



# Town of Carrboro

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

## Meeting Agenda Board of Aldermen



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Tuesday, April 5, 2016

7:30 PM

Board Chambers - Room 110

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### 7:30-7:35

#### A. REQUESTS FROM VISITORS AND SPEAKERS FROM THE FLOOR

### 7:35-8:00

#### B. RESOLUTIONS, PROCLAMATIONS, AND ACKNOWLEDGEMENTS

1. [16-108](#) Poetry Month Proclamation and Reading by Celisa Stelle,  
Carrboro's Poet Laureate  
**Attachments:** [2016 National Poetry Month Proclamation](#)
2. [16-104](#) A Resolution of Appreciation for Congressman David Price for  
Cosponsoring HR 1586  
**Attachments:** [Resolution of Appreciation for Congressman Price for Cosponsoring  
HR 1586](#)
3. [16-111](#) Sexual Assault Awareness Month
4. [16-112](#) Bike Month Proclamation  
**Attachments:** [Bike Month 2016 - Proclamation.docx](#)
5. [16-105](#) Charge(s) Issued to Recently Appointed Advisory Board Members

### 8:00-8:05

#### C. ANNOUNCEMENT OF UPCOMING MEETINGS

### 8:05-8:10

#### D. CONSENT AGENDA

1. [16-106](#) Approval of Previous Meeting Minutes

2. [16-097](#) A Request to Approve a Municipal Agreement with NCDOT and Adoption of a Capital Project Ordinance for the Jones Creek Greenway

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to consider the approval of the municipal agreement with the North Carolina Department of Transportation and the adoption of a capital project ordinance for the Jones Creek Greenway.

**Attachments:** [Attachment A - Jones Creek map](#)  
[Attachment B - Jones Creek CIP Ordinance](#)

3. [16-107](#) Request to Make an Appointment to the Recreation and Parks Commission

**PURPOSE:** The purpose of this item is for the Mayor and Board to make an appointment to the Recreation and Parks Commission.

**Attachments:** [Recreation and Parks Commission Appointment Resolution](#)  
[Mark Vandergrift Recreation and Parks Commission Advisory Board Application.pdf](#)

4. [16-103](#) Timeline of Southern Branch Library and Related Projects

**PURPOSE:** The purpose of this item is to update the Board of Aldermen on the anticipated schedule for the Southern Branch Library in relation to studies that may inform the Town how the 203 S. Greensboro property could otherwise be used.

**Attachments:** [Attachment A - Memo Regarding Library Update](#)  
[Attachment B - Copy of Timeline for Library and Related Projects](#)

5. [16-109](#) Request to Authorize Town Manager to Execute Deed of Easement for Ingress, Egress, Regress and Utilities Over a portion of the Town's Westwood Cemetery Property For Lion's Club

**PURPOSE:** The purpose of this item is for the Board of Aldermen to Consider Authorizing the Town Manger to execute a Deed of Easement, conveying an access easement over a 40-foot wide strip on the east side of the Town's Westwood Cemetery Property, to benefit the Lion's Club Property which adjoins the Town's property.

**Attachments:** [Attachment A - Resolution for Lion's Club Easement - PDF](#)  
[Attachment B - Lion's Club Color Photo](#)

6.      **16-098**      A Resolution Making Appointments to the Safe Routes to School Implementation Committee

**PURPOSE:** The Board of Aldermen is asked to consider establishing a Safe Routes to School Implementation Committee to recommend transportation projects, policies, programs, or activities that serve to increase the safety and convenience of walking and bicycling to school and fulfill related functions.

**Attachments:**    A Resolution Making Appointments to the Safe Routes to School Committee.docx  
Safe Routes to School Committee Applications.pdf

7.      [16-095](#)      Consider a loan request from Eden Food Group for Tandem

**PURPOSE:** The purpose is to consider a business loan fund request from Eden Food for \$100,000 to help capitalize a new restaurant concept named Tandem.

**Attachments:**    [A RESOLUTION APPROVING A LOAN FOR EDEN FOOD GROUP INC.](#)  
[Application-Eden Food Grp. 1](#)  
[Application Summary](#)

E.      **OTHER MATTERS**

**8:10-8:45**

1.      [16-102](#)      An Update on Carrboro's Parking Study

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to receive an update on the Town's Parking Study.

**8:45-9:00**

2.      [16-101](#)      An Update on Carrboro's Bicycle Friendly 'Path to Gold' Efforts, and Bike Month 2016 Activities

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to receive an update on the Town's efforts to achieve a Bicycle Friendly Community Gold-Level status, and a list of local Bike Month 2016 activities.

**Attachments:**    [Attachment A - LAB Report Card](#)  
[Attachment B - Resolution](#)

**9:00-9:30**

3.     [16-100](#)     Response to Board Review of Draft Community Climate Action Plan
- PURPOSE:**   The purpose of this memo is to respond to the Board's review of the draft plan.
- Attachments:**   [Climate Action Plan Resolution](#)  
                          [Climate Action Plan Staff Memo](#)  
                          [CommunityClimateActionPlanDraft033016](#)  
                          [Community Climate Action Plan Letter CHCCS](#)

F.     **MATTERS BY BOARD MEMBERS**

G.     **MATTERS BY TOWN MANAGER**

H.     **MATTERS BY TOWN ATTORNEY**

I.     **MATTERS BY TOWN CLERK**

J.     **CLOSED SESSION - NCGS 143-318.11 (3) - ATTORNEY-CLIENT PRIVILEGE**





# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-108

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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Poetry Month Proclamation and Reading by Celisa Stelle, Carrboro's Poet Laureate

**PROCLAMATION  
“NATIONAL POETRY MONTH”**

**WHEREAS**, the Academy of American Poets established the month of April as National Poetry Month in 1996; and

**WHEREAS**, National Poetry Month seeks to highlight the extraordinary legacy and ongoing achievement of American poets; introduce the pleasures and benefits of reading poetry; bring poets and poetry to the public in immediate and innovative ways; make poetry an important part of our children's education; and

**WHEREAS**, as National Poetry Month, under the leadership and direction of the Academy of American Poets, is now the largest literary celebration in the world; and

**WHEREAS**, poetry enhances and enriches the lives of all Americans and as an essential part of the arts and humanities, affects every aspect of life in America today, including education, the economy, and community pride and development; and

**WHEREAS**, poetry has produced some of the nation's leading creative artists and has inspired other artists in fields such as music, theatre, film, dance, and the visual arts; and

**WHEREAS**, The Town of Carrboro has had a Poet Laureate since 2002 and the current Poet Laureate is Celisa Steele; and

**WHEREAS**, the first Tuesday of each month, the Recreation and Parks Dept. hosts a “Poets Open Mic Night” at the Open Eye Cafe; and

**WHEREAS**, Carrboro’s monthly “West End Poetry Newsletter” highlights poetry readings, groups, workshops, websites, and events; and

**Whereas**, The 11<sup>th</sup> Annual West End Poetry Festival will take place on the afternoon of Saturday, October 15, 2016 and focus on the theme of healing and poetry.

**WHEREAS**, on Sunday, May 1, 2016 a the Carrboro Poets Council will host a Poetry “Reading in the Round” will take place in the Town Hall Boardroom from 2:30 – 4:30 p.m. This is an open reading – all are welcome – come read your own work, come ready to share a poem you love by someone else, or come to listen only;

**WHEREAS**, to celebrate National Poetry Month, on Friday, April 22 from 6:30 – 8:30 p.m. Carrboro will host “Poetry on Your Plate”; a reading by local poets Pamela Moffatt, Gary Phillips, and Pamela Baggett at the Century Center.

**Whereas**, The Board of Aldermen wishes to express their gratitude to Celisa Steele for serving as the Town’s Poet Laureate with a term ending in June 2016.

**NOW THEREFORE BE IT RESOLVED** that I, Lydia E. Lavelle, Mayor of the Town of Carrboro, North Carolina, do hereby proclaim **the month of April 2016** as “**National Poetry Month**”. I invite public officials, educators, librarians, and all the people of Carrboro to observe this month, celebrate the cultural riches our community has to offer, and to recognize the important role poetry plays in creating and sustaining this great nation with appropriate ceremonies, activities, and programs.

This the 5<sup>th</sup> day of April, 2016

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Lydia E. Lavelle, Mayor



# Town of Carrboro

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## Agenda Item Abstract

**File Number:**16-104

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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A Resolution of Appreciation for Congressman David Price for Cosponsoring HR 1586

A RESOLUTION SUPPORTING REPEAL OF POLICIES THAT ENCOURAGE AND ALLOW  
LEGAL HIV DISCRIMINATION AND THANKING CONGRESSMAN DAVID PRICE FOR HIS  
COSPONSORSHIP OF THE REPEAL HIV DISCRIMINATION ACT OF 2015 (HR 1586)

WHEREAS, 33 states and two US territories have criminal statutes based on perceived exposure to HIV rather than actual transmission of HIV, and 11 states have HIV-specific laws that make spitting or biting a felony, even though it is not possible to transmit HIV via saliva; and

WHEREAS, 24 states require persons who are aware that they have HIV to disclose their status to sexual partners, and 14 of these 24 states also require disclosure to needle-sharing partners; and 25 states criminalize one or more behaviors that pose a low or negligible risk for HIV transmission; and

WHEREAS, HIV-specific criminal laws are classified as felonies in 28 states; and in three states, a person's exposure of another to HIV does not subject the person to criminal prosecution for that act alone but may result in a sentence enhancement, and

WHEREAS, in North Carolina, regulation of persons living with HIV is found in the health code, and violation of HIV-specific provisions of the North Carolina health code is a misdemeanor that can result in up to two years of incarceration; and

WHEREAS, the number of prosecutions, arrests, and instances in which HIV-specific criminal laws are used to induce plea agreements is unknown, because state-level prosecution and arrest data are not readily available in any national legal database and, as a result, the societal impact of these laws may be underestimated and most cases that go to trial are not reduced to written, published opinions; and

WHEREAS, state and federal criminal laws and prosecutions do not reflect the three decades of medical advances and discoveries regarding transmission of and treatment for HIV and do not take into account the benefits of effective antiretroviral medications, which reduce HIV viral load to undetectable levels and further reduce the already low risk of transmitting HIV to near zero; and

WHEREAS, the Centers for Disease Control and Prevention has stated that HIV is only transmitted through blood, semen, vaginal fluid, and breast milk and that correct and consistent male or female condom use is very effective in preventing HIV transmission; and

WHEREAS, although HIV/AIDS is a treatable, chronic medical condition, persons living with HIV have been charged under aggravated assault, attempted murder, and even bioterrorism statutes; and such cases have resulted in disproportionately long sentences as a result of prosecutors, courts, and legislators continuing to characterize the blood, semen, and saliva of persons living with HIV as a "deadly weapon," which has led to persons who are convicted for HIV exposure, nondisclosure, or transmission often being required to register as sex

offenders—even in cases of consensual sexual activity—which is detrimental to their employability and family relationships; and

WHEREAS, research findings from multiple peer-reviewed studies have shown that HIV-specific laws do not reduce risk-taking behaviors or increase disclosures by persons living with or at risk of acquiring HIV, and there is increasing evidence that these laws, in fact, reduce willingness to get tested; and

WHEREAS, these laws place persons who are aware of their HIV status at greater risk of prosecution, counteracting public health efforts to expand HIV testing and engagement in lifesaving care and treatment and placing legal responsibility for preventing transmission of HIV and other pathogens exclusively on persons diagnosed with HIV, without consideration of other pathogens that can be sexually transmitted, further undermining the public health message that all persons, regardless of HIV status, should practice behaviors that protect themselves and their partners from HIV and other sexually transmitted diseases; and

WHEREAS, the continued presence and implementation of HIV-specific laws increases stigma against persons living with HIV and perpetuates misconceptions about HIV transmission; and

WHEREAS, the United Nations (including the Joint United Nations Programme on HIV/AIDS) recommends that criminal law should not be applied to cases in which there is no significant risk of transmission and that criminalization should be limited to cases of intentional transmission, requiring a person to know his or her HIV-positive status, to act with intent to transmit HIV, and to in fact transmit HIV; and

WHEREAS, the Global Commission on HIV and the Law has called on governments, civil society, and international bodies to repeal punitive laws and enact laws that enable and facilitate effective HIV prevention, care, and treatment for all who need them, and has recommended against the enactment of laws that explicitly criminalize HIV transmission, exposure, or nondisclosure of HIV status, which they characterize as counterproductive; and

WHEREAS, in 2010, the President's National HIV/AIDS Strategy recommended that legislators consider whether existing HIV-specific laws further the public interest and public health, given that these laws run counter to scientific evidence about HIV transmission and may undermine public health goals; and proposed that state legislatures review criminal statutes to ensure that they are consistent with current knowledge and public health approaches to prevention and treatment; and

WHEREAS, in February 2013, the President's Advisory Council on AIDS passed a resolution stating that US law should be consistent with current medical and scientific knowledge and accepted human rights-based approaches to disease control and prevention and avoid imposition of unwarranted punishment based on health and disability status; and

WHEREAS, at the urging of HIV/AIDS advocates in North Carolina and members of the Carrboro Board of Aldermen, Congressman David Price signed on as a cosponsor of HR 1586, the REPEAL HIV Discrimination Act of 2015, on March 16, 2016.

NOW, THEREFORE, BE IT RESOLVED:

SECTION 1. The Board of Aldermen urges Congress to enact HR 1586, the REPEAL HIV Discrimination Act of 2015, to ensure that federal and state laws, policies, and regulations concerning persons living with HIV (1) do not place unique or undue burdens on persons solely as a result of their HIV status; (2) are based on public health best practices; (3) reflect evidence-based, medically accurate, and up-to-date understanding of the routes, risks, and consequences of HIV transmission; (4) reflect understanding of effective antiretroviral therapy on HIV prevention; and (5) avoid negative impacts on public health and on affected persons, families, and communities.

SECTION 2. The Board of Aldermen thanks Congressman David Price for his cosponsorship of HR 1586 and asks that the town clerk share this resolution with Congressman Price's office.

This the 5th day of April, 2016.



# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-112

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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Bike Month Proclamation

P R O C L A M A T I O N  
DESIGNATING MAY 2016 AS “BIKE MONTH”; MAY 4, 2016 AS “WALK AND BIKE TO  
SCHOOL DAY”; THE WEEK OF MAY 16-20, 2016 AS “BIKE TO WORK WEEK”; AND  
MAY 20, 2016 AS “BIKE TO WORK DAY”

WHEREAS, the League of American Bicyclists (LAB) is promoting May 2016 as National Bike Month, the week of May 16-20, 2015 as Bike to Work Week, and May 20, 2015, as Bike to Work Day; and

WHEREAS, the National Center for Safe Routes to School is promoting May 4, 2016, as National Walk and Bike to School Day; and

WHEREAS, the Town of Carrboro is a Silver-level Bicycle Friendly Community working towards Gold; and

WHEREAS, 5.2% of Carrboro residents commute to work by bicycle, as compared with .2% of North Carolinians and .6% of Americans; and

WHEREAS, bicycling is good for personal health, the environment, the economy, and is FUN!

NOW, THEREFORE BE IT RESOLVED that I, Lydia Lavelle, the Mayor of the Town of Carrboro, North Carolina, do hereby proclaim that May 2016 is designated as “Bike Month”; May 4, 2016 is designated as “Walk and Bike to School Day”; May 16-20, 2016 is designated as “Bike to Work Week”; and May 20, 2016 is designated as “Bike to Work Day”.

This the 5<sup>th</sup> day of April in 2016.

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Lydia Lavelle, Mayor





# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-097

**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

A Request to Approve a Municipal Agreement with NCDOT and Adoption of a Capital Project Ordinance for the Jones Creek Greenway

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to consider the approval of the municipal agreement with the North Carolina Department of Transportation and the adoption of a capital project ordinance for the Jones Creek Greenway.

**DEPARTMENT:** Planning

**CONTACT INFORMATION:** Bergen Watterson, 919-918-7329; Tina Moon 919-918-7325

**INFORMATION:** In 2010, Town staff submitted a Congestion Mitigation and Air Quality Improvement (CMAQ) application to fund the Jones Creek Greenway, a 750-foot connection between the end of Lake Hogan Farm road and the existing Twin Creeks Greenway to Morris Grove Elementary School. Both the MPO and NCDOT approved the 2011 CMAQ projects and funding, and the greenway was included in the Town's adopted 2012-2018 Capital Improvement Plan. It is scheduled in the current State Transportation Improvement Program (STIP) for construction in FY16. The existing budget for this project is \$320,000, including \$63,000 of local funding.

When the federal Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) came out in 2012, NCDOT decided not to program CMAQ projects in the 2012-2018 STIP because they were unsure that the funding source would remain intact. NCDOT reinstated the previous years' CMAQ funding and made the funds for FY16 and FY17 available to projects in mid-2015.

In July 2015 Town staff updated the Jones Creek CMAQ application in response to an MPO announcement of additional available funding. In October 2015 the project first received \$80,000 in supplementary funding and then an additional \$20,000, bringing the total to \$420,000. The Board of Aldermen passed a [resolution](https://carrboro.legistar.com/View.ashx?M=M&ID=414413&GUID=98F4CD25-3FB6-495E-A70C-4B5EF4B32AC5) [<https://carrboro.legistar.com/View.ashx?M=M&ID=414413&GUID=98F4CD25-3FB6-495E-A70C-4B5EF4B32AC5>](https://carrboro.legistar.com/View.ashx?M=M&ID=414413&GUID=98F4CD25-3FB6-495E-A70C-4B5EF4B32AC5) to accept these latest funds and provide the local match on October 13, 2015. In January 2016 NCDOT sent the municipal agreement for signature by the Town.

**FISCAL & STAFF IMPACT:** The Jones Creek Greenway will require a \$84,000 local match in order to receive the \$336,000 in federal funding. Significant staff time will also be required to manage the project.

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

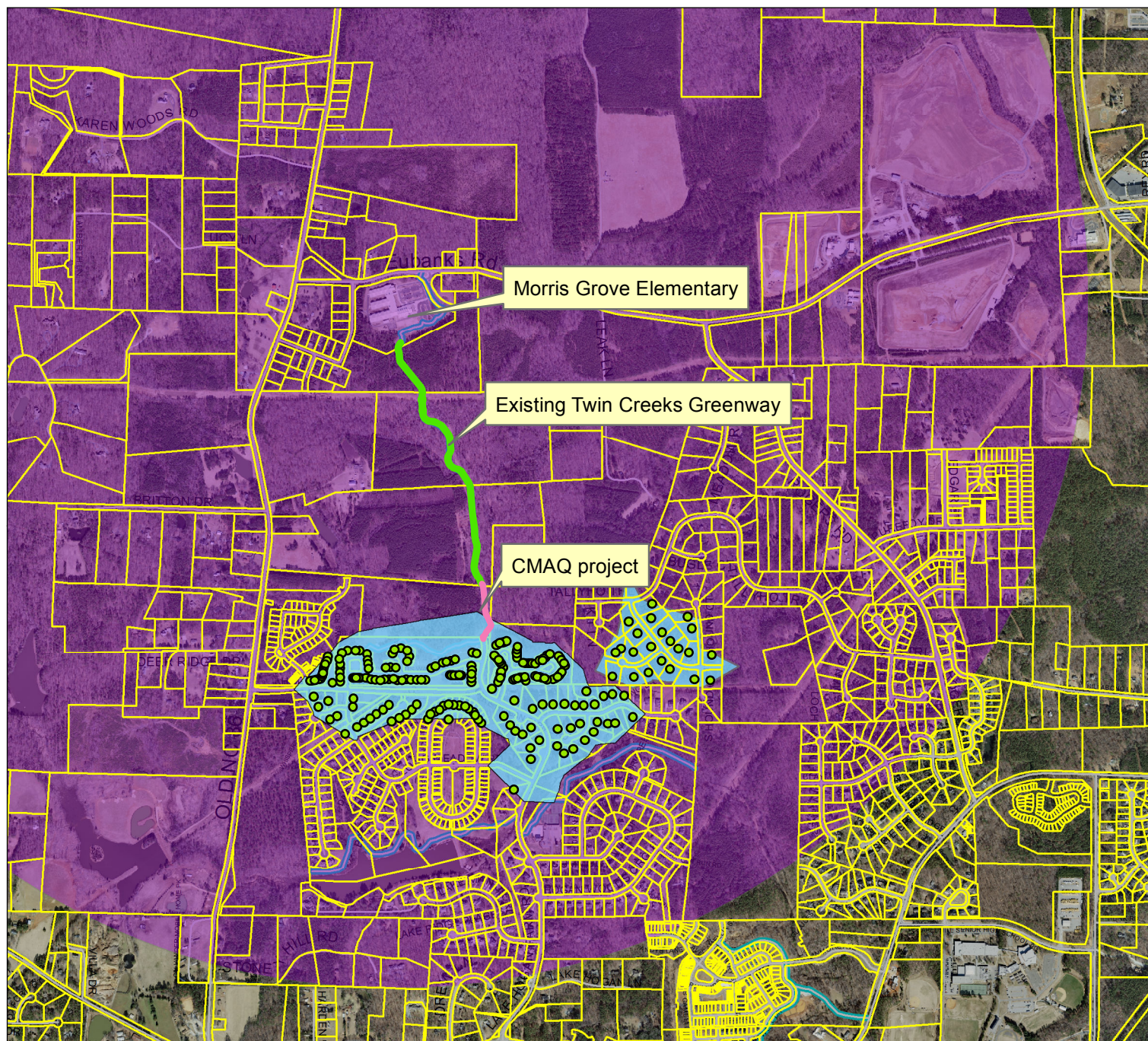
**In Control:** Board of Aldermen

**Version:** 1

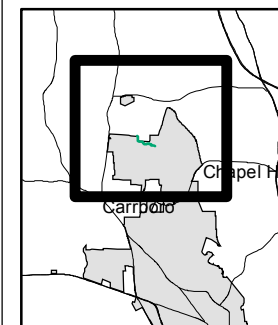
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**RECOMMENDATION:** Town staff recommends that the Board of Aldermen approve the municipal agreement and adopt the capital project ordinance for the Jones Creek Greenway.





# Jones Creek Greenway



0            950            1,900 Feet

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

The Town of Carboro assumes no liability for damages caused by inaccuracies in this map or supporting data and makes no warranty, expressed or implied, as to the accuracy of the information presented. The fact of distribution does not constitute such a warranty.



TOWN OF CARRBORO  
301 W. Main St.  
Carrboro, NC 27510  
Created June 30, 2015



**JONES CREEK GREENWAY CAPITAL IMPROVEMENT PROJECT ORDINANCE**  
**NO. \_\_\_\_\_**

WHEREAS, the Town of Carrboro, has received federal funding from the North Carolina Department of Transportation (NCDOT) under the Congestion Mitigation and Air Quality Improvement Program (CMAQ) for the design and construction of Jones Creek Greenway; and,

WHEREAS, local funds have been assigned in the Town's Bond Fund to match the NCDOT CMAQ award; and,

WHEREAS, the Board of Aldermen has approved and authorized the Town Manager to execute a Municipal Agreement with NCDOT to administer federal funding to design and build the Jones Creek Greenway;

NOW, THEREFORE PURSUANT TO N.C.G.S 159-13.2, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO THAT:

1. The Jones Creek Greenway Capital Improvement Project is hereby authorized to be undertaken until all project activity is completed.
2. The following revenues are anticipated to be available to the Town of Carrboro to complete the project:

FEDERAL FUNDS	\$336,000.00
Town Bond Funds Local Match	<u>\$ 84,000.00</u>
Total	\$420,000.00

3. The following amount is appropriated for this project to be expended in the following manner:

Design and Engineering	\$ 50,000.00
Construction	\$358,000.00
Outreach and Education	<u>\$ 12,000.00</u>
Total Appropriation	\$420,000.00

4. Within five (5) days after this ordinance is adopted, the Town Clerk shall file a copy of this ordinance with the Finance Director and Planning Director.



# Town of Carrboro

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301 W. Main St.  
Carrboro, NC 27510

## Agenda Item Abstract

**File Number:**16-107

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

Request to Make an Appointment to the Recreation and Parks Comission

**PURPOSE:** The purpose of this item is for the Mayor and Board to make an appointment to the Recreation and Parks Commission.

**DEPARTMENT:** Town Clerk

**CONTACT INFORMATION:** Cathy Dorando 918-7309

**INFORMATION:** The Recreation and Parks Commission is currently without a chair or vice-chair due to mid-term resignations. Mark Vandergrift has applied to the Recreation and Parks Commission and affirmed his ability to attend the monthly meetings of the Board.

**FISCAL IMPACT:**N/A

**RECOMMENDATION:**It is recommended that the Mayor and Board adopt the attached resolution.

**A RESOLUTION MAKING AN APPOINTMENT TO THE  
RECREATION AND PARKS COMMISSION  
Draft Resolution**

WHEREAS, Mark Vandegrift has submitted his application to the Recreation and Parks Commission and there are five vacant seats.

NOW, THEREFORE, THE BOARD OF ALDERMEN OF THE TOWN OF CARRBORO RESOLVES;

Section 1. The Board of Aldermen hereby appoints the following applicant to the Recreation and Parks Commission:

<b>Seat Designation</b>	<b>Appointee</b>	<b>Term Expiration</b>
In-Town	Mark Vandegrift	2/2019

Section 2. This resolution shall become effective upon adoption.

## Advisory Board Application

Name	Mark Vandegrift
Date	3/5/2016
Address1	202 Wyndham Drive
Address2	<i>Field not completed.</i>
City	Chapel Hill
State	North Carolina
Zip	27516
Is this address located within the corporate limits of the Town of Carrboro?	Yes
Telephone	9196076178
Email Address	<a href="mailto:markvandegrift@gmail.com">markvandegrift@gmail.com</a>
Date of Birth	12/9/1976
Race	Caucasian
Sex	Male
Occupation	VP Product Management, ChannelAdvisor Corp
Are you a registered Orange County Voter?	Yes
Length of Residence in Orange County	1.5 years this time, ~5 years previously
Length of Residence in the Town of Carrboro	1.5 years this time, ~5 years previously
I wish to be considered for appointment to the following committee/board(s):	Economic Sustainability Commission, Recreation and Parks Commission

Other (advisory board not listed): *Field not completed.*

Advisory Board Preference	Economic Sustainability Commission
*Employer/Self Employed	ChannelAdvisor Corporation
Number of Years Employed	14
* Provide examples of how you are involved in the promotion of travel and tourism in the Town of Carrboro.	N/A
Community Activities/Organizational Memberships	Carrboro Recs and Park youth basketball coach
Experience to Aid You in Working on Advisory Boards	10 years of business leadership positions
Reasons You Wish to be Appointed	Become a stronger part of and hopefully help the community.
Have you ever served on any Town of Carrboro Committee or Board?	No
If yes, which one(s)?	<i>Field not completed.</i>
Are you currently serving on a Town Board or Committee?	No
If yes, are you applying for a third consecutive term?	No
If yes, please describe how you meet one, or more, of the following	N/A



exceptions noted below.

\*Members of the Board  
of Adjustment,

Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation

Advisory Board may be  
reappointed to successive  
terms without limitation

(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

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# Town of Carrboro

Town Hall  
301 W. Main St.  
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## Agenda Item Abstract

**File Number:**16-103

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

Timeline of Southern Branch Library and Related Projects

**PURPOSE:** The purpose of this item is to update the Board of Aldermen on the anticipated schedule for the Southern Branch Library in relation to studies that may inform the Town how the 203 S. Greensboro property could otherwise be used.

**DEPARTMENT:** Planning and Manager's Office

**CONTACT INFORMATION:** Trish McGuire, [pmcguire@townofcarrboro.org](mailto:pmcguire@townofcarrboro.org)  
<<mailto:pmcguire@townofcarrboro.org>>, 919-918-7327; David Andrews, [dandrews@townofcarrboro.org](mailto:dandrews@townofcarrboro.org), 919-918-7308

**INFORMATION:** On October 6, 2015, the Board of Aldermen directed the Town Manager to move forward with discussing use of the 203 S. Greensboro Street property with the County Manager. On February 2, 2016, the Board received an update on the progress of those discussions. Board comments and questions that evening revealed an interest in understanding the timeline of several active projects, especially with regard to how those efforts might inform the Town how the 203 S. Greensboro site could be used. A memo describing the status of those efforts is included as *Attachment A* and a timeline of project completion in relation to a possible schedule for the library moving forward is provided as *Attachment B*.

**FISCAL & STAFF IMPACT:** None anticipated in association with receiving this information.

**RECOMMENDATION:** It is recommended that the Board of Aldermen accept the agenda materials and provide direction to the Town Manager regarding any follow-up.



## TOWN OF CARRBORO

NORTH CAROLINA

### TRANSMITTAL

### PLANNING DEPARTMENT

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

**To:** David Andrews, Town Manager  
Mayor and Board of Aldermen

**From:** Patricia J. McGuire & Marty Roupe

**Date:** March 27, 2016

**Subject:** Southern Branch Library – Update

The purpose of this memo is to provide an update to the Board of Aldermen on the ongoing Southern Branch Library site due diligence, and related efforts that will inform the Town's interests in participating in project development.

On October 6, 2015, the Board of Aldermen directed the Town Manager to move forward with discussing use of the 203 S. Greensboro Street property with the County Manager. On February 2, 2016, the Board received an update on the progress of those discussions. Board comments and questions that evening revealed an interest in understanding the timeline of several active projects, especially with regard to how those efforts might inform the Town in deciding whether and how the 203 S. Greensboro site could be used. A brief summary of the related active projects is offered here. An attached schedule displays the combined timelines for these efforts.

**Southern Branch Library.** Orange County staff have proceeded with due diligence for the site. Environmental and geotechnical studies have been completed. Preparation of an interlocal agreement is expected to proceed following the results of studies listed below.

**Carrboro Parking Plan.** The Town engaged VHB, Inc. in November to undertake a study of parking, engage the public on parking experiences and interests, evaluate future demand, and prepare a parking plan. Such a plan will inform the Town's actions related to regulating the provision of private parking, as well as leasing or developing areas for public parking. Preliminary evaluation of parking behavior began in early November, with the first round of data collection occurring in January and the second scheduled for April. Final products will be in hand by November.

**Feasibility Study – ArtsCenter and Kidzu.** UNC's Development Finance Initiative staff work has been underway. Review of each organization's business plan and space needs has been completed. Project completion is anticipated this spring.

Planning Department

301 West Main Street, Carrboro, NC 27510 • (919) 918-7327 • FAX (919) 918-4454 • TDD 1-800-826-7653  
AN EQUAL OPPORTUNITY EMPLOYER

Carrboro Space Needs Study. The Town released an RFQ for consultant services to assess condition of facilities, identify needs for rehabilitation and expansion, and advise how spaces might be reassigned temporarily during periods of renovation. Review of consultant responses is underway; staff expect to request the Board's consideration of the most qualified respondent in April. Completion of the study is projected for September 2016.

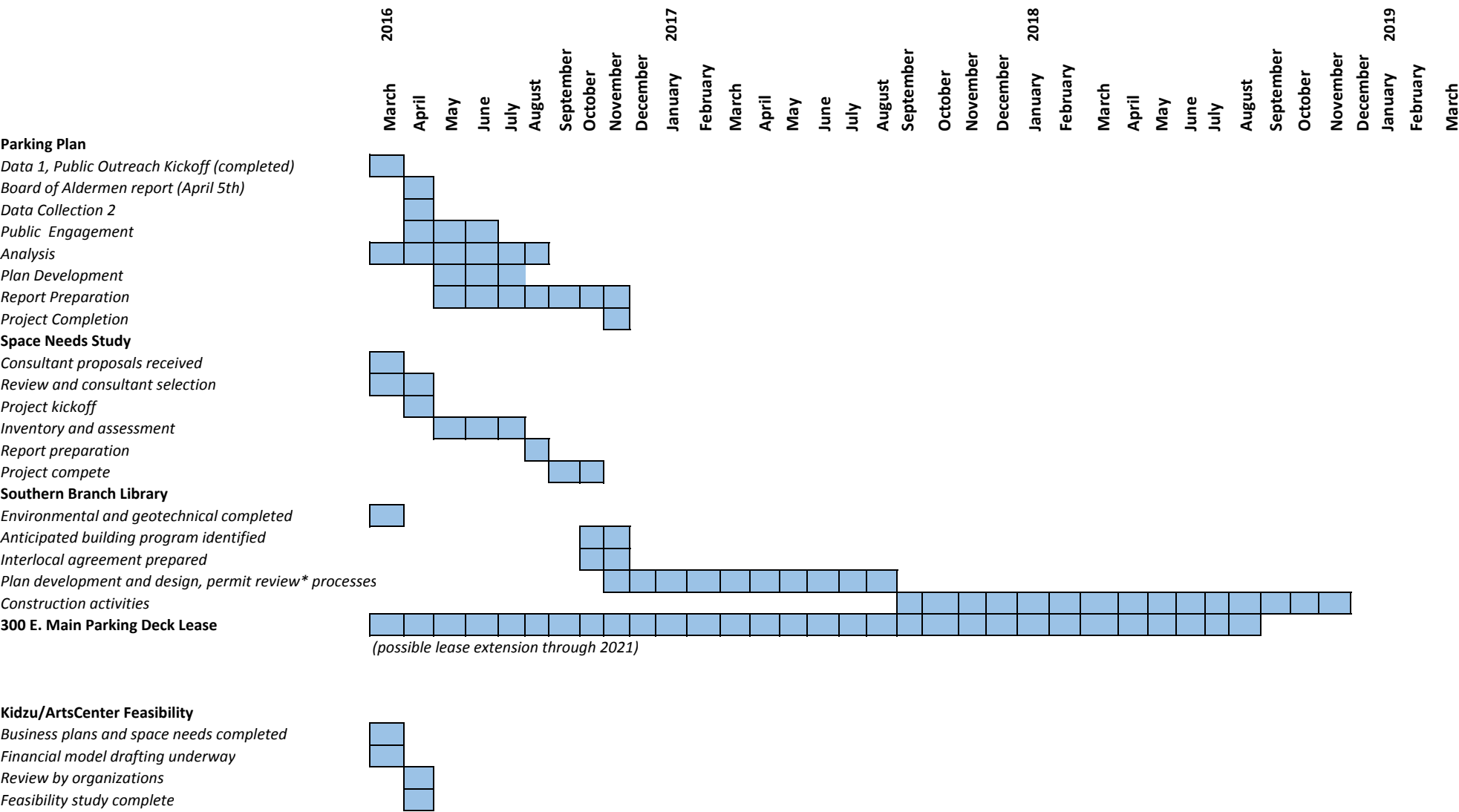
300 E. Main Parking Deck Lease. The Town's lease with Main Street Partners became effective with the issuance of certificates of occupancy (CO) for the hotel and parking deck. The dates COs were issued for those buildings are, respectively, August 20, 2013 and August 28, 2013. The Board of Aldermen has authorized in concept pursuing an option that would involve extending the lease for an additional three years and updating other terms relating to timing, management, and costs. An additional condition of the approved permit for the Hilton Garden Inn involves completion of a study of use of the site's parking for its current customers and clients.

Board members expressed interest in other possible users of the 203 S. Greensboro site. A teen center was specifically mentioned, as was consideration of Kidzu and the ArtsCenter. A deadline for the identification of other users was also requested. Because of the site's central location, parking, both on a permanent basis and in the interim should construction proceed, remains a high priority.

#### Project Timing/Expedited Review

A project timeline for the library and other studies is included as Attachment B. The timeline only considers an expedited conditional use permit review process, with the estimate based on our most recent experience with expediting permit review for Morris Grove Elementary School. The projected timeline represents an aggressive schedule per the Board's discussion. Much is dependent on the outcome of the Town's studies regarding parking, space needs, and ultimately an interlocal agreement governing use of the property.

Southern Branch Library and Related Activities - Projected and Estimated Timelines - April 2016



\*Timeline considers expedited review of land use permit.



# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-109

**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

Request to Authorize Town Manager to Execute Deed of Easement for Ingress, Egress, Regress and Utilities Over a portion of the Town's Westwood Cemetery Property For Lion's Club

**PURPOSE:** The purpose of this item is for the Board of Aldermen to Consider Authorizing the Town Manger to execute a Deed of Easement, conveying an access easement over a 40-foot wide strip on the east side of the Town's Westwood Cemetery Property, to benefit the Lion's Club Property which adjoins the Town's property.

**DEPARTMENT:** Planning & Town Attorney

**CONTACT INFORMATION:** Bob Hornik, Town Attorney, 919-929-3905 & Marty Roupe, 919-918-7327

**INFORMATION:** Carrboro Lion's Club owns a parcel of land adjacent to the Town's Westwood Cemetery Property on Fidelity Street. The Lion's Club Property lies just south of the Village Square Townhouses, and the driveway serving the property runs adjacent and parallel to the eastern boundary line of the Westwood Cemetery Property, adjacent to the Village Square Townhouses.

The Lion's Club acquired its property from the Carrboro Volunteer Firemen's Association in 1984. The Carrboro Volunteer Firemen's Association had acquired the property from the Town of Carrboro in 1967. The Lion's Club Property is landlocked, and does have an existing structure on it. The gravel drive over which the proposed easement would be located seems to be the only means of ingress/egress to reach the structure. There also appear to be some underground utilities in the easement area. The Lion's Club Property has had access via a gravel drive over this portion of the Town's Property approximately 50 years (or more). As the Lion's Club is preparing now to convey their property, they need to establish a formal access easement. The Town was approached approximately one year ago by David Wilson, a real estate agent working for the Lion's Club, about establishing the easement to the Property.

The Town Attorney's office has prepared a proposed Deed of Easement for ingress, egress, regress and utility over a 40 foot wide strip of land running parallel to the eastern boundary line of the Westwood Cemetery Property. The existing, gravel driveway runs through this easement area. The proposed easement is a non-

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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exclusive easement, so that the Town may still use the gravel drive as long as the use does not interfere with the access, etc., for the Lion's Club Property. The Google Hut site recently approved to the Town will also use this easement area for access.

The formalization of the easement will not create any new or different conditions in the area, but will formalize the condition which has existed there since the time that the Town acquired the Westwood Cemetery Property.

**FISCAL & STAFF IMPACT:** No impact beyond staff and attorney time to prepare and execute easement related documents.

**RECOMMENDATION:** Staff recommends that the Board adopt the attached resolution authorizing the Town Manager to grant and execute the easement document.



**RESOLUTION AUTHORIZING TOWN MANAGER TO EXECUTE  
THE DEED OF EASEMENT FOR INGRESS, EGRESS, REGRESS  
AND UTILITIES FOR LION'S CLUB PROPERTY**

**Dated: April 5, 2016**

WHEREAS, the Town of Carrboro is the owner of certain real property known as the Westwood Cemetery Property (Orange County Property Identification No. 9778-56-3356);

WHEREAS, the Carrboro Lion's Club is the owner of certain adjoining property (Orange County Property Identification No. 9778-56-7241), which is a "landlocked" parcel;

WHEREAS, historically, access to the Lion's Club Property has been from Fidelity Street via a gravel drive located on the Town's Westwood Cemetery Property, running generally parallel to the eastern property line of the Town's Lion's Club Property;

WHEREAS, the Lion's Club has asked the Town to formalize this easement so that the Lion's Club may be able to convey the property to a purchaser;

WHEREAS, the Town is authorized by North Carolina General Statutes Section 160A-273 to grant easements over, through, under or across any city property or right-of-way;

NOW, THEREFORE, BE IT RESOLVED on this 5th day of April, 2016 that the Town of Carrboro Board of Aldermen authorizes the Town Manager to execute a deed of easement for ingress, egress, regress and utilities for a portion of the Town's Westwood Cemetery Property, in favor of the Carrboro Lion's Club (the current owner of the Property).

The foregoing Resolution was put to a vote of the Town of Carrboro Board of Aldermen, the results of which was as follows:

Ayes:

Noes:

Absent or Excused:









# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-098

**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### TITLE:

A Resolution Making Appointments to the Safe Routes to School Implementation Committee

**PURPOSE:** The Board of Aldermen is asked to consider establishing a Safe Routes to School Implementation Committee to recommend transportation projects, policies, programs, or activities that serve to increase the safety and convenience of walking and bicycling to school and fulfill related functions.

**DEPARTMENT:** Town Clerk, Planning

**CONTACT INFORMATION:** Cathy Dorando, 919-918-7309 and Bergen Watterson, 919-918-7329

**INFORMATION:** On May 22, 2012, the Board of Aldermen adopted the Safe Routes to School Action Plan. On October 4, 2012, the Action Plan was endorsed by the Chapel Hill-Carrboro City Schools Board of Education. On March 4, 2014 the Board adopted a Town Code Amendment establishing a Safe Routes to School Implementation Committee to recommend transportation projects, policies, programs, or activities that serve to increase the safety and convenience of walking and bicycling to school and fulfill related functions.

This agenda item will make the initial appointments to the Safe Routes to School Implementation Committee

There are currently two applicants for the High School Member seat. The Town Code allows for, and the Town Clerk suggests, that the Board consider appointing an alternate position for the High School seat since it is the only seat with two applications. The Clerk also requests that the Board appoint a Board of Aldermen Liaison to this committee. The Committee will hold at least three meetings per calendar year. Bergen Watterson, the Town's Transportation Planner, will be the staff liaison to this committee.

The following seats and applicants are eligible for appointment:

DESIGNATED SEAT	APPLICANT NAME	AGENCY	TERM EXPIRATION
Member of the Chapel Hill-Carrboro City Schools Board of Education	Joal Broun	CHCCS Board of Education	February 2019

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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Member of the Chapel Hill-Carrboro City Schools Administration	Jonathan Norris	CHCCS Administration	February 2019
Member of administration, faculty, or staff of Carrboro Elementary School	Jillian LaSerna	Carrboro Elementary School	February 2019
Member of administration, faculty, or staff of McDougle Elementary School	Tiffany Cheshire	McDougle Elementary	February 2018
Member of administration, faculty, or staff of Morris Grove Elementary School	Amy Rikard	Morris Grove Elementary	February 2018
Member of the Carrboro Transportation Advisory Board	Kurt Stolka	TAB	February 2018
Representative of the North Carolina Department of Transportation	Charles Edwards	NCDOT	February 2017
Parent of a student attending an elementary school in Carrboro	Eric Allman	Parent	February 2017
Resident of the Town with a demonstrated background in public health, physical activity promotion, or active transportation	Suzanna Dupee	Fitness/Active	February 2017

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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Youth Member enrolled in High School	Jonah Perrin	High School	February 2017 or until successor assigned or they remain enrolled in the same school category
Alternate Youth Member Enrolled in High School	Curtis Kinnaman	High School	February 2017 or until successor assigned or they remain enrolled in the same school category
Youth Member Enrolled in Middle School	Nathan Barta	Middle School	February 2017 or until successor assigned or they remain enrolled in the same school category
Youth Member Enrolled in Elementary School	Ashé Rivera Soltero	Elementary School	February 2017 or until successor assigned or they remain enrolled in the same school category
Board of Aldermen Liaison	Damon Seils	Board of Aldermen	Until successor assigned
Alternate Board of Aldermen Liaison	Lydia Lavelle	Board of Aldermen	Until successor assigned

**FISCAL & STAFF IMPACT:** Expected committee budget: \$250 annually. This will be requested as part of the Town's Annual Budget.

**RECOMMENDATION:** Staff recommend that the Board of Aldermen consider the appointments to the Safe Routes to School Implementation Committee.

**A RESOLUTION MAKING APPOINTMENTS TO THE SAFE ROUTES TO SCHOOL  
IMPLEMENTATION COMMITTEE**

<b>DESIGNATED SEAT</b>	<b>APPLICANT</b>	<b>AGENCY</b>	<b>TERM EXPIRATION</b>
Member of the Chapel Hill-Carrboro City Schools Board of Education	Joal Broun	CHCCS Board of Education	February 2019
Member of the Chapel Hill-Carrboro City Schools Administration	Jonathan Norris	CHCCS Administration	February 2019
Member of administration, faculty, or staff of Carrboro Elementary School	Jillian LaSerna	Carrboro Elementary School	February 2019
Member of administration, faculty, or staff of McDougle Elementary School	Tiffany Cheshire	McDougle Elementary	February 2018
Member of administration, faculty, or staff of Morris Grove Elementary School	Amy Rikard	Morris Grove Elementary School	February 2018
Member of the Carrboro Transportation Advisory Board	Kurt Stolka	TAB	February 2018
Representative of the North Carolina Department of Transportation	Charles Edwards	NCDOT	February 2017
Parent of a student attending an elementary school in Carrboro	Eric Allman	Parent	February 2017
Resident of the Town with a demonstrated background in public health, physical activity promotion, or active transportation	Suzanna Dupee	Fitness/Active	February 2017
Youth Member enrolled in High School	Jonah Perrin	High School	February 2017 or until successor assigned or they remain enrolled

			in the same school category
Alternate Youth Member Enrolled in High School	Curtis Kinnaman	High School	February 2017 or until successor assigned or they remain enrolled in the same school category
Youth Member Enrolled in Middle School	Nathan Barta	Middle School	February 2017 or until successor assigned or they remain enrolled in the same school category
Youth Member Enrolled in Elementary School	Ashé Rivera Soltero	Elementary School	February 2017 or until successor assigned or they remain enrolled in the same school category
Board of Aldermen Liaison	Damon Seils	Board of Aldermen	Until successor assigned
Alternate Board of Aldermen Liaison	Lydia Lavelle	Board of Aldermen	Until successor assigned

This resolution is to become effective upon adoption.

## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Tuesday, March 15, 2016 2:01 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name JOal Broun

Date 3/15/2016

Address1 107 Creekview Circle

Address2 *Field not completed.*

City Carrboro

State NC

Zip 27510-1278

Is this address located within the corporate limits of the Town of Carrboro? Yes

Telephone 9193573647

Email Address [jbroun@chccs.k12.nc.us](mailto:jbroun@chccs.k12.nc.us)

Date of Birth 2/20/2061

Race Black

Sex Female

Occupation Attorney/Administrator

Are you a registered Orange County Voter? Yes

Length of Residence in Orange County 24 years

Length of Residence in the Town of Carrboro 24 years



I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

School representative on the Recreations Commission

Advisory Board  
Preference

Safe Schools

\*Employer/Self  
Employed

N.C. Department of the Secretary of State

Number of Years  
Employeed

12

\* Provide examples of  
how your are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

*Field not completed.*

Community  
Activities/Organizational  
Memberships

Former Carrboro Board of Alderman, 1999 to 2011; former  
member, Orange County Dispute Settlement Center Board;  
OWASA Board Member, 1993 to 1999;

Experience to Aid You in  
Working on Advisory  
Boards

Past nonprofit board experience; government experience;

Reasons You Wish to be  
Appointed

To fulfill my School Board Assignment to Safe Schools Route  
Implementation Committee

Have you ever served on  
any Town of Carrboro  
Committee or Board?

Yes

If yes, which one(s)?

Board of Alderman, Carrboro OWASA representative

Are you currently serving  
on a Town Board or  
Committee?

No

If yes, are you applying  
for a third consecutive  
term?

No

If yes, please describe  
how you meet one, or

I was appointed by the School Board to represent the District  
on the Recreation Committee and the Safe Schools

more, of the following exceptions noted below.  
\*Members of the Board of Adjustment, Environmental Advisory Board, Human Services Advisory Commission, and Transportation Advisory Board may be reappointed to successive terms without limitation (Sections 15-29(c), 15-45(c) 3-7(d), 3-24(c))

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## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Friday, March 04, 2016 3:48 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name	Jonathan Norris
Date	3/4/2016
Address1	1708 Highschool Road
Address2	APT. C
City	Chapel Hill
State	NORTH CAROLINA
Zip	27516
Is this address located within the corporate limits of the Town of Carrboro?	No
Telephone	9199425045
Email Address	<a href="mailto:jonathan.norris@chccs.k12.nc.us">jonathan.norris@chccs.k12.nc.us</a>
Date of Birth	3/14/2072
Race	White
Sex	Male
Occupation	Operations Manager
Are you a registered Orange County Voter?	No
Length of Residence in Orange County	24 yrs
Length of Residence in the Town of Carrboro	24 yrs

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

*Field not completed.*

Advisory Board  
Preference

*Field not completed.*

\*Employer/Self  
Employed

Chapel Hill Carrboro City Schools

Number of Years  
Employed

almost seven years

\* Provide examples of  
how your are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

I work in Transportation here at the school system.

Community  
Activities/Organizational  
Memberships

N/A

Experience to Aid You in  
Working on Advisory  
Boards

N/A

Reasons You Wish to be  
Appointed

N/a

Have you ever served on  
any Town of Carrboro  
Committee or Board?

No

If yes, which one(s)?

*Field not completed.*

Are you currently serving  
on a Town Board or  
Committee?

No

If yes, are you applying  
for a third consecutive  
term?

No

If yes, please describe  
how you meet one, or  
more, of the following

N/A

exceptions noted below:  
\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

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# TOWN OF CARRBORO

## *Application for Membership on a Committee/Board*

NAME: Jillian La Serna DATE: 11-7-14

**ADDRESS:**

Home: 525 Tall Oaks Drive Durham, NC 27713

Work: 400 Shelton Street Carrboro, NC 27510

IS THIS ADDRESS LOCATED WITHIN THE CORPORATE LIMITS OF THE TOWN OF CARRBORO? work

TELEPHONE: [HOME] ( 858 ) 2280036 [BUSINESS] (919 )9683652

E-MAIL ADDRESS: jlaserna@chccs.k12.nc.us

DATE OF BIRTH 12/24/2980 RACE: W SEX: F

OCCUPATION Principal, Carrboro Elementary School

ARE YOU A REGISTERED ORANGE COUNTY VOTER? no

LENGTH OF RESIDENCE IN ORANGE COUNTY 0

LENGTH OF RESIDENCE IN THE TOWN OF CARRBORO 0

*I wish to be considered for appointment to the following committee/board(s):*

<input type="checkbox"/> Board of Adjustment	<input type="checkbox"/> OWASA Board of Directors
<input type="checkbox"/> Animal Control Board of Appeals	<input type="checkbox"/> Orange County Economic Dev. Com.
<input type="checkbox"/> Appearance Commission/NPDC	
<input type="checkbox"/> Arts Committee	<input type="checkbox"/> Orange County Human Relations Com.
<input type="checkbox"/> Economic Sustainability Commission	<input type="checkbox"/> Personnel Advisory Committee
<input type="checkbox"/> Environmental Advisory Board	<input type="checkbox"/> Planning Board
<input type="checkbox"/> Human Services Commission	<input type="checkbox"/> Recreation & Parks Commission
<input type="checkbox"/> Greenways Commission	<input type="checkbox"/> Safe Routes to School Implementation Com.
	<input type="checkbox"/> Tourism Development Authority*
<input type="checkbox"/> Northern Transition Area Advisory Com.	<input type="checkbox"/> Transportation Advisory Board
	<input checked="" type="checkbox"/> Other <u>SRTS</u>

If you apply for membership on more than one advisory board, please indicate your preference by number, with "1" being your first choice (please limit your selection to two (2) boards). Please note that membership is limited to one advisory board at a time. You shall not be considered for appointment to another board unless you resign before filing an application or you are in the last six months of your current term.

\*EMPLOYER/SELF EMPLOYED CHCCS \*NUMBER OF YEARS EMPLOYED 4.5 YEARS

\*PROVIDE EXAMPLES OF HOW YOU ARE INVOLVED IN THE PROMOTION OF TRAVEL AND TOURISM IN THE TOWN OF CARRBORO?  
(\*REQUIRED ONLY FOR TOURISM DEVELOPMENT AUTHORITY APPLICATION)

LOCATED IN THE HEART OF THE CARRBORO COMMUNITY, CARRBORO ELEMENTARY SCHOOL IS CLOSELY CONNECTED TO TRAVEL IN AND AROUND TOWN. WE REGULARLY TAKE STUDENTS ON WAKING FIELD TRIPS THROUGH THE COMMUNITY AND UTILIZE TOWN SERVICES TO HELP SUPPORT THE CURRICULUM. WE COLLABORATE WITH COMMUNITY ORGANIZATIONS WHEN THEY ARE INTERESTED IN RENTING SCHOOL FACILITIES FOR COMMUNITY EVENTS. WE ALSO COLLABORATE WITH CARRBORO PARKS AND RECREATION TO BEST USE OUR SCHOOL FACILITIES TO MEET THE NEEDS OF CARRBORO CITIZENS.

**COMMUNITY ACTIVITIES/ORGANIZATIONAL MEMBERSHIPS:**

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**EXPERIENCE TO AID YOU IN WORKING ON THESE ADVISORY BOARDS**

AS PRINCIPAL OF CARRBORO ELEMENTARY, I HAVE WORKED CLOSELY WITH TOWN AND DISTRICT OFFICIALS TO CREATE A SAFE WALKING AND BIKING COMMUNITY FOR OUR STUDENTS. WE HAVE PARTICIPATED IN SAFE ROUTES TO SCHOOLS EVENTS EACH YEAR I HAVE BEEN AT CARRBORO. IN ADDITION, OUR SCHOOL HAS MADE WALKING IN THE COMMUNITY A FOCUS THROUGH CAR FREE FRIDAY EVENTS IN OCTOBER AND OUR FAMILY MARATHON PROGRAM THIS FALL.

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**REASON(S) YOU WISH TO BE APPOINTED:**

I HOPE TO SERVE AS A REPRESENTATIVE FOR CARRBORO ELEMENTARY SCHOOL.

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**HAVE YOU EVER SERVED ON ANY TOWN OF CARRBORO COMMITTEE OR BOARD? IF YES, WHICH ONE(S) NO**

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**ARE YOU CURRENTLY SERVING ON A TOWN BOARD OR COMMITTEE? NO**      **IF YES, ARE YOU APPLYING FOR A THIRD CONSECUTIVE TERM?**      **IF YES, PLEASE DESCRIBE HOW YOU MEET ONE, OR MORE, OF THE EXCEPTIONS NOTED BELOW. PLEASE USE AN ADDITIONAL PAGE IF NECESSARY TO COMPLETE.**

After completing two full terms, a member must take off one year before applying for re-appointment to the advisory board. However, a board member may apply to serve on another advisory board if he/she desires. The Board of Aldermen may make exceptions to this rule under the following circumstances:

1. To retain diversity on an advisory board;
2. To provide continuity in oversight of a major, on-going project;
3. To keep a member who provides expertise otherwise unavailable on an advisory board (e.g., an engineer on the Planning Board or Board of Adjustment); or
4. A lack of qualified applicants.

*RETURN THIS FORM TO: TOWN CLERK, 301 WEST MAIN STREET, CARRBORO, N.C. 27510*  
[www.townofcarrboro.org](http://www.townofcarrboro.org)

*(Please note that this document and the information contained on it is a public record and must be provided by the town to anyone requesting a copy of it.)*

## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Monday, March 28, 2016 4:59 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name	Amy Rickard
Date	3/28/2016
Address1	215 Eubanks Road
Address2	Field not completed.
City	Chapel Hill
State	NC
Zip	27516
Is this address located within the corporate limits of the Town of Carrboro?	Yes
Telephone	9199184800
Email Address	<a href="mailto:arickard@chccs.k12.nc.us">arickard@chccs.k12.nc.us</a>
Date of Birth	5/6/1972
Race	White
Sex	Female
Occupation	Principal
Are you a registered Orange County Voter?	No
Length of Residence in Orange County	N/A
Length of Residence in the Town of Carrboro	Morris Grove Elementary School opened in August 2008. I have been the principal of the school since this time.



I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed): *Field not completed.*

Advisory Board  
Preference *Field not completed.*

\*Employer/Self  
Employed Chapel Hill-Carrboro City Schools

Number of Years  
Employeed 16

\* Provide examples of  
how your are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro. *Field not completed.*

Community  
Activities/Organizational  
Memberships Principal, Morris Grove Elementary School (includes various  
school groups such as PTA, School Improvement Team) UNC  
School of Education Alumni Council Member of University  
United Methodist Church; previously on Education Council  
State Superintendent's Principal Advisory Council

Experience to Aid You in  
Working on Advisory  
Boards Through my work as a school administrator, I have been  
involved in various leadership roles, committees, and advisory  
boards. I have experience leading a variety of committees,  
groups and teams, as well as serving as a participant.

Reasons You Wish to be  
Appointed Morris Grove Elementary is directly impacted by issues and  
decisions resulting from the work of this advisory board. I would  
like to participate through contributions and advocacy, as well  
as serve as a liaison to my school community.

Have you ever served on  
any Town of Carrboro  
Committee or Board? No

If yes, which one(s)? *Field not completed.*

Are you currently serving  
on a Town Board or  
Committee? No

If yes, are you applying No

for a third consecutive term?

If yes, please describe how you meet one, or more, of the following exceptions noted below.

N/A

\*Members of the Board of Adjustment, Environmental Advisory Board, Human Services Advisory Commission, and Transportation Advisory Board may be reappointed to successive terms without limitation (Sections 15-29(c), 15-45(c) 3-7(d), 3-24(c))

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### ***Application for Membership on a Committee/Board***

**ADDRESS:**

**LENGTH OF RESIDENCE IN THE TOWN OF CARRBORO** worked here for 2 years at MES

***I wish to be considered for appointment to the following committee/board(s):***

<input type="checkbox"/> Board of Adjustment <input type="checkbox"/> Animal Control Board of Appeals <input type="checkbox"/> Appearance Commission/NPDC <input type="checkbox"/> Arts Committee <input type="checkbox"/> Economic Sustainability Commission <input type="checkbox"/> Environmental Advisory Board <input type="checkbox"/> Human Services Commission <input type="checkbox"/> Greenways Commission  <input type="checkbox"/> Northern Transition Area Advisory Com.	<input type="checkbox"/> OWASA Board of Directors <input type="checkbox"/> Orange County Economic Dev. Com.  <input type="checkbox"/> Orange County Human Relations Com. <input type="checkbox"/> Personnel Advisory Committee <input type="checkbox"/> Planning Board <input type="checkbox"/> Recreation & Parks Commission <input type="checkbox"/> Safe Routes to School Implementation Com. <input type="checkbox"/> Tourism Development Authority* <input type="checkbox"/> Transportation Advisory Board <input type="checkbox"/> Other _____
--	--

**\*PROVIDE EXAMPLES OF HOW YOU ARE INVOLVED IN THE PROMOTION OF TRAVEL AND TOURISM IN THE TOWN OF CARRBORO?  
(\*REQUIRED ONLY FOR TOURISM DEVELOPMENT AUTHORITY APPLICATION)**



4. A lack of qualified applicants.

*RETURN THIS FORM TO: TOWN CLERK, 301 WEST MAIN STREET, CARRBORO, N.C. 27510*  
[www.townofcarrboro.org](http://www.townofcarrboro.org)

*(Please note that this document and the information contained on it is a public record and must be provided by the town to anyone requesting a copy of it.)*

## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Tuesday, March 08, 2016 11:31 AM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name	Kurt Stolka
Date	3/8/2016
Address1	207 Robert Hunt Dr.
Address2	Field not completed.
City	Carrboro
State	North Carolina
Zip	27510
Is this address located within the corporate limits of the Town of Carrboro?	Yes
Telephone	7035813742
Email Address	<a href="mailto:kurt.stolka@gmail.com">kurt.stolka@gmail.com</a>
Date of Birth	3/1/1981
Race	Caucasian
Sex	Male
Occupation	Transportation Planner
Are you a registered Orange County Voter?	Yes
Length of Residence in Orange County	5
Length of Residence in the Town of Carrboro	5

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

*Field not completed.*

Advisory Board  
Preference

*Field not completed.*

\*Employer/Self  
Employed

UNC-Chapel Hill

Number of Years  
Employed

3

\* Provide examples of  
how you are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

*Field not completed.*

Community  
Activities/Organizational  
Memberships

Carrboro Bicycle Coalition member

Experience to Aid You in  
Working on Advisory  
Boards

I am serving my final of six years on the Transportation  
Advisory Board which focuses heavily on pedestrian and  
bicycle safety. Providing safe crossings at intersections and  
bus stops to increase access to Town destinations is a sorely  
needed improvement to make it safer for people to walk and  
bike to school.

Reasons You Wish to be  
Appointed

I wish to represent the TAB on the SRTS implementation  
committee. My main motivation for joining the committee is to  
greatly reduce the number of children who are dropped off or  
ride the bus, who otherwise would walk or bicycle, because of  
unsafe conditions on their route to school. I have a son who will  
be entering kindergarten at Carrboro Elementary in 2018 and  
hope to have a number of recommendations implemented so  
he and his friends in our neighborhood can travel safely to  
school by walking or bicycling.

Have you ever served on  
any Town of Carrboro  
Committee or Board?

Yes

If yes, which one(s)?

Transportation Advisory Board

Are you currently serving    Yes  
on a Town Board or  
Committee?

If yes, are you applying    No  
for a third consecutive  
term?

If yes, please describe  
how you meet one, or  
more, of the following  
exceptions noted below.  
\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

I am not applying for another term on the TAB at this time.

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## Catherine Dorando

---

**From:** noreply@civicplus.com  
**Sent:** Friday, February 26, 2016 9:17 AM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name Charles N. Edwards Jr.

Date 2/26/2016

Address1 P.O. Box 766

Address2 *Field not completed.*

City Graham

State NC

Zip 27253

Is this address located  
within the corporate  
limits of the Town of  
Carrboro? No

Telephone 3365706830

Email Address [cnedwards@ncdot.gov](mailto:cnedwards@ncdot.gov)

Date of Birth 3/3/1965

Race w

Sex m

Occupation Engineer

Are you a registered  
Orange County Voter? No

Length of Residence in  
Orange County N/A

Length of Residence in  
the Town of Carrboro N/A

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

Field not completed.

Advisory Board  
Preference

Field not completed.

\*Employer/Self  
Employed

N. C. Department of Transportation

Number of Years  
Employed

27

\* Provide examples of  
how you are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

Field not completed.

Community  
Activities/Organizational  
Memberships

N/A

Experience to Aid You in  
Working on Advisory  
Boards

27.5 years of professional engineering experience serving  
Orange and Alamance Counties with N. C. Department of  
Transportation, Division of Highways.

Reasons You Wish to be  
Appointed

My participation on this committee was requested by Town of  
Carrboro Planning Department staff.

Have you ever served on  
any Town of Carrboro  
Committee or Board?

No

If yes, which one(s)?

Field not completed.

Are you currently serving  
on a Town Board or  
Committee?

No

If yes, are you applying  
for a third consecutive  
term?

No

If yes, please describe  
how you meet one, or

N/A

more, of the following  
exceptions noted below.

\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

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# TOWN OF CARRBORO

## Application for Membership on a Committee/Board

NAME: ERIC ALLMAN DATE: 3/24/14  
ADDRESS:

104 Brighton Ct., Chapel Hill, NC 27516

IS THIS ADDRESS LOCATED WITHIN THE CORPORATE LIMITS OF THE TOWN OF CARRBORO? NO

TELEPHONE: [HOME] (919 370-7427 [BUSINESS] ( )  
E-MAIL ADDRESS ecallman@hotmail.com

DATE OF BIRTH 6/10/1973 RACE: W SEX: M  
OCCUPATION Nurse Practitioner

ARE YOU A REGISTERED ORANGE COUNTY VOTER? Yes  
LENGTH OF RESIDENCE IN ORANGE COUNTY 10yrs  
LENGTH OF RESIDENCE IN THE TOWN OF CARRBORO 6yrs

*I wish to be considered for appointment to the following committee/board(s):*

*Safe Routes to School*

<input type="checkbox"/> Board of Adjustment	<input type="checkbox"/> OWASA Board of Directors
<input type="checkbox"/> Appearance Commission/NPDC	<input type="checkbox"/> Orange County Economic Dev. Com.
<input type="checkbox"/> Arts Committee	<input type="checkbox"/> Orange County Human Relations Com.
<input type="checkbox"/> Economic Sustainability Commission	<input type="checkbox"/> Personnel Advisory Committee
<input type="checkbox"/> Environmental Advisory Board	<input type="checkbox"/> Planning Board
<input type="checkbox"/> Human Services Commission	<input type="checkbox"/> Recreation & Parks Commission
<input type="checkbox"/> Greenways Commission	<input type="checkbox"/> Tourism Development Authority*
<input type="checkbox"/> Northern Transition Area Advisory Com.	<input type="checkbox"/> Transportation Advisory Board

If you apply for membership on more than one advisory board, please indicate your preference by number, with "1" being your first choice (please limit your selection to two (2) boards). Please note that membership is limited to one advisory board at a time. You shall not be considered for appointment to another board unless you resign before filing an application or you are in the last six months of your current term.

\*EMPLOYER/SELF EMPLOYER UNC HEALTH CARE \*NUMBER OF YEARS EMPLOYED 10

\*PROVIDE EXAMPLES OF HOW YOU ARE INVOLVED IN THE PROMOTION OF TRAVEL AND TOURISM IN THE TOWN OF CARRBORO?  
(\*REQUIRED ONLY FOR TOURISM DEVELOPMENT AUTHORITY APPLICATION)

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COMMUNITY ACTIVITIES/ORGANIZATIONAL MEMBERSHIPS: FOUNDING MEMBER OF CCGC AND MLK COMMUNITY GARDENS, CARRBORO REC AND PARKS COMMISSION (7YRS, 2 YRS AS CHAIR), FOUNDING MEMBER OF CARRBORO BICYCLE COALITION AND ONGOING SECRETARY, CHAIR-OPEN STREETS COMMITTEE, GREENWAYS COMMITTEE (4YRS); PART-TIME WORK WITH CARRBORO PARKS PROJECT AND ONGOING EFFORTS AT BALDWIN GARDEN

EXPERIENCE TO AID YOU IN WORKING ON THESE ADVISORY BOARDS

2 CHILDREN AT CARRBORO ELEMENTARY, EXPERTISE WITH MANY OF THE NON-PROFITS IN TOWN, ALL THE BOA MEMBERS, MANY OF THE TAB MEMBERS, REC AND PARKS STAFF, TOWN TRANSPORTATION AND PLANNING STAFF, AND GENERAL WORKINGS OF CARRBORO TOWN GOVERNMENT. MY ADDRESS MAY BE CHAPEL HILL, BUT I LIVE IN CARRBORO.

REASON(S) YOU WISH TO BE APPOINTED:

VERY DEEP PASSION FOR SAFE ROUTES TO SCHOOL. THIS INCORPORATES MY LOVE OF HEALTH AND WELLNESS, CYCLING AND WALKING, KIDS, AND COMMUNITY. I KNOW THAT CHANGES AT THIS BASIC LEVEL WILL HELP KIDS AND FAMILY TREMENDOUSLY. THERE ARE GREAT STEPS ALREADY MADE TOWARD SAFE ROUTES TO SCHOOL, AND I WOULD LIKE TO BE A PART OF COORDINATING, GUIDING AND IMPLEMENTING ONGOING EFFORTS TO MAKE SURE THE ACTION PLAN IS CARRIED OUT AND CHANGED AS NEEDED. I WILL BE RELINQUISHING MY POSITION ON THE REC AND PARKS IN ORDER TO CONCENTRATE ON SAFE ROUTES TO SCHOOL.

HAVE YOU EVER SERVED ON ANY TOWN OF CARRBORO COMMITTEE OR BOARD? If YES, WHICH ONE(S) YES, GREENWAYS, REC AND PARKS

ARE YOU CURRENTLY SERVING ON A TOWN BOARD OR COMMITTEE? Y If YES, ARE YOU APPLYING FOR A THIRD CONSECUTIVE TERM? N If YES, PLEASE DESCRIBE HOW YOU MEET ONE, OR MORE, OF THE EXCEPTIONS NOTED BELOW. PLEASE USE AN ADDITIONAL PAGE IF NECESSARY TO COMPLETE.

After completing two full terms, a member must ~~take off one year~~ before applying for re-appointment to the advisory board. However, a board member may apply to serve on another advisory board if he/she desires. The Board of Aldermen may make exceptions to this rule under the following circumstances:

1. To retain diversity on an advisory board;
2. To provide continuity in oversight of a major, on-going project;
3. To keep a member who provides expertise otherwise unavailable on an advisory board (e.g., an engineer on the Planning Board or Board of Adjustment); or
4. A lack of qualified applicants.

RETURN THIS FORM TO: TOWN CLERK, 301 WEST MAIN STREET, CARRBORO, N.C. 27510  
[www.townofcarrboro.org](http://www.townofcarrboro.org)

(Please note that this document and the information contained on it is a public record and must be provided by the town to anyone requesting a copy of it.)



**RECEIVED**

3/28/14 1:53PM

## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Thursday, February 18, 2016 1:24 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name Suzanna Dupee

Date 2/18/2016

Address1 112 Estes Drive Extension

Address2 Apartment B

City Carrboro

State NC

Zip 27510

Is this address located within the corporate limits of the Town of Carrboro? Yes

Telephone 9194759416

Email Address [suzannadupee@gmail.com](mailto:suzannadupee@gmail.com)

Date of Birth 11/20/1987

Race White

Sex Female

Occupation Massage therapist

Are you a registered Orange County Voter? Yes

Length of Residence in Orange County 9 years

Length of Residence in the Town of Carrboro 9 years



I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

*Field not completed.*

Advisory Board  
Preference

*Field not completed.*

\*Employer/Self  
Employed

Self-Employed

Number of Years  
Employed

9 years

\* Provide examples of  
how you are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

*Field not completed.*

Community  
Activities/Organizational  
Memberships

Competitive / semi-professional cyclist for locally-based Happy  
Tooth Elite Women's Racing Member of many running / cycling  
/ endurance sports groups in the community Sole Proprietor of  
Suzanna Dupee Massage Therapy, serving Carrboro for 9  
years Marketing Manager and Creative Director of Balanced  
Movement Studio, serving Carrboro for 13 years BA in  
Exercise and Sport Science from UNC Chapel Hill

Experience to Aid You in  
Working on Advisory  
Boards

I'm an experienced cyclist and regular / long-time walker and  
bike commuter in the Carrboro community. From commuting to  
work daily on the Carrboro roads to 4 years of commuting from  
Carrboro to school at UNC Chapel Hill, I understand the  
challenges and opportunities involved in creating a community  
that fosters safe walking and bicycling to school.

Reasons You Wish to be  
Appointed

Coming up on a decade of residing in the wonderful Carrboro  
community, I have been looking for ways to be involved in and  
give back to local government. Though I don't yet have any  
children of my own, I have many friends and colleagues who  
do, and I would love a chance to positively shape policies that  
encourage childrens' ability to commute to school safely and  
promote healthy lifestyles through bicycling and walking.

Have you ever served on  
any Town of Carrboro  
Committee or Board?

No

If yes, which one(s)? *Field not completed.*

Are you currently serving  
on a Town Board or  
Committee? No

If yes, are you applying  
for a third consecutive  
term? No

If yes, please describe  
how you meet one, or  
more, of the following  
exceptions noted below.  
\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c)) N/A

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## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Wednesday, February 24, 2016 9:19 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name	Jonah Perrin
Date	2/24/2016
Address1	207 Glade Street
Address2	Field not completed.
City	Chapel Hill
State	NC
Zip	27516
Is this address located within the corporate limits of the Town of Carrboro?	No
Telephone	9192609881
Email Address	<a href="mailto:jperrin100@gmail.com">jperrin100@gmail.com</a>
Date of Birth	9/23/2000
Race	White
Sex	Male
Occupation	Student
Are you a registered Orange County Voter?	No
Length of Residence in Orange County	15 years
Length of Residence in the Town of Carrboro	2 years at a Carrboro school and bike commuting to Carrboro

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

*Field not completed.*

Advisory Board  
Preference

*Field not completed.*

\*Employer/Self  
Employed

student

Number of Years  
Employed

11

\* Provide examples of  
how you are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

I am a sophomore at Carrboro High School, and I commute  
every possible day (every day that is not extreme weather).  
This makes me a good candidate for this committee, as I will  
provide a student perspective on bike accessibility to Carrboro.

Community  
Activities/Organizational  
Memberships

I have volunteered under State Representative Graig Meyer  
and worked with him at the State Legislature. From that I  
learned about committees, legislation, and how to better my  
community. I have also worked on increasing teacher pay by  
selling wristbands and donating the money to the PTSA. I  
teach Hebrew at my local synagogue to fifth graders.

Experience to Aid You in  
Working on Advisory  
Boards

My experience in this includes working under Representative  
Meyer, hearing the NC House of Representatives debating  
committee bills and creating legislation like the Advisory Board  
will. I also am taking Honors Civics and Economics this year  
and learning a lot about the democratic process. I am also in  
Model UN which calls upon my skills in making an argument  
and resolving conflict.

Reasons You Wish to be  
Appointed

I would like to be appointed to the Safe Routes to School  
Implementation Committee so I can help improve our town's  
accessibility, better our community so that more students like  
me are able to bike and walk to our school. Right now, my  
school has very few kids who bike, and it would be really great  
to see more students bike. This would help with physical  
activity which is low for adolescents. I also find that I feel better  
and am better able to attend to school better when I bike.  
Finally, walking and biking to school helps the environment.  
However, to accomplish the goal of more students walking and  
biking, we have to make our lanes, roads, and paths much  
better and establish safe driving practices near schools. We

also have to establish a culture of walking and biking. That is why I want to be appointed to this committee.

Have you ever served on any Town of Carrboro Committee or Board?

No

If yes, which one(s)?

Field not completed.

Are you currently serving on a Town Board or Committee?

No

If yes, are you applying for a third consecutive term?

No

If yes, please describe how you meet one, or more, of the following exceptions noted below.

N/A

\*Members of the Board of Adjustment, Environmental Advisory Board, Human Services Advisory Commission, and Transportation Advisory Board may be reappointed to successive terms without limitation (Sections 15-29(c), 15-45(c) 3-7(d), 3-24(c))

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## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Saturday, March 05, 2016 7:28 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

Name	Curtis Kinnaman
Date	3/5/2016
Address1	104 Nuttree Lane
Address2	Field not completed.
City	Chapel Hill
State	NC
Zip	27516
Is this address located within the corporate limits of the Town of Carrboro?	No
Telephone	9199233503
Email Address	<u><a href="mailto:cwkinnaman37@gmail.com">cwkinnaman37@gmail.com</a></u>
Date of Birth	11/1/1999
Race	Caucasian
Sex	M
Occupation	None
Are you a registered Orange County Voter?	No
Length of Residence in Orange County	16 years
Length of Residence in the Town of Carrboro	0 years

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed): *Field not completed.*

Advisory Board  
Preference *Field not completed.*

\*Employer/Self  
Employed *Field not completed.*

Number of Years  
Employed 0

\* Provide examples of  
how your are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro. *Field not completed.*

Community  
Activities/Organizational  
Memberships None

Experience to Aid You in  
Working on Advisory  
Boards I have participated in Model UN (a mock United Nations  
conference). This improves my skills of debating and  
negotiating. Last year, as a freshman in high school, I was a  
captain of my high school's Frisbee B-team. I also captained  
the JV baseball team, along with another teammate. All these  
opportunities I have had make me a better person, as I improve  
my collaboration skills.

Reasons You Wish to be  
Appointed It will allow me to voice my opinion to a local board that will  
directly impact me as a person. It will also give me an  
opportunity to give back to my community as well as potentially  
have an impact on my community. Also, it will look good on my  
college resume.

Have you ever served on  
any Town of Carrboro  
Committee or Board? No

If yes, which one(s)? *Field not completed.*

Are you currently serving  
on a Town Board or  
Committee? No



If yes, are you applying  
for a third consecutive  
term?

No

If yes, please describe  
how you meet one, or  
more, of the following  
exceptions noted below.

N/A

\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

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# TOWN OF CARRBORO

## Application for Membership on a Committee/Board

NAME: Nathan Barta DATE: 1/3/2016  
ADDRESS:

1532 PATHWAY DRIVE, CARRBORO, NC 27510

IS THIS ADDRESS LOCATED WITHIN THE CORPORATE LIMITS OF THE TOWN OF CARRBORO? yes

TELEPHONE: [HOME] (919) 933-3971 [BUSINESS] (-)

E-MAIL ADDRESS: NATHAN.BARTA@YAHOO.COM

DATE OF BIRTH 1/22/2002 RACE: W SEX: M

OCCUPATION student (8<sup>th</sup> grade)

Additional Contact:  
Robin Hathorn (mother)  
(919) 619-9178 cell.  
same address

ARE YOU A REGISTERED ORANGE COUNTY VOTER? Not eligible until 2020

LENGTH OF RESIDENCE IN ORANGE COUNTY 11 1/2 years

LENGTH OF RESIDENCE IN THE TOWN OF CARRBORO 11 1/2 years

*I wish to be considered for appointment to the following committee/board(s):*

<input type="checkbox"/> Board of Adjustment	<input type="checkbox"/> OWASA Board of Directors
<input type="checkbox"/> Animal Control Board of Appeals	<input type="checkbox"/> Orange County Economic Dev. Com.
<input type="checkbox"/> Appearance Commission/NPDC	<input type="checkbox"/> Orange County Human Relations Com.
<input type="checkbox"/> Arts Committee	<input type="checkbox"/> Personnel Advisory Committee
<input type="checkbox"/> Economic Sustainability Commission	<input type="checkbox"/> Planning Board
<input type="checkbox"/> Environmental Advisory Board	<input type="checkbox"/> Recreation & Parks Commission
<input type="checkbox"/> Human Services Commission	<input checked="" type="checkbox"/> Safe Routes to School Implementation Com.
<input type="checkbox"/> Greenways Commission	<input type="checkbox"/> Tourism Development Authority*
<input type="checkbox"/> Northern Transition Area Advisory Com.	<input type="checkbox"/> Transportation Advisory Board
	<input type="checkbox"/> Other _____

If you apply for membership on more than one advisory board, please indicate your preference by number, with "1" being your first choice (please limit your selection to two (2) boards). Please note that membership is limited to one advisory board at a time. You shall not be considered for appointment to another board unless you resign before filing an application or you are in the last six months of your current term.

\*EMPLOYER/SELF EMPLOYED Student \*NUMBER OF YEARS EMPLOYED \_\_\_\_\_

\*PROVIDE EXAMPLES OF HOW YOU ARE INVOLVED IN THE PROMOTION OF TRAVEL AND TOURISM IN THE TOWN OF CARRBORO?  
(\*REQUIRED ONLY FOR TOURISM DEVELOPMENT AUTHORITY APPLICATION)

COMMUNITY ACTIVITIES/ORGANIZATIONAL MEMBERSHIPS:

ReCycling Bicycle Co-op  
Torwheel Tween's Youth Cycling.

EXPERIENCE TO AID YOU IN WORKING ON THESE ADVISORY BOARDS

I use my bicycle almost every day to get to McDougall Middle School, and also for school events before and after school, even though I am eligible for bus transportation. I frequently use my bike to get around Carrboro.

I have experience as a volunteer building and rebuilding bicycles for community members at the ReCycling. I also serve as a ride steward for the ReCycling Kid's mass events and Torwheel Tween Rides Around Carrboro.

REASON(S) YOU WISH TO BE APPOINTED:

My bicycle is my main mode of transportation. I think that more kids should bike to school. I would like kids and their parents to feel more comfortable choosing bikes as transportation to school.

HAVE YOU EVER SERVED ON ANY TOWN OF CARRBORO COMMITTEE OR BOARD? IF YES, WHICH ONE(S) NO.

ARE YOU CURRENTLY SERVING ON A TOWN BOARD OR COMMITTEE? NO IF YES, ARE YOU APPLYING FOR A THIRD CONSECUTIVE TERM? NO IF YES, PLEASE DESCRIBE HOW YOU MEET ONE, OR MORE, OF THE EXCEPTIONS NOTED BELOW. PLEASE USE AN ADDITIONAL PAGE IF NECESSARY TO COMPLETE.

After completing two full terms, a member must take off one year before applying for re-appointment to the advisory board. However, a board member may apply to serve on another advisory board if he/she desires. The Board of Aldermen may make exceptions to this rule under the following circumstances:

1. To retain diversity on an advisory board;
2. To provide continuity in oversight of a major, on-going project;
3. To keep a member who provides expertise otherwise unavailable on an advisory board (e.g., an engineer on the Planning Board or Board of Adjustment); or
4. A lack of qualified applicants.

RETURN THIS FORM TO: TOWN CLERK, 301 WEST MAIN STREET, CARRBORO, N.C. 27510  
[www.townofcarrboro.org](http://www.townofcarrboro.org)

(Please note that this document and the information contained on it is a public record and must be provided by the town to anyone requesting a copy of it.)

## Catherine Dorando

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**From:** noreply@civicplus.com  
**Sent:** Friday, March 04, 2016 2:44 PM  
**To:** Catherine Dorando  
**Subject:** Online Form Submittal: Advisory Board Application

### Advisory Board Application

**Name** Ashé Rivera Soltero

**Date** 3/4/2016

**Address1** 108 S Peak Drive

**Address2** *Field not completed.*

**City** Carrboro

**State** North Carolina

**Zip** 27510

**Is this address located within the corporate limits of the Town of Carrboro?** Yes

**Telephone** 9194486542

**Email Address** [reynaseis@hotmail.com](mailto:reynaseis@hotmail.com)

**Date of Birth** 10/1/2004

**Race** Latino

**Sex** Male

**Occupation** Student

**Are you a registered Orange County Voter?** No

**Length of Residence in Orange County** 5-1/2 years

**Length of Residence in the Town of Carrboro** 5-1/2 years

I wish to be considered  
for appointment to the  
following  
committee/board(s):

Safe Routes to School Implementation Committee

Other (advisory board not  
listed):

Field not completed.

Advisory Board  
Preference

Field not completed.

\*Employer/Self  
Employed

Elementary School Student

Number of Years  
Employed

5th grader

\* Provide examples of  
how you are involved in  
the promotion of travel  
and tourism in the Town  
of Carrboro.

none

Community  
Activities/Organizational  
Memberships

soccer, basketball, after school clubs, taekwondo black belt

Experience to Aid You in  
Working on Advisory  
Boards

student perspective

Reasons You Wish to be  
Appointed

Principal asked me to

Have you ever served on  
any Town of Carrboro  
Committee or Board?

No

If yes, which one(s)?

Field not completed.

Are you currently serving  
on a Town Board or  
Committee?

No

If yes, are you applying  
for a third consecutive  
term?

No

If yes, please describe  
how you meet one, or  
more, of the following

no previous experience

exceptions noted below.  
\*Members of the Board  
of Adjustment,  
Environmental Advisory  
Board, Human Services  
Advisory Commission,  
and Transportation  
Advisory Board may be  
reappointed to successive  
terms without limitation  
(Sections 15-29(c), 15-  
45(c) 3-7(d), 3-24(c))

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# Town of Carrboro

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

## Agenda Item Abstract

**File Number:** 16-095

**Agenda Date:** 4/5/2016

**File Type:** Agendas

**In Control:** Board of Aldermen

**Version:** 1

---

### TITLE:

Consider a loan request from Eden Food Group for Tandem

**PURPOSE:** The purpose is to consider a business loan fund request from Eden Food for \$100,000 to help capitalize a new restaurant concept named Tandem.

**DEPARTMENT:** Economic and Community Development

**CONTACT INFORMATION:** Annette D. Stone, AICP Economic and Community Development Director

**INFORMATION:** The town has received a business loan application request from Eden Food Group which is owned by Emma Dunbar and Younes Sabouh. The request is for \$100,000 to capitalize a new restaurant concept named Tandem which is located in Carr Mill Mall in the space previously occupied by Café Symmetry, see Attachment 1 Loan Application. A summary sheet of the details are in Attachment 2. The ESC has met with the applicant and is recommending a loan amount of at least \$56,239.00. This recommended amount is based on the amount of equity in Ms. Dunbar's home and a \$20,000.00 unsecured loan allowed under the business loan criteria. The recommendation is to amortize the loan over a 10 year period at 3% interest with the 1 year payments deferred.

The ESC also recommended that if the applicant could demonstrate a higher equity in the property through a professional appraisal that the loan amount be increased consistent with the available equity in the property. It should be noted that although the ESC was unanimous in its recommendation to fund the project, they were split 6 to 3 on the decision to defer payments for the first year or interest only payments for the first.

**FISCAL & STAFF IMPACT:** Funds are available to make this loan.

**RECOMMENDATION:** The ESC recommends the Board of Aldermen approve the loan based on the demonstrated equity in the property located at 104 Gracewood Place, Chapel Hill NC located in the Town of Carrboro, plus \$20,000 in unsecured funds for a term of 10 years at 3% interest with the first year payments deferred.

A RESOLUTION APPROVING A LOAN FOR EDEN FOOD GROUP, INC.

Draft Resolution No.

**WHEREAS**, the Town of Carrboro has had a Business Loan Program for over 30 years; and

**WHEREAS**, the Town has loaned over \$2,000,000 in business loans for 50 + businesses; and

**WHEREAS**, the Town wishes to continue to support small local businesses by creating jobs and providing capital investment opportunities; and

**WHEREAS**, the Eden Food Group has submitted a complete application requesting a loan from the Town in the amount of \$100,000; and

**WHEREAS**, the applicant has offered property at 104 Gracewood Place, Chapel Hill, NC as collateral for the loan; and

**WHEREAS**, the Economic Sustainability Commission has reviewed application and recommends that the Board of Aldermen approve application the loan request for a minimum of \$56,239.00 and up to the requested \$100,000.00 (if the applicants can demonstrate additional equity in Ms. Dunbar's property) for a term of 10 years at 3% interest rate with payments of \$543.05 deferred for year one and a final balloon payment of \$6516.66 or payments of \$603.39 deferred for year one.

**NOW THEREFORE BE IT RESOLVED**, that the Carrboro Board of Aldermen approve the loan based on the Economic Sustainability Commission recommendation and accept the property at 104 Gracewood Place as collateral for the loan.

This 5<sup>th</sup> day of April 2016.



01.20.2016

Annette

Thank you so much for your time the other day in explaining the process of loan application from the town of Carrboro.

I have put together a package which includes all the requirements listed in the application

Business plan

P&L for 5 years

Projected menus

Payroll expectations

Start up expenses

Detailed drawings of space remodel

Personal finance statements from Younes Sabouh and Emma Dunbar

Tax returns for the past two years for Younes Sabouh and Emma Dunbar

Capital revenue sources - 2 bank statements for Younes Sabouh and Emma Dunbar detailing

Cash available

Personal credit report

Documentation of real property used for collateral

Please let me know what questions you have and if you need any other information.

Emma Dunbar

919-641-4441

Town of Carrboro, NC  
Business Revolving  
Loan Fund Application



INSTRUCTIONS: Please read the Business Revolving Loan Description and Criteria before completing this application. It is important that you fill out all sections of this application completely. *Please be advised that this application and the information submitted with it are considered to be public records subject to disclosure in accordance with N.C. General Statutes Chapter 132; information which is considered "trade secret" as defined by law and marked as such (or as "confidential") may be withheld from public disclosure as provided by law.* Questions regarding this application or the application process should be directed to the Town's Economic and Community Development Director.

NAME OF APPLICANT (S): Emma Dunbar + Younes Saboutt.

APPLICANT MAILING ADDRESS: 104 GRACEWOOD PLACE, CHAPEL HILL, NC 27516

PHONE: 919-641-4441 EMAIL: emmadunbar@live.com

NAME OF BUSINESS: Eden food group

NUMBER OF YEARS

IN OPERATION: ☐ CORPORATION ☐ PARTNERSHIP ☐ SOLE PROPRIETORSHIP ☒ LLC

FED TAX ID# 81-0895110 PRIVILEGE LICENSE # —

PHYSICAL LOCATION OF BUSINESS: 200 North Greensboro Street, Carrboro, NC 27510

PHONE: 919-641-4441 EMAIL: emmadunbar@live.com

1. FINANCIAL INFORMATION:

CAPITAL NEEDED FOR START UP AND FIRST YEAR OPERATING EXPENSES: 300,000

LOAN AMOUNT REQUESTED: 100,000





Town of Carrboro, NC  
Business Revolving  
Loan Fund Application



- A. List other sources of capital and financing to be involved, including equity contributions from the applicants resources. Project must demonstrate at least 50% funding for start-up and first year operating expenses.

Capital from applicants \$200,000

- B. Describe the financial need to include specific need for the Revolving Loan Funds in addition to or in lieu of private financing.

We need the addition funding to complete upfit of space and to allow for operating cash within the business for the first year.

2. PROJECT DESCRIPTION:

Describe the type of service, retail, technology or manufacturing business that is being proposed.

full service restaurant offering contemporary American Cuisine in a service oriented high energy environment. High food and service standards. comfortable and inviting place that is professional and has a high degree of value.

3. PROJECT BENEFIT TO THE COMMUNITY:

- A. What are the estimated annual sales/revenue projections? Detail any improvements to real property.

estimated annual sales

Year 1 1,200,000.00

Year 2 1,381,040.00

Year 3 1,689,246.00

Year 4 2,078,298.00

Year 5 2,555,397.00

Town of Carrboro, NC  
Business Revolving  
Loan Fund Application



- B. How will the project benefit or serve the community or targeted clients/customers? Why are these needs not currently being met and how will this project satisfy these needs? \_\_\_\_\_

Elevate the food scene, bring better quality food and experience to Carrboro. Create a meeting place, a hub of activity, a place of excitement pull from Durham + Raleigh. The food and service in Carrboro eateries are good but we will up the level of food + service setting a new standard, bringing in more out of town guests as well as keeping Carrboro guests satisfied, happy and a place for them to enjoy. We plan on a very in depth community give back program that benefits local organizations.

4. JOB CREATION AND RETENTION:

How many jobs will be created or retained in this project? What are the estimated number of hours and salaries for these positions? What types of benefits or policies are proposed to ensure employee retention?

30 jobs in total (15 full time, 15 part time). full time 40 hrs a week, part time 15-25 hrs a week. salaries range \$10 hr to \$18 hr. 2 salary positions. good environment to work, a safe clean caring employer, food, a place to make money, future plans for medical + sick's

5. BACKGROUND, BUSINESS PLAN AND MARKET ANALYSIS

- A. What is your previous business experience or education? \_\_\_\_\_

Yanes - 15 years in culinary world see attached resume.  
Emma - 15 years in hospitality management see attached resume.

- B. What are the market trends and who are you trying to serve? \_\_\_\_\_

trends looking for great food, competitive pricing, warm, welcoming environment, families, friends, millennials, chapel hill, Carrboro, Durham, Raleigh, communities, well educated, WNC, Duke, everyone and anyone who wants great food and a smile.

- C. Have you developed a business plan and/or a market analysis? Either attach copies of the business plan and market analysis or briefly describe. \_\_\_\_\_

See attached.



Town of Carrboro, NC  
Business Revolving  
Loan Fund Application



D. Describe your facility, size and location. Also attach any building elevations, floor or facility plans. Carr Mill Mall

4834 sq feet.

see attached plans.

E. If you are leasing, describe the terms of your lease. \_\_\_\_\_

5 year with 5 year extension.

6. PLEASE ATTACH THE FOLLOWING DOCUMENTATION:

- A. Detailed budget of start-up cost, first year operating expenses, and 3 to 5 years pro-forma cost/revenue projections.
- B. Documentation of other capital revenue sources.
- C. Personal or business financial statements.
- D. Personal credit report.
- E. Documentation of real property that will be used for collateral, any outstanding liens and tax values.

I (we) the undersigned certify that the information provided in this application, documents and attachments provided are true and complete to the best of my knowledge. I further commit to the following actions;

- A) I understand that the Town is not obligated to fund any project and that funding is fully at the discretion of the Board of Aldermen and limited based on available funds.
- B) Undertake and carry out the project as described in the application and documents as submitted.
- C) Agree to create/retain jobs as described in the application. I understand and that 51% of the jobs created must be filled by persons who earned less than 80% of the median income for the county they resided in the previous 12 months.
- D) Submit annual employment reports to the Town showing the number of jobs created or retained which would otherwise have been lost.
- E) Make all relevant records available to the Town or State available upon request for reporting purposes.

Town of Carrboro, NC  
Business Revolving  
Loan Fund Application



- F) I understand that the Town is not committed to provide funding until loan documents have been fully executed and the release of any other conditions have been satisfied by the applicant.
- G) Project must be completed by \_\_\_\_\_.
- H) Secure and obtain additional loan funds in the amount of \$\_\_\_\_\_ as described in this application, and provide \$\_\_\_\_\_ in equity for the applicants own resources for the project.
- I) Be responsible for any cost overruns.
- J) I will not discriminate against any individual on the basis of race, color, religion, sex, gender, or national origin, disability, sexual orientation or gender expression/identity in any of my business activities or operations whether financed in whole or in part by funds received by the Town.

PARTNERSHIP AND SOLE PROPRIETORSHIPS	CORPORATIONS
<p>SIGNED: <u><i>[Signature]</i></u></p> <p>TITLE: <u><i>[Signature]</i></u></p> <p>DATE: _____</p>	<p>NAME OF CORPORATION: <u><i>[Signature]</i></u></p> <p>SIGNED BY: _____</p> <p>ATTEST: _____ (seal)</p> <p>DATE: _____</p>
<p>LLC</p> <p>NAME OF LLC: <u><i>Eden Food Group</i></u></p> <p>SIGNED: <u><i>[Signature]</i></u></p> <p>TITLE: _____</p> <p>DATE: _____</p>	

## Carrboro Business Loan – Application Summary March 16, 2016

Applicants: Emma Dunbar  
104 Gracewood Place  
Chapel Hill, NC 27516

Younes Sabouh  
17307 Rose Garden Lane  
Durham, NC 27707

Name of Business: Tandem  
200 North Greensboro, NC  
Carrboro, NC 27510

The applicants have submitted all the requested information including the application, business plan, 5 year profit/loss projections, payroll projections, start-up expenses, detail drawings of the floor plan, personal financial statements and tax returns from both owners, capital revenue sources and cash available, personal credit reports and documentation of real property used for collateral.

The applicant is requesting \$100,000.00 for business start-up and operating cost in the first year. The owners have already signed a lease for 5 years and a 5 year option to extend and have begun the process of up-fitting the space in Carr Mill Mall. Both have extensive experience in the restaurant/hospitality industry and have been working together for the past 5 years at City Kitchen in Chapel Hill. Both owners have demonstrated very good and excellent credit ratings.

The business will create 15 Full-time jobs and 15 Part-time jobs with wages between \$10/hr to \$15/hr.

Ms. Dunbar is offering her home at 104 Gracewood Place as collateral for the loan. A recent evaluation from a real estate professional valued the home at \$252,777.00. Ms. Dunbar has a mortgage with Wells Fargo for the home in the amount of \$216,000.00, putting the equity in the home at \$36,239.00.

The applicants are using \$200,000.00 of their own cash for start-up/operating cost and have demonstrated available credit sources.

In addition, the applicants have been consulting with Elizabeth Morris with the Small Business Technology and Development Center to improve their business plan and anticipate all cost associated with business start-up.

The ESC met twice on this application and recommends the Board approve the loan request of at least \$56,239.00 and up to the requested \$100,000.00 if the applicants can demonstrate additional equity in Ms. Dunbar's property. The ESC is recommending a 10 year term at 3% interest rate with payments of \$543.05 deferred for year one and a final balloon payment of \$6516.66 or payments of \$603.39 deferred for year one.







# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-102

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

An Update on Carrboro's Parking Study

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to receive an update on the Town's Parking Study.

**DEPARTMENT:** Planning

**CONTACT INFORMATION:** Bergen Watterson, 919-918-7329; Timothy Tresohlavy, VHB, 919-741-5506

**INFORMATION:** In November 2015 the Town entered into a contract with VHB, a transportation planning firm in Raleigh, to undertake a parking study. To date, VHB has developed a [survey <https://www.surveymonkey.com/r/ParkCarrboro>](https://www.surveymonkey.com/r/ParkCarrboro), a [project website <http://parkcarrboro.org/>](http://parkcarrboro.org/), conducted occupancy rate data collection at public and private lots in the study area, collected length-of-stay data at Town-owned and leased lots, started the analysis; and held a public kick-off meeting. A link to the [video of the presentation <http://parkcarrboro.org/mediacenter.aspx?VID=4>](http://parkcarrboro.org/mediacenter.aspx?VID=4) at the kick-off meeting is posted on the project website. Tasks scheduled for April include the walkability audit; stakeholder interviews with downtown business owners and residents; public outreach at Farmers Market, Coffee with a Cop, and other local venues; Saturday occupancy and length-of-stay data collection; and loading zone, park and ride, and bicycle parking data collection. There will also be mid-point public meeting in June or July.

Timothy Tresohlavy, the project manager from VHB, will provide more detailed information on the status to date of the study and initial findings from the field data collection and survey responses.

**FISCAL & STAFF IMPACT:** There is no fiscal impact associated with receiving this presentation. .

**RECOMMENDATION:** Town staff recommends that the Board of Aldermen receive the presentation.





# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-101

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

An Update on Carrboro's Bicycle Friendly 'Path to Gold' Efforts, and Bike Month 2016 Activities

**PURPOSE:** The purpose of this agenda item is for the Board of Aldermen to receive an update on the Town's efforts to achieve a Bicycle Friendly Community Gold-Level status, and a list of local Bike Month 2016 activities.

**DEPARTMENT:** Planning

**CONTACT INFORMATION:** Bergen Watterson, 919-918-7329

### **INFORMATION:**

#### **'Path to Gold' Efforts:**

The Town of Carrboro received a Silver-level Bicycle Friendly Community designation from the League of American Bicyclists (LAB) for the second time in November 2014. In March 2015 the Board of Aldermen accepted the designation and [resolved <https://carrboro.legistar.com/View.ashx?M=M&ID=386353&GUID=86213CC7-7A2B-4AD3-B81E-1DAD84E73E74>](https://carrboro.legistar.com/View.ashx?M=M&ID=386353&GUID=86213CC7-7A2B-4AD3-B81E-1DAD84E73E74) to pursue Gold-level status by 2018.

A report card received from the LAB (Attachment A) in response to the Town's 2014 Bicycle Friendly Community application noted some specific areas where Carrboro will need to improve in order to achieve Gold-level status:

- Public education outreach
- Percent of schools offering bicycling education
- Bike Month and Bike to Work events
- Bicycle-friendly laws & ordinances
- Expand the on- and off-road bike network and increase network connectivity to parts of town that are cut off by barriers
- Develop a system of bicycle boulevards
- Make intersections safer and more comfortable for cyclists
- Increase amount of high quality bicycle parking throughout the community
- Expand Safe Routes to School program

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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- Offer a greater variety of bicycling skills training for adults
- Offer more family-oriented community or social rides
- Establish formal communication channel between Carrboro Police Dept. and cycling community. Ask officers to step up enforcement of motorist and cyclist infractions.
- Update bike plan and establish dedicated funding source for implementation.

A representative from the Carrboro Bicycle Coalition made a presentation to the Board of Aldermen in September 2015 that consisted of suggestions for achieving Gold-level status. These suggestions were based on the LAB report card as well as the CBC's own ideas for how to improve bicycle-friendliness in Town. Staff has been working internally and with the CBC and the Transportation Advisory Board on various efforts and programs that address most of these items. More information will be shared at the meeting.

**Bike Month 2016:**

May is Bike Month. As always, there are dozens of events throughout the Triangle region to celebrate and promote bicycling as a commute option, for exercise, for fun, and for infinite other reasons. Carrboro and Chapel Hill host a handful of local events, which are listed below:

1. **May 4**-UNC Gearing up for Bike Month, 11am-1pm, Berryhill Hall Courtyard
2. **May 4**-Walk and Bike to School Day
3. **May 6**-Chapel Hill/Carrboro Family Friendly Bike Parade: 7pm depart 140 West on Franklin St. and ride towards Carrboro Town Hall, return on Weaver/Rosemary.
4. **May 7**-Bikeability event, 9am-noon, Chapel Hill Fire Station #4
5. **May 17**-Carrboro Bike Breakfast, 7am-10am, Roberson St. entrance to the Libba Cotten Bikeway
6. **May 18**-Chapel Hill/Carrboro Ride of Silence, 7pm, leaves from Old Post Office on Franklin/Henderson St., 7 miles

For the full calendar of regional Bike Month events, please see (events may not be visible until mid-April):  
<<http://www.gosmartnc.org/gobike>>

**FISCAL & STAFF IMPACT:** There is no fiscal impact associated with receiving this report. Significant staff time will be needed to implement the LAB's recommendations for achieving gold-status. The fiscal impact associated with project implementation related to gold-status is dependent on the specific actions taken.

**RECOMMENDATION:** Town staff recommends that the Board of Aldermen receive the presentation and approve the resolution.



# CARRBORO, NC

## TOTAL POPULATION

20,908

## POPULATION DENSITY

3,237.0

## TOTAL AREA (sq. miles)

6.3

# OF LOCAL BICYCLE FRIENDLY BUSINESSES

0

# OF LOCAL BICYCLE FRIENDLY UNIVERSITIES

N/A

## 10 BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY

	Average Gold	Carrboro
Arterial Streets with Bike Lanes	65%	75%
Total Bicycle Network Mileage to Total Road Network Mileage	43%	56%
Public Education Outreach	VERY GOOD	GOOD
% of Schools Offering Bicycling Education	50%	22%
Bike Month and Bike to Work Events	VERY GOOD	GOOD
Active Bicycle Advocacy Group	YES	YES
Active Bicycle Advisory Committee	YES	VERY
Bicycle-Friendly Laws & Ordinances	VERY GOOD	GOOD
Bike Plan is Current and is Being Implemented	YES	YES
Bike Program Staff to Population	PER 32K	73379

## CATEGORY SCORES

<b>ENGINEERING</b> <i>Bicycle network and connectivity</i>	4/10
<b>EDUCATION</b> <i>Motorist awareness and bicycling skills</i>	3/10
<b>ENCOURAGEMENT</b> <i>Mainstreaming bicycling culture</i>	3/10
<b>ENFORCEMENT</b> <i>Promoting safety and protecting bicyclists' rights</i>	3/10
<b>EVALUATION &amp; PLANNING</b> <i>Setting targets and having a plan</i>	4/10

## KEY OUTCOMES

	Average Gold	Carrboro
<b>RIDERSHIP</b> <i>Percentage of daily bicyclists</i>	5.5%	5.90%
<b>SAFETY MEASURES CRASHES</b> <i>Crashes per 10k daily bicyclists</i>	100	40.5
<b>SAFETY MEASURES FATALITIES</b> <i>Fatalities per 10k daily bicyclists</i>	0.6	1.6



## KEY STEPS TO GOLD



- » Continue to expand the on and off street bike network and to increase network connectivity to parts of town that are cutoff by barriers (Highway 54, railroad) and to Chapel Hill. On roads with posted speed limits of more than 35 mph, such as Estes Drive, it is recommended to provide protected bicycle infrastructure.
- » Develop a system of bicycle boulevards, utilizing quiet neighborhood streets.
- » Make intersections safer and more comfortable for cyclists.
- » Increase the amount of high quality bicycle parking throughout the community and upgrade substandard bike parking.
- » Expand the Safe Routes to School program.

- » Continue to expand your public education campaign promoting the share the road message.
- » Offer a greater variety of bicycling skills training opportunities for adults.
- » Promote cycling throughout the year by offering or supporting more family-oriented community or social rides.
- » Establish a formal communication channel between the Carrboro Police Department and the cycling community. Ask police officers to step up enforcement of both motorist and cyclist infractions.
- » Update your bike plan and establish a dedicated funding source for the implementation.

A RESOLUTION TO RECEIVE AN UPDATE ON CARRBORO'S BICYCLE  
FRIENDLY 'PATH TO GOLD' EFFORTS, AND BIKE MONTH 2016 ACTIVITIES

WHEREAS, on March 17, 2015 the Board of Aldermen resolved to express its commitment to pursue Gold-Level Bicycle Friendly Community status; and,

WHEREAS, Town staff has been working to address the issues outlined in the League of American Bicyclists' 'Key Steps to Gold' report card; and

WHEREAS, there are many local and regional events scheduled to celebrate Bike Month 2016 in May, which will further support the Town's efforts towards Gold-Level status;

NOW, THEREFORE, BE IT RESOLVED by the Carrboro Board of Aldermen that the Board receives the update on 'Path to Gold' efforts and Bike Month activities;

BE IT FURTHER RESOLVED that the Board offers the following comments:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

This the 5<sup>th</sup> day of April in 2016.



# Town of Carrboro

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

## Agenda Item Abstract

**File Number:**16-100

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**Agenda Date:** 4/5/2016

**File Type:**Agendas

**In Control:** Board of Aldermen

**Version:** 1

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### **TITLE:**

Response to Board Review of Draft Community Climate Action Plan

**PURPOSE:** The purpose of this memo is to respond to the Board's review of the draft plan.

**DEPARTMENT:** Planning

**CONTACT INFORMATION:** Patricia McGuire, 919 918-7327; Randy Dodd 919 918-7326

**INFORMATION:** At the November 10th, 2015 meeting, the Energy and Climate Action Task Force presented an updated draft of a Community Climate Action Plan to the Board of Aldermen. The Board provided direction on next steps and referred questions for staff consideration. Staff have prepared a memo with responses to: the administrative actions requested; direction to remove the recommendation on bicycle and pedestrian infrastructure; consideration of a Sustainability Coordinator position; deer herd management; and more information on fiscal impacts. Information is also presented on statutory authority needed for several recommendations, implementation considerations, and public outreach. In addition to the staff memo, an updated draft of the plan has been prepared in response to the Boards direction. A public outreach session is scheduled for April 6<sup>th</sup>. A public hearing date of April 26, 2016 has been set.

**FISCAL & STAFF IMPACT:** There is no fiscal or staff impact associated with accepting the staff report.

**RECOMMENDATION:** It is recommended that the Board accept the staff report and direct staff to present the updated draft at the Public Hearing.

## **ATTACHMENT A**

### **A RESOLUTION ACCEPTING THE STAFF REPORT ON THE DRAFT COMMUNITY CLIMATE ACTION PLAN**

WHEREAS, a temporary Energy and Climate Action Task Force was formed in 2014 to present community climate action planning recommendations; and

WHEREAS, the Task Force presented a draft Community Climate Action Plan to the Board of Aldermen on November 10, 2015; and

WHEREAS, the Board of Aldermen referred follow up actions on the draft plan to staff; and

WHEREAS, staff have prepared a staff report and recommended edits to the draft plan; and

WHEREAS, a Public Hearing to receive public input on the draft plan is planned for April 26th;

NOW THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen accept the staff report and recommended edits to the draft plan.





## TOWN OF CARRBORO

NORTH CAROLINA

### TRANSMITTAL

### PLANNING DEPARTMENT

DELIVERED VIA: ☒ HAND ☐ MAIL ☐ FAX ☒ EMAIL

**To:** David Andrews, Town Manager  
Board of Aldermen

**From:** Randy Dodd, Environmental Planner  
Patricia McGuire, Planning Director

**Date:** March 31, 2016

**Subject:** Follow up Report on Draft Community Climate Action Plan

#### Summary

At the November 10<sup>th</sup>, 2015 meeting, the Energy and Climate Action Task Force presented an updated draft of a Community Climate Action Plan to the Board of Aldermen. The Board provided direction on next steps and referred questions for staff consideration. The purpose of this memo is to provide a follow up report from the 11/10/2015 meeting.

#### Information

In the spring of 2014, the Board of Aldermen created a temporary Energy and Climate Action Task Force charged with supporting the Town with community scale climate action. The Task Force was asked to prepare a report to submit to the Board of Aldermen that addressed:

- a. Recommendations for new actions the Town can pursue to reduce nonrenewable energy use and greenhouse gas emissions from residential and commercial buildings in Carrboro
- b. Recommendations for new actions the Town can pursue to reduce nonrenewable energy use associated with transportation in Carrboro
- c. Recommendations for new actions the Town can pursue to promote renewable energy in Carrboro
- d. Recommendations for new actions the Town can pursue to better manage vegetation, soil, and impervious surfaces to capture carbon, reduce energy use in buildings, mitigate the heat island effect, and reduce stormwater runoff

In the fall of 2014, the advisory boards sponsored a series of three forums related to climate action planning. Using information from the advisory board forum series reports as a starting point, the Task Force deliberated in 2014 and 2015 and prepared drafts of a Community Climate Action Plan for Board of Aldermen review in June, 2015, advisory board review in September/October, and Board of Aldermen review again in November. The preparation of this plan, designed as a companion document to the Energy and Climate Protection Plan (focused on municipal operations and adopted in May of 2014), is a step toward reducing greenhouse gas emissions community-wide, becoming more energy efficient, generating more renewable energy, and nurturing a social and ecological environment that is more resilient, livable, and attuned with

the epochal change that is occurring. The plan recommends a goal of a 50% reduction in per capita greenhouse emissions by 2025, and includes over 25 specific recommendations relating to community integration, buildings, transportation, renewable energy, and ecosystem protection and restoration.

At the November 10<sup>th</sup>, 2015 meeting, the Board of Aldermen provided direction and feedback for staff consideration. The Board's requests and a summary of the staff response is provided in the following table. A more detailed response follows.

**Table 1: Summary of Staff Follow Up from November 10, 2015 Meeting**

Board Direction	Staff Response
Send plan to CHCCS and OWASA	Completed. CHCC response provided as attachment. OWASA staff have indicated that a response will be prepared prior to public hearing.
Set public hearing	A public hearing has been set for April 26. Additional public outreach is being pursued, as discussed in this memo.
Extend the Task Force until June, 2016	The Task Force met on March 10 <sup>th</sup> . The next meeting has been scheduled for April 20 <sup>th</sup> .
Remove the recommendation on bicycle and pedestrian infrastructure	The recommendation has been removed from the updated draft.
Explore creating a Sustainability Coordinator position	Discussion of staffing considerations and options to address the need for additional capacity included in this memo. Text edits are offered in updated draft of plan to provide more flexibility in implementation.
Report back on deer herd management	Culling of deer is not recommended. The recommendation has been edited to focus on evaluating the extent to which the deer population and climate change may be affecting native plant ecosystems.
Provide fiscal analysis	This memo includes additional information on potential fiscal impacts. It is recommended that a more detailed fiscal analysis that includes an assessment of greenhouse gas emissions reductions be pursued after the public hearing.

### Sustainability Coordinator

The draft plan presented on 11/10/2015 recommends that the Town hire a Sustainability Coordinator. A new Coordinator position is specifically mentioned in the Executive Summary and Implementation sections as well as under recommendations for new grass roots partnerships, integrating climate action with the local living economy, expanded capacity for community sustainability, and facilitating low cost financing. A new full time position to manage neighborhood portfolios and facilitate neighborhood efforts is also included in the recommendations, although the draft plan does not specify if this is in addition to a Sustainability Coordinator, or would be the focus of a Sustainability Coordinator position. (Other recommendations mention the need for expanded capacity for the Town and community, they do not specifically refer to a new Town Sustainability Coordinator.) The following thoughts are offered in consideration of hiring additional staff to support plan implementation.

- 1) The plan includes a diverse set of recommendations that require expertise in separate disciplines: energy efficiency of single family, multifamily, and commercial buildings; renewable energy; transportation; stormwater management; solid waste/recycling;

ecology/botany/forest ecology; finance/funding; and community organizing. A diversity of skills and experience is needed to work in these different areas.

- 2) There has been limited outreach to gauge the degree to which the community would utilize the services a new Sustainability Coordinator (and/or others) could provide, but uncertainty remains as to the degree to which the array of recommendations in the draft plan may gain traction in the community. More clarity on priorities, roles, available resources, and community interest in the different recommendations put forward is needed before determining a position's requirements and responsibilities and proceeding with a hiring process.
- 3) In terms of the Town's involvement in implementing the plan, an alternative, or compliment, to hiring a Sustainability Coordinator is for current staff to assume/continue to assume responsibility for some of the goals and recommendations in the plan, with a more distributed responsibility in which a single person would not bear an inordinate burden. This would involve developing a more detailed implementation plan.
- 4) The degree to which community "champions" step forward is very important to the success of the plan. New Town staff could potentially help identify and organize "champions", but there may also be a rationale (more grassroots, less bureaucracy/centralization) for a more limited involvement from the Town on some of the plan's recommendations. Perhaps others in the community could be as or more effective than a Town employee in reaching the community. The nonprofit sector, along with the business community, HOAs, and others will be important to the success of climate action efforts. Alternatives such as (but not limited to) a community grant program, contractual services/temporary staff, and expanded partnerships are also worth investigating.
- 5) The Town has been pursuing initial steps to address the stormwater recommendation. This will be a major undertaking, and will require time from some of the same staff that could have responsibility for supporting the implementation of the Community Climate Action Plan.
- 6) Partners the Town routinely works with (e.g., OWASA, Orange County, CHCCS, Chapel Hill, UNC) have Sustainability staff that serve the community.
- 7) There would be a fiscal and staff impact associated with hiring a new Sustainability Coordinator staff position, as discussed under "Fiscal Analysis" below.
- 8) In considering the scope of the plan, community greenhouse gas emissions profile, and Town authority and capacity, an important "gap" is supporting improved energy efficiency in buildings. There is some uncertainty on how effective the Town, with or without a dedicated staff person, may be in making progress on the energy efficiency of buildings. Partners for the WISE program stressed the importance of pursuing energy efficiency in buildings at a regional scale. Outreach to potential partners at both local and regional scales is worth exploring. In the absence of an established partnership, it would be more difficult for a Sustainability Coordinator and the Town to make progress. Energy efficiency work could also require resources beyond staffing, for example, funding for subsidies and/or loans.

Given the above, it is recommended that the Town defer the decision to hire new staff until more feedback has been received on community needs and a more detailed implementation plan with a more thorough assessment of the pros/cons and costs/benefits of alternative approaches is available. Part of this assessment should include consideration of the potential reduction in

community greenhouse gas emissions associated with hiring, and a comparison of these reductions with alternative approaches. The Town should explore a host of options for supporting plan implementation including (but not limited to) expanded partnerships, a community grant program, and contractual services in addition to hiring new staff.

Edits to sections of the draft plan are offered in consideration of the above points.

#### Fiscal Assessment

Table 2 provides a preliminary assessment of potential fiscal impacts for selected recommendations that could entail some degree of Town fiscal responsibility. The total fiscal impact of the draft plan to the Town could be significant over the next decade, with variability possible in relation to timing and financing.

#### Statutory Authority

Several of the plan's recommendations provide both regulatory and non-regulatory approaches for pursuing the recommendation. For the regulatory options, the Town Attorney has looked into the degree to which new statutory authority may be needed to implement the recommendation. A summary is provided in Table 3.

#### Implementing the Plan

The draft plan presented in November, 2015 includes implementation recommendations. The following thoughts are offered in consideration of plan implementation.

- 1) It is recommended that staff provide a more detailed implementation assessment later in 2016 (after the public hearing) that will further analyze fiscal impacts.
- 2) Fundamentally, the plan is a community rather than municipal plan, and as such, requires broad community buy in, participation, and leadership. The Town is simultaneously pursuing a municipal plan focusing on Town operations, which represents 2% of the total community greenhouse gas emissions.
- 3) From a greenhouse gas emissions reduction perspective, a critical gap exists in terms of improving energy efficiency of buildings relative to the plan's other recommendations. The rate of improvement in energy efficiency needs to be at least doubled to realize the 50% per capita reduction goal by 2025. A specific challenge is improving energy efficiency in rental and multifamily housing, which comprises a large portion of the housing stock. To help focus implementation efforts, it could make sense to develop a more detailed implementation plan on this specific topic. This has some synergy with the interest in social equity and affordable housing. The plan recommends establishment of a new Rental Property Task Force, and consideration of a Rental Registry.

**Table 2: Potential/Preliminary Fiscal Impacts Associated with Climate Action Plan**

<u>Plan Recommendation</u>	<u>Potential Fiscal Impact</u>
Hire Sustainability Coordinator	A single full time position could require ~\$65k/year plus benefits (equivalent to 0.3 cents/\$100 tax value). This does not include any new operating budget. Staff have begun to assess alternative uses for this level of annual allocation.
Facilitate Low Cost Financing	The primary impact would be the debt burden. There would also be an administrative cost. The scope of efforts needing financing and amount of debt have not been determined.
Integrate Climate Action and Social/Equity Initiatives	Multiple potential partners and grant opportunities are identified. Seed/matching/operating funding would probably be required.
Buildings Recommendations	Potentially significant impacts associated with administration costs, contract support and/or subsidies. For reference, the Federal DOE-funded Carrboro WISE (2011-2013) program required ~\$366k (\$100k to seed EERLF; \$75k for administration; \$190k for subsidies) in public monies to reach 113 residential units and 3 commercial buildings. The projects were estimated to save 21% in energy use and almost \$40,000 a year in total utility bills for the participants. (An educational campaign through Clean Energy Durham reached an additional 77 Carrboro residents, with costs included in the administrative costs.) An analysis of Duke Energy electricity usage data from 2011-15 indicates that the rate of energy efficiency improvement needs to be at least doubled from the improvement during this time period to reach the 50% goal, suggesting that a new program would have to exceed the performance, and by reference, fiscal impact of the WISE program.
Transportation Recommendations	New impacts will need to be determined in cooperation with transit/transportation partners. For reference, the Town currently dedicates about 1.5 FTE to transportation planning/administration, and provides about \$1.5 M as a transit partner. Tracking emissions reductions locally is challenging and will require additional resources and effort. A mechanism for doing so with reliability has not yet been identified.
Community Solar Projects	Capital outlay if Town helps with financing. Preliminary staff discussions with NextClimate have identified a potential of pursuing one or two community solar projects (perhaps at a size of approximately 30kW) per year. A 30kW project currently has ~\$90k capital cost, with a potential public/private 70/30 split. This scale of project accounts for a little less than 1% of the total community electricity demand.
Downtown Geothermal	If feasible, large upfront cost anticipated. Lifetime equipment is ~50 years; heating/cooling costs reduced by ~50%. For reference, Orange County has installed geothermal HVAC systems to serve county buildings in Hillsborough at a cost of ~\$1.8M. Staff can pursue prefeasibility assessment, with a possible nominal fee for contract support.
Stormwater Utility	If a Town run utility is pursued, there would be flexibility in the establishment of a fee structure. For example, the utility could be established as revenue neutral. According to the UNC Environmental Finance Center, there are currently 55 utilities operating in North Carolina. The typical/average stormwater utility fee is \$1/month/1000 sq. ft. of impervious surface. ( <a href="http://www.efc.sog.unc.edu/reslib/item/nc-stormwater-utility-dashboard#">http://www.efc.sog.unc.edu/reslib/item/nc-stormwater-utility-dashboard#</a> ) for details on NC stormwater utility rates.) For reference, Chapel Hill's 2015/16 budget appropriated \$2.4M (with 14 FTEs) for stormwater management. Hillsborough is considering establishing a utility with an annual budget of \$579k in FY 2017, increasing to \$933k by FY 2021: <a href="http://www.hillsboroughnc.gov/media/page-documents/stormwater-utility-fee-analysis-and-report.pdf">http://www.hillsboroughnc.gov/media/page-documents/stormwater-utility-fee-analysis-and-report.pdf</a>
Evaluate Impacts of Climate Change and	There would be costs associated with additional studies; the scope of the studies and extent of costs will require additional investigation. The primary factors influencing the

Deer Herd on Native Plant Ecosystems	magnitude of Town costs will be if Town funding is needed for those providing support and the amount of time and labor rate for work devoted to field studies.
Organic Waste Collection/Composting	The Town is in the process of initiating a contracted study (\$50k with an optional \$7.5k pay as you throw analysis). This study will provide additional information on potential longer term fiscal impacts.
Discourage Invasive Plants and Encourage Native Plants	Amount of funding needed is TBD. For reference, the Bolin Forest and Quarterpath Trace neighborhoods completed a \$30k invasives removal and education grant in 2015. ( <a href="http://www.townofcarrboro.org/DocumentCenter/View/2894">http://www.townofcarrboro.org/DocumentCenter/View/2894</a> ). The cost of on-the-ground work depends in large part on the amount of volunteer versus paid labor.

**Table 3: Statutory Authority Considerations for Selected Plan Recommendations**

<u>Plan Recommendation</u>	<u>Statutory Authority</u>	<u>Notes</u>
Energy Audit/Performance Rating	No explicit authority identified. Because the State regulates building codes, there may be a “preemption” issue if this were to be a requirement	Gen Stat 160A-383.4 authorizes Town to adopt ordinances providing incentives to developers who agree to take steps in their projects to reduce energy consumption.
Energy Efficiency “Beyond Code”	The Town has requested authority to implement Appendix 4 to the 2012 NC Energy Conservation Code (15% additional efficiency-residential building permits)	This request has not made it out of committee. See note above.
Limiting Idling	The Town probably has authority to limit or regulate idling under General Statute 160A-185	For schools, CHCCS Board Policy 6306 “prohibits all unnecessary school bus idling”.
Downtown Geothermal	General Statute 160A-459.1 authorizes Town to “establish a program to finance the purchase and installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently affixed to residential, commercial, or other real property.”	The term “renewable energy source” includes geothermal (General Statute 62-133.8(a)(8)). More investigation needed to determine authority for establishing a utility.
Rental Registry/Certificate Program	No authority identified to require registration; no restrictions identified to a voluntary program.	

- 4) As an alternative to creating a new Task Force, it is recommended that climate action be considered as a core value in the charges to all advisory boards. This would avoid duplication of effort across committees. In addition, a process could be pursued for formal collaboration of existing advisory boards to address the goals of the plan. For example, a periodic joint review and report dedicated to climate action to the Board of Aldermen from advisory boards could be established.

- 5) Staff has not yet been able to complete a more robust assessment of the greenhouse gas emissions reductions of pursuing the different recommendations and actions included in the plan.
- 6) Some of the recommendations include activities that are currently included in staff work plans, and some recommendations could result in new staff impacts, depending on the implementation approach. There will be a staff impact to support one or more Task Forces.
- 7) There is value in identifying and exploring partnership and outside funding opportunities.

Edits have been offered in an updated draft of the plan given the above considerations. A general recommendation is that staff provide a report later in 2016 that addresses the points made above as well as additional public input.

#### **Public Outreach**

The development of the draft plan over the course of the past 18 months has included some community engagement through the Planning Forums, advisory board review, and presentation of two drafts of the plan to the Board of Aldermen. A public drop in session at Town Hall is scheduled for Wednesday, April 6th (5:30 pm-7:30 pm). A survey (online and hard copies) has been created to get feedback on recommendations presented in the Community Climate Action Plan. The survey will be available online until April 15th; survey results will be presented as part of the Public Hearing agenda packet. The Energy and Climate Action Task Force is also performing outreach at the Farmers Market. The Town's website has been updated to include information on the draft plan and public participation opportunities.

#### **Fiscal and Staff Impact**

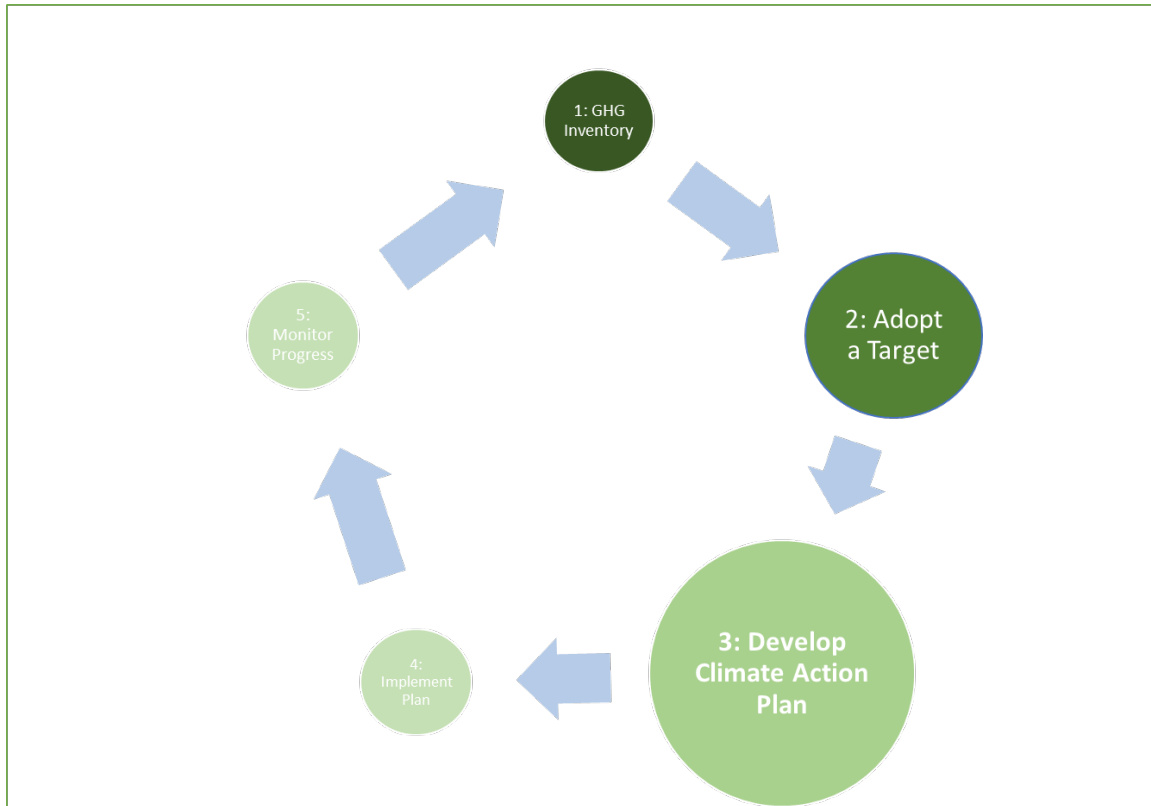
There is no fiscal or staff impact associated with accepting the staff report.

#### **Recommendation**

It is recommended that the Board of Aldermen receive the staff report and update to the draft plan, and provide any desired direction in preparation for the Public Hearing. It is further recommended that, after further community input and the Public Hearing, staff pursue a more detailed implementation analysis and report back with any new implementation recommendations.

# Community Climate Action Plan

**Reducing Greenhouse Gas Emissions, Saving Energy,  
Generating Renewable Energy, and Enhancing Ecosystems**



## Town of Carrboro, North Carolina

March 31, 2016

### BOARD OF ALDERMEN

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With support from the Carrboro Energy and Climate Action Task Force:



**Carolyn Buckner, Jeff Herrick, Kathy Kaufman, Jeanette O'Connor, Rob Pinder**

## **Acknowledgments**

The Carrboro Planning Board, Environmental Advisory Board, and Transportation Advisory Board for sponsoring the Fall Forum series on Energy and Climate Action held at the Carrboro ArtsCenter in 2014 and their review of a draft of this plan.

The Carrboro Board of Aldermen for adopting a proactive climate protection resolution, and feedback on a draft of this plan.

Those who have worked to develop and support previous greenhouse house gas inventories for Carrboro and Orange County.

The many people and organizations in the community involved in climate action work.

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# Executive Summary

In 2009, the Carrboro Board of Aldermen passed a resolution committing the Town to take steps to reduce emissions of greenhouse gases that are causing global climate change. In doing so, and through work leading up to the resolution with other Orange County governments, the Town joined a group of more than 1000 cities, towns and metropolises around the world who are taking part in the Cities for Climate Protection Campaign. The campaign follows a 'Five Milestone' process that includes a greenhouse gas (GHG) emissions inventory, establishment of an emissions reduction target, development and implementation of an action plan to reduce emissions, and monitoring of emissions reductions measures.

This document expands on previous efforts, with an emphasis on completion of the second milestone – further articulation of a reduction target, and the third milestone – the drafting of a Local Climate Action Plan. In 2014, Carrboro developed a plan focusing on the Town's municipal operations. This plan is a companion and follow up to that effort with an emphasis on measures that the broader community is asked to take in order to achieve GHG reduction targets. The recommendations offered are intended to reduce greenhouse gas emissions, while raising the community's awareness of and involvement in solutions to global climate change and a post-carbon energy future, adaptation to changes and enhancement of ecosystem resilience.

A significant recommendation of this report is for the Town and community to adopt a goal of a 50% reduction in greenhouse gas emissions by 2025, as supported by a broad community campaign. Additional recommendations are provided around the themes of community integration, energy efficiency of buildings, transportation, renewable energy, and ecosystem protection and restoration. Measures outlined in the Plan to reduce greenhouse gas emissions not only contribute to overall climate change mitigation, but can also provide the community with many local benefits such as financial savings through energy efficiency, the creation of new jobs, improved air quality and public health, and a healthier forest and streams.

The degree to which the broad campaign advocated for in this plan takes off will depend on many factors. The following direction is suggested to build momentum: ~~1) a new version of this Task Force needs to be created and made permanent; 2) the Town needs to devote more resources towards implementing the plan, starting with creating a Sustainability Coordinator position; 3) the first assignment for the coordinator should be to turn the recommendations in this plan into an outreach and engagement program;~~ 1) focused attention is needed to more rapidly reduce energy use in buildings; 2) similarly, the efforts underway to increase transit, bicycling and pedestrian modes of travel as well as vanpooling, carpooling, and carsharing need to gain even more traction; 3) innovative efforts are needed to support residents with limited opportunities for renewable energy; 4) grass roots efforts and new partnerships need to be fostered; 5) the paradigm for local environmental/ecosystem protection and restoration needs to expand to consider the stress of climate change; and 6) last not but not least, individuals, businesses, and in effect the entire community need to take the recommendations in this report to heart.

# Introduction

*“Recognizing that all human economic activity is a subset of nature’s economy and must not degrade its vitality is the starting point for systemic transformation of the energy system.”<sup>1</sup>*

There is widespread scientific agreement that the increasing quantity of greenhouse gases (GHGs) in the atmosphere is causing temperatures to rise and increasing the frequency and severity of extreme weather events, and that human activities are the primary cause.<sup>2</sup> The accumulation of greenhouse gases is a major threat to the climate stability of the earth. Arguably, no other issue threatens our planet with such dramatic, far-reaching impacts, and no other issue is so clearly a worldwide problem. The world’s leading scientists predict that, in the absence of radical societal change, global average temperature will rise from 2.7 to 11 degrees F. within our children’s lifetimes. Already, effects of climate change are being seen, from melting of the Arctic permafrost, to the disappearance of glaciers worldwide, to rising sea levels around islands and other low-lying areas, and the acidification of oceans. Erratic weather and extreme events such as droughts, floods, heat waves, avalanches and hurricanes are becoming more common.

The primary cause of global climate change is the burning of fossil fuels such as petroleum, coal, and natural gas. These activities release gases such as carbon dioxide and methane that accumulate in the atmosphere and trap the sun’s heat, thereby warming the earth – the so-called “greenhouse effect”. The greenhouse effect is essential for life on earth, but rapidly increasing levels of greenhouse gases during the past 200 years are now destabilizing the climate. Average global temperature have already risen an unprecedented 1-2 degrees F during this period, and the impacts of emissions that have already occurred will take decades to cycle through ecosystems. Carbon dioxide concentrations in the atmosphere have reached their highest level in 160,000 years, and are rising at a rate 500 times higher than ever before in history.

Richard Heinberg, Senior Fellow of the Post Carbon Institute regarded as one of the world’s foremost energy and climate action experts, says this: “The most important thing to understand about the energy transition is that it’s not optional. Delay would be fatal. It’s time to make a plan—however sketchy, however challenging—and run with it, revising it as we go.”<sup>3</sup>

In Carrboro, the effects of climate change over the next century are likely to be significant. They may include the migration of hardwood forests northward to cooler areas. We will have to cope with hotter summers and more frequent floods, droughts, and intense storms, with more money diverted to repair damage from these events. Our local ecosystems could experience a broad range of negative trends and

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<sup>1</sup> [The Energy Reader: Overdevelopment and the Delusion of Endless Growth](#), Tom Butler, Daniel Lerch, and George Wuerthner, eds. (Healdsburg, CA: Watershed Media, 2012)

<sup>2</sup> <http://www.townofcarrboro.org/DocumentCenter/Home/View/1213>

<sup>3</sup> <http://www.yesmagazine.org/issues/life-after-oil/100-renewable-energy-what-we-can-do-in-10-years-20160222>

losses, and ecological diversity will likely decline. All of the careful planning, stewardship of beautiful natural places, promotion of biodiversity, and other crucial work at the local level will be rendered meaningless if we cannot stave off the worst consequences of climate change. As members of the world community, we will have to deal with challenges involving food security, human health, and scarce resources. Humanity is beginning to respond to the unprecedented transition from the industrial era to the era that is to follow. Local governments and communities can address the challenge and opportunity of the transition and specifically reducing greenhouse gases in a number of creative ways.

The 2014 Orange County State of the Environment<sup>4</sup> report provides a similar message:

*“A report focused on Orange County alone also risks underemphasizing global climate change, the most pressing environmental threat we face. Our use of fossil fuels here, whenever we start a car engine or run our air conditioners, adds to the accumulation of carbon in the atmosphere that is rapidly destabilizing our climate. In 2012, leading climate activist and writer Bill McKibben summarized how close we are to reaching the limits of our carbon budget: Scientists estimate that humans can pour roughly 565 more gigatons of carbon dioxide into the atmosphere by midcentury and still have some reasonable hope of staying below two degrees [Celsius] increase in global temperature. (“Reasonable,” in this case, means four chances in five, or somewhat worse odds than playing Russian roulette with a six-shooter)....Reaching or surpassing that two degree rise in average global temperatures risks catastrophic consequences for our ability to grow food, maintain access to drinking water, and generally perpetuate human civilization as we now know it.”*

### **Beyond Doom and Gloom**

*What we’re for is leaving behind the current energy economy, which is wasteful, polluting, and centralized; assumes perpetual growth; and is anchored by nonrenewable fuels. We envision a bold leap toward a future energy economy that fosters beauty and health; that is resilient because it emphasizes renewable, community-scale energy generation; that supports durable economies, not growth; and that is informed by nature’s wisdom.<sup>5</sup>*

The previous section presents a stark, sobering, and ominous picture and one that we all need to acknowledge and recognize. Only laying out the danger associated with climate change neglects humanity’s capacity, ingenuity, and adaptability. It also can be counterproductive by effectively triggering a “fight and flight” response, or being received as a judgment for denial and lack of action. The reality of climate change also presents tremendous opportunity for transition to living in a more satisfying, resilient, and connected community that is less reliant on fossil fuels.<sup>6</sup> In addition, some measures are often necessary and/or more effective at the municipal/community level than at other levels. This plan is intended to inspire this community and others to accelerate and ramp up efforts, and begin to make significant reductions in the level of climate-changing gases now being produced.

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<sup>4</sup> [http://www.orangecountync.gov/document\\_center/DEAPR/2014\\_SOE\\_complete\\_report.pdf](http://www.orangecountync.gov/document_center/DEAPR/2014_SOE_complete_report.pdf)

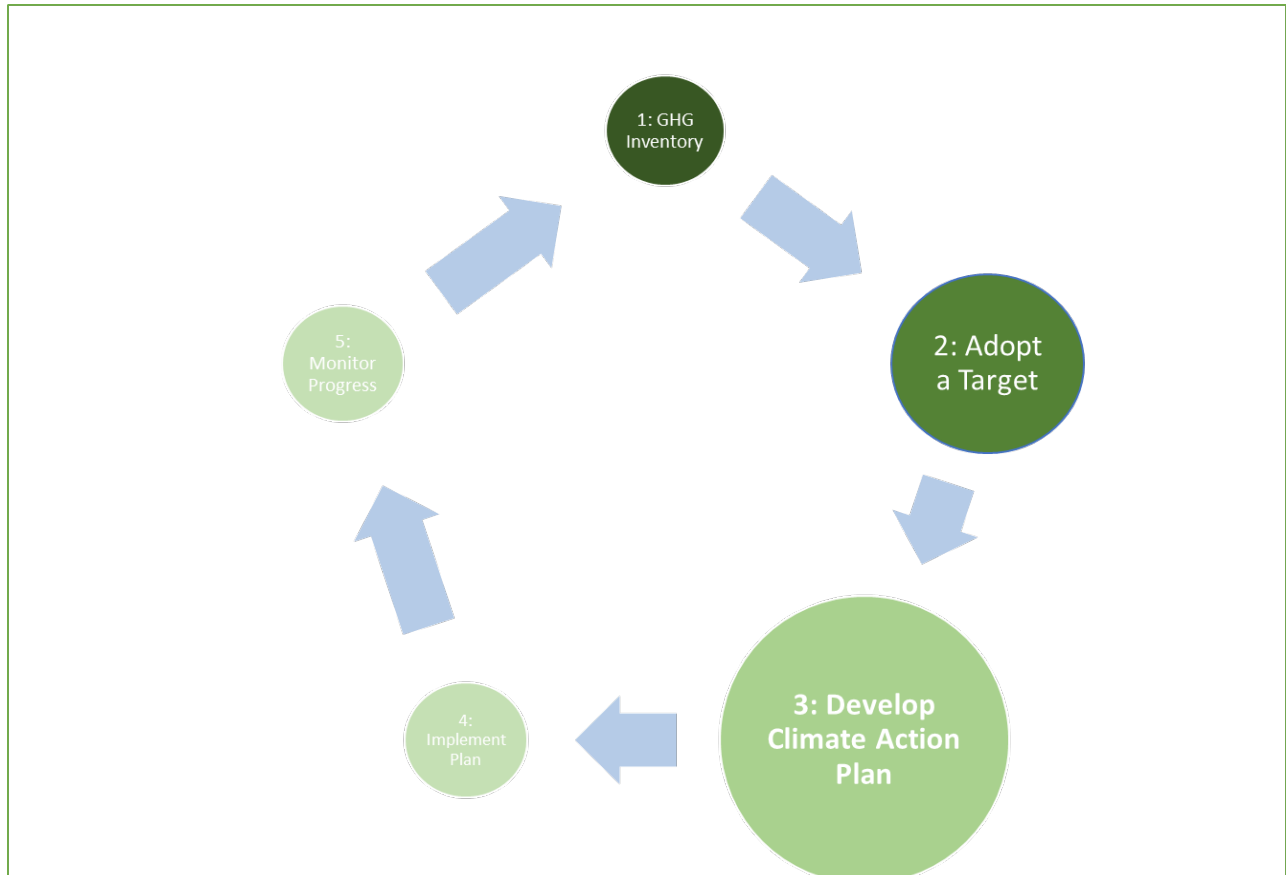
<sup>5</sup> [The Energy Reader: Overdevelopment and the Delusion of Endless Growth](#), Tom Butler, Daniel Lerch, and George Wuerthner, eds. (Healdsburg, CA: Watershed Media, 2012)

<sup>6</sup> <http://www.wri.org/news/2014/10/release-new-analysis-highlights-opportunities-economic-gains-climate-action-united>

## The Cities for Climate Protection Campaign and the Five Milestone Process

The Cities for Climate Protection (CCP) campaign is a global project led by the International Council for Local Environmental Initiatives (ICLEI), a membership association of local governments dedicated to addressing global environmental problems through local action. The CCP was established by ICLEI in 1993 at an international summit of municipal leaders. The CCP has engaged many municipal governments in North Carolina, the U.S and abroad in a worldwide effort to slow the earth's warming. The CCP campaign follows a 'Five Milestone' process (Figure 1).

**Figure 1:**  
**Cities for Climate Protection Five Milestone Climate Action Planning Process.**



*The size of each circle indicates the relative emphasis in this plan. The darkness indicates the amount of attention already given to each milestone based on work in Carrboro over the past decade, as discussed in the text.*

## The Greenhouse Gas Emissions Inventory<sup>7</sup>

Carrboro collaborated with other jurisdictions in Orange County and ICLEI to complete the first countywide Greenhouse Gas Emissions Inventory for the baseline year of 2005. In 2011, a UNC Capstone Team completed a community scale inventory specifically for Carrboro based on data for 2009. Every year beginning in 2012, the Town has updated the municipal operations inventory, and in 2015, a second UNC Capstone Team updated the community inventory based on data for 2012 and assisted the Town in entering the inventory data into the ClearPath software which will help the Town with future climate action planning steps. These inventories help establish a baseline and guide the community to develop and implement strategies to mitigate emissions by understanding the sources and quantity of emissions. They also provide a means to monitor changes over time.

## Establishing Emissions Reductions Goals

The countywide inventory included an initial attempt to identify potential goals in terms of “tiers” of “least aggressive” to “most aggressive” climate action strategies. In 2009, the Board of Aldermen passed a resolution resolving that the Town “will seek, and will facilitate the community at large, to cut CO<sub>2</sub> emissions by its proportion of the amount which is required to stabilize the climate back to <350 ppm of CO<sub>2</sub> ..., and asks staff to evaluate how to achieve this target for municipal operations and the community”.<sup>8</sup> As part of municipal inventories, annual reduction goals of 2-7% have been discussed and the 2014 plan set a goal of a reduction in emissions from municipal operations on the order of 5-10% within a 2 year time frame. Other notable climate goals are listed in the table below.<sup>9</sup> In its Clean Power Plan to reduce carbon dioxide emissions in the power sector, EPA has set a unique target emissions rate for each state to achieve by 2030. 8 states are asked to reduce emissions by 41%-50%, 24 states are asked to reduce emissions by 31%-40%, and the remainder of the states are asked to reduce emissions by 30% or less. 8 large US cities have signed on to the Carbon Neutrality Alliance.

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<sup>7</sup> More information on previous inventories is available on the Town’s website:

<http://www.townofcarrboro.org/271/Greenhouse-Gas-Inventories>

<sup>8</sup> 1990 is when global CO<sub>2</sub> concentrations first surpassed 350 ppm. To date, Carrboro emissions have not been estimated for 1990. Town staff have asked those providing support with completing emissions inventories to attempt to estimate emissions for 1990. The uncertainties due to the lack of data and difficulty deriving credible assumptions have proven too great to complete this task. It is certainly hypothetically possible to “backcast” emissions. For example, some factors could lead to lower per capita emissions such as industry/technology standards (e.g. more efficient vehicles, buildings, and appliances), more availability of transit and bicycle and pedestrian infrastructure, economic factors leading to changing behavior (e.g., fuel costs), and growing awareness and concern. Other factors could lead to higher per capita emissions, such as suburbanization, less affordable housing locally, and social/cultural norms and consumer choices with higher footprints (e.g., larger vehicles and homes and less active lifestyles and more emphasis on comfort and convenience) leading to more single occupancy vehicle trips, vehicle miles traveled (this has been documented) and use of fossil fuels. Assumptions could also be derived from national/international reports, however the bias that could be introduced is uncertain.

<sup>9</sup> Appendix 2 outlines a hypothetical example of a “typical” American household becoming carbon neutral in 10 years.



**Table 1: Examples of Climate Action Goals**

Scale	Entity	Reduction Goal	Date
National/Countries	United States	26 - 28% of 2005	2025
	Department of Defense	30% reduction in energy use; 20% of energy from renewable sources	2020
	China	20% of energy from non-fossil sources	2030
States	California	40%	2030
Cities	Seattle	Net zero/climate neutral (community)	2050
	Asheville	80% from 2011 (4%/year; municipal)	2030
	Chapel Hill	60% of 2006 <sup>10</sup>	2050
	Durham	30% (community) 50% (municipal) of 2005	2030
	Boulder, CO <sup>11</sup>	80% (community)	2050
Businesses	Weaver Street Market	Net zero via efficiency, rooftop solar, purchased green power	2020
Utilities	OWASA (2015 draft)	35%/5% reduction in purchased electricity/natural gas (2020 vs. 2010) Pursue biogas to energy and renewable energy projects	2020
Universities	UNC	Net zero/climate neutral	2050
	Warren Wilson College	80% of 2007/8	2020

One purpose of this Plan is to provide a new recommendation on a community scale emissions reduction goal. Climate action goals can be framed in a variety of ways to best meet a particular entity's needs and values. The Energy and Climate Action Task Force has recommended that Carrboro's Climate Action Goal: meaningfully reduce greenhouse gas emissions at a time scale that is urgent; encourage growth and shared prosperity; and be able to be measured and certified. With these criteria in mind, the Task Force has recommended this Carrboro Climate Action Goal:

*It is recommended that Carrboro adopt the goal of a 50% reduction in per capita greenhouse gas emissions by 2025. We recommend a goal to cut the carbon footprint in half over the next 10 years for the entire community, Town operations, the buildings and transportation "sectors", and ultimately each resident and business.*

<sup>10</sup> Reduction is on a per capita basis. Interim goals are 5 percent by 2010, 10 percent by 2015, 20 percent by 2030, 30 percent by 2040; 45 percent by 2045, and 60 percent by 2050.

<sup>11</sup> Appendix 1 provides more information on the leadership Boulder is providing with local climate action.

This goal is a meaningful reduction in carbon/greenhouse gas pollution that is consistent with the scientific recommendations calling for the large emission reductions needed to reduce the risk of dangerous climate change. It is both ambitious and achievable with the support of the Town and community. It is framed in per-capita terms to recognize that Carrboro continues to attract new residents and businesses and to make it easy for any individual, business, or organization to measure and demonstrate their progress toward the goal. Investments in energy efficiency and renewable energy offer very favorable returns and substantial reductions in energy costs. This can power a virtuous cycle, where more energy costs are reduced and more income is available for local consumers and businesses.

It is possible that many people will sense that the goal is too ambitious: too much change too quickly. Richard Heinberg recently concluded that, globally, we can achieve at least a 40 percent reduction in carbon emissions in 10 to 20 years.” While there are challenges (e.g., dropping petroleum prices, technology advances allowing for new extraction practices), there are also external factors that will help, most notably a rising global awareness and conviction. Solar power is accelerating; fuel economy standards will likely continue to reduce gasoline use. The proliferation of more energy efficient lighting, appliances and heating/cooling equipment is already reducing household energy use, and transportation options with smaller emissions footprints are expanding.<sup>12</sup>

### **The Local Climate Action Plan**

The U.S. Department of Energy has developed a “Guide to Community Strategic Energy Planning” that identifies two types of planning efforts: one focusing on the government operations and one focusing on the community at large. The former: includes a focus on government buildings, facilities, infrastructure, and transportation; concentrates on activities for which the government has direct influence – e.g., personnel, planning, and budgeting – which means tighter control over implementation. The latter (community-wide plan) is a broader plan to address activities that: expands the focus to include energy saving activities across the jurisdiction (residential, commercial, industrial, transportation, and other sectors) of the broader community; recognizes that, while local government actions can greatly influence, energize, and leverage effective activities in the broader community, the government has less direct control over these activities in comparison to a government-only plan. This plan focuses on the community wide plan.

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<sup>12</sup> Appendix 2 provides a hypothetical example of how a household can become carbon neutral in 10 years. Appendix 3 presents a discussion of how to approach this goal from a social and psychological perspective.



The measures recommended below provide the basis for the first comprehensive community scale climate action plan specifically for Carrboro. They are a companion to measures presented in the 2014 plan that focused on municipal operations. Other local governments and agencies and UNC continue to be engaged in similar locally relevant efforts<sup>13,14,15</sup>. To emphasize, the Task Force has recommended that the Town pursue a two-part climate action strategy. Strategy 1 is to provide leadership by following through with the recommendations outlined in the 2014 report. The Town of Carrboro efforts to reduce emissions sets an example for residents, businesses, and institutions. Strategy 2 is to further develop a community based initiative as detailed in this document and guided by the recommended Carrboro Climate Action Goal in tandem with a goal to protect and restore local ecosystems. Details for how to pursue these broader goals is provided in the following sections, starting with the critical element of the mobilization of the Carrboro community in support of the goals of this plan.

## Community Integration

“Local” climate action planning has important but limited influence within a personal to global continuum (Table 1). The collective choices, behaviors, norms, requirements, and plans and agreements at lesser and greater social scales than that of a town of ~20k people arguably have greater influence on GHG than the municipal/community scale. A very large share of the GHG footprint in the community occurs because of the collective impact of private decisions made by residents and businesses for which the Town has very limited involvement and oversight, and also within a global social context and the constraints of state, federal, and international laws, regulations, agreements and corporate (large scale) decisions. In terms of other levels of organization and governance and how they interact with community scale climate action planning, the following are important (and in some cases unique) points in Carrboro and indicate the Town’s interdependence with many other entities in pursuing climate action planning:

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<sup>13</sup> <http://www.townofchapelhill.org/town-hall/departments-services/planning-and-sustainability/sustainability>

<sup>14</sup> <http://www.owasa.org/energy-management>

<sup>15</sup> <https://climate.unc.edu/GreenhouseGasInventory>

- 1) The Chapel Hill-Carrboro City School system and OWASA both have separate policy, fiscal, and administrative processes from the Town, and therefore, different boards and staff. They also have larger emissions, facilities and operating budgets than Carrboro has, and therefore, an ability to have a greater influence on emissions reductions;
- 2) Transit is a public service that has the ability to significantly mitigate emissions. Chapel Hill Transit is a cooperative effort between Carrboro, Chapel Hill and UNC; GoTriangle is a multi-county/regional transit authority serving over a million people;
- 3) Currently, Carrboro on its own has very limited influence on larger electricity and natural gas utilities. Duke Energy provides electrical service to over 90% of Carrboro. Carrboro is also served by Piedmont Electric Membership Cooperative, which buys its electricity from Duke for resale. PSNC is the local natural gas provider. This is in contrast to local governments operating municipal utilities.
- 4) Carrboro's largest emissions sector is buildings, with most building emissions being residential, and most of the residential building sector being non-owner occupied. Oversight by the North Carolina Utilities Commission, management by the above utilities, and regulation by building codes (which are established at state/federal levels) are strong non-market/public sector drivers that influence emissions from buildings. Landowner and landlord management and decisions are strong private sector drivers. Social/cultural norms influence both public and private sectors.
- 5) The Town has very limited oversight of Homeowners Associations (HOAs) (less in fact than the state of North Carolina). Carrboro did recently update regulations to limit new HOAs ability to constrain an individual homeowner's desire to pursue sustainability measures.

**Table 1: Local Climate Action Planning is One Layer in a Continuum <sup>16</sup>**

<b>Organizational Examples</b>	<b>Scale</b>	<b>General Scale (population)</b>	<b>Climate Action "Primary Domain" Examples</b>
Personal		1 person	Personal choices (e.g., dietary, housing, transportation, vocation, financial, consumer)
Household/family		~2-10 people	"Home economics" (e.g., housing, transportation, landscaping/gardening, financial, consumer)
Neighborhoods, small businesses, clubs, nonprofits, congregations		~10-100 people	Small organization organizing, management, fossil fuel divestment
Schools, co-ops, larger clubs, businesses, congregations, corporations		~100-1000 people	Business/organization planning and management; fossil fuel divestment

<sup>16</sup> This table does not fully address continuums of access to capital and decision making authority, nor to sociological and cultural dimensions; all add complexity. The point of this table is to illustrate that climate action transcends all scales, and to help define the "space" in which community scale climate action planning occurs.

Small towns, colleges, co-ops	~1k-10k people	Sustainability plans; land use and transportation; local living economy; fossil fuel divestment
Towns, small utilities, universities	~10k-100k people	Local climate action plans; land use and transportation; local living economy; fossil fuel divestment
Cities, medium utilities, counties	~100k-1M people	Local climate action plans; land use, transit/transportation; local living economy; fossil fuel divestment
Regions, states, large utilities/utility commissions	~1M-10M people	Transit/transportation/utility policy and regulation; State law; Building Code; fossil fuel divestment
Nations, international	~>10M people	Climate summits/agreements; carbon pricing; IPCC; building code; federal laws; trade agreements; multinational corporate policy; fossil fuel divestment

6) At a municipal scale, Carrboro's "primary domain" or area of most effective focus for local climate action planning could be in partnership with organizations and entities operating at a similar scale. Similarly, for work in the community, it is important to establish initiatives and measures that work at the appropriate scale, and to bridge gaps across the different scales.

7) The community sector accounts for 93% of greenhouse gas emissions within Carrboro; the remaining 7% comes from local government operations. Significant community buy-in in every aspect of this plan is essential for emissions reduction and climate change mitigation.

Recommendations are offered in this section that focus on grassroots/neighborhood scale efforts and enhanced Town and community capacity for supporting climate action. The recommendations are integrative in that they apply to all of the other recommendations provided, and are focused on community enhancement and participation.

### **Community Integration Recommendation #1: Create Grass Roots Partnerships to Engage Community**

***Create new Grass Roots Partnerships and Engage Community to be a Part of the Solution***

Widespread community participation is needed to meet the emissions reduction and climate change mitigation goals of this plan. Carrboro is fortunate to have many local groups already involved in environmental outreach and climate action. In addition, many successful models for community engagement in climate action can be adapted and used here. While these are mostly grassroots efforts, leadership is needed to coordinate, adapt, promote, and sustain efforts over the long term.

Implementation Opportunities	Many local and other groups are involved in environmental outreach and/or climate action. These include but are not limited to Transition Streets, Pete Streets, NW Earth Institute community action courses, the Solarize Carrboro model, Awakening the Dreamer Symposiums and Game Changer Intensive, K-12 Sustainability Curriculums (Chapel Hill-Carrboro City Schools is currently developing a local version), Grey to Green Initiatives, <u>HEAT</u> (Heat Energy Assessment Technologies), Meatless Monday Communities, Backyard Wildlife Habitat Certification Programs, and Incentive Programs. Carrboro can adapt and use programs with proven track records for community engagement.
Implementation Challenges	<ul style="list-style-type: none"> <li>• Who will bring partners together?</li> <li>• Who will recruit and train community facilitators?</li> <li>• How can diverse populations be reached?</li> <li>• Who will modify programs if needed?</li> <li>• How will engagement/momentum be sustained considering the relatively transient population? (59% of Carrboro's residential properties are rentals).</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Money for education and promotion materials.</li> <li>• Leadership ideally from a nonprofit, along with Town staff.</li> <li>• Support such as technical assistance and loans or grants for low-income households, stakeholder incentives, etc.</li> </ul>
Leadership	Grassroots but will need a leader or nonprofit organization to adapt, promote, and sustain efforts. <del>A town sustainability coordinator would be ideal.</del>
Partners	Pickards Mountain Eco-Institute, Chapel Hill-Carrboro City Schools (including District Sustainability Group and Student Environmental Groups), UNC Sustainability Program, Orange County Solid Waste Program, NC Cooperative Extension Service, Chapel Hill Sustainability Officer and Committee, Transition Carrboro- Chapel Hill, NC Botanical Gardens, Carrboro Greenspace, Carrboro Bike Coalition, Solarize Carrboro, Carrboro Farmers Market, Irvin Learning Farm and Nature Center, NC Sierra Club, Friends of Bolin Creek, Morgan Valley Alliance, Home Builders Association of Durham, Orange, and Chatham, Neighborhood Homeowners Associations, Faith Based Environmental Groups, Carrboro Farmers Market, Carrboro Business Alliance, businesses, utility providers, Homeowner associations, former Pete Street participants and more
Fit with Items	Every section of this Action Plan
Time Frame	This can move forward as soon as leadership is identified. <del>The time frame for a Sustainability Coordinator and permanent Task Force on board is a key factor.</del>
Next Step(s)	<ul style="list-style-type: none"> <li>• Identify partners;</li> <li>• Bring partners together and choose programs;</li> <li>• Modify programs for Carrboro if needed;</li> <li>• Work with partners to recruit and train diverse group of facilitators.</li> <li>• Pilot program in facilitator's neighborhoods</li> <li>• Debrief with pilot neighborhoods and modify programs as needed.</li> <li>• Install neighborhood and/or town wide dashboard to show progress, and build a climate change action oriented community.</li> </ul>
Evaluation Criteria	People reached. Energy saved. Forest and soil protected or gained.

## Community Integration Recommendation #2: Expand Public Partnerships to More Explicitly Consider Climate Action

### ***Pursuing Carrboro's Climate Action Goals Will Require Expansion of Current Partnerships and Creation of New Partnerships.***

As a small town with limited capacity and jurisdiction and many existing partnerships, it makes sense for Carrboro to work cooperatively with a variety of partners to pursue Carrboro's Climate Action goals. In some cases, it may be possible to emphasize these goals through existing partnerships, and in other cases, it could make sense to create a new partnership. Collaborating with other local public sector partners has particular appeal. Examples of opportunities through both existing and new partnerships are discussed below and elsewhere in this report and summarized in the table.

Developing a partnership for improved energy efficiency of buildings is a special challenge. Carrboro and Chapel Hill, with support from federal stimulus funding and the Southeast Energy Efficiency Alliance, put considerable effort towards creating an energy efficiency alliance between 2010 and 2013 that has not come to fruition. Progress on this in the absence of clear interest and initiative from utility providers and partners may be difficult. In the short term, less ambitious efforts such as focusing on commercial and municipal buildings and focusing on other recommendations provided in this plan may be preferable to attempting to create an alliance. Local staff working on sustainability initiatives have recently begun to more specifically explore collaborative possibilities; it's likely some new recommendation(s) will emerge.

Implementation Opportunities	Existing and new partnerships could support improved building energy efficiency, transportation, renewable energy, community scale composting, and environmental community goals. Examples of existing partnerships include Chapel Hill Transit/Partners Committee, OWASA, Chapel Hill-Carrboro City Schools, Orange County Solid Waste/Solid Waste Advisory Group, GoTriangle, Durham/Chapel Hill/Carrboro Metropolitan Planning Organization. Examples of new partnership opportunities include: creating a building energy efficiency alliance; expanding car/bike/ride sharing and transit services; partnership at the nexus of water supply and wastewater/energy; stormwater utility across municipal boundaries; county/regional scale sustainability partnership (either general or more focused, e.g., on public buildings and/or renewable energy installations); downtown geothermal partnership.
Implementation Challenges	Attempt through WISE program to create Regional Energy Alliance was unsuccessful and indicates general challenges in working in buildings sector Unclear as to interest from others in partnering Town has limited capacity to investigate and work with local partners to pursue these programs on its own. New funding may be needed in some cases
Resources Needed (human and material)	Staffing and funding
Anticipated Cost	Cost of additional staffing/contracting to coordinate

Leadership	Board of Aldermen; staff managers; staff
Partners (selected)	Chapel Hill-Carrboro City Schools, UNC Sustainability Program, Orange County Solid Waste Program, Chapel Hill Sustainability Committee, OWASA, NC Botanical Gardens
Fit with Items	Many of the other recommendations depending on details
Time Frame	Exploration can begin immediately. Some partnerships will take longer to develop.
Next Step(s)	Staff and Board of Aldermen to consider in operating budget development and community champions to self-identify
Evaluation Criteria	Track adoption of efficiency measures incentivized by programs facilitated/supported by the Town.

### **Community Integration Recommendation #3: Create Green Neighborhood Program**

#### ***Create Participatory Green Neighborhood Budgeting Program to Reduce Carbon Emissions, Build Community, Save Money and Reallocate Savings to New Green Project Initiatives***

It is proposed that Carrboro create a new program that will identify projects to offer neighborhoods that will save the Town money and make the neighborhood's proportion of saved monies available to them to reallocate to new green project initiatives through a participatory democracy process.

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Enlists and engages neighborhoods in efforts to reduce CO<sub>2</sub> emissions in community-at-large</li> <li>• Builds community within neighborhoods</li> <li>• Neighborhood based economic development opportunities may spin-off</li> <li>• Possibility of creating a community scale "dashboard" that tracks energy use/emissions/savings</li> <li>• Recycling and composting successes translate into savings associated with less frequent trash pick-ups</li> <li>• Composting reduces trash headed for the landfill = cost savings + reduced methane gas</li> <li>• Neighborhood competitions awards program</li> <li>• Can boost initiatives such as Solarize; Energy Efficiency / Pete Street; Street Lights off for Climate t Project</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Identification of mechanism for Town to allocate saved funds to neighborhoods</li> <li>• Development of participatory democracy process and criteria for new green project initiatives</li> <li>• Marketing for participation of neighborhoods</li> <li>• Availability for multi-family complexes?</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Full time person managing neighborhood portfolios and facilitating neighborhood efforts</li> <li>• Common spaces per neighborhood (i.e. for centralized neighborhood</li> </ul>



	composting, solar panels, etc.) <ul style="list-style-type: none"> <li>• Educational campaign on opportunities for greening ones neighborhood</li> </ul>
Anticipated Cost	<ul style="list-style-type: none"> <li>• Cost of full time person in charge of managing program</li> <li>• Marketing</li> </ul>
Leadership	Neighborhood leaders
Partners	<ul style="list-style-type: none"> <li>• Homeowner associations</li> <li>• Next Climate</li> <li>• Former Pete Street participants?</li> <li>• Town staff</li> <li>• Businesses               <ul style="list-style-type: none"> <li>Local building supply companies</li> <li>Solar installers</li> <li>Weatherization installers</li> <li>Local nurseries</li> <li>Local landscapers</li> </ul> </li> <li>• Non-profits</li> <li>• Orange County Solid Waste Management – composting</li> </ul>
Time Frame	Will depend on identification of leadership
Fit with Items	Many of the other recommendations
Next Step(s)	<ol style="list-style-type: none"> <li>1. Presentations laying out town's CO<sub>2</sub> responsibilities as measured through social equity lens and the urgency of CO<sub>2</sub> reduction per the latest science               <ul style="list-style-type: none"> <li>• Town-wide initial presentation followed by</li> <li>• Presentations to neighborhoods that want to engage in green neighborhoods initiative</li> </ul> </li> <li>2. Create process for developing further program ideas and mechanism for neighborhoods to initiate               <ul style="list-style-type: none"> <li>• Set neighborhood CO<sub>2</sub> reduction goals in line with town's at large goal</li> <li>• Town recognizes savings achieved through existing green initiative successes and allocates these for neighborhoods to use proportional to neighborhood's impact in making the savings. (recurring)</li> <li>• Identify further potential programs and their contributions to reducing CO<sub>2</sub> for the neighborhood (ongoing)</li> <li>• Develop neighborhood green participatory democracy process and criteria for new green project initiatives</li> <li>• Develop way for town to allocate funds</li> <li>• Support and facilitate neighborhoods participation</li> </ul> </li> <li>3. Awards program for neighborhoods achieving biggest reductions per energy sector (Trash, Transportation, Housing)</li> <li>4. On-street parking park and ride permits?</li> </ol>
Evaluation Criteria	People reached. Energy saved. \$ reallocated.

## Community Integration Recommendation #4: Integrate Climate Action with Local Living Economy

### ***Integrate Climate Action Implementation Opportunities identified in this Plan into the Update of the Local Living Economy Task Force Report***

From 1990 to 2008 the rise in emissions from goods produced in developing countries but consumed in industrialized countries was six times greater than the emissions savings of industrialized countries. The international transportation of goods is not formally attributed to any nation and countries are not responsible for pollution produced by the manufacturing of goods that are shipped to their shores; those are attributed to the country where the goods were produced.

The Carrboro Local Living Economy Task Force Report enumerates many reasons why support of locally owned businesses is vital, including that locally owned businesses have less environmental impact. This recommendation identifies some of the means by which both locally owned businesses and a habitable climate can be simultaneously and further supported.

Implementation Opportunities	Integrate implementation opportunities into the update of the Local Living Economy Task Force report: 1) Include climate change mitigation in local living economy/locally owned marketing messaging 2) Encourage light manufacturing zone in Carrboro, 3) Set-up PACE program for commercial buildings to implement renewable energy.
Implementation Challenges	Time is running out to mitigate climate change!
Resources needed	<del>New Town</del> <u>staff Sustainability Coordinator</u>
Anticipated cost	Cost of hiring staff
Leadership	<ul style="list-style-type: none"> <li>• Town of Carrboro</li> <li>• Carrboro Business Alliance,</li> <li>• Town businesses</li> </ul>
Partners	<ul style="list-style-type: none"> <li>• Carrboro Economic Sustainability Commission,</li> <li>• Carrboro Economic Development department,</li> <li>• Carrboro Business Alliance,</li> <li>• County -- ¼ cent sales tax economic development monies</li> </ul>
Time Frame	Some steps can be pursued immediately, others will take longer
Fits with items	<ul style="list-style-type: none"> <li>• Local Living Economy Task Force report and update,</li> <li>• Implementation of locally owned first campaign,</li> <li>• Downtown geothermal heating district</li> <li>• Commercial energy improvement revolving loan fund</li> </ul>
Next steps	Further develop each identified implementation opportunity
Evaluation criteria	The locally owned economy campaign is understood as also being a climate change mitigation strategy by the Carrboro community

## **Community Integration Recommendation #5: Expand Capacity**

### ***Expand Capacity to Pursue Community Sustainability Initiatives***

Expanded capacity and prioritization and integration of climate action into community life are needed to implement this plan. ~~A strong recommendation of this plan is that the Town hire a Sustainability Coordinator charged with helping implement the plan. In conjunction with expanded staff capacity, a new Task Force/Advisory Board could be formed with responsibility for overseeing community climate action efforts; the Coordinator could staff this Task Force.~~ The above recommendations (1-4) along with additional recommendations in the sections that follow in this plan will also support expanded community capacity. An online resource hub could also be created.

Implementation Opportunities	Additional capacity/initiative could facilitate non-profit/ business partnerships to improve energy efficiency in the community, publicly recognize successes, and more effectively pursue grants. A community grant program could be initiated.
Implementation Challenges	<ul style="list-style-type: none"><li>• Currently, Town has limited capacity to investigate and work with local partners to pursue these programs.</li><li>• Ability of community advocates to organize</li><li>• Community organizing requires dedicated volunteers; not clear if sufficient interest exists</li><li>• Funding to help residents interested in retrofits</li><li>• Staff capacity is currently limited to support a new advisory board/task force</li></ul>
Resources Needed (human and material)	Additional community volunteers and staff capacity
Anticipated Cost	Cost of staff and any operating budget.
Leadership	Board of Aldermen, Town staff, and community volunteers
Partners	None specific to this recommendation
Time Frame	As soon as possible
Fit with Items	Many of the other recommendations
Next Step(s)	Staff and Board of Aldermen to consider in development of operating budget and community champions to self-identify
Evaluation Criteria	Track adoption of measures facilitated/supported by the Town.

## **Community Integration Recommendation #6: Facilitate Low Cost Financing for Energy Efficiency and Renewable Energy Projects**

### ***Pursue Alternative/ Long Term/Low Cost Financing Approaches***

Energy efficiency and renewable energy projects often require low cost/long term financing to be attractive since a short simple payback time can be hard to achieve; savings are realized over longer time frames. Two specific new financing approaches are suggested. The first is to utilize Qualified Energy

Conservation Bonds (QECB), which may provide Carrboro and partners with access to low-cost financing that help projects become financially viable. The second is to make this low-cost financing available for community projects using a revolving loan fund or Property Assessed Clean Energy (PACE) financing.

Implementation Opportunities	<p>Many of the recommendations listed in this report require low-cost financing. For example, QECBs could provide seed funding for</p> <ul style="list-style-type: none"> <li>• efficiency improvements to public buildings</li> <li>• a revolving loan fund for community projects</li> <li>• Property assessed clean energy (PACE), a program where the loan is paid using assessments on the property tax bill</li> <li>• low cost financing for home energy efficiency projects for community members who have difficulty qualifying for traditional financing</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Reluctance to take on debt</li> <li>• Clarity about how to use the complex QECB mechanism to obtain state/federal approval</li> <li>• Capacity and expertise to issue bonds</li> <li>• Community financing via PACE or a revolving loan fund can have low community participation because (i) onerous loan application process requiring a lengthy municipal approval process, and (ii) maximum loan amounts that are set too low to fund an entire project with one loan.</li> </ul>
Resources Needed	<ul style="list-style-type: none"> <li>• Bond issuance process can be lengthy and the Town would need expertise</li> <li>• Would be coordinated with other programs that need financing</li> </ul>
Anticipated Cost	The cost of low interest debt financing
Leadership	While QECBs have been used in municipalities outside of NC, within North Carolina these bonds have been limited to agricultural programs. There would be some learning required by the Town to get the bonds issued. Also, a PACE program has not yet been implemented by any NC municipality.
Partners	NC Clean Tech Center, UNC Environmental Finance Center, other local governments
Fit with Items	Many recommendations could benefit from low-cost financing
Time Frame	Exploration could begin immediately. For a higher probability of moving forward, either a Sustainability Coordinator or championing by the county or another entity will likely be needed.
Next Step(s)	<p>Identify and/or recruit nonprofit organization/local champion to:</p> <ul style="list-style-type: none"> <li>• Identify project/revolving loan fund that could benefit from QECB</li> <li>• Pursue bond issuing process</li> </ul>
Evaluation Criteria	<ul style="list-style-type: none"> <li>• Life cycle costs and net present value</li> </ul>

## Community Integration Recommendation #7: Integrate Climate Action and Social/Equity Initiatives

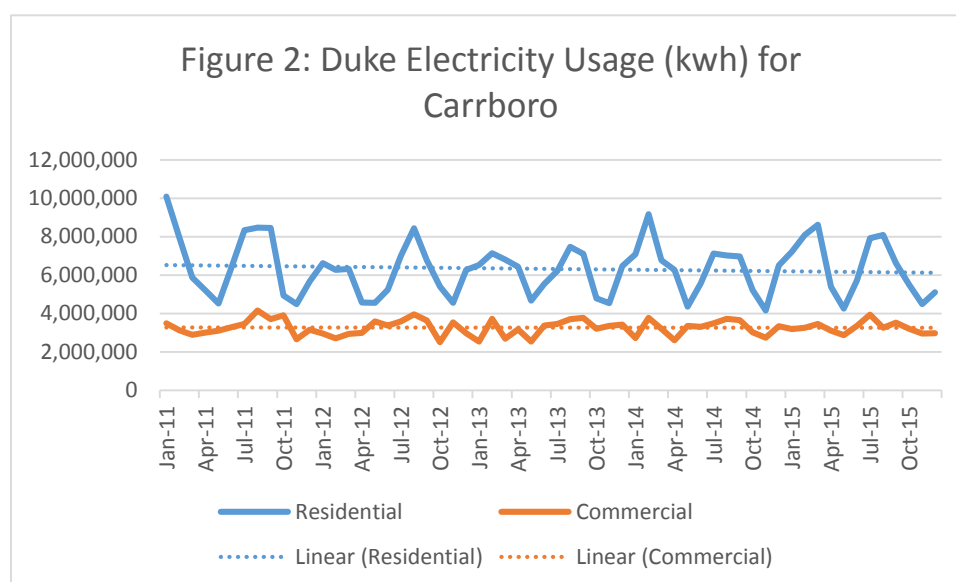
Low income households spend 24% of their income on energy costs. To make housing affordable, we must do more than just lower mortgage payments/rent. We also need to take a look at how to lower utility bills. The installation cost of solar has dropped precipitously in recent years and more and more middle and upper class households are taking advantage of this opportunity to both use clean energy and save money. However, the switch to solar is made easier by income tax credits and access to financing. Both of these are often not available for lower income/wealth households. The mechanisms to make energy more affordable are federal grants, community programs, and Town initiatives/ordinances.

Implementation Opportunities	<ul style="list-style-type: none"><li>● Grants: In July 2015, the federal government announced increased grant and loan guarantee funding for solar installations on "federally assisted housing". This includes HUD's rental housing portfolio (Public Housing, Multifamily Assisted) and USDA's Rural Development Multifamily Programs, as well as rental housing supported through the Low Income Housing Tax Credit (LIHTC). More information is available at the HUD exchange webpage: <a href="http://www.hudexchange.info">www.hudexchange.info</a></li><li>● Community programs: Community programs have worked to improve energy efficiency and renewable energy access for low-income communities. One example is <i>Grid Alternatives</i>, a non-profit that develops solar for low-income, single family homes by deploying donated materials and simultaneously running a training program to complete the installation. The result is lower energy costs and a more skilled workforce. Another example is <i>Grid Free NC</i>, a solar company in Chatham County that has partnered with Habitat for Humanity to develop solar for low income families.</li><li>● Town initiatives/ordinances: When assessing affordability, include the utility costs. Town-led initiatives that improve affordability and livability are preferred over bare-minimum construction. Efficiency improvements with little monetary benefit are not preferred. For new development or substantial retrofits, the Town could offer leniency on other requirements in exchange for improvements to energy efficiency. For example, the Town could offer a density bonus or fewer required parking spaces in exchange for meeting a higher standard of energy efficiency.</li></ul>
Implementation Challenges	<ul style="list-style-type: none"><li>● Requirements and construction standards seek to improve the safety and longevity of buildings. However, such requirements should be crafted with care, as increases in cost of construction or delays in the approval process can make housing less affordable.</li><li>● Federal grants only cover a small portion of affordable housing units.</li></ul>
Resources Needed	<ul style="list-style-type: none"><li>● Grant applications development</li><li>● Facilitating community programs through seed or matching funding</li></ul>

Anticipated Cost	Variable, depending on Town commitment
Leadership	Town staff and community programs
Partners	Federal government, community programs, Triangle Green Building Council
Fit with Items	Works to address both affordable housing and climate change mitigation
Time Frame	Coordination with affordable housing focused efforts can be explored immediately. Significant traction is a long term proposition.
Next Step(s)	<ul style="list-style-type: none"> <li>• Identify relevant federal grants</li> <li>• Develop partnerships with community programs</li> <li>• Investigate legal authority and cost-benefit analysis for Town ordinances</li> </ul>
Evaluation Criteria	<ul style="list-style-type: none"> <li>• life cycle costs and net present value</li> </ul>

# Building Energy Efficiency Measures

Residential and commercial buildings are the largest emissions sectors in Carrboro, accounting for 2/3 of all emissions. Duke Energy has been able to provide monthly electricity use data specifically for Carrboro beginning in January, 2011 through the end of 2015, broken out by residential and commercial accounts. An analysis of this data (Figure 2) indicates that residential electricity use declined by about 1% per annum during this time, while population increased by about 2% per annum. Commercial use remained very stable. The residential use also has a sharp seasonal pattern, with winter and summer peaks presumably associated with heating and cooling loads. This improved energy efficiency trend will need to be accelerated by 2-3 times to meet the 50% reduction by 2025 goal. Any ability to determine how representative the trend is of years prior to 2011 would also be beneficial to the monitoring of overall progress, but is difficult because of the lack of data.



Energy performance rating and auditing can inform interested parties on the overall energy efficiency of the building and provide transparency for market based decisions about property sales and rentals. By influencing a property's appeal to future renters and buyers, ratings can serve as an incentive for building owners to improve energy efficiency. This approach is being tested in cities such as Seattle, WA, Portland, OR, and Austin, TX. A website tracking different jurisdictions efforts for policies, improvements, and benchmarking in energy efficiency can be found at <http://www.buildingrating.org/jurisdictions>.

It is recommended that efforts be pursued so that the results of an energy audit and/or an energy performance rating (including one year of utility bills) are made available at the point of building sale or lease. This could be in the form of a written document and/or a numerical score such as a HERS rating or other recognized format. The information provided could include potential/recommended energy efficiency improvement measures. Carrboro would need to acquire statutory authority from the State to

make this a requirement. For new buildings and improvements requiring a building permit, pending the granting of a request for statutory authority, the Town could implement a section of the Building Code<sup>17</sup> with additional energy efficiency requirements that the Town does not currently have authority to implement. Alternatively, the Town could look into partnering with the Triangle Green Building Council to develop an optional checklist of efficiency performance/measures that, if implemented, would lead to special designation and public recognition.

Most Carrboro residents rent their homes; 33% of homes are owner occupied, compared to 59% renter occupied (the remaining 8% of homes are vacant)<sup>18</sup>. While some reductions can be achieved via low cost/no cost approaches, to achieve substantial (>10%) GHG reductions, retrofitting or including energy efficiency improvements during rehab work is typically necessary. For many rental properties, renters pay the utility bills and as a result, building owners/landlords may have little or no financial incentive to pursue this work. Conversely, renters have no financial incentive to make investments in a property they do not own. Accordingly, there is an underinvestment in energy efficiency improvements in rental units. Without aligning the landlord's costs for retrofits and the renter's benefit in lower energy bills, it will be difficult to voluntarily achieve GHG reductions in rental units. Addressing this issue requires engagement of a diverse set of stakeholders: affordable housing advocates, renters, landlords, new development planners, and energy efficiency contractors. It is recommended that the Town commission a Task Force to bring forward policy recommendations for how to align landlord and renter interests towards achieving energy efficiency in rental units. The Town could also create a voluntary registry or certification program that landlords could include in the advertisements of their properties. This could be in the form of a certification or a points system.

## **Buildings Recommendation #1: 50% Challenge**

### ***Reduce Emissions Attributed to Carrboro Buildings by 50% by 2025***

It is proposed that local leaders announce an emissions reduction challenge to reduce community wide emissions by 50% by 2025. The challenge could include a component focused on buildings emissions in Carrboro.

Implementation Opportunities	Reduced electricity and gas use from more efficient building envelopes, appliances, HVAC systems, lighting. Healthier buildings; older buildings brought up to code; utility cost savings for building owners/occupants. More efficient buildings result in cost savings and support the green building sector. If the
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<sup>17</sup> At the December 14, 2010 NC Building Code Council meeting, a 15% residential efficiency part of the code was not approved, instead this code was considered to be voluntary and included as Appendix 4 to the 2012 NC Energy Conservation Code. The Carrboro Board of Aldermen is seeking statutory authority to pilot making Appendix 4 mandatory. This request has not made it out of committee with the NC Legislature.

<sup>18</sup> UNC Capstone Team, 2015. 2012 Greenhouse Gas Emission Inventory for the Town of Carrboro, NC. <http://nc-carrboro.civicplus.com/DocumentCenter/Home/View/2788>



	private sector becomes engaged, the downtown area of Carrboro and Chapel Hill could evolve into a recognized “2030 District” <sup>19</sup>
Implementation Challenges	“Cost, complexity, inertia”. High percentage of non-owner occupied buildings; financial challenges especially for lower income residents and renters.
Resources Needed (human and material)	A nonprofit organization to become a community champion. Neighborhood and business champions and grassroots/community organizing, outreach, and education. Broad support from community leaders, utilities, financiers, and contractors. Potentially, fiscal support for nonprofit and organizing/coordination support from Board and staff
Anticipated Cost	Time and potentially salary involved in organizing
Leadership	Potential leaders include: existing and/or new nonprofit(s); the Carrboro Business Alliance; Chamber of Commerce; Triangle Green Building Council
Partners	<p>Potential partners include: existing and/or new nonprofit(s); the Carrboro Business Alliance; Chamber of Commerce; Triangle Green Building Council. Several programs have been developed in North Carolina to lower the barriers to energy efficiency adoption within a community.</p> <ul style="list-style-type: none"> <li>• The NC Banker’s Association pools banks for the financing of low income tax credit apartment complexes. They are interested in partnering with nonprofits to start a small loan pool for energy retrofits.<sup>20</sup></li> <li>• System Vision program, which partners Advanced Energy Corp, the Self-Help Credit Union, and the NC Housing Finance Authority to finance green home construction/retrofits.<sup>21</sup></li> <li>• Transition Streets and Pete Street programs.<sup>22</sup></li> </ul> <p>The State Energy Office and Cooperative Extension Service ran the E-Conservation Home Energy Improvements program, which expired in July, 2015. If it is not renewed, it is recommended that Carrboro discuss partnering with Chapel Hill, Orange County, and perhaps others to run a similar program. The State Energy Office has been pursuing this for several years and is a valuable resource for learning what works.</p>
Time Frame	It is recommended that local leaders do this immediately.
Fit with Items	Renewable energy and transportation challenges

<sup>19</sup> <http://www.2030districts.org/>

<sup>20</sup> Contact is Michelle Lampert shellielampert@gmail.com

<sup>21</sup> <http://www.nchfa.com/nonprofits/HPsystemvision.aspx>

<sup>22</sup> In 2013 Carrboro and Chapel Hill contracted with Clean Energy Durham to pilot their “Pete Street” neighbor-to-neighbor energy retrofit program. The approach trains neighborhood volunteers who lead neighborhood workshops where small groups of resident learn simple energy savings projects and behaviors. Clean Energy Durham has recently closed.

Next Step(s)	Local elected officials/community leaders collaborate to initiate challenge
Evaluation Criteria	Reductions in energy use/GHG emissions from buildings. Updated community energy use/emissions inventories for 2016 and 2020

## **Buildings Recommendation #2: Energy Audit/Performance Rating**

***For Existing Buildings, an Energy Audit and/or Building Energy Performance Rating, Including Utility Bills from Past Year, Could be Conducted at Point of Sale or Lease.***

An energy audit is a service that involves inspecting and analyzing energy use, efficiency, and conservation. Different types of audits can be pursued, from simple “walk through” audits to more involved audits that can use equipment (such as blower doors and infrared cameras). A building performance rating is the result of an analysis that rates a building on a standardized scale for buildings of the same type. For example, for homes, the Home Energy Rating System (HERS) is a national recognized rating system. EPA’s Energy Star program similarly has created a system for rating and benchmarking different categories of buildings. The purpose of this recommendation is to create a level playing field using recognized standards of information about energy use and efficiency for people in the housing market.

Implementation Opportunities	<ul style="list-style-type: none"> <li>· Healthier buildings (better air handling and moisture control)</li> <li>· Lower carbon emissions.</li> <li>· Lower utility bills for occupants.</li> <li>· Provides a service to those looking to buy or rent and reaches a demographic not reached with many incentive based efforts</li> <li>· Addresses the unique situation in Carrboro with a high percentage of non-owner occupied buildings</li> <li>· Heat loss audits could be automated for a neighborhood using thermal IR imagery</li> <li>· The Town’s Energy Efficiency Revolving Loan Fund is available for recommended improvements to commercial buildings.</li> <li>· Can potentially support businesses performing energy ratings/audits</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>· The Town does not have the authority to make this a requirement and would need special enabling legislation if this were to be a regulatory program.</li> <li>· Some building owners, especially those with less efficient buildings, will likely not be in favor of this for reasons of “over regulation” and/or the potential market implications.</li> </ul>
Resources Needed (human and material)	Effort associated with outreach and education and crafting the details with stakeholders as well as monitoring for compliance.
Anticipated Cost	Significant costs are not anticipated but would need to be determined as part of implementation
Leadership	Board of Aldermen for policy direction, with support from the Economic Sustainability Commission, Town staff

Partners	Business Alliance, Chamber of Commerce, Board of Realtors, Triangle Green Building Council
Time Frame	Exploration could begin immediately. For a higher probability of moving forward, a champion will likely be needed.
Fit with Items	Rental Task Force; Rental Registry/Certification
Next Step(s)	To be determined
Evaluation Criteria	Reductions in metered utility energy usage and costs.

### **Buildings Recommendation #3: Demonstrate/Pursue Energy Performance Beyond Minimum Requirements for New Development**

***For New Developments and/or Individual New Buildings or Major Retrofits, Pursue Compliance with Voluntary Section of Building Code, or Request Specific Energy Performance Rating/Measures as Part of Land Use and/or Building Permit.***

In 2010, a 15% residential efficiency part of the building code was not approved by the NC Building Council, instead this code was considered to be voluntary and included as Appendix 4 to the 2012 NC Energy Conservation Code. The Carrboro Board of Aldermen is seeking statutory authority to pilot making Appendix 4 mandatory. Other approaches could be followed to pursue energy efficiency in new buildings beyond the current minimum code requirements.

Implementation Opportunities	Healthier buildings (better air handling and moisture control) Lower carbon emissions. Lower utility bills for occupants.
Implementation Challenges	Additional Town staff time. Statutory authority, or voluntary compliance from developers/builders
Resources Needed (human and material)	Town staff to expand Building Code implementation and/or work with Triangle Green Building Council to develop checklist and form of recognition.
Anticipated Cost	No significant cost anticipated
Leadership	Town staff, potentially with support from Planning Board
Partners	Triangle Green Building Council
Time Frame	Exploration could begin immediately. Identifying a champion will likely be needed.
Fit with Items	Pursuing 50% reduction
Next Step(s)	TBD
Evaluation Criteria	Number of buildings affected. Reductions in metered utility energy usage and energy intensity (energy use per square foot)

## Buildings Recommendation #4: Create Rental Property Task Force and Process

### ***Create a Task Force to Pursue a Facilitative Process to Achieve Greenhouse Gas (GHG) Reductions in Rental Units***

Most emissions in Carrboro come from buildings, a very high percentage of buildings are for housing and about two-thirds of housing in Carrboro is rental property. For progress towards Carrboro's Climate Action Goal, it is imperative that emissions reductions efforts address rental property. It is recommended that the Town commission a Task Force to bring forward policy recommendations for how to align landlord and renter interests towards improved energy efficiency in rental units. (This Task Force could be the same as identified below for renewable energy.)

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Energy efficiency reduces waste and saves money in the long term</li> <li>• Energy efficiency retrofits create local jobs</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• There is little precedent; organizing and coordinating will require significant effort.</li> <li>• Many rental property owners are not local.</li> <li>• Owners and renters financial incentives are not necessarily well aligned</li> </ul>
Resources Needed (human and material)	The Town could partner with an outside organization to facilitate this Task Force.
Anticipated Cost	Staff time and/or contract support to help facilitate Task Force
Leadership	Town staff for giving the group a well-defined mission and keeping the group on track
Partners	Work with organization that facilitates stakeholder groups
Time Frame	Time frame to set up a Task Force depends on Board priority and staff/community capacity. Operating the resulting program would be a long term endeavor.
Fit with Items	50% reduction challenge; Rental Registry; Renewable Energy Task Force
Next Step(s)	<ol style="list-style-type: none"> <li>1. Develop Task Force charge</li> <li>2. Identify relevant stakeholders needed to agree to process in order to make impactful change</li> <li>3. Identify outside organization to facilitate Task Force</li> <li>4. Commission Task Force</li> </ol>
Evaluation Criteria	Savings from lower energy bills could be put towards other projects. Keep energy dollars local. Reduces greenhouse gas emissions.

## **Buildings Recommendation #5: Create Rental Property Registry/Certification**

### ***Create a Certificate Program or Registry for the Energy Performance of Rental Housing***

The basis for this recommendation is identical for the above building recommendations. The essence of this recommendation is that, as part of making rental properties more energy efficient, a program be created that makes it easy for those in the rental market to find energy efficient rental listings.

Implementation Opportunities	<ul style="list-style-type: none"><li>· Lower residential carbon emissions.</li><li>· Lower utility bills for tenants.</li><li>· Provides a service to those looking to rent and reaches a demographic not reached with many incentive based efforts</li><li>· Addresses the unique situation in Carrboro with a high percentage of non-owner occupied housing</li><li>· The Town could potentially support performing energy ratings/audits</li></ul>
Implementation Challenges	<ul style="list-style-type: none"><li>· The Town does not have the authority to make this a requirement.</li><li>· The effectiveness of this program would be dependent on widespread adoption by Carrboro landlords.</li><li>· It may require outreach to the landlords and research on the how to best communicate a potential rating system.</li></ul>
Resources Needed (human and material)	Town staff, or another entity, could run the program and set the program requirements.
Anticipated Cost	Costs would be primarily associated with staff time and marketing.
Leadership	Board of Aldermen for policy direction, Town staff
Partners	Triangle Green Building Council, potentially others
Time Frame	Time frame to set up depends on Board priority and staff/community capacity. Operating it would be a long term endeavor.
Fit with Items	Other buildings recommendations, especially the energy audit/performance rating
Next Step(s)	Outreach to determine interest and feasibility
Evaluation Criteria	Reductions in metered utility energy usage and costs.

# Transportation Measures

Reducing emissions from transportation in Carrboro will rely on a coordinated, multifaceted effort involving infrastructure improvements, additional transit service, land use changes, outreach and engagement to affect transportation mode choices, and participation broadly with partners and across the community.

Availability of local bicycling and pedestrian infrastructure is strongly associated with overall levels of biking and walking, especially with trips to work, school, or shopping.<sup>23</sup> In September 2010, the League of American Bicyclists recognized Carrboro as a Bicycle Friendly Community at the “Silver” level. There is an aspiration to achieve the “Gold” level during the next review cycle. The Town has the support of the Carrboro Bike Coalition, Chapel Hill Carrboro City Schools and other Safe Routes to Schools partners, a high level of ridership relative to other jurisdictions, and comprehensive bicycling and greenway plans. In order to get even more people out of their cars and onto their feet and bikes, Carrboro must keep working on the gaps, continue to connect neighborhoods to schools, and expand bicycle and pedestrian infrastructure to connect all areas of Carrboro to downtown, surrounding greenways, and bike routes. Improvements such as signals and pavement markings can increase convenience and perceptions of safety, and provide official, visible recognition that bicyclists are legitimate users of the road.

Carrboro (and Chapel Hill and UNC) have sponsored Chapel Hill Transit for several decades, the only fare free transit system and the highest per capita use system in North Carolina. In combination with regional transit provided by GoTriangle, transit options, along with publically and privately supported rideshare/carpooling/vanpooling/car sharing options continue to increase. Nevertheless, for many users and trips, transit and other alternatives to single occupancy vehicle use is a difficult option because of the relative convenience and comparative time relative to single occupancy motor vehicle use. A number of initiatives are in place to help promote and expand use of alternatives to single occupancy vehicle use; suggestions for further pursuing these initiatives are provided. A final recommendation is to reduce vehicle idling in school loading zones.

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<sup>23</sup> A Seattle study found that adults living within a half-mile of a bike path were 20 percent more likely to bicycle at least once a week. A Portland study found that cyclists went the furthest out of their way to use off-street bike paths, followed by bicycle boulevards (low speed streets that have been “optimized” for bicycle traffic) suggesting a general preference for facilities protected from motor vehicle traffic.

## Transportation Recommendation #1: 50% Challenge

***Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 50% by 2025.***

It is proposed that local leaders announce an emissions reduction challenge to reduce community wide emissions by 50% by 2025. The challenge could include a component focused on transportation/motor vehicle emissions in Carrboro.

Implementation Opportunities	<ul style="list-style-type: none"><li>• Requirements and market for more fuel efficient/lower emission vehicles and pedestrian and bicycle infrastructure and transit system use continue to improve.</li><li>• Land use planning is supporting mixed use, infill and redevelopment and community is proactive to further encourage non-vehicular modes.</li></ul>
Implementation Challenges	<ul style="list-style-type: none"><li>• High percentage of residents work outside Carrboro with significant challenges for using transit or commuting by bike or on foot.</li><li>• Constraints such as topography/natural features, ownership, and grey infrastructure exist in some areas for further bicycle and pedestrian facility development.</li><li>• Non-vehicular transportation options in some parts of Town are more limited.</li><li>• Ability to monitor and track progress towards emissions reduction is currently quite limited methodologically and in terms of clarity of the responsible party for tracking.</li></ul>
Resources Needed (human and material)	There are no resource requirements associated with a recognized community wide goal, although there will be resources needed for implementation of different actions.
Anticipated Cost	There are no specific costs associated with a recognized community wide goal, although there will be resources needed for implementation of different actions.
Leadership	Local elected officials and community leaders could endorse this goal
Partners	Various public, private, nonprofit
Time Frame	It is recommended that local leaders do this immediately.
Fit with Items	Buildings and renewable energy challenges
Next Step(s)	Formal adoption/publicity for challenge
Evaluation Criteria	Ability to track emissions via VMT, fuel type, and vehicle efficiency. CAMPO model? Other methodology?

## Transportation Recommendation #2: Enhance Transit Service

### ***Improve/Extend Transit Service***

While overall, Chapel Hill Transit is the most successful transit agency in North Carolina and GoTriangle is steadily increasing service, areas farther from downtown have more limited service.

Implementation Opportunities	<ul style="list-style-type: none"> <li>Transit service could be extended to new areas by adding more stops in Carrboro well connected to other transit, bike, and pedestrian access, and including more hours of service.</li> <li>New Transit Oriented Development could be sited in the Northern Transition Area.</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>Fleet has many old and inefficient vehicles</li> <li>Funding is currently stressed.</li> <li>It is difficult to site development of sufficient density in northern Carrboro to justify transit.</li> <li>Service level makes it difficult for many commuters to use transit.</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>Increased funding</li> <li>Landowner, developer, and community support new mixed use/transit oriented development</li> </ul>
Anticipated Cost	Improved local transit service costs will depend on different factors, and will be implemented by Chapel Hill Transit and GoTriangle.
Leadership	Board/Transit Partners, NTAAC, Transportation Advisory Board, Town staff for new development. Chapel Hill Transit for improved/expanded local transit service; GoTriangle for regional transit. Other partners below can also provide leadership.
Partners	Local business community, NTA neighbors
Time Frame	Transit development/improvement by nature is an ongoing and long term undertaking.
Fit with Items	See separate recommendation for steps to promote transit service.
Next Step(s)	<ul style="list-style-type: none"> <li>Work with GoTriangle and Chapel Hill Transit staff to provide additional feedback on plans for future service and ability to accelerate adding service.</li> <li>Enhance transit access points along the 54/15-501 corridor from Chapel Hill/Carrboro to Durham and provide more frequent, reliable bus service.</li> </ul>
Evaluation Criteria	Number of bus commuters/trips



### Transportation Recommendation #3: Improve Vanpool/Carpool Options

#### ***Improve Vanpool/Carpool Options for Commuters***

A considerable amount of transportation related emissions can be attributed to people commuting in and out of Carrboro for work. Vanpools and carpools can be an effective approach for reducing vehicle miles traveled and single occupancy vehicle trips, but existing park and ride areas could be more convenient for Carrboro commuters. Adding vanpool parking areas could reduce vehicle miles traveled and emissions.

Implementation Opportunities	Add GoTriangle vanpool/carpool parking in Carrboro (including downtown Carrboro and Northern Carrboro) and nearby in Chapel Hill.
Implementation Challenges	Requires partnership with GoTriangle and local businesses.
Resources Needed (human and material)	Signs to identify vanpool and carpool parking areas
Anticipated Cost	Signs to identify vanpool and carpool parking areas
Leadership	Board of Aldermen; Staff; GoTriangle
Partners	Chapel Hill Transit, GoTriangle; businesses with suitable parking
Time Frame	The main timing consideration is determining who can champion this.
Fit with Items	Reduce transportation emissions by 50% by 2025.
Next Step(s)	Work with GoTriangle to identify currently registered vanpools and carpools and use this info along with expected increase in use to establish carpool and vanpool parking areas, including downtown Carrboro and Northern Carrboro and nearby areas in Chapel Hill.
Evaluation Criteria	Number of vanpool and carpool commuters

### Transportation Recommendation #4: Further Promote Walking, Biking, Transit

#### ***Take Additional Steps to Promote Walking, Biking, and Transit Use***

Carrboro has a considerable base of bicycling, walking, and transit use to build on. In September 2010, the League of American Bicyclists named the Town of Carrboro a Bicycle Friendly Community at the “Silver” level, and there is an aspiration to achieve the “Gold” level during the next review. Carrboro has significant support from the Carrboro Bike Coalition and other partners and already participates in the Safe Routes to School program. Marketing and educational programs, as well as regulations, significantly affect levels of bicycling, walking, and transit use. Investments in infrastructure must be supported by outreach programs to be most effective.

Implementation Opportunities	More promotion/outreach for bicycling and walking
Implementation Challenges	<ul style="list-style-type: none"> <li>● Challenge of changing set behaviors.</li> <li>● Some greenway, bike route, and transit services are not yet complete.</li> <li>● Transit services are spotty or non-existent in some areas</li> <li>● Uncertain funding for new/renovated buses</li> </ul>
Resources Needed	<ul style="list-style-type: none"> <li>● Town Staff and partners support.</li> </ul>
Anticipated Cost	TBD
Leadership	Town Transportation Planner, with support from Recreation and Parks staff, Transportation Advisory Board, Greenways Commission.
Partners	UNC, Chapel Hill Transit, GoTriangle, Carrboro Bike Coalition, Carrboro Business Alliance, Chapel Hill-Carrboro City Schools, Walk Bike NC
Fit with Items	Reduce Greenhouse Gas Emissions from Motor Vehicle Use by 50% by 2025; Improve and Extend Bicycling and Pedestrian Infrastructure; Improve and Extend Transit Services
Time Frame	This is ongoing. The main consideration for significantly accelerating efforts is identifying people with capacity.
Next Step(s)	<ul style="list-style-type: none"> <li>● Continue, accelerate, and intensify efforts to: <ul style="list-style-type: none"> <li>○ Promote bike to work days; consider doing these weekly. Studies have reported long-term increases in bicycling following bike-to-work days.</li> <li>○ Work with the Carrboro Bicycle Coalition to: put on and publicize on-going bicycle training;</li> <li>○ Work with the Carrboro Bike Coalition to hold “Open Streets” days.</li> <li>○ Work with Chapel Hill Transit and GoTriangle to develop and implement a marketing and educational program on carpooling, vanpooling, and transit use. Promote official car free, carpool, vanpool, and transit use days.</li> <li>○ Support the <i>Safe Routes to Schools Program</i>. Work with the Carrboro-Chapel Hill City School System and local PTAs to promote bike and walk to school days; consider doing these weekly.</li> <li>○ Pursue efforts to implement land use and development policies that help ensure destinations for daily needs, such as school, work, and shopping, are within convenient bicycling distance from home. Encourage developers to promote multi-modal transportation options.</li> </ul> </li> <li>● Promote “park and stroll” programs at schools, where students are dropped off at a remote location and walk or bike the rest of the way to school.</li> <li>● Research and implement a bike sharing system downtown.</li> <li>● Explore new policies that make driving more expensive and less convenient (e.g. reduced parking supply, increased parking fees, and reduced road speeds). Lower speed limits for vehicles make bicycling safer and more attractive. One study conducted in Germany found that reducing general speed limits led to a significant increase in bicycling.</li> </ul>
Evaluation Criteria	<ul style="list-style-type: none"> <li>● Number of students biking or walking to school.</li> <li>● Number of residents biking, walking, or using transit, carpooling or vanpooling to commute to work.</li> <li>● Increased transit ridership.</li> </ul>

## Transportation Recommendation #5: Limit Idling in School Loading Zones

### ***Limit Idling in School Loading Zones***

Avoiding idling time has a multitude of benefits including: savings in fuel and maintenance costs, extending vehicle life, and reducing damaging emissions. It is especially appropriate to look at school loading zones because they are focal points in Carrboro for vehicle idling, expose a sensitive population to air pollution, and meaningful reductions could be achievable through simple behavior change. Outreach resources are available at [http://daq.state.nc.us/motor/idle/idle\\_campaign.shtml](http://daq.state.nc.us/motor/idle/idle_campaign.shtml).

Implementation Opportunities	This is a simple effort that will reduce air pollution and GHG emissions.
Implementation Challenges	Parental resistance, especially at elementary schools, and outreach/enforcement.
Resources Needed	School system employee time. Consider recruiting student and parent volunteers to help with education/outreach.
Anticipated Cost	Costs associated with staff time
Leadership	Board of Aldermen, CHCCS School Board, staff
Partners	PTA; individual school teams;
Time Frame	If the policy direction exists, this could be pursued immediately.
Fit with Items	Community integration and emission reduction recommendations
Next Step(s)	Coordinate with CHCCS
Evaluation Criteria	Monitoring of idling activity



# Renewable Energy Measures

Carrboro's Climate Action Goal can be pursued by generating more energy from renewable sources and improving energy efficiency. This section provides recommendations for how to increase renewable energy from two sources, solar and geothermal. Solar panels convert light from the sun into electricity. Geothermal heating and cooling employs pumps and wells to take advantage of the near constant temperatures below the Earth's surface. This can be used to reduce the costs to heat buildings in the winter and cool them during the summer. Both of these approaches require considerable initial costs to install the equipment. However these technologies have low maintenance costs and a lifetime of more than 25 years, which creates considerable energy savings over time. Homeowners and businesses that can shoulder the upfront costs have been switching to renewable energy. The focus of these recommendations is to help speed the transition to renewable energy, especially addressing the barrier of initial costs.

The first recommendation is to develop a community solar project for Carrboro. Solar panels can provide low-cost energy without environmental impacts. Many home and business owners are realizing lower energy costs by investing in solar. However, most Carrboro residents either rent or own homes that are shaded by trees, and cannot benefit from solar at their home. A community solar project would allow people across Carrboro to invest in solar, lower electricity bills, and help bring about a clean energy future for our Town. However, the electric utilities that service Carrboro restrict most forms of community ownership. Legislation currently under discussion in the NC General Assembly would allow a third-party, such as a community entity, to sell electricity directly to power consumers. Under this change, a community group could own a solar installation and sell the energy to a large buyer, such as the Town of Carrboro. The agreement could set the electricity price to a rate that is beneficial to both the Town and the community investment group.

The second recommendation is to explore and encourage geothermal heating and cooling, especially in downtown. The Carrboro Century Center has considerable heating and cooling costs that could be reduced by switching to geothermal. Developing geothermal heating and cooling for the Century Center could reveal economies of scale, where neighboring buildings could be added to the system at lower cost. If it is legally and technically feasible and cost-effective, the opportunity could be extended to explore the formation of a geothermal heating and cooling utility to provide low-cost, sustainably sourced heating and cooling to downtown buildings that is easy for property owners to join.

The third recommendation is to convene an action group to develop policy opportunities to create incentives for renewable energy and energy efficiency upgrades in rental properties ([see Buildings Recommendation #3](#)). The majority of Carrboro residents are renters and do not directly have control over their energy efficiency and energy generation. Because renters pay the utility bills, landlords have less financial incentive to invest in energy savings. Lowering electricity costs makes housing more affordable, but the incentives are not aligned to encourage this change. This action group will be charged with finding policy opportunities to better align renter and landlord incentives towards lowering electricity costs. This action group should include advocates from renter, property owner, affordable housing, and green building organizations.

When taken together, these recommendations provide opportunities for Carrboro residents and businesses to further participate in and benefit from the switch to renewable energy.

### **Renewable Energy Recommendation #1: Pursue Community Solar Projects**

#### ***Pursue Community Solar Projects***

Solar panels can provide low-cost energy without environmental impacts. Many home and business owners are realizing lower energy costs by investing in solar. However, most Carrboro residents have homes that are shaded by trees, and cannot benefit from solar at their home. A community solar project would allow people across Carrboro to invest in solar, lower electricity bills, and help bring about a clean energy future for our Town. However, the electric utilities that service Carrboro restricts most forms of community ownership. Legislation currently under discussion in the NC General Assembly would allow a third-party, such as a community entity, to sell electricity directly to consumers. Under this change, a community group could own a solar installation and sell the energy to a large buyer, such as the Town of Carrboro. The agreement could set the electricity price to a rate that is beneficial to both the Town and the community investment group.

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Broadly share solar investment benefits, including keeping dollars local</li> <li>• Town of Carrboro buildings could be first adopters, but this approach could be deployed on other buildings</li> <li>• The community investment group could pay the upfront costs to develop solar</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Requires considerable effort to organize support and investment</li> <li>• The loss of the NC Renewable Energy Tax Credit and the absence of third-party sales of electricity significantly limit the market.</li> </ul>
Resources Needed (human and material)	This will likely require collaboration between Town staff and one or more outside organizations.
Anticipated Cost	There are options depending on how the electricity purchasing agreement with the community group is defined
Leadership	Town staff for considering Town property; economic development groups for development of community infrastructure
Partners	Work with organization that coordinates community investment group
Time Frame	Projects could take months or more to develop and would have benefits for many decades
Fit with Items	Community Integration recommendations
Next Step(s)	Develop program with community investment group
Evaluation Criteria	Savings from lower energy bills could be put towards other projects. Keep energy dollars local. Reduces greenhouse gas emissions.

## Renewable Energy Recommendation #2: Pursue Downtown Geothermal Heating and Cooling

### ***Pursue Geothermal Heating/Cooling, Especially in Downtown***

Geothermal heating and cooling employs pumps and wells to take advantage of the near constant temperatures below the Earth's surface. This can be used to reduce the costs to heat buildings in the winter and cool them during the summer.

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Lower costs of heating and cooling</li> <li>• Century Center or Town Hall/Town Commons could be candidate for first adopter</li> <li>• If marginal costs of adding adjacent community/commercial buildings to the heating and cooling network are low, then a municipal utility could be an effective way to provide services at low cost</li> <li>• A community geothermal utility would make it easier to adopt geothermal broadly by lowering costs and simplifying construction.</li> <li>• Savings from lower energy bills could be put towards other projects</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Unknown technical feasibility</li> <li>• Large upfront costs; requires low-cost financing</li> <li>• New for Carrboro. Orange County buildings in Hillsborough have implemented geothermal in HVAC and are realizing substantial savings</li> </ul>
Resources Needed (human and material)	Effort to: explore feasibility; develop engineering design; and policy development towards an approach for other community buildings.
Anticipated Cost	Upfront costs are large but design lifetime of equipment is approximately 50 years. Geothermal systems (on average) reduce heating and cooling costs by 50%. The actual installation costs and benefits depend on the building.
Leadership	Town staff for development for Town buildings, business community for development of community infrastructure
Partners	Technical assistance from Orange County, contractor(s), and investors
Time Frame	An initial assessment of technical feasibility could be pursued quickly. Project development would likely take several years, depending on the scope, with benefits for many decades
Fit with Items	Pursue Partnerships; 50% Reduction Goal for Buildings
Next Step(s)	<ol style="list-style-type: none"> <li>1. Examine completed projects in Orange County</li> <li>2. Solicit contracting support for feasibility study</li> <li>3. If deemed feasible, develop preliminary design for Town of Carrboro buildings including financial assessment and environmental benefits.</li> <li>4. Explore opportunities to develop a municipal utility</li> <li>5. Explore ways to encourage developers to install geothermal</li> </ol>
Evaluation Criteria	<ul style="list-style-type: none"> <li>• Reduced energy bills.</li> <li>• Reduced greenhouse gas emissions.</li> <li>• More comfortable work environment for Town staff.</li> </ul>

### Renewable Energy Recommendation #3: Create Rental Property Task Force and Process

***Create a Task Force to Pursue a Facilitative Process to Achieve Greenhouse Gas (GHG) Reductions in Rental Units***

It is recommended that the Town commission a Task Force to bring forward policy recommendations for how to align landlord and renter interests towards achieving renewable energy in rental units. (This Task Force could be the same as identified above for building energy efficiency.)

Implementation Opportunities	<ul style="list-style-type: none"> <li>Renewable energy is clean energy and create local jobs</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>The policy options to address this issue also have an impact on Town planning and affordable housing</li> </ul>
Resources Needed (human and material)	Town staff could partner with an outside organization to facilitate this Task Force.
Anticipated Cost	Staff time and/or contract support to help facilitate Task Force
Leadership	Town staff for giving the group a well-defined mission and keeping the group on track
Partners	Work with organization that facilitates stakeholder groups
Time Frame	Time frame to set up a Task Force depends on Board priority and staff/community capacity. Operating the resulting program would be a long term endeavor.
Fit with Items	Task Force/Facilitative Process for Buildings
Next Step(s)	<ol style="list-style-type: none"> <li>Develop Task Force charge</li> <li>Identify relevant stakeholders needed to agree to process in order to make impactful change</li> <li>Identify outside organization to facilitate Task Force</li> <li>Commission Task Force</li> </ol>
Evaluation Criteria	Savings from lower energy bills could be put towards other projects. Keep energy dollars local. Reduces greenhouse gas emissions.

# Ecosystem Protection and Enhancement

The ecosystems that Carrboro is located within are being affected by a warming planet, but they also offer opportunities for combating climate change. This section of the plan includes recommendations to improve ecosystem health and resilience by reducing stormwater impacts, increasing tree canopy and biodiversity, better management of invasive plants and encouragement of native plants, managing organic waste and improving soil quality. In addition, there is a need for better information about the impact of climate change as well as herbivory on the health of the community forest. These focus areas are discussed separately, but are highly interwoven. The following is a brief overview of each area to provide context for the recommendations.

Climate change is likely to increase the frequency and intensity of storms and droughts in Carrboro, which will in turn increase the negative impacts of stormwater runoff that include erosion, flooding, nonpoint source pollution, and altered hydrology<sup>24</sup>. Many methods and opportunities exist to aid in curbing stormwater runoff (permeable paving, rain gardens, and green roofs to name just a few), but often landowner interest and available resources are not in place to pursue these projects<sup>25</sup>. Creating a stormwater utility or joining Chapel Hill's utility could ensure a dedicated funding source for stormwater projects that is not subject to discretionary spending in annual budget cycles. Doing so would provide the financial stability and predictability needed for such projects. A utility could also support public education, helping citizens understand the causes and consequences of stormwater runoff and the ways in which individuals can limit the runoff and pollution leaving their property.

Despite climate and land use changes, forests in the southeastern USA will likely continue to provide a sink of atmospheric carbon dioxide (CO<sub>2</sub>). There is potential for mitigating CO<sub>2</sub> emissions through carbon sequestration in soils and plant biomass. Protection of these natural carbon sinks in the face of development pressures is an important issue for climate change mitigation. The potential savannification of the southeast, in which forests are converted into more open woodlands due to a combination of hotter and drier conditions, is one of the most significant potential climate change impacts in the USA.<sup>26</sup>

Overgrazing by deer could adversely affect the health of the forest by causing a decrease in plant diversity and aiding in the spread of exotic species. Soil studies have shown that the seed stores in areas with deer overpopulation can shift from native wildflowers and woody plants to invasive plants and grasses. This could threaten the ability of our forests to regenerate in a healthy way and continue to serve as diverse ecosystems and significant carbon sinks.

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<sup>24</sup> <http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=1131&context=scwrc>

<sup>25</sup> <http://www.nrdc.org/water/pollution/storm/chap4.asp>

<sup>26</sup> Ingram, K., K. Dow, L. Carter, J. Anderson (eds). *Climate of the Southeast United States: Variability, Change, Impacts, and Vulnerability*. Washington, D.C. Island Press, 2013.

NRC (National Research Council), 2010. *Adapting to the Impacts of Climate Change*. Washington, D.C. National Academies Press.



Trees, whether lining a city street or part of a forest, are an important tool in addressing climate change. Carrboro's urban forest provides innumerable ecosystem services<sup>27</sup> (not just limited to climate protection/resilience and energy management). Trees act as carbon sinks, reduce the heat island effect in urban areas, and reduce the energy used to cool and heat buildings. Trees stabilize and improve soil, reducing erosion and improving stormwater management through infiltration and evapotranspiration. Trees have been shown to increase property values and help to create a sense of community and economic vitality<sup>28</sup>. Trees absorb air pollutants, reducing exposure of dangerous chemicals to people and wildlife. And, of course, trees offer habitat for wildlife such as pollinators and migratory birds. A recent study has shown that Carrboro lost about 4% of its tree canopy between 2002 and 2010<sup>29</sup>. A "Tree Coalition" could be formed to promote the preservation and health of trees and the community forest in Carrboro and be a resource for citizens who have questions about trees on their property.

Unfortunately, native plant species are being threatened by invasive plant species (categorized by the US government as non-native species that are economically and environmentally devastating). Recent studies have shown that as climate change lengthens growing seasons, invasive species are adjusting their flowering schedules more quickly than their native counterparts. This earlier bloom time can allow invasives to shade out natives and "capture a larger share of nutrients, water, or pollinators".<sup>30</sup> It can take decades to discover that a species is invasive, and such a discovery does not necessarily lead States to ban nursery sales of the species. Many people are unaware of the critical importance of native plants to food webs and biodiversity, and often fail to realize the impact that their own landscaping choices have on our local ecosystems. For example, because native plants serve as the host plants on which native insects lay their eggs -- and 96% of North American birds (excepting seabirds) rely on native insects to feed their young-- native plants are important both environmentally and economically. According to The White House, as of 2009, pollination of US crops by native insects was valued at more than nine billion dollars. It is recommended that the Town and community take a three-fold approach to this issue: 1) review and strengthen Town ordinances against invasive species and in favor of native species; 2) educate the community about the link between native species and ecosystem health; and 3) encourage invasive species removal projects that are carried out by citizens but led by a non-profit or task force.

The Town should consider expansion of composting in studies of and plans for waste management for multiple reasons. According to NCDENR, "landfills are the largest human-made contributor of methane into the atmosphere. Methane, a greenhouse gas, is 72 times more potent than CO<sub>2</sub> over twenty years." The organic material buried in landfills is responsible for this methane, releasing the gas through anaerobic decomposition. Orange County has recently begun to utilize the methane in its landfill for energy production. At the same time, reducing future methane production at landfills is a positive

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<sup>27</sup> See Nowak, D. et al., "Sustaining America's Urban Trees and Forests". USDA Forest Service, Northern Research Station. State and Private Forestry General Technical Report NRS-62. June 2010.

[http://www.fs.fed.us/openspace/fote/reports/nrs-62\\_sustaining\\_americas\\_urban.pdf](http://www.fs.fed.us/openspace/fote/reports/nrs-62_sustaining_americas_urban.pdf)

<sup>28</sup> Council of Tree and Landscape Appraisers, as reported by City of Raleigh

ICMA, as reported by City of Raleigh

<sup>29</sup> Shields, Shane. 2014. Modeling Carrboro's Tree Canopy Cover 2002 to 2010. Report completed as intern to Carrboro Planning Department.

<sup>30</sup> Nijhuis, Michelle. "How Climate Change is Helping Invasive Species Take Over." Smithsonian.com. Smithsonian Magazine, December 2013. <http://www.smithsonianmag.com/science-nature/how-climate-change-is-helping-invasive-species-take-over-180947630/?no-ist>

climate mitigation measure. Composting is considered to be the most effective way to combat this production of methane<sup>31</sup>. Orange County Solid Waste Management is scheduled to begin offering onsite disposal of household organic waste (i.e. food scraps) at its Chapel Hill facility on Eubanks Road in 2016. This will be in addition to the composting facility offered at its Walnut Grove Church Road Convenience Center in Hillsborough. However, many residents do not utilize these convenience centers, instead throwing their food scraps into the trash. Cities and towns that have implemented curbside composting have been able to move to bi-weekly trash pickup, freeing up funds for commercial hauling and processing of compost. Seattle, Portland, and San Francisco have curbside composting programs that could offer examples for Carrboro<sup>32</sup>.

### **Ecosystem Recommendation #1: Pursue Stormwater Utility**

***Create a Stormwater Utility in Carrboro, or Join Chapel Hill's Stormwater Utility.***

The Town has taken steps to exceed minimum State requirements for stormwater volume control and water quality buffers for new development and instituted land use planning and policies that have to some extent reduced surface water impacts from new development and exceeded what many other jurisdictions have pursued. The Town has also actively worked with the Bolin Creek Watershed Restoration Team to restore the aquatic health of Bolin Creek. Nevertheless, monitoring of aquatic life continues to identify concerns for the health of Bolin Creek, and stormwater runoff is also known to impact Morgan Creek and other creeks in Carrboro. From the viewpoint of residents with properties regularly experience flooding impacts, however, the Town has not yet been able to comprehensively respond to these impacts. The reality of climate change means that it will likely become more difficult in the future to adequately safeguard the health of local streams and citizens properties. In addition, the Town is faced with both current and new future regulatory requirements related to stormwater runoff. The Town administers an NPDES Phase II stormwater permit, and also will be pursuing a multimillion dollar initiative in the next decade to comply with the Jordan Lake Existing Development Rules.

According to the UNC Environmental Finance Center, there are currently 55 utilities operating in North Carolina, including many utilities in small towns. There appears to be a solid foundation from the work of all these communities that there is value in having dedicated, predictable and sufficient funding for stormwater management efforts. Chapel Hill has formed a stormwater utility that has significantly increased Chapel Hill's ability to more proactively manage stormwater. Hopefully, a majority of Carrboro residents would be willing to support a utility if the revenue is well managed, especially if provisions are included so that the fee structure not be burdensome to lower income residents.

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<sup>31</sup> Dennings, Kelly. (2010). The Link between Recycling and Climate Change [SlideShares]. retrieved from <http://www.slideshare.net/NCDENR/the-link-between-recycling-climate-change>

<sup>32</sup> Seattle composting program:

<http://www.seattle.gov/council/bagshaw/attachments/compost%20requirement%20QA.pdf>

Portland composting program: <http://www.portlandoregon.gov/bps/56513>

San Francisco composting program: <http://www.sfenvironment.org/zero-waste/recycling-and-composting>

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Fee structure can be set up for greater “environmental equity” (fees are based on actual runoff impact, not property value).</li> <li>• Emerging/innovative financing approaches exist for stormwater and green infrastructure.</li> <li>• Chapel Hill’s stormwater utility offers: local lessons (what works well/what is difficult); staff with technical expertise in engineering, science, administration, outreach/education; potential for efficiencies/sharing of resources.</li> <li>• A utility would help address current limited fiscal and staff capacity to meet needs for flooding issues/property impacts, protecting and restoring surface water quality, requirements for federal/state stormwater permit, and planning for compliance with Jordan Lake rules.</li> <li>• Opportunities exist for incorporating incentives for implementation of on-site stormwater management. For example, offering subsidies to help homeowners and businesses pay for part of a project on their land as a way to incentive the implementation of BMPs on private property.</li> <li>• The City of Durham has found that it is less expensive overall to distribute stormwater-related expenses as a utility fee rather than by increasing property taxes.<sup>33</sup></li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Carefully planning the utility’s goals upfront.</li> <li>• Determining whether to create a new utility, join Chapel Hill’s utility, or explore an alternative approach that protects the benefits of a utility.</li> <li>• Determining a pathway for helping low-income individuals (exemptions, reimbursements, etc.).</li> <li>• Creating a well-conceived and well-implemented public outreach campaign. This campaign is needed to get public buy-in, ensuring that citizens are understand the purpose of and need for the utility.</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Funds for stormwater management/financing study</li> <li>• Eventually, new staff position(s)</li> <li>• Partnering agreement if collaborating with Chapel Hill</li> <li>• Funds for an education campaign</li> </ul>
Anticipated Cost	See footnote <sup>34</sup>
Leadership	<ul style="list-style-type: none"> <li>• Policy leadership from Board of Aldermen.</li> <li>• Management, technical, and administrative leadership from staff.</li> <li>• Environmental Advisory Board may be able to provide support.</li> <li>• Chapel Hill and Durham stormwater may be able to provide advice based on their own experiences.</li> </ul>

<sup>33</sup> See #7 on the City of Durham’s Stormwater Utility Fee Frequently Asked Questions Page: <http://durhamnc.gov/ich/op/pwd/GIS/Pages/FAQ.aspx>

<sup>34</sup> The average residential fee across 55 utilities in NC is currently about \$1/month/1000 sq. ft. of impervious surface. Chapel Hill’s utility’s fee is about twice the average rate. See <http://www.efc.sog.unc.edu/reslib/item/nc-stormwater-utility-dashboard#> for details on NC stormwater utility rates. <http://www.efc.sog.unc.edu/project/innovative-financing-approaches-stormwater-and-green-infrastructure> has information on innovative financing.

Partners	Potentially Chapel Hill, OWASA
Fit with Items	Creating a new revenue stream for the Town adds capacity (Community Integration Recommendation #5)
Time Frame	Deciding to look into a stormwater utility could happen immediately. Forming a utility or joining Chapel Hill's utility would likely take 1-2 years
Next Step(s)	<ol style="list-style-type: none"> <li>1) Staff to look into both administrative and policy opportunities and challenges <ol style="list-style-type: none"> <li>a) Contact nearby jurisdictions and Environmental Finance Center determine best fit for Carrboro in creating a utility.</li> <li>b) Determine whether or not to partner with Chapel Hill's stormwater utility.</li> </ol> </li> <li>2) Craft public outreach/education campaign about negative impacts of stormwater and economic/environmental benefits of a utility.</li> </ol>
Evaluation Criteria	<ul style="list-style-type: none"> <li>• Town can consider annual surveys and other means of measuring public awareness about stormwater impacts and management</li> <li>• Increased number of BMPs created and increased amount of area treated to control stormwater runoff*</li> <li>• Improved stream health as measured by aquatic insects</li> <li>• Changes in stream hydrology based on stream gage monitoring</li> <li>• Availability of harvested rainwater in times of drought</li> <li>• Utility is being funded by fees collected</li> </ul>

## **Ecosystem Recommendation #2: Evaluate Extent to Which the Deer Population and Climate Change affect Native Plant Ecosystems.**

### ***Evaluate Extent to Which the Deer Population and Climate Change affect Native Plant Ecosystems.***

It is recommended that Carrboro seek professional support to determine whether native plant ecosystem effects from the deer population and climate change are apparent in the community forest. The potential savannafication of the southeast, in which forests are converted into more open woodlands due to a combination of hotter and drier conditions, is one of the most significant potential climate change impacts in the USA. Overgrazing by deer has the potential to adversely affect the health of forests, causing a decrease in plant diversity and forest regeneration, and aiding in the spread of non-native, invasive species.

Implementation Opportunities	<p>A better understanding of ecosystem impacts from climate change and herbivory would:</p> <ul style="list-style-type: none"> <li>• Provide a baseline of forest ecosystem conditions;</li> <li>• Identify if actions are needed to mitigate negative ecosystem impacts;</li> <li>• Yield action options more specific and more consistent with local conditions.</li> </ul>
Implementation Challenges	<p>An evaluation of forest ecosystem impacts would:</p> <ul style="list-style-type: none"> <li>• Require outside assistance from experts in forest/ecological/wildlife assessment;</li> <li>• Require coordination among owners of community forest.</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Administrative support from Town Staff with help from the Environmental Advisory Board.</li> <li>• Information/advice/guidance from organizations such as the NC Forest Service – Orange County, Humane Society of the United States, ecologists/botanists.</li> </ul>
Leadership	Policy leadership by the Board of Alderman. Support from Town Staff and the Environmental Advisory Board.
Partners	Carolina North Forest Management, NC Forest Service – Orange County
Fit with Items	Tree Coalition, Invasive Plant Management
Time Frame	Further study could be pursued immediately.
Next Step(s)	<ol style="list-style-type: none"> <li>1. Obtain professional assistance with evaluating impact of climate change and deer herbivory on forest health</li> <li>2. Consider outcome of evaluation and identify response that meets needs of community.</li> </ol>
Evaluation Criteria	Forest understory (increase in native flora, decrease in exotic species, and increase in plant and animal biodiversity).

### Ecosystem Recommendation #3: Accelerate/Expand Organic Waste Collection/Composting

***Accelerate Efforts to Study and Implement a Comprehensive Organics Collection and Composting Program.***

The Solid Waste Advisory Group, along with local government staff, are actively looking at the future of solid waste in Orange County, including implementation of an organics program. Prioritization/acceleration of this effort is encouraged. Details are provided below.

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Improved soil quality by increasing soil organic content;</li> <li>• Improved water quality by improving infiltration;</li> <li>• Decreased carbon footprint by decreasing methane gas and decreasing the number of trips to the transfer station.</li> <li>• Potential to move to bi-weekly trash pickup, freeing up funds for commercial hauling and processing of compost. Funding for the program could come entirely from the reduction of trash hauling and tipping fees.</li> <li>• A backyard composting demonstration site(s) in a central location(s) could encourage people to participate in composting.</li> <li>• The Town could consider offering finished compost for sale to the community (currently done at the county level) or providing it for free to program participants.</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Educating the public is critical, as contamination of waste streams remains problematic. Contamination is a big problem in composting due to packaging, utensils, and other plastics being discarded with organic matter. Any campaign would need to be multilingual, as Carrboro is home to many people who speak Spanish or Karen as their first (and sometimes only) language.</li> <li>• Residential composting is especially challenging for multi-family housing, which is more prevalent in Carrboro than other jurisdictions in Orange County. Future planning needs to be sensitive to this challenge.</li> <li>• It can be labor-intensive to get businesses on board. Orange County staff currently have to go back to a business two or three times to get the business to agree to participate. In addition, employees need to be retrained as new people are hired.</li> <li>• Questions remain about program financing. Will Pay-As-You-Throw be viable? Would residents be charged for composting services, or given a discount on trash/recycling services if they compost? Would they pay for the collection but then receive free compost in return?</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Potentially, further waste characterization studies</li> <li>• Composting equipment (bins, trucks).</li> <li>• A business to take the food waste if Carrboro isn't going to have its own composting site.</li> <li>• Utility or some way to process fees from participants.</li> <li>• Additional staff resources and/or partnerships with community groups</li> </ul>

	and/or businesses to expand outreach and education. This could include encouragement of a local business to operate the curbside program (such as CompostNOW).
Anticipated Cost	The main cost is likely to be the educational campaign aimed at letting people know what can be composted and what still goes in the trash, along with bins. Once the program is running, it could fund itself through money that used to be spent hauling and disposing of trash in landfills.
Leadership	Policy: Solid Waste Advisory Group. Technical: Local government staff.
Partners	Local gardening organizations, environmental groups, local businesses, county staff.
Fit with Items	Community Integration recommendations
Time Frame	Carrboro has initiated a solid waste study. Current trajectory for Solid Waste Advisory Group (SWAG) to consider a residential composting program is three to four years.
Next Step(s)	<ol style="list-style-type: none"> <li>1. The solid waste study can include lessons learned from other communities with successful curbside composting (e.g., San Francisco, Portland, Seattle, NYC) and locally successful programs (CHCCS, UNC, etc.) as well as how to collaborate with local contractors (Brooks, CompostNow, etc.).<sup>35</sup></li> <li>2. Budget for and choose area for pilot program that includes residential and multi-family units.</li> <li>3. Expand program to entire town. <ul style="list-style-type: none"> <li>• Future plans should consider adding a more central drop-off location downtown.</li> <li>• Future studies and plans should include curbside compost collection.</li> </ul> </li> </ol>
Evaluation Criteria	Set a goal of 30% reduction in organic material being hauled to the transfer station by 2020, then 70% by 2030.

### Ecosystem Recommendation #4: Create a Tree Coalition

***Help Community Members Form an Independent Tree Coalition to Support the Community and Advocate for the Community Forest***

Most of Carrboro's community forest is owned and managed by private landowners. There is a rich community of local arborists, gardeners, landscapers, nurseries, botanists, and ecologists that can support the community in creating healthier and more beautiful yards and ultimately a more resilient and diverse community forest. However, the knowledge and skills are relatively dispersed. Landowners can benefit from a local resource to help with forest, landscape, and tree management and advocacy.

<sup>35</sup>

<http://dusp.mit.edu/sites/dusp.mit.edu/files/attachments/project/Municipal%20Curbside%20Compostables%20Collection%20What%20Works%20and%20Why.pdf>

Implementation Opportunities	<ul style="list-style-type: none"> <li>• Increase public awareness of the intrinsic value and beauty of trees.</li> <li>• Provide oversight for a community scale urban forestry program.</li> <li>• Educate citizens about proper tree selection, planting, and care.</li> <li>• Educate citizens about the health of the larger community forest, its importance for both human and environmental health, and ways in which they can support it.</li> <li>• Partner with local government and civic groups to improve and expand the Town's tree canopy.</li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Creating a new and sustainable organization or finding an existing organization to lead the coalition.</li> <li>• Connecting with the public.</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• A nonprofit organization to become a community champion for education, outreach, and action.</li> <li>• Neighborhood and business champions.</li> <li>• Broad support from community leaders, utilities, and business partners to help fund and provide technical expertise (e.g., arborists, foresters, nurseries, landscapers, NC Botanical Gardens, NC Cooperative Extension Service, Carolina North staff, Duke Forest staff).</li> <li>• Fiscal/policy/staff support from Town, North Carolina Urban Forest Council.</li> </ul>
Anticipated Cost	Costs associated with nonprofit establishment/management if an existing nonprofit doesn't offer to take on the task (though this may be unnecessary if a coalition, like the Carrboro Bike Coalition, is formed.)
Leadership	Nonprofit/community members pulled together by Town staff.
Partners	NC Botanical Garden, Arbor Day Foundation, National Wildlife Federation, possibly expanding to Chapel Hill, Hillsborough, and/or Orange County.
Fit with Items	Community forest; stormwater utility; invasive plant management
Time Frame	Depends on identifying leadership and ability to mobilize community
Next Step(s)	Establish goals for the coalition Recruit members Form partnerships with those who have technical expertise. Begin education/outreach campaign to community

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

***Pursue both Regulatory and Non-regulatory Approaches to Better Manage Invasive Plant Species and Increase Community Efforts to Improve Plant Communities***

The spread of non-native and invasive plants is a threat to forest resilience and biodiversity. Ideas for approaches to reduce the spread of non-native/invasive plants are offered in this recommendation.



Implementation Opportunities	<ul style="list-style-type: none"> <li>• Implement a campaign to educate people on the link between native plant species and ecosystem health, particularly for pollinators who face stress due to climate change and other factors.</li> <li>• Encourage naturalized landscaping instead of manicured lawns. These types of landscapes offer critical wildlife habitat, cause a decline in the use of petroleum-based fertilizers and pesticides, more effectively capture stormwater runoff, and reduce the heat island effect.<sup>36</sup></li> <li>• Pursue invasive species removal projects, especially in Town parks and along greenways/bikeways/right-of-ways. Such projects would be carried out by citizens but perhaps spearheaded by a local non-profit or task force. Projects could initially focus on: <ol style="list-style-type: none"> <li>1. Vining invasives (Japanese wisteria, porcelain berry, kudzu, mile-a-minute, English ivy, Japanese honeysuckle, oriental bittersweet, Japanese euonymus) that threaten urban tree health;</li> <li>2. Japanese stiltgrass and privet that alter soil pH and outcompete many native grasses and shrubs.</li> </ol> </li> </ul>
Implementation Challenges	<ul style="list-style-type: none"> <li>• Many people can't distinguish between native and non-native/invasive plants, nor do they know that the plants they're choosing for their yard are invasive.</li> <li>• Many people don't understand the link between native plants and ecosystem health, choosing their plants based on cost or aesthetics.</li> <li>• Renters don't often have the option to choose what's planted outside their door.</li> <li>• Some landowners and HOAs are resistant to native species or more natural-looking landscapes.</li> <li>• Some developers may need outreach and education.</li> <li>• Large/big box nurseries often sell few (if any) native species</li> <li>• Some people need assistance learning about/accessing local nurseries that specialize in natives.</li> <li>• Deer tend to ignore non-native species and prefer native species.</li> </ul>
Resources Needed (human and material)	<ul style="list-style-type: none"> <li>• Town staff to examine/amend ordinances.</li> <li>• Someone(s) to head an educational campaign.</li> <li>• Someone(s) to lead invasive species removal projects.</li> </ul>
Anticipated Cost	Money for an educational campaign and supplies for projects removing invasives (tools, leaf bags, etc.).
Leadership	Town staff, Environmental Advisory Board, a non-profit or task force to lead invasive removal projects
Partners	NC Botanical Garden, NC Native Plant Society, local nurseries, biologists, local bee keepers, landscapers knowledgeable about native/invasive species, HOAs, Friends of Bolin Creek, Morgan Valley Alliance
Fit with Items	Community forest; Tree Coalition
Time Frame	Town staff are currently looking at the LUO. An outreach campaign is a long

<sup>36</sup> See this book for more information on the benefits and approaches for more naturalized yards and landscapes: Tallamy, Doug. *Bringing Nature Home*. Portland: Timberpress, 2010. Print.

	term undertaking.
Next Step(s)	<ul style="list-style-type: none"> <li>• Update the Land Use Ordinance invasive/native plant requirements.</li> <li>• Implement an educational campaign, maybe in partnership with the Botanical Gardens or others, to help citizens and businesses understand the importance of planting natives and avoiding invasives. This could be done in conjunction with the Town's newly established annual Pollinator Day.</li> <li>• Explore options for implementing invasive removal projects.</li> <li>• Develop and regularly update an inventory of areas with excessive invasive plant growth</li> </ul>
Evaluation Criteria	<ul style="list-style-type: none"> <li>• Stronger ordinance against invasive species and in favor of native species.</li> <li>• Decrease in the number of invasive species in Carrboro and an increase in the number of natives.</li> <li>• More knowledgeable citizenry concerning the importance of native species.</li> </ul>

# Implementation Recommendations

~~Carrboro established a temporary Energy and Climate Task Force in 2014, charged with providing recommendations on reducing nonrenewable energy use from residential and commercial buildings and transportation, increasing renewable energy generation, and supporting healthier and more resilient ecosystems in Carrboro. Recognizing that the recommendations provided will require dedicated, ongoing community involvement and Town support, the Task Force further recommends that in order to maintain momentum, the Board of Aldermen should move expeditiously to establish a permanent Task Force to oversee implementation of the Community Climate Action Plan. This Task Force should draw from the expertise that can be found across the community in clean energy and clean transportation, funding and financing mechanisms, ecosystem enhancement, and in developing and working with coalitions across the community. It is further recommended that this permanent Task Force should have appointees from advisory boards such as the Planning Board, Environmental Advisory Board, Transportation Advisory Board, and Economic and Sustainability Commission. To support the establishment of a permanent Task Force, a draft of a “charge” for the Task Force is proposed below:~~

- ~~a. Coordinate overall implementation of the recommendations of the Community Climate Action Plan;~~
- ~~b. Work with community groups, nonprofits, and members of the Carrboro business community, homeowners associations, and neighborhood groups to implement all recommendations;~~
- ~~c. Work with the Transportation Advisory Board to implement transportation recommendations; and~~
- ~~d. Work with the Environmental Advisory Board to implement the ecological recommendations.~~
- ~~e. Provide recommendations to the Town for support needed from the Town to implement the Community Climate Action Plan.~~

This plan identifies a number of recommendations that include elements of implementation, however it is beyond the scope of the plan to include a detailed implementation plan. The following suggestions are offered as a starting point for pursuing implementation, and focus on categorizing the recommendations into (somewhat arbitrary) timeframes for consideration. “Work has already begun” refers to recommendations which are currently being pursued, and the predominant need is for acceleration, mobilization, and/or additional resources. “Begin immediately” refers to recommendations that could be prioritized because they support other recommendations, can potentially be pursued with more limited partnering requirements, outside or new resources or statutory authority, and in general have a lower risk/higher reward. Those listed “Within one year” are likely to involve more effort/resources, rely more heavily on the creation of partnerships, the development of educational campaigns, and/or input from the community. Items listed under “Within two years” will likely require significant effort and reliance on potential partners and are subject to some uncertainties. Finally, a regulatory based approach to two recommendations is likely to be possible only through changes in state law. While this prioritization is offered to attempt to make the entire pallet of recommendations more manageable from an implementation perspective, considerable flexibility is needed, and reasons to adjust the priorities will no doubt arise as part of implementation. Additional suggestions on the time frame and next steps are included in the more detailed recommendations in previous sections of the plan.

Work has already begun:

Transportation Recommendation #3: Improve Vanpool/Carpool Options

Transportation Recommendation #4: Further Promote Walking, Biking, Transit

Ecosystem Recommendation #3: Accelerate/Expand Organic Waste Collection/Composting

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

Begin immediately:

Community Integration Recommendation #4: Integrate Climate Action with Local Living Economy

Buildings Recommendation #1: 50% Challenge

Transportation Recommendation #1: 50% Challenge

Ecosystem Recommendation #1: Pursue Stormwater Utility

Begin Within 1 Year:

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

Community Integration Recommendation #2: Expand Public Partnerships to More Explicitly Consider Climate Action

Community Integration Recommendation #3: Create Green Neighborhood Program

Community Integration Recommendation #5: Expand Capacity

Community Integration Recommendation #6: Facilitate Low Cost Financing for Energy Efficiency and Renewable Energy Projects

Community Integration Recommendation #7: Integrate Climate Action and Social/Equity Initiatives

Buildings Recommendation #4 and Renewable Energy Recommendation #3: Create Rental Property Task Force and Process

Buildings Recommendation #5: Create Rental Property Registry/Certification

Transportation Recommendation #5: Limit Idling in School Loading Zones

Renewable Energy Recommendation #1: Pursue Community Solar Projects

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

Ecosystem Recommendation #4: Create a Tree Coalition

Begin Within 2 years:

Transportation Recommendation #2: Enhance Transit Service

Renewable Energy Recommendation #2: Create a Downtown Geothermal District

Statutory Authority May Be Needed to Pursue Recommendation as a Requirement:

Buildings Recommendation #2: Require Energy Audit/Performance Rating

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

(For these two recommendations, a non-regulatory approach is also offered in the recommendation for which statutory authority is not needed.)

# Appendix 1

## Boulder's Local Climate Action Plan and Climate Commitment

The Task Force recommends that Carrboro pay close attention to Boulder, Colorado, a community that is leading the pack with local climate action planning in the US<sup>37</sup>. For example, Boulder is:

- 1) A leader in energy efficiency according to the American Council for an Energy Efficient Economy. Boulder has distinguished itself through:
  - a. excelling in improving access to energy usage information;
  - b. implementing the SmartRegs program, which mandates baseline energy efficiency requirements for rental housing;
  - c. receiving the highest rating from ACEEE by having staff dedicated to implementing community-wide efficiency goals and implementing programs to mitigate the urban heat island effect, including instituting an Urban Forestry program.
  - d. Piloting Community Power Partnership, a program designed to help residents and businesses better understand their electricity use at a whole-building and circuit levels.
  - e. Piloting Boulder Energy Challenge, a grant program launched in 2014 that has provided \$300,000 funding for innovative solutions from the community to reduce emissions.
  - f. Running EnergySmart, a program that offers energy efficiency assessments, advising services and rebates for residents and businesses. Since EnergySmart began in 2010, more than 7,500 housing units and 2,300 businesses have participated in the program, more than \$3.4 million in rebates have been paid and over \$18 million in private investments made.
- 2) Working to become a zero waste community that reuses, recycles and composts at least 85 percent of its waste stream by the year 2025.
- 3) Becoming a Platinum Bicycle Friendly Community (one of 4 in the US).
- 4) Pursuing owning and operating a local electric utility, a process known as municipalization. For the city, it's an opportunity to move away from getting electricity from a for-profit investor-owned utility with a carbon-intensive coal-powered energy supply.
- 5) Becoming a platinum-level Solar Friendly Community in 2014, with one of the highest per-capita solar installations in the country. Since 2007, Boulder residents, businesses and institutions have installed more than 15 megawatts of solar on more than 1,900 rooftops.
- 6) Supporting climate action initiatives by the Climate Action Plan (CAP) tax (since 2007). The tax funds city-funded programs and services designed to reduce local greenhouse gas emissions.
- 7) Pursuing a GHG reduction goal of 80% by 2050, having already made substantial progress.

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<sup>37</sup> More information about what Boulder is doing is available at <https://bouldercolorado.gov/climate> and <https://bouldercolorado.gov/climate/boulders-climate-commitment>.

## Appendix 2

### How the Jones Household Goes Carbon Free in 10 Years

In July 2008, Al Gore challenged the country to generate all our electricity carbon free in just 10 years. He believes it's possible, and so do we. We also think it's possible for individual families to go carbon free in 10 years.

# How the Jones Household Goes Carbon Free in 10 Years

HERE'S HOW YOU CAN DO IT ...



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magazine

Reprinted from  
Issue 45  
Spring 2008

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# Beyond Lightbulbs

## The Jones Household Goes Carbon Free in 10 Years



START  
HERE

**YEAR 1**

### A Big Difference from Small Changes

The family starts off with easy changes: They wash clothes in cold water and air dry them in the summer, replace incandescent bulbs with compact fluorescents (CFLs), turn off their computer when not in use. That's an instant, virtually free savings of 6,200 pounds of CO<sub>2</sub>. They make one simple transportation change: One of the adults commutes by bus three days a week—enough to see whether it can be done, but keeping the second car just in case. That's worth another 2,200 pounds. They're down to 51,600 pounds and it hasn't cost them anything but the price of the CFLs and a clothesline. They're actually saving money.



**YEAR 2**

### Home Improvement

They stop donating so much heat to the outdoors: attic and basement insulation, sealing and insulating heat ducts, and patching the large air leaks typical of standard construction saves them a whopping 7,100 pounds. These savings aren't free up front, but the savings in heating and cooling bills will repay the cost over time. Besides, Mrs. Jones is handy with home repair, and does a lot of this work herself. Down to 44,500 per year.



**YEAR 3**

### House and Car

The bus commute's gone well, so Mr. Jones now buses to work all the time. They've worked on consolidating trips outside work, and find they can do without the second car altogether. That's 5,900 pounds gone. They finish weatherproofing their house: beefing up wall insulation, weatherizing doors and windows, and upgrading to high performance windows. Another 1,800 pounds disappear. They're at 36,800.



**YEAR 4**

### Shed Carbon on Vacation

Instead of flying for their annual vacation, the Joneses take the train: a leisurely way to save 7,200 pounds every year. (If they took the bus, they'd save even more.) They're at 29,600 pounds per year—halfway there a year early.



**YEAR 5**

### Car Upgrade

Time to replace the car. Thanks to consumer demand, electric cars have become widely available, and they buy one. Even charging on dirty power, they save 9,000 pounds. Household total is now 20,600.



## Brooke Jarvis and Doug Pibel

**M**eet the Joneses. They're your average U.S. energy consumers. They haven't yet upgraded to energy-efficient appliances, their house needs better insulation, and they keep the place as cool in the summer and warm in the winter as most Americans do. The two adults commute 30 miles each per day, in separate cars with average fuel efficiency, and every year they each drive an additional 4,500 miles running errands and taking their child to soccer games and violin practice. The family takes one vacation trip per year, flying to visit grandparents 1,350 miles away. How much CO<sub>2</sub> do their house and cars produce? We figure it at 60,000 pounds, or 10 tons for each family member.

Lately, though, the Joneses have been reading about climate change, and they're getting worried. Ecological crisis has never felt so urgent before. Even little Joey Jones is talking greenhouse gases—he learned at school that scientists are predicting a worldwide climate catastrophe that will change the rest of his life, unless we stop the worst effects by making big changes in the next ten years. The Joneses decide: change is necessary, and they're ready to do their part. But how much can they really do? A lot, it turns out.

In 10 years, without sacrificing their way of life, the Jones family eliminates the CO<sub>2</sub> emissions that their home and transportation used to create—the bulk of their carbon footprint.

### Count Your Carbon

Want to keep up with the Joneses? Here are the numbers we used. Use them to find—then shrink—your own carbon footprint.

	CO <sub>2</sub> output, in pounds
Gallon of gas	19.36
Gallon of fuel oil or diesel	22.38
Kilowatt hour of electricity (national average)	1.43
Therm of natural gas	11.71
Gallon of propane	12.67
<i>Per passenger:</i>	
Airplane mile	1.28
Train mile	0.42
Long-distance bus mile	0.18
Local mass transit mile	0.50
Electric bike mile	0.02

### The Rest of the Story

The Joneses only changed their housing and transport habits. How can you go further?

**Eat meatless.** For every day of the week you skip meat, you'll save 215 lbs. per year.

**Buy local.** Most food eaten in the U.S. has traveled 1,500 miles to your plate.

**Be a low-impact consumer.** Choose local products, reduce the stuff you buy, and save embedded energy by buying used.

**Reduce waste.** Stop junk mail, reduce packaging, and reduce the 2,020 lbs. each American's waste produces annually.

**Avoid the McMansion.** A smaller house saves a lot of carbon: on average, 11.4 lbs. of CO<sub>2</sub> per square foot per year.



### YEAR 6

#### Hot and Cold

They improve their water system, including insulating their hot water heater and their pipes, and also lower the temperature of their water heater: 1,000 pounds down. When the old refrigerator kicks the bucket, the Joneses buy a new energy-efficient one and finally unplug a second fridge in the garage, knocking off another 1,300. Total remaining: 18,300.



### YEAR 7

#### Close to Home

Grandma and Grandpa retire and move nearby. The Joneses now vacation within the range of their electric car, saving 3,300 pounds of CO<sub>2</sub> each year. The city converts its bus fleet to clean electricity, which saves another 1,200 pounds. They're down to 13,800.



### YEAR 8

#### A Few More Things Around the House

An efficient clothes washer saves carbon on its own, and saves dryer time. With all the money they're saving, they decide it's time to invest in a solar hot water system. Total: 2,000. Leaving 11,800.



### YEAR 9

#### Electric Bikes

While the Joneses have been on this journey, their town has responded to citizen pressure and gone bike friendly. The new bike paths make it easy for both to ride to work. To ease the hills, they buy electric bikes. There are four months of the year when they can't bike, so they continue their usual commute patterns then. Savings: 3,500. Total remaining: 8,300.



### YEAR 10

#### Green Power

The Joneses' furnace has been groaning and working overtime. They replace it with an electric heat pump, which also cools the house in summer. They also buy certified green, renewable power from their electric company, and the switch from coal plants eliminates the remaining 8,300 pounds of CO<sub>2</sub> produced by the electricity for their house and car.



Sources: Rocky Mountain Institute, Bureau of Transportation Statistics, Environmental Protection Agency, Department of Energy, University of Chicago. Illustration by Kayann Legg / I-S



# Appendix 3

## 10 Things You Want to Know about Human Nature if you're Fighting Climate Change

By [Lisa Bennett](#), posted at <http://grist.org/climate-energy/10-things-you-want-to-know-about-human-nature-if-youre-fighting-climate-change/> June 10, 2015.

I've spent nearly a decade thinking about why people get stuck on climate change: stuck in debates, denial, what looks like indifference, and the awful discomfort that comes with the question "But what can I do?" In search of answers, I've interviewed dozens of experts in psychology, neuroscience, sociology, economics, political science, and other fields — and many more Americans across a broad spectrum of political affiliations, income brackets, and ages. I've also read widely to tap the thinking of those who were once more commonly looked to for insights into human nature, such as poets, philosophers, and spiritual leaders. What I've come up with is my own climate-centric version of Robert Fulghum's *All I Really Need to Know I Learned in Kindergarten*. Climate change has been my window into learning about human nature — or, at least, about what we humans do when faced with a challenge much greater than ourselves. The experience has also persuaded me that a better understanding of our own nature can help inspire a more effective response to what is happening to the natural world.

Here then are 10 things I've learned, along with some ideas about how these insights might be applied by those working on climate change:

**1. We are overly optimistic about the future — *our* future, that is.** Neuroscientist Tali Sharot has observed that when newlyweds are asked about their chances of getting divorced, they tend to say zero, despite the widely known fact that the odds are 50-50. We instinctively overestimate the probability of positive events and underestimate the probability of negative events in our own lives, she writes in *The Optimism Bias*, for two reasons: We think we have more control over our lives than we actually do, and we tend to see ourselves as better than average.

Applied to climate change, this means that I might think that you — and surely those poor Pacific Islanders — might be negatively affected but I'll be OK. The problem, of course, is that this reflects a bias grounded in delusion. But don't try to tell me or anyone else that. You'll have a better chance of engaging others in climate action, experts like Sharot say, if you keep a laser-like focus on how climate change is affecting people now.

**2. We can be blasé about the most important issues in the world because the global perspective is way beyond ordinary human scale.** "Trying to convince people of the magnitude of the climate problem through large-scale statistics is essentially useless," says Scott Huettel, chair of the Department of Psychology and Neuroscience at Duke University. "The iconic global warming image of the polar bear on the iceberg is evocative precisely because it is one polar bear. Thousands of polar bears on a glacier that is receding would be irrelevant. Our brains cannot process it."

Put another way, climate change seems like an abstraction because it is so much bigger than us. Humans relate to human-sized stories — the kind that speak to a family living in a home like ours, having dreams and struggles like ours, and maybe discovering one day that their home is on a map of places expected to soon be under water.

**3. We are wired to refute imperatives.** “If you say I have to act now on climate change, my first reaction will be, ‘No, I don’t,’” says Huettel. The reason, he explains, is that our brains are very well designed to come up with counterarguments. So no matter how good the reasons to switch to solar energy or demand that government take bolder action on climate change, people can always come up with reasons why they don’t need to do anything, such as: “If I don’t act right now, the world will basically be the same.”

Passing a law that requires people to change their behavior (especially if those changes are relatively easy to make) is one effective way around this. But short of that — just as in other aspects of human relationships — efforts to attract people to a cause are much more likely to yield a positive response than those that threaten or make demands.

**4. We are vulnerable to peer pressure, especially about things that confuse us.** We can watch the news, see photos of melting glaciers, even experience changing weather patterns. But if our neighbors aren’t doing anything about climate change, we’re unlikely to do anything either because, as much as we hate to admit it, we are herd animals who use social cues to adapt to our environment, according to [Robert Cialdini](#), author of *Influence: The Psychology of Persuasion*. And if you doubt how powerful this instinct is, consider the experiment Cialdini conducted in which his team hung four different kinds of flyers on people’s doorknobs in San Diego, with the goal of inspiring residents to reduce their energy consumption. Three of the flyers directly asked them to reduce their energy use, offering three different motivations: save money, save the environment, and benefit future generations. But none of these appeals made a significant difference. Only the fourth flyer did, which read simply: “The majority of your neighbors are undertaking energy-saving actions every day.” The lesson: Don’t be afraid to appeal to our instinct to fit in.

**5. We shy away from topics that remind us of our mortality but can be motivated to take action on behalf of beings more vulnerable than us.** Janis L. Dickinson, a professor of natural resources at Cornell University, conducted an experiment a few years ago in which she asked 3,546 people (largely birders) if they would be willing to reduce their energy consumption after learning that climate change was, among other things, a threat to people or to birds, and then she compared the results. It turned out that people were left unmoved by considering the threat to humans, but envisioning the threat to birds was another story. One possible reason, Dickinson says, is that considering climate change as a threat to humans may trigger thoughts of death (which we also tend to deny) whereas we like to think of ourselves as helping cute little creatures that seem to need us. This suggests that emphasizing the threat climate change poses to beloved animals could be an effective way of motivating people.

**6. We perceive and respond to risks only when we feel them.** While riding a roller coaster with my children one day, my youngest son took his hands off the bar and raised them in the air. The amusement park, I was sure, anticipated antics like this and did not expect people to remain in their seats by the strength of their grip. Still, I screamed, insisting he hold on because I was scared and, for the moment,

that made the risk I imagined feel real. This, says Columbia University professor of psychology Elke Weber, is how we perceive and respond to risk: through our emotions more than an analysis of the facts.

When it comes to climate change, this means that no matter how much scientific and journalistic evidence we are presented with, we will not be moved to action unless something makes us feel the risk. As a result, it may be more effective to tell a short, detailed story that can evoke people's feelings — for example, about an individual or family encountering some specific impact of climate change — than present yet more scientific evidence about the global or even national implications of a warming planet.

**7. We are motivated more by hope than fear, at least in matters of social change.** While research shows that fear is a more powerful motivator than hope when it comes to behaviors such as diet and fitness, inspiring social change seems to depend more on a positive vision of the future, according to the social movement, political science, and neuroscience experts with whom I spoke. “This rhetoric about we only have a certain amount of time is a killer. It doesn't make people engaged, it makes them give up,” says David Meyer, professor of sociology at U.C. Irvine and author of *The Politics of Protest: Social Movements in America*. Sharot confirmed this, saying: “Our studies show that people don't process information — they don't pay attention — when what is being communicated is how things will get worse.” In a widely shared opinion, Meyer said the implication was clear: “You have to be hopeful.”

**8. We are more likely to take action when we know precisely what we can influence.** It would take a fantastic and deluded leap of the imagination to think that, as individuals, we can control rising seas, melting glaciers, or heat waves. As a result, when people hear messages that encourage them to broadly act on climate, it can strike them as unrealistic and trigger what psychologist Martin Seligman called learned helplessness — specifically because it appears so far outside their sphere of influence. But, as Seligman and others have also found, it is possible to cut through learned helplessness (or apparent indifference) by appealing to what people think they can control, such as their own attitudes and behavior. For this reason, Huettel recommends emphasizing how people will feel about themselves, for example, after they take some realistic action, such as riding a bike or buying a hybrid.

**9. We need to believe our actions will make a difference.** “We have to have some sense of efficacy to motivate us to make changes in our lifestyle that are beneficial to the planet,” says Paul Slovic, a professor of psychology at the University of Oregon and expert in decision making around risk. But when it comes to big issues like genocide or climate change, his research suggests that people can be demotivated by a sense of inefficacy as well as what he calls “pseudo-inefficacy” or the illusion of inefficacy. For example, Slovic explained, some people fail to do anything because they think their action will be just a drop in the bucket, even though that drop is important. This finding suggests that it could be useful to explicitly speak to people's suspicion that individual actions don't matter and creatively show them how such drops add up.

**10. We will continue to behave the same way we always have — even after we know it is problematic — until there is a realistic alternative.** It is a safe bet that if you are reading this, you know that fossil fuels contribute to climate change and yet you continue, either directly or indirectly, to rely upon them, as most of us do.

But the reason for this, I have firmly come to believe, is not because most people don't care, don't get it, or have been duped by climate denial propaganda. I find a more believable reason in the words of Thomas Kuhn, widely considered one of the most influential philosophers of science of the 20th century. "People are unlikely to jettison an unworkable paradigm, despite many indications it is not functioning properly," Kuhn said, "until a better paradigm can be presented." While individual behavior changes are essential, in other words, many of them remain dependent on systemic public- and private-sector changes. To fully succeed, we need a "moon shot"-style rapid transition to a clean energy economy, like the one [proposed](#) by a group of scientists and economists led by the U.K.'s former chief scientist, Sir David King.

But in the end, even the best of plans depends on understanding, communicating, and acting with a fuller appreciation not just of the state of the natural world but of our own nature, which means bringing today's global climate story down to a human scale. The good news is that doing so requires that we engage some of the best aspects of human nature, including our ability to be present in the here and now, to care more about people than facts, to be drawn to hope more than fear, to be willing to defend those weaker than us, and to focus our actions on things that are in our control — all the while being capable of believing in, even being thrilled by, the vision of a moon shot.

*[Lisa Bennett](#), coauthor of [Ecoliterate](#), is a writer and communications strategist focused on climate change and what helps people rise to challenges great and small. She blogs at [lisabennett.org/blog](http://lisabennett.org/blog), and is on Twitter at [@LisaPBennett](https://twitter.com/LisaPBennett).*

# Appendix 4

## Energy in the 21st Century: Excerpts from Post Carbon Institute's Energy Primer<sup>38</sup>

*We are now facing a transformational moment in our energy story. As we leave the age of seemingly cheap and plentiful fossil fuels and enter an era of extreme energy, the ever-rising financial, social, and environmental costs of fossil fuels can no longer be ignored. The essential problem is not just that we are tapping the wrong energy sources (though we are), or that we are wasteful and inefficient (though we are), but that we are overpowered, and we are overpowering nature.*

– Richard Heinberg, from the Introduction to ENERGY: Overdevelopment and the Delusion of Endless Growth

### **The Energy Picture**

In order to make the right choices and investments, we must have a more comprehensive understanding of our energy predicament, including:

- The true costs, potential benefits, and limitations of all energy options, including renewables;
- The impact of each form of energy production on human societies and nature; and
- The true relationship between energy, our economic system, and the environment.

It's tempting to take the micro-view and look for ways to target each of our energy problems with a technical fix. Can't we improve the energy efficiency of vehicles, insulate our buildings, and develop renewable energy sources? Yes, of course. Can't we regulate the fossil fuel industry better, and allow the vast, recently unlocked North American reserves of shale gas and shale oil to be produced responsibly? Possibly. We could do all of those things, and many more besides, to lessen the current energy economy's impacts on natural and human communities—and still there would remain serious obstacles ahead. Why? Let's move out from the details of our dilemma and take in the big picture.

### **What is Energy?**

Though we cannot hold a jar of pure energy in our hands or describe its shape or color, it is nevertheless the basis of everything. Without energy, nothing could happen; matter itself could not exist in any meaningful sense. But because energy as such is so elusive, physicists and engineers define it not in terms of what it is, but what it does—as “the ability to do work,” or “the capacity to move or change matter.”

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<sup>38</sup> <http://energy-reality.org/primer/>

In traditional societies, most useful energy came from the sunlight annually captured by food crops and forests; people exerted energy through muscle power and obtained heat from firewood. Modern industrial societies obtain enormously greater amounts of energy from fossil fuels, nuclear power, and hydroelectric dams, and they exert energy through a vast array of machinery. Industrial energy production is essential to every aspect of modern life, but no matter how far our technology for capturing or using energy advances, energy itself always remains the same.

In the nineteenth century, physicists formulated two fundamental laws of energy that appear to be true for all times and places. These are known as the First and Second Laws of Thermodynamics. The First Law is known as the law of conservation. It states that energy cannot be created or destroyed, only transformed. Think of energy as a singular reality that manifests itself in various forms—nuclear, mechanical, chemical, thermal, electromagnetic, and gravitational—and that can be converted from one form to another.

The Second Law states that in every energy conversion, some energy is dissipated (typically as heat). When the gas gauge in a car moves from “full” to “empty,” it may appear that the energy that is chemically stored in gasoline is being consumed. But all the energy that was originally present in the gasoline still exists. In reality, the stored energy is merely being released and doing some work as it moves from a condition of higher concentration to one of lower concentration. It is converted from chemical storage (via the atomic electromagnetic bonds within hydrocarbon molecules) to mechanical motion and heat (as combustion within the engine’s cylinders pushes the car forward and also increases the rate of motion of molecules in the cylinder and the surrounding environment).

We might be able to get some work out of the “wasted” heat being given off by the burning of gasoline in the car engine; but heat tends to radiate quickly into the general environment, so we would have to use that heat both immediately and close to the engine. If we could gather up all the heat and mechanical energy that was released by burning the tankful of gasoline, it could do just as much work for us yet again; but the act of re-concentrating and storing it would require more energy than we could regather. Thus, in effect, available energy is always being lost.

The Second Law is known as the law of entropy (entropy is a measure of the amount of energy no longer practically capable of conversion into work). The Second Law tells us that the entropy within an isolated system inevitably increases over time. Energy that is sufficiently concentrated (relative to background energy levels) so that it can do work for us is called a source. There are two kinds of energy sources: flows (examples include sunlight, winds, and rivers) and stocks (a word that in this context refers to energy chemically stored in substances such as wood or fossil fuels). Flows tend to be variable, whereas stocks deplete.

### **Energy-fueled Population Growth**

Humanity’s current population explosion is an aberration. During the vast majority of human history, population levels were low and quite stable. Demographer Joel Cohen estimates that from the time our species emerged until roughly twelve thousand years ago, when local agriculture appeared, the

population growth rate was less than 1/500th of 1 percent. After the widespread adoption of farming the growth rate ticked up by a factor of ten or more, but for thousands of years thereafter remained at around 1/50th of 1 percent. It took all of human history until the early eighteen hundreds for global population to reach one billion. Then the population doubled—a second billion was added—in just a century or so. Adding the next billion humans to the planet took only thirty years. The next billion, fourteen years. The next, twelve years. After another dozen years, in 1999, world population reached six billion, and the seven billion mark was passed in 2011.

When charted graphically, the human demographic explosion takes the familiar “hockey stick” shape of a classic exponential growth curve. Many factors contributed to demographic expansion, including: the global agricultural revolution in the sixteen hundreds when new foods were shared between continents; the dispersal of scientific and public health knowledge; and increasing urbanization. But central to the runaway population growth of the past two centuries is the incredible windfall of energy that fossil fuels presented to humanity. The ability to command energy, especially highly energy-dense fuels like coal, precipitated the Industrial Revolution and allowed its descendant, the techno-industrial growth culture, to flourish. Food could now be produced in far larger quantities, and local scarcity could be overcome through global transport networks.

Leading ecologists agree that humanity has already surpassed Earth’s ecological carrying capacity. Exploiting the onetime reserve of fossil energy has allowed us to temporarily escape the constraints that kept early human population levels in check. Today’s global extinction crisis, massive poverty and malnutrition, rising social inequity, and unraveling ecosystems around the globe suggest that the age of abundance is nearly over. As economist Lisi Krall tells her students, “The defining fact of this historical moment is the reality of exponential growth. With exponential growth, if you do the same things as your parents, you’ll get entirely different results.” Confronting the population problem is the preeminent challenge of our time.

## **Net Energy**

A business may have high gross receipts and still go broke; it is the net, the profit after costs are subtracted, that determines viability. For any potential energy resource, the fundamentals are the same. How much energy is available after subtracting the energy costs to extract, process, and deliver the resource? To know how much energy from a particular source can actually be deployed by society, we must factor in both the production costs and the system costs—that is, the energy required to make energy available to the end user. With gasoline, for instance, this calculation would include energy costs related to oil exploration, drilling, refining, transportation, and the infrastructure that supports each step of the process. With coal-derived electricity, the calculation would include the life cycle from mine to power plant to electric grid.

Experts who study this use the terms “net energy ratio” or “energy returned on energy invested” (EROEI). Decades ago when the most accessible reserves were drilled, an oil company might produce 100 barrels of oil or more for each barrel’s worth of energy invested. Declining oil field productivity has

brought the average net energy ratio for conventional oil down to approximately 20:1 globally, with more remote or hard-to-refine oil significantly worse. For fossil energy generally, the trend is downward despite technological advances in exploration and drilling. For biofuels, the net energy ratio is lower still. Some studies suggest that corn-derived ethanol actually has a negative net energy ratio—that is, more energy than a gallon of ethanol can deliver is used to produce a gallon of ethanol. Sugarcane-based ethanol has a superior net energy ratio, but it is still low compared to fossil fuels.

Any produced energy resource can be analyzed for its net energy ratio, although the process raises a difficult question: What are the boundaries of consideration? For example, when tallying the energy required to build a solar photovoltaic panel, what should be included in the accounting? The energy needed to mine the bauxite for the aluminum frame? The energy needed to manufacture the heavy equipment that did the mining? The energy needed to construct the factory that produced the panel? Where the boundaries are drawn affects the final net energy ratios.

A society that depends on inexpensive energy to maintain a high standard of living and constant growth faces a predicament—it cannot maintain itself over the long run without high net energy fuels. Oil, natural gas, and coal have provided a huge, high-quality energy subsidy to the modern world. That subsidy, which has enabled human population and wealth to grow exponentially, is based on finite resources and cannot continue indefinitely. Renewable energy sources, excluding hydropower, are generally more diffuse and have lower net energy ratios than fossil fuels. If high net energy sources are in decline, and no reasonable replacements are available, the result may be a painful restructuring as society rearranges economic activity to fit a diminishing energy supply.

For any potential energy resource, the fundamentals are the same. How much energy is available after subtracting the energy costs to extract, process, and deliver the resource? To know how much energy from a particular source can actually be deployed by society, we must factor in both the production costs and the system costs—that is, the energy required to make energy available to the end user. With gasoline, for instance, this calculation would include energy costs related to oil exploration, drilling, refining, transportation, and the infrastructure that supports each step of the process. With coal-derived electricity, the calculation would include the life cycle from mine to power plant to electric grid.

## **Energy-fueled Economic Growth**

World economic activity has historically grown slowly. From the Middle Ages to until the early eighteen hundreds, average per capita income rose only about 50 percent. But since the advent of the Industrial Revolution the pace has picked up, with global per capita income rising more than eightfold in just the last two hundred years.

Energy consumption has also risen dramatically, from under 20 gigajoules (GJ)<sup>39</sup> per person per year in the pre-industrial era to over 75 GJ per person today (and more than 300 GJ per person in the United

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<sup>39</sup> One joule is defined as the work required to produce one watt of power for one second. A gigajoule is a billion joules



States). During this period, energy consumption and economic activity have stoked each other in a self-reinforcing feedback loop. Once the fossil fuel tap was opened for the modern world in eighteenth-century Britain, the high-energy content of coal (and, later, oil) enabled unprecedented productivity—spurring more consumption, more demand for energy, and better technology to get at yet more fossil fuels.

Despite the clear link between energy and economic growth, economists have interpreted and normalized growth as resulting from factors such as “market efficiency” and “labor productivity,” which (it is assumed) can be counted upon to produce more and more growth, ad infinitum. Policy makers have therefore built dependence on growth into the design of our economic system. Investors demand constant growth and high rates of return. Future growth is assumed to wipe away the debts taken on today by governments, businesses, and households. Most Americans are even betting their retirement savings, sitting in mutual funds on Wall Street, on continued growth.

As the global bonanza of cheap fossil fuels winds down, what will happen to economic growth? Certainly it’s possible to get more benefit per joule through smarter use of energy, but using energy efficiency to “decouple” economic growth from energy consumption can only go so far. After the easy efficiencies are found, further efficiency measures often require greater cost for less benefit; and while greater efficiency may reduce costs at first, it can have the effect of spurring yet more consumption.

It’s intuitively clear that it takes energy to do things, and modern civilization has exploited high-energy-content fossil fuels to dramatically reshape the living conditions and experiences of billions of people. (Altering the climate and destroying natural ecosystems around the globe were unintended consequences.) In the future, humanity will need to cope with both more expensive energy and less energy available per capita. Maintaining an acceptable level of productivity—let alone growth—may constitute one of society’s foremost social, political, technical, and economic challenges.

## **Energy Density**

Different fuels contain more or less potential energy per unit of weight or volume, and even within fuel types, such as wood or coal, the heat value varies. Anthracite packs more energy than bituminous coal, and putting oak rather than pine in the woodstove before bedtime makes a big difference in how warm the house will feel on a winter morning. The fossil fuel age has been such a bonanza because oil and coal are extremely energy-dense fuels. They have benefited from the long work of geological processes to concentrate the carbon molecules from ancient plant and animal matter.

On average, coal has approximately twice the energy density of wood. Liquid fuels refined from petroleum including gasoline, kerosene, diesel, and heating oil all contain more than three times the energy value of wood. It is no accident that when human societies have had the opportunity to transition from locally harvested biomass to concentrated fossil energy fuels, they have chosen to do so.

The miraculous quality of fossil fuel energy density is easy to understand if one imagines trying to push an automobile for twenty miles. Given enough time, and some help from athletic friends, it would be

possible to push a 3,000-pound car that distance. But it would require a tremendous amount of effort. And yet a mere gallon of gasoline (which, despite recent price increases, still costs far less in the United States than an equivalent amount of good coffee) can easily power a car that far in the time it takes to drink a mocha latte. The fact that renewable energy is, in general, more diffuse than fossil fuel presents the primary challenge to transitioning from the current energy economy to a renewables-powered future.

## **Peak Oil and Resource Depletion**

Every individual gas or oil well, every oil field, and every oil-producing country experiences a similar lifecycle. After a well is drilled, extraction ramps up to its maximum sustained output and eventually begins to decline as the reservoir is depleted. Then we search for the next well, which is generally a little harder to find, a little more expensive to produce. The price of any fossil energy determines what reserves are economically recoverable, and technological innovations can temporarily reverse the decline or extend well life. But as with any finite, nonrenewable resource—coal, natural gas, uranium, etc.—depletion is inevitable at some point.

In recent years, a large body of literature has begun exploring the many ramifications of “peak oil”—the moment when aggregate global oil production reaches its apex. The late American geologist M. King Hubbert predicted in the mid-1950s that U.S. oil production would reach the top of its production curve around 1970 and then begin to decline. That assessment was remarkably prescient: America’s production of crude did peak in 1970 and has been generally declining since, despite the addition of new sources on the Alaska North Slope and in the Gulf of Mexico. The United States, the first great power of the oil age, was also the first nation to explore, exploit, and begin to deplete its conventional oil reserves.

Oil of course is a global commodity. From a global perspective, reaching Hubbert’s peak means that roughly half of the world’s total oil resources are still in the ground, waiting to be tapped. Practically, however, the second half of the global oil resource is more difficult to access, making it less profitable (in terms of net energy) and more environmentally destructive than the earlier-exploited reserves.

The exact timing of the global oil production peak will only be recognizable in hindsight. Some energy experts predict that the peak will occur sometime during the first two decades of the twenty-first century. Others project continued growth in oil extraction through 2050. Based on data published by the International Energy Agency, global conventional oil production has been essentially flat since 2004, despite record-high prices, and likely peaked in 2006. Increased production of unconventional oil (deepwater oil, tar sands, oil shale, and shale oil) is officially projected to help meet growth in demand in the near future, but some energy experts insist that new production from these sources will be unable to make up for accelerating declines in production from conventional oil fields. Whether peak oil has occurred, is imminent, or remains years or decades off makes little difference to the salient fact: the era of abundant, inexpensive oil is closing, and all the systems for modern life designed around that earlier reality are bound to be affected.

## Embodied Energy

Every material artifact—a carrot bought at the grocery store, the cooler where it was displayed, the supermarket building, the car driven there, and the road network it travels—requires a certain amount of energy in its manufacture, maintenance, and eventual disposal. The methods used to analyze the total embodied energy of manufactured objects vary, but in general, studies over the decades have used life-cycle analysis to quantify embodied energy in computers, household appliances, automobiles, and other common products.

The embodied energy in our physical infrastructure—from water mains and buildings to superhighways and airports—is immense, and thus infrastructure is one of the most important areas where energy use (and associated greenhouse gas pollution) could be reduced. In addition to building smaller, or building less, we can also build differently. Wood, for example, has the lowest embodied energy of common building materials; plastic has approximately six times as much embodied energy by weight, glass 16 times as much, steel 24 times as much, and aluminum a whopping 126 times as much embodied energy as wood. Erecting the scaffolding of civilization took a great deal of energy, and maintaining and expanding it takes more all the time. This vast amount of embodied energy, along with psychological and financial investments in the current energy distribution system, is a key obstacle to fundamental changes in that system.

Another useful metaphor that communicates the idea of embodied energy across a product's life cycle is the "energy train." Take for example that ubiquitous artifact of modern civilization, the mobile phone. To its owner, a cell phone is simply a handy gadget that offers convenience and a feeling of connection. But the phone does not exist in isolation—it isn't a single locomotive chugging down the tracks; rather, it pulls a train of cars behind it, all of which have ecological and energetic costs. Those metaphorical railroad cars are filled with packaging to ship the phone; an advertising industry to inculcate desire for it; a retail store to sell it; a communications network that allows it to function; an assembly plant to build it; factories to manufacture plastic cases and computer chips and other components; mines where copper, silver, and rare earth elements are dug from the ground; the transportation infrastructure to move raw materials; and of course the energy system (oil wells, coal mines, power plants, hydroelectric dams, etc.) that support the entire operation. It is a very long train, and every car being pulled along must be in place for even one mobile phone to make its first call.

## Energy Sprawl

The foremost criterion by which to judge any existing or potential energy source is its systemic ecological impact. A key subset of this analysis is its physical footprint. The useful term "energy sprawl" refers to the ever-increasing area—on land and offshore—that is devoted to energy production. Quantifying the area affected by different energy sources raises challenging methodological questions. It's obvious, for instance, to take into account the drilling pad when considering the energy sprawl impact of oil and gas development. But one should also include the land affected by pipelines, access roads, refining facilities, and other related infrastructure in the calculation. Nuclear power plants occupy

a small area relative to their electrical generation output, the smallest physical footprint of any major energy source. That energy sprawl impact grows considerably, however, when one factors in uranium prospecting, mining, processing, nuclear waste disposal, and any new power lines needed for an expanded nuclear industry. Moreover, as past accidents have demonstrated, when nuclear power plants fail, a large area can be contaminated.

Because of their high energy densities, coal, oil, and natural gas have a medium-size footprint if judged on an energy-output-per-acre ratio; but in practice these extractive industries affect a huge and growing area because they dominate energy production, and because of the enormous quantities of energy being consumed. Oil shale development in the American West is a potential area of fossil fuel exploitation that would create massive energy sprawl. Renewables, which harness the diffuse energy sources of wind and solar power, can have a large physical footprint relative to energy produced; they constitute such a small part of the current energy mix in North America that their aggregate energy sprawl impact at present is modest but growing. Because wind turbines require minimum spacing distances to maximize wind energy capture, the physical footprint of wind power is extensive but can be mitigated, whereas decapitated mountains in Appalachia sacrificed for surface coal mining will never grow back. Siting wind turbines in existing agricultural landscapes need not fragment any additional wildlife habitat. Putting solar arrays on rooftops, parking lots, and urban brownfields need not contribute to energy sprawl at all while generating significant energy close to where it is needed, eliminating the sprawl precipitated by new transmission lines.

Devoting land to growing feedstock for liquid biofuels, or growing biomass for generating electricity, augurs the greatest potential energy sprawl of the major energy alternatives under discussion. The energy density of these fuels is low and the amount of land that must be effectively industrialized, even for relatively small quantities of biofuels or biomass-derived electricity, is massive. In the end, the most effective strategy for fighting energy sprawl is to reduce energy consumption.

## **Energy Slaves**

During the vast majority of our species' history, work was done by human muscles (sometimes the muscles of human beings enslaved by others). After people learned to domesticate wild creatures, beasts of burden such as oxen and horses added to our ability to harness the Sun's energy—captured by plants and channeled into the muscles of work animals. (This relationship between domestic animals and the machines we use today is enshrined in the "horsepower" rating of modern engines.) More recently, people began using wind and waterpower to amplify human labor. But with the dawn of the fossil fuel age, the average person was able to command amounts of energy previously available only to kings and commanders of armies.

Where people or work animals formerly toiled in the fields, the petroleum-powered machines of industrial agriculture now do the work of growing food. Need to be on the other side of the planet tomorrow? Jet travel can get you there. Want to sit in the sunshine, gamble, and overeat with a few thousand strangers in a gigantic floating hotel? The cruise "industry" can make your dreams come true.

Energy-dense fossil fuels make the seemingly impossible or ridiculously extravagant whims of people a reality.

In effect, the modern energy economy provides power equivalent to that of vast numbers of human or animal servants. That is the idea behind the concept of “energy slaves.” Although top athletes can do far better, a typical adult male at sustained labor is estimated to produce 75 to 100 watts of power. Calculate the total energy use of an average American and it seems that there are the energetic equivalent of more than 100 energy slaves working around the clock to prop up the easy lifestyle offered by modern civilization.

### **Energy Future: A Positive Vision**

Everyone engaged in combating human-caused climate change or specific elements of the current energy economy knows that the work is primarily oppositional. It could hardly be otherwise; for citizens who care about ecological integrity, a sustainable economy, and the health of nature and people, there is plenty to oppose—burgeoning biomass logging, mountaintop-removal coal mining, inadequately regulated natural gas and oil drilling, poorly sited solar and wind developments, river-killing megadams, and new nuclear and coal plants around the globe. These and many other fights against destructive energy projects are crucial, but they can be draining and tend to focus the conversation in negative terms. Sometimes it’s useful to reframe the discourse about ecological limits and economic restructuring in positive terms, that is, in terms of what we’re for. The following list is not comprehensive, but beauty and biodiversity are fundamentals that the energy economy must not diminish. And energy literacy, conservation, relocation of economic systems, and family planning are necessary tools to achieve our vision of a day when resilient human communities are embedded in healthy ecosystems and all members of the land community have space enough to flourish. In short, what we’re for is leaving behind the current energy economy, which is wasteful, polluting, and centralized; assumes perpetual growth; and is anchored by nonrenewable fuels. We envision a bold leap toward a future energy economy that fosters beauty and health; that is resilient because it emphasizes renewable, community-scale energy generation; that supports durable economies, not growth; and that is informed by nature’s wisdom. Recognizing that all human economic activity is a subset of nature’s economy and must not degrade its vitality is the starting point for systemic transformation of the energy system. While such a transition may seem daunting, reforms may be implemented incrementally, and the destination offers exciting possibilities for building vibrant human communities embedded in healthy ecosystems.

### **Energy Literacy**

Energy is arguably the most decisive factor in both ecosystems and human economies. It is the fulcrum of history, the enabler of all that we do. Yet few people have more than the sketchiest understanding of how energy makes the world go around. Basic energy literacy consists of a familiarity with the laws of thermodynamics, and with the concepts of energy density and net energy (also known as energy return on energy invested, or EROEI). It requires a familiarity with the costs and benefits of our various energy sources—including oil, coal, gas, nuclear, wind, and solar. It also implies numeracy—the ability to

meaningfully compare numbers referring to quantities of energy and rates of use, so as to be able to evaluate matters of scale. Without energy literacy, citizens and policy makers are at the mercy of interest groups wanting to sell us their vision and products for the future energy economy. We hear from the fossil fuel industry, for example, that Canada's oil reserves (in the form of "tar sands") are second only to Saudi Arabia's, or that the United States has over one hundred years of natural gas thanks to newly tapped "shale gas" resources. And it's tempting to conclude (as many people do) that there are no real constraints to national fossil fuel supplies other than environmental regulations preventing the exploitation of our immense natural treasures. On the other end of the spectrum, we hear from technooptimists that, with the right mix of innovative energy generation and efficiency technologies, we can run the growth economy on wind, solar, hydropower, and biofuels. And it's tempting to conclude that we only need better government incentives and targeted regulatory reform to open the floodgates to a "green" high-tech sustainable future. Energy literacy arms us with the intellectual tools to ask the right questions: What is the energy density of these new fossil fuel resources? How much energy will have to be invested to produce each energy unit of synthetic crude oil from oil shale, or electricity from thin-film solar panels? How quickly can these energy sources be brought online, and at what rate can they realistically deliver energy to consumers? When we do ask such questions, the situation suddenly looks very different. We realize that the "new" fossil fuels are actually third-rate energy sources that require immense and risky investments and may never be produced at a significant scale. We find that renewable energy technologies face their own serious constraints in energy and material needs, and that transitioning to a majority-renewable energy economy would require a phenomenal retooling of our energy and transportation infrastructure. With energy literacy, citizens and policy makers have a basis for sound decisions. Householders can measure how much energy they use and strategize to obtain the most useful services from the smallest energy input. Cities, states, and nations can invest wisely in infrastructure to both produce and use energy with greatest efficiency and with minimal damage to the natural world. With energy literacy, we can undertake a serious, clear-eyed societal conversation about the policies and actions needed to reshape our energy system.

### Conservation

The current energy economy is toxic not simply because of its dependence on climate-altering fossil fuels, but also because of its massive scale and wastefulness. A first step toward reducing its global impacts is simply using less energy, a goal readily accomplished through conservation practices that are widely available and cost-effective. Energy conservation consists of two distinct strategies: efficiency and curtailment. Energy efficiency means using less energy to produce a similar or better service. For example, we can exchange old incandescent lightbulbs for compact fluorescents or LEDs that use a fraction of the electricity and still enjoy satisfactory levels of indoor illumination. Curtailment means exactly what you'd think: cutting out a use of energy altogether. In our previous example of indoor lighting, this strategy might take the form of turning off the lights when we leave a room. Efficiency is typically more attractive to people because it doesn't require them to change their behavior. We want services that energy provides us, not energy per se, and if we can still have all the services we want,

then who cares if we're using less energy to get them? Much has been achieved with energy efficiency efforts over recent decades, but much more remains to be done: Nearly all existing buildings need to be better insulated, and most electric power plants are operating at comparatively dismal efficiencies, to mention just two examples. Unfortunately, increasing investments in energy efficiency typically yield diminishing returns. Initial improvements tend to be easy and cheap; later ones are more costly. Sometimes the energy costs of retooling or replacing equipment and infrastructure wipe out gains from efficiency. Nevertheless, the early steps toward efficiency are almost always rewarding. While curtailment of energy use is a less inviting idea, it offers clearer savings. By simply driving fewer miles we unequivocally save energy, whether our car is a more or less efficient model. We've gotten used to using electricity and fuels to do many things that can be done well enough with muscle power, or that don't need doing at all. Conservation helps us appreciate the energy we use. It fosters respect for resources, and for the energy and labor that are embodied in manufactured products. It reduces damage to already stressed ecosystems and helps us focus our attention on dimensions of life other than sheer consumption. During the latter decades of the twentieth century, most Americans achieved a standard of living that was lavish from both historical and cross-cultural perspectives. They were coaxed and cajoled from cradle to grave by advertising to consume as much as possible. Simply by reversing the message of this incessant propaganda, people might be persuaded to make do with less—as occurred during World War II—and be happier as well. Many social scientists claim that our consumptive lifestyle damages communities, families, and individual self-esteem. A national or global ethic of conservation could even be socially therapeutic.

## Resilience

Resilience is “the capacity of a system to withstand disturbance while still retaining its fundamental structure, function, and internal feedbacks.” Resilience contrasts with brittleness—the tendency to shatter and lose functionality when impacted or perturbed. Ecologists who study resilience in natural systems have noted that ecosystems tend to progress through a series of phases: growth, consolidation and conservation, release (or “collapse”), and reorganization. Each turning of this adaptive cycle provides opportunities for individual species and whole systems to innovate in response to external and internal change (i.e., disturbance). Resilient ecosystems (in the early growth phase) are characterized by species diversity; many of the organisms within such systems are flexible generalists, and the system as a whole contains multiple redundancies. In contrast, less resilient ecosystems tend to be more brittle, showing less diversity and greater specialization particularly in the consolidation phase. Resilience can be applied to human systems as well. Our economic systems, in particular, often face a trade-off between resilience and efficiency. Economic efficiency implies specialization and the elimination of both inventories and redundancy (which typically guarantee greater resilience). If a product can be made most cheaply in one region or nation, manufacturing is concentrated there, reducing costs to both producers and consumers. However, if that nation were to suddenly find it impossible to make or ship the product, that product would become unavailable everywhere. Maintaining dispersed production and local inventories promotes availability under crisis conditions, though at the sacrifice of economic efficiency (and profits) in “normal” times. From a resilience perspective one of the most vulnerable

human systems today is the American transportation system. For over seventy years we've spent trillions of dollars building transportation infrastructure that is completely dependent (i.e., "specialized") on affordable petroleum fuels, and we've removed or neglected most alternative methods of transport. As petroleum fuels become less affordable, the effects reverberate throughout the system. Resilience becomes more of a priority during periods of crisis and volatility, such as the world is experiencing today. Households, towns, and regions are better prepared to endure a natural disaster such as a flood or earthquake if they have stores of food and water on hand and if their members have a range of practical self-sufficiency skills. While the loss of economic efficiency implies trade-offs, resilience brings incidental benefits. With increased local self-sufficiency comes a shared sense of confidence in the community's ability to adapt and endure. For the foreseeable future, as global energy, finance, and transport systems become less reliable, the rebalancing of community priorities should generally weigh in favor of resilience.

### Eco-Localism

A central strategy needed to increase societal resilience is localization—or, perhaps more accurately, relocalization. Most pre-industrial human societies produced basic necessities locally. Trade typically centered on easily transportable luxury goods. Crop failures and other disasters therefore tended to be limited in scope: If one town was devastated, others were spared because they had their own regional sources—and stores—of necessities. Economic globalization may have begun centuries ago with the European colonization of the rest of the world, but it really took hold during the past half century with the advent of satellite communications and container ships. The goal was to maximize economic growth by exploiting efficiency gains from local specialization and global transport. In addition to driving down labor costs and yielding profits for international corporations, globalization maximized resource depletion and pollution, simplified ecosystems, and eroded local systems resilience. As transport fuel becomes less affordable, a return to a more localized economic order is likely, if not inevitable. The market's methods of rebalancing economic organization, however, could well be brutal as global transport networks become less reliable, transport costs increase, and regions adapt to less access to goods now produced thousands of miles away. Government planning and leadership could result in a more organized and less chaotic path of adaptation. Nations can begin now to prioritize and create incentives for the local production of food, energy, and manufactured products, and the local development of currency, governance, and culture. Natural ecological boundaries—such as watersheds—bordered traditional societies. Bioregions defined by waterways and mountain ridges could thus become the basis for future relocalized economic and political organization. Deliberate efforts to relocalize economies will succeed best if the benefits of localism are touted and maximized. With decentralized political organization comes greater opportunity for participation in decision making. Regional economic organization offers a wide variety of productive local jobs. Society assumes a human scale in which individuals have a sense of being able to understand and influence the systems that govern their lives. People in locally organized societies see the immediate consequences of their production and waste disposal practices, and are therefore less likely to adopt an "out of sight, out of mind" attitude toward resource depletion and pollution. Local economic organization tends to yield art,



music, stories, and literature that reflect the ecological uniqueness of place—and local culture in turn binds together individuals, families, and communities, fostering a sense of responsibility to care for one another and for the land.

## Beauty

Discussions about energy rarely focus on beauty. But the presence or absence of this ineffable quality offers us continual clues as to whether or not society is on a regenerative and sustainable path, or on the road to further degrading nature. From the time of the earliest cave paintings, human ideals of beauty have been drawn from the wild world. Animals, plants, rivers, oceans, and mountains all tend to trigger a psychological response describable as pleasure, awe, and wonder. The sight of a great tree or the song of a goldfinch can send poets and mystics into ecstasy, while the deep order inherent in nature inspires mathematicians and physicists. Nature achieves its aesthetic impact largely through anarchic means. Each part appears free to follow its own inner drives, exhibiting economy, balance, color, proportion, and symmetry in the process. And all of these self-actualizing parts appear to cooperate, with multiple balancing feedback loops maintaining homeostasis within constantly shifting population levels and environmental parameters. The result is beauty. Ugliness, by contrast, is our unpleasant aesthetic response to the perception that an underlying natural order has been corrupted and unbalanced—that something is dreadfully out of place. Beauty is a psychological and spiritual need. We seek it everywhere and wither without it. We need beauty not as an add-on feature to manufactured products, but as an integral aspect of our lives. With the gradual expansion of trade—a process that began millennia ago but that quickened dramatically during the past century—beauty has increasingly become a valuable commodity. Wealthy patrons pay fortunes for rare artworks, while music, fashion, architecture, and industrial design have become multibillion-dollar industries. Nature produces the most profound, magnificent, and nurturing examples of beauty in endless abundance, for free. Industrialism, resulting from high rates of energy use, tends to breed ugliness. Our ears are bombarded by the noise of automobiles and trucks to the point that we can scarcely hear birdsong. The visual blight of highways, strip malls, and box stores obscures natural vistas. With industrial-scale production of buildings, we have adopted standardized materials produced globally to substitute for local, natural materials that fit with their surroundings. But industrialism does not just replace and obscure natural beauty—it actively destroys it, gobbling up rivers and forests to provide resources for production and consumption. Large-scale energy production—whether from coal mines and power plants, oil derricks and refineries, or massive wind and solar installations—comes at a cost of beauty. While some energy sources are inherently uglier than others, even the most benign intrude, dominate, and deplete if scaled up to provide energy in the quantities currently used in highly industrialized nations. The aesthetic impact of industrial processes can be mitigated somewhat with better design practices. But the surest path to restoring the beauty of nature is to reduce the scale of human population and per capita production and consumption. Returning to a sustainable way of life need not be thought of as sacrifice; instead it can be seen as an opportunity to increase aesthetic pleasure and the spiritual nourishment that comes from living in the midst of incalculable beauty.

## Biodiversity

The family of life on Earth is large: More than a million species have been identified and formally described by taxonomists, and estimates of the total number of species on the planet range from 3 million to 100 million. We humans depend for our very existence on this web of life of which we are a part. Indeed, it is part of us: Each human is inhabited by thousands of species of microbes that enable digestion and other basic functions. Yet through our species' appropriation and destruction of natural habitat we are shredding microbial, forest, prairie, oceanic, riparian, desert, and other ecosystems. Habitat loss, overharvesting, climate change, and other results of human numbers and behavior endanger untold numbers of species with extinction. Extinction is nothing new: It is an essential part of the process of evolution. Throughout the billions of years of life's history, life forms have appeared, persisted for thousands or millions of years, and vanished, usually individually but occasionally in convulsive mass events triggered by geological or astrophysical phenomena. There were five ancient extinction events so catastrophic that 50–95 percent of all species died out. Today humans are bringing about the sixth mass extinction in the history of life on Earth. While the normal rate of extinction is about one in a million species per year, the extinction rate today is roughly a thousand times that. According to recent studies, one in five plant species faces extinction as a result of climate change, deforestation, and urban growth. One of every eight bird species will likely be extinct by the end of this century, while one-third of amphibian and one-quarter of mammal species are threatened. As species disappear, we are only beginning to understand what we are losing. A recent United Nations study determined that businesses and insurance companies now see biodiversity loss as presenting a greater risk of financial loss than terrorism—a problem that governments currently spend hundreds of billions of dollars per year to contain or prevent. Nonhuman species perform ecosystem services that only indirectly benefit our kind, but in ways that often turn out to be crucial. Phytoplankton, for example, are not a direct food source for people, but comprise the base of oceanic food chains, in addition to supplying half of the oxygen produced each year by nature. The abundance of plankton in the world's oceans has declined 40 percent since 1950, according to a recent study, for reasons not entirely clear. This is one of the main explanations for a gradual decline in atmospheric oxygen levels recorded worldwide. Efforts to determine a price for the world's environmental assets have concluded that the annual destruction of rainforests alone entails an ultimate cost to society of \$4.5 trillion—roughly \$650 for each person on the planet. Many species have existing or potential economically significant uses, but the value of biodiversity transcends economics: The spiritual and psychological benefits to humans of interaction with other species are profound. Most fundamentally, however, nonhuman species have intrinsic value. Shaped by the same forces that produced humanity, our kin in the community of life exist for their own sake, not for the pleasure or profit of people. It is the greatest moral blot, the greatest shame on our species, for our actions to be driving other life forms into the endless night of extinction.



To: Town of Carrboro Board of Alderman  
Re: Carrboro Climate Community Action Plan

2.16.16

Dear Board of Alderman,

The Chapel Hill-Carrboro City School District (CHCCS) is committed to creating healthy and sustainable environments for our students and community to live and learn. The proposed Carrboro Climate Community Action Plan, addresses many of the issues that impact our students and their families and we are pleased to support this community effort.

The proposed Action Plan directly addresses private vehicle idling at schools. CHCCS Board Policy 6306 "prohibits all unnecessary school bus idling" and we welcome the support from the town to assist in private vehicle idling reduction.

CHCCS would like to see further development of the plan to include expedited and possibly reduced fees for permits for projects that meet or exceed town sustainability goals. We believe that this will incentivize sustainable-focused projects and support our commitment to sustainability.

Sincerely,

A handwritten signature in blue ink, appearing to read "DAS", with a long horizontal flourish extending to the right.

Dan Schnitzer  
Sustainability Coordinator  
Chapel Hill-Carrboro City Schools