks, bike lanes, and greenways.

Renewable Energy (RE) Recommendation #1: Pursue Community Solar Projects

Using the average yearly electricity production of the Carrboro Town Commons solar array, it would require 9,528 5 kWh solar arrays to produce 66,428,017 kWh/year, or half the yearly electricity used by Carrboro residents.

Estimated Cost of one 5 kWh system	\$22,688.00
Total Cost of 9,528 systems	\$216,171,264.00
Duke Energy Rebates (up to \$50,000)	\$216,121,264.00
Total Cost for Community Solar Arrays, Including 30% Tax Credit (through 12/31/19)	\$151,284,884.80

A 50% reduction in emissions from electricity is equal to 32,524.5 MTCDE.

The ratio of cost to MTCDE reduced is \$4,651.41/MTCDE. Reducing the electricity use of the community by 50% would reduce total community emissions by 29.02%

The Federal Solar Tax Credit will decrease to 26% of solar installations in 2020, and 22% in 2021, and will expire in 2022.

In a previous Community Climate Action Plan Memorandum to the Board of Aldermen, staff estimated that 3% of Carrboro may be suitable for solar installations from rooftops, open land, and parking lots. The Department of Energy has estimated that about 175k square meters of rooftop space is available in Carrboro, which is equivalent to about 34k MWh of potential annual generation, or a little more than 1/3 of the extrapolated area suitable for solar installations.

RE Recommendation #2: Pursue Downtown Geothermal Heating and Cooling

As of June 2016, Orange County has connected 6 buildings to geothermal systems at a cost of \$1.8 million. County buildings have experienced a 30-50% reduction in heating and cooling energy use and costs from this project. Town staff have researched this potential for Carrboro Town buildings, but have found that the logistics of the geothermal installation are prohibitive at this time.

RE Recommendation #3: Create Rental Property Task Force and Process

See BR #3 and BR #4.

Ecosystem Recommendation (ER) #1: Pursue Stormwater Utility

The Stormwater Utility is currently collecting ~\$800,000 in annual revenue from new stormwater fees, which is being used for both operational expenses and capital projects/revenues.

ER #2: Evaluate Extent to Which the Deer Population and Climate Change affect Native Plant Ecosystems

This recommendation will require a scientific study or UNC Capstone Project. It is a resiliency measure and will not result in easily-quantifiable emissions reduction.

ER #3: Accelerate/Expand Organic Waste Collection/Composting

In the December 4, 2018 Energy and Climate Protection Plan and Community Climate Action Plan Implementation Update, Town staff analyzed multiple composting scenarios using EPA's WARM model. Staff updated the WARM model by removing yard waste components to obtain additional estimates of emissions reduction from different composting scenarios. The average emissions reduction from a composting program was 236.89 MTCDE/year.

Town staff also updated cost estimates for composting scenarios. The average one-time cost for a composting program is \$199,647.24 to purchase curbside and kitchen composting bins. The average yearly cost of a composting and every-other-week garbage collection program is \$682,533.65. The average costs to emissions reduction ratio is \$5,706.20/MTCDE.

Pilot Program

A pilot program can be initiated in the Old Carrboro Neighborhood, Green Neighborhood #14. At approximately 1,077 people per Green Neighborhood, and an average of 2.34 persons per household, there will be approximately 460 households in the pilot program. Residents will receive outreach materials, a kitchen compost bin, a curbside compost bin, and a 6-month supply of compostable kitchen bin liners.

Item	Cost
Cost per 96-gallon bin	\$48.18
Cost to provide bins to 460 homes	\$22,162.80
Cost per kitchen bin	\$5.00
Cost to provide bins to 460 homes	\$2,300
Cost of 6-month supply of kitchen bin liners to each home	\$4,600
Outreach Materials	\$5,000
Total Cost	\$34,062

Outreach Materials

The City of Renton, Washington Pilot provided the following communications with participants in the pilot composting program:

- Initial notification letter
- Introductory postcard
- Composting instructional brochure
- Cart stickers, Problem tags
- Follow-up communication after completion of pilot

Monitoring Success

Resident feedback surveys, load weights, and visual audits can be used to measure success of the pilot program. According to McGowen and Nicoletto (2015), the Residential Composting Monitoring Program in Cambridge, Massachusetts used resident feedback surveys to obtain information on the following topics:

- Demographics
- Changes in generation of household waste
- Opinions on kitchen containers, compostable bags and green bins
- Cooking, food purchasing, leftovers and waste-related behaviors
- Odors, fruit flies and rodents

Cambridge staff also emailed participants on a monthly basis with updates on program performance, greenhouse gas emissions reductions, and composting tips.

During their pilot composting program, the City of Portland, Oregon measured participation and diversion rates by weighing haulers and performing visual audits on a selected sample of participants.

Additionally, the City of Renton, Washington monitored public health impacts of every-other-week garbage collection. To measure these impacts, a separate observer (staff member or consultant) joined route collection staff to perform visual monitoring. The observer also performed walk-around monitoring at selected locations.

ER #4: Tree Preservation, Protection and Conservation

The Town of Carrboro can pursue an Urban and Community Forestry Grant from the North Carolina Forest Service to perform a tree inventory and write a Street Tree Master Plan. Grants awarded to other cities in the state through the program in 2017 to complete a tree inventory and management plan average a cost of \$25,000-\$50,000.

ER #5: Improve Regulations and Community Capacity to Discourage Invasive Plants and Encourage Native Plants

This recommendation will involve updates to the Town's Land Use Ordinance and outreach. Using a \$30,000 grant, the Bolin Forest and Quarterpath Trace neighborhoods, with support from Green Roots Environmental Design from Raleigh, collaborated to pursue a neighborhood-driven forest stewardship campaign. The effort included invasive plant management, a community workshop at the Century Center, and preparation of an Urban Forest Stewardship Report. This

Recommendation action focuses more on resiliency than easily-quantifiable greenhouse gas emissions mitigation.

ER #6: Pursue Watershed Restoration Actions to Protect Local Streams from Changes in Rainfall Due to Climate Change

The Town of Carrboro was awarded a Section 319 NPS Pollution Control Grant for \$200,000 by the North Carolina Department of Environmental and Natural Resources (NC DENR) to support the continuation of watershed restoration efforts for Bolin Creek. The grant was a cooperative effort between the Town of Carrboro, North Carolina State University, CHCCS, and Friends of Bolin Creek. The Town of Carrboro provided an in-kind match of \$148,393.00, and the Friends of Bolin Creek provided a \$5,000.00 cash match. The Town pursued watershed restoration projects, planning, and monitoring using this funding. Watershed restoration focuses more on resiliency than easily-quantifiable greenhouse gas emissions mitigation.

Food Choice Recommendation (FCR) #1: 50% Challenge, FCR #2: Develop Local Dietary Consumption and Associated GHG Profile

FCR #2 must be completed in order to accurately track progress on FCR #1. Food choice emissions data was not included in the 2012 Greenhouse Gas Emission Inventory Capstone Project. In order to determine emissions from food choices, staff studied relevant research and utilized the CoolClimate Network's consumption-based greenhouse gas accounting. The CoolClimate Network is a University-Government-Business-NGO Partnership at the University of California (UC), Berkeley.

UC Berkeley CoolClimate Network Estimated Household Footprints for Carrboro Zip Codes		
Zip Code	Average Household Footprint (MTCDE)	Average Household food footprint (MTCDE)
27510	35.4	6
27516	49.5	7
Average of Zip Codes	42.45	6.5

According to U.S. Census Data, between 2013-2017, there were 8,991 households in Carrboro and an average of 2.34 persons per household. The estimated population for 2017 was 21,544.

Summary Table

CoolClimate Estimated Avg. Footprints	MTCDE
Avg. Estimated Total Footprint per person	18.14
Avg. Estimated Footprint per person – Food Consumption	2.78
Percentage of emissions related to food consumption per person ¹	15.3
Avg. Yearly Food Footprint Per Person	2.78
Total Yearly Town Food Footprint	59,892.32

¹This matches an estimate in a review of carbon calculators by Kim & Neff (2009) regarding the contribution of food to the average individual's carbon footprint.

Goals

	Avg. Yearly Food Footprint Per Person (MTCDE)	Total Yearly Town Food Footprint (MTCDE)	Food footprint from animal products (MTCDE)	50% Reduction Goal (MTCDE)	Goal Footprint from animal products (MTCDE)
2017 Population					
21544	2.78	59,892.32	26,951.54	13,475.78	46,416.55

Potential Emissions Reduction

Diet	Emissions Reduction	Decrease in per person footprint (MTCDE)	New Footprint Per Person (MTCDE)	Number of people	% of Population	New food-related footprint per person (MTCDE)
Meat partially replaced by plant-based food	7%	0.19	2.58	1,077	5%	2,782.25
Adopting Dietary Guidelines for Americans	12%	0.33	2.44	8,618	40%	21,063.92
Vegetarian	31%	0.86	1.92	6,463	30%	12,383.35
Vegan ¹	45%	1.25	1.53	3,878	18%	5,920.72
No change	0%	0.00	2.78	1,508	7%	4,192.46
Total				21,544		46,342.71

¹A publication by Aleksandrowicz et al., (2016) conducted a systematic examination of scientific literature measuring the environmental impacts of shifting current average dietary intake to a variety of more-sustainable diet options and found the median reduction in food-related emissions when shifting to a vegan diet was 45%. According to Weber & Matthews (2008), food production accounts for 83% of diet-related emissions, while food transport accounts for 11% of diet-related emissions.

Larger Context

Total Community Emissions	Town Emissions Including Food Footprint	Total Town Emissions with 50% Reduction from Food Emissions	Percentage of Emissions Reduction with 50% Reduction from Food Emissions
112,059	171,951.32	158,475.5	7.8%

If 5% of the population replaces a small amount of meat with plant-based food, 40% of the population adopts the Dietary Guidelines for Americans, published by the U.S. Department of Agriculture and U.S. Health and Human Services, 30% of the population becomes vegetarian, and 18% of the population becomes vegan, then Carrboro will reach its goal to reduce community-wide emissions from animal consumption by 50% by 2025. This will reduce total Town emissions approximately 8%.

Examples from Other Cities to Reduce Emissions from Food Consumption:

1. The City of Cincinnati, Ohio estimates a cost of \$25,000 for an outreach program to reduce meat consumption. The City recommended circular advertising, and providing handouts at events, grocery stores, fitness centers, and farmers' markets.

The City of Cincinnati also recommended an expansion of their Produce Perks/SNAP (Supplemental Nutrition Assistance Program) Plus Program. Produce Perks provides SNAP recipients an extra \$1.00 to spend on produce for each \$1.00 spent on other food, up to \$10.00/day. This allows SNAP recipients to purchase additional fruits and vegetables at no cost and will increase consumption of plant-based meals. The program also allows SNAP recipients to purchase produce at participating farmers markets and Community Supported Agriculture (CSA) programs, helping the local economy and incentivizing healthy foods at retailers. The cost estimate for the Produce Perks Program in Cincinnati was \$6,469.00.

2. The City of Eugene, Oregon recommends a "Buy climate-friendly first" food purchasing policy for public institutions including city and county governments, schools, and hospitals in its Community Climate and Energy Action Plan.

3. The City of Portland, Oregon partnered with the Portland Metro, the City of Portland Water Bureau, the Portland Bureau of Planning and Sustainability, and Energy Trust of Oregon to match Portland businesses and non-profits with a sustainability advisor through the Sustainability at Work Program. This program offers three levels of certification to recognize the positive impacts of businesses on the environment and community. Vegetarian and vegan meals are components of certification for restaurants.

4. The City of Durham, NC holds the Bull City Vegan Challenge (BCVC) each year. The BCVC is a 30-day contest where local chefs compete by adding a vegan entrée to their menus. Throughout the month, customers can visit the restaurants and vote for their favorite dishes. The BCVC is sponsored by The Durham Originals, the Triangle Vegetarian Society, Triangle VegFest, Fillaree, and Vegans for Peace. Additionally, local businesses donated prizes to the contest.

Estimated Cost to Promote Plant-Based Diets

Item	Cost
Outreach Program	\$25,000
Produce Perks Program	\$6,469
Community Survey	\$19,000
Restaurant Vegan Challenge	\$5,000
Part-time staff or staff time	\$20,000
Total	\$75,569

Reduction: 13,475.78 MTCDE

Ratio of Cost to MTCDE Reduced: \$5.61

Additionally, promoting local food could achieve 4-5% of additional emissions reduction (Weber & Matthews, 2008). The same reduction could also be made from an individual shifting less than 1 day/week from red meat and/or dairy to other protein sources or vegetable-based meals.

Town of Carrboro Community Emissions Reduction Estimates

Community Reductions 2012-2018	MTCDE Reduced
CHCCS Electricity Reductions, Solarize Carrboro & Pete St. Initiatives	1,000.45
WISE Program	89.7
CHCCS Nat Gas	490.89
CHCCS and Farmers' Market Composting	95.81
Town Reduction	353.9
EV Charging Station	9.02
Solid Waste	329.19
Projected Electricity Use with Current Population	13,268.43
Homestead Rd-Chapel Hill High School Multi-Use Path	16.02
Total Estimated Reduction	15,653.40

Total Community Emissions	MTCDE
2012	112,059
Estimated 2018	96,405.60

13.97% reduction in total community emissions

Per Capita Emissions	MTCDE
2012	5.50
Estimated 2018	4.47

18.73% reduction in total community emissions

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Town of Carrboro

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