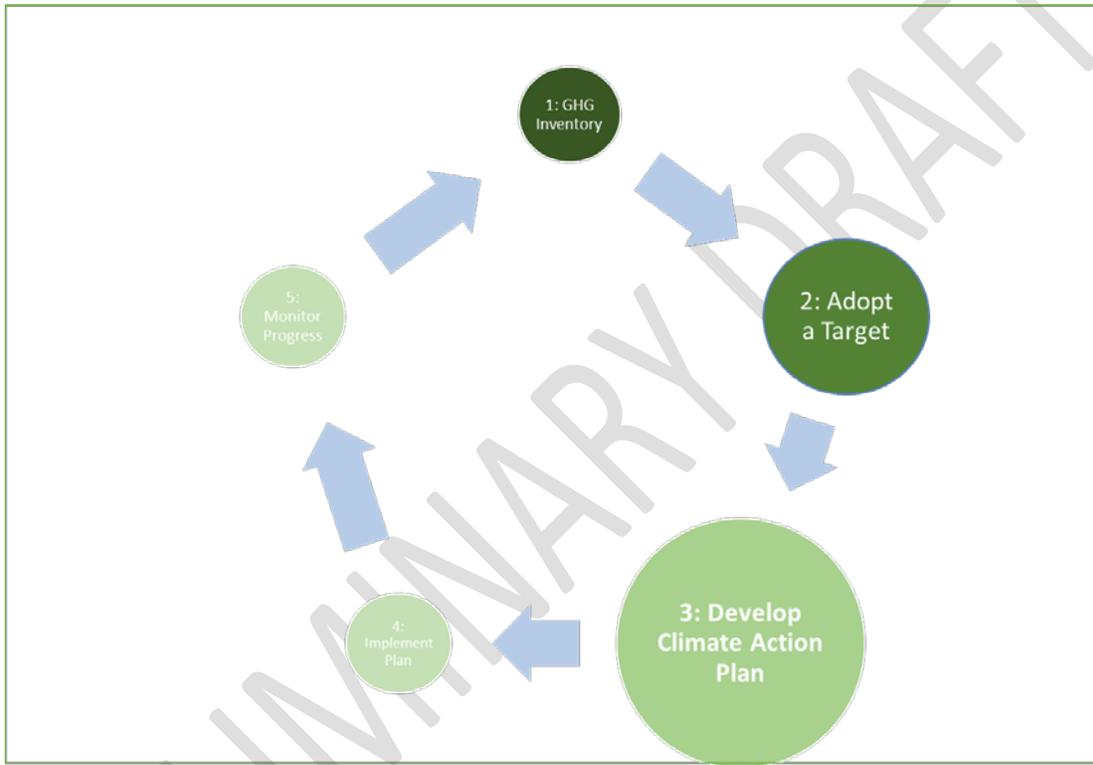


Community Climate Action Plan

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



Town of Carrboro, North Carolina

June 23, 2015

**Prepared by the Carrboro Energy and Climate Protection Task Force
Carolyn Buckner, Jeff Herrick, Kathy Kaufman, Jeanette O'Connor, Rob Pinder**

With support from

**Board of Aldermen Liaisons Randee Haven O'Donnell and Sammy Slade
and Town Staff Randy Dodd**

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Those in the community pursuing climate action work.

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PRELIMINARY DRAFT

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. Measures in the plan are designed primarily 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 to adopt a goal of a 50% reduction in greenhouse gas emissions by 2025, as supported by a broad community campaign. Over 20 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 also provide the Town with many local benefits such as financial savings through energy efficiency, the creation of new jobs, improved air quality and public health, a healthier forest and streams.

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.”¹

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.² 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 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.

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 natural resources could experience a broad range of negative trends and 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 this massive environmental problem. Local governments and communities can address the challenge and opportunity of reducing greenhouse gases in a number of creative ways.

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

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

The 2014 Orange County State of the Environment³ 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.*⁴

The introduction in the previous section presents a stark, sobering, and ominous picture and one that we all need to acknowledge and recognize. However, only laying out the danger associated with climate change neglects humanity’s capacity and resourcefulness. 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.⁵ In addition, some measures are often necessary and/or more effective at the municipal/community level than at other levels. Our hope is that more and more communities will accelerate and ramp up efforts, and begin to make significant reductions in the level of climate-changing gases now being produced.

³ http://www.orangecountync.gov/document_center/DEAPR/2014_SOE_complete_report.pdf

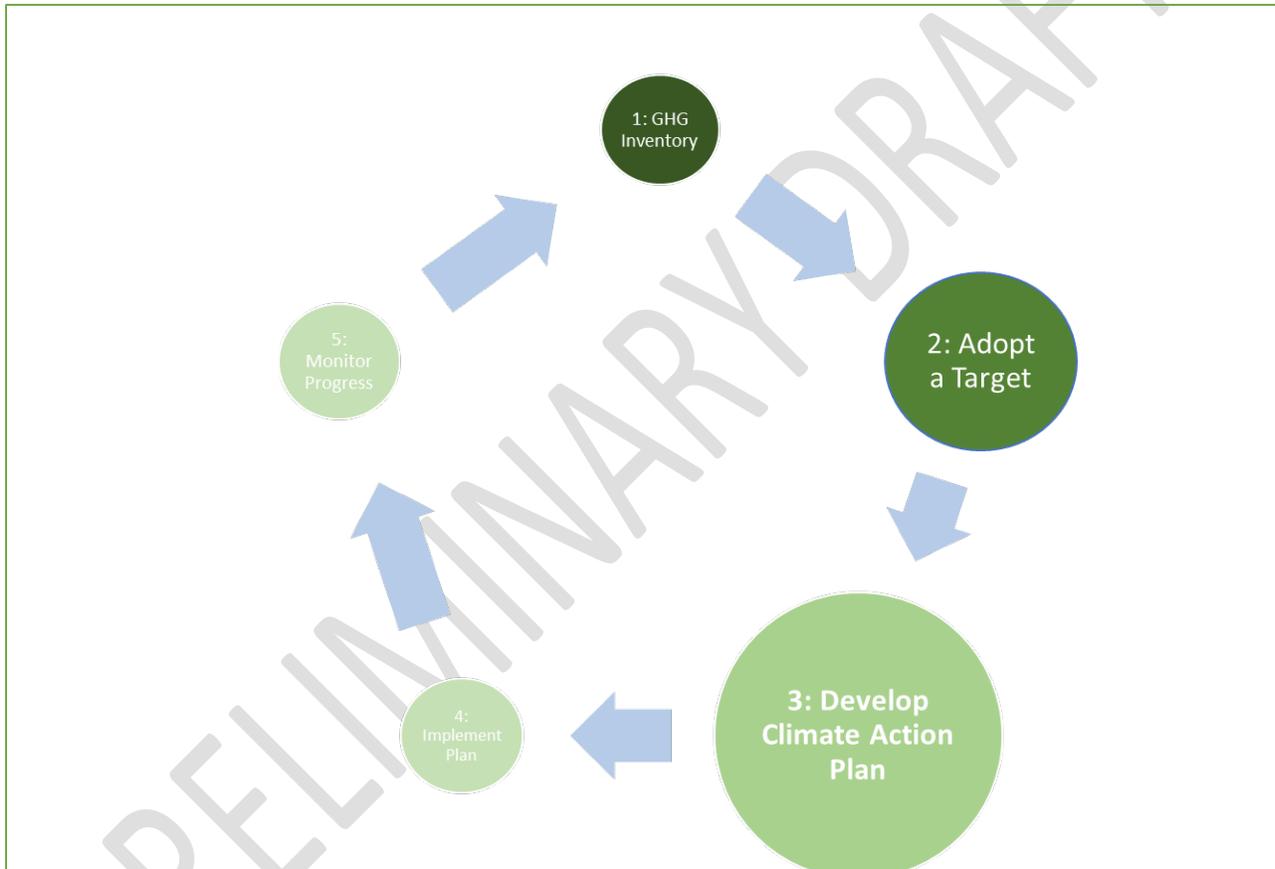
⁴ [The Energy Reader: Overdevelopment and the Delusion of Endless Growth](#), Tom Butler, Daniel Lerch, and George Wuerthner, eds. (Healdsburg, CA: Watershed Media, 2012)

⁵ <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 Inventory⁶

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 in development and implementation of strategies to mitigate emissions by understanding the sources and quantity of emissions and 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 CO₂ emissions by its proportion of the amount which is required to stabilize the climate back to <350 ppm of CO₂ ..., and asks staff to evaluate how to achieve this target for municipal operations and the community”.⁷ 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.⁸

⁶ More information on previous inventories is available on the Town’s website:

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

⁷ 1990 is when global CO₂ 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.

⁸ Chapel Hill has established a goal of 60% reduction by 2050. UNC has established a goal of being carbon neutral by 2050. Appendix 2 outlines a hypothetical example of a “typical” American household becoming carbon neutral in 10 years.

Organization	Goal	Target year
Department of Defense	30% reduction in energy use and 20% of energy from renewable sources	2020
State of California	40% reduction in greenhouse gas emissions for entire state	2030
City of Seattle	Net zero greenhouse gas emissions for entire city (not just municipal operations)	2050
US-China Joint Announcement on Climate Change	US greenhouse gas emission reduction of 26 - 28%, China achieve 20% of energy from non-fossil sources	US: 2025; China: 2030

One purpose of this Plan is to provide a new recommendation on community scale target reductions. Climate Action Goals are framed in a variety of ways to best meet that entity’s needs and values. The task force recommends that Carrboro’s Climate Action Goal: meaningfully reduce greenhouse gas emissions at a time scale that is urgent; encourage growth and shared prosperity; be able to be measured and certified. With these criteria in mind, the Task Force recommends this Carrboro Climate Action Goal:

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

This goal is a meaningful reduction in carbon pollution that is consistent with the scientific recommendations calling for large emission reductions needed to reduce the risk of dangerous climate change. The goal represents a substantial but 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 and 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. There are also external factors that will help the community make progress. The electric utilities are scheduled to generate 6% of their electricity from renewable sources by 2021. National 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.⁹

⁹ 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 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, operations, and transportation; concentrates on activities for which the government has direct influence – personnel, operations, 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.



The measures recommended below provide the basis for the first comprehensive community scale plan focusing on climate action specifically for Carrboro. They are a companion to measures presented in the plan produced in 2014 that focused on municipal operations. Other local governments and agencies and UNC have and continue to be engaged in similar and locally relevant efforts^{10,11,12}. To emphasize, the Task Force recommends that the Town pursue a two-part climate action strategy. Strategy 1 is to provide leadership through municipal operations as outlined in the 2014 report. By working to significantly reduce its own emissions, the Town of Carrboro is leading the community’s climate protection efforts, and is setting 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 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.

¹⁰ <http://www.townofchapelhill.org/town-hall/departments-services/planning-and-sustainability/sustainability>

¹¹ <http://www.owasa.org/energy-management>

¹² <https://climate.unc.edu/GreenhouseGasInventory>

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 than the choices made by a town. A very large share of the GHG footprint in the community occurs because of the collective impact of private decisions made by residents for which the Town has very limited 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:

- 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 with Carrboro, Chapel Hill and UNC; TTA is a multi-county/regional transit authority serving over a million people;
- 3) Carrboro on its own has very limited influence on larger electricity and natural gas utilities. Duke Energy provides electricity 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;
- 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 multifamily. 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.
- 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, with the remaining 7% coming from local government operations. Significant community buy-in and involvement in nearly every aspect of this plan is essential for Carrboro to succeed with emissions reduction and climate change mitigation.

Table 1: Local Climate Action Planning is One Layer in a Continuum ¹³

Organizational Scale Examples	General Scale (population)	Climate Action “Primary Domain” Examples
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, corporations	~10-100 people	Small organization organizing, management, orientation to
Schools, co-ops, larger clubs, businesses, congregations, corporations	~100-1000 people	Business/organization planning and management
Small towns, colleges, co-ops	~1k-10k people	Sustainability plans; land use and transportation
Towns, small utilities, universities	~10k-100k people	Local climate action/sustainability plans; land use and transportation; local living economy
Cities, medium utilities, counties	~100k-1M people	Local climate action/sustainability plans; land use, transit/transportation
Regions, states, large utilities/utility commissions	~1M-10M people	Transit/transportation; utility regulation; State law; building Code
Nations, international	~>10M people	Climate summits; carbon pricing; IPCC; building code; federal laws; trade agreements

¹³ Note that this table does not fully address continuums of access to capital and decision making authority, nor to sociological and cultural dimensions, all of which 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 for Carrboro occurs. The reader is referred to the work of the Post Carbon Institute for a fuller introduction to energy and climate literacy: <http://www.postcarbon.org/>

The Task Force offers recommendations in this section that focus on grassroots/neighborhood scale efforts and enhancing the Town and community capacity for supporting sustainability. The recommendations are integrative in that they apply to all of the other recommendations provided, and are more focused on community enhancement and participation.

Community Integration Recommendation 1: Engage Community

<i>Engage Community to be a Part of the Solution by Piloting Transition Streets and/or Similar Programs</i>
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Implementation Opportunities	Transition Streets is a program with a proven track record in Europe and growing interest in the U.S. Neighbors recruit neighbors. Groups meet seven times over several months and choose practical actions to take from units on energy, food, water, waste, and transportation. The US version has just rolled out is a good place to start with a community engagement effort.
Implementation Challenges	<ul style="list-style-type: none"> • How to Ensure Diverse Group Trained as Facilitators • 59 % of Residential Properties in Carrboro are rental properties • How to Ensure Momentum
Resources Needed (human and material)	<ul style="list-style-type: none"> • Money for education and promotion materials. • Ideally a nonprofit, along with new Town staff to provide leadership. • Consider support such as technical assistance and loans or grants for low income households to weatherproof, etc.
Anticipated Cost	TBD
Leadership	Grassroots but will need a leader or nonprofit organization to adapt, promote, and sustain efforts beyond the Pilot Phase.
Partners	Pickards Mountain Ecoinstitute, Chapel Hill-Carrboro City Schools, UNC Sustainability Program, Orange County Solid Waste Program, Chapel Hill Sustainability 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, Home Builders Association of Durham, Orange, and Chatham, Faith Based Environmental Groups, Town of Carrboro, and more
Fit with Items	Every Single Section of this Action Plan
Next Step(s)	<p>Modify Transition Streets program for Carrboro (add: land unit for sustainable landscaping and urban forestry; components geared towards multi-family residential properties/rentals; appendix with information on locally available resources). <i>Summer 2015</i></p> <p>Recruit and train diverse group of facilitators. <i>Fall 2015</i></p> <ul style="list-style-type: none"> • Pilot Program in facilitator’s neighborhoods (TBD). <i>Fall-Winter 2015</i> • Debrief with pilot program neighborhoods and modify program as needed. <i>Spring 2016</i> • Official rollout. <i>Fall 2016</i> • Install neighborhood and/or town wide dashboard to show progress, and build a climate change action oriented community. <i>Fall 2016</i>
Evaluation Criteria	<ul style="list-style-type: none"> • People reached. Energy saved. Forest and soil protected or gained.

Other Potential Programs Involving the Community:

- K-12 Educational Curriculum on Sustainability (Talk of this from the CHCCS Sustainability Coordinator, Excellent model in Oberlin Climate Action Plan)
- Grey to Green Initiatives (Portland Model, etc.) – Funded by Stormwater Utility
- Incentive Programs (Neighborhoods, Businesses, Property Owners) – Funded by Stormwater Utility or in Residential Areas by Green Neighborhoods Program.

PRELIMINARY DRAFT

Community Integration Recommendation 2: Green Neighborhood Program

It is proposed that Carrboro create a new program that will identify projects to offer neighborhoods that

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

will save the Town money and make available the neighborhood’s proportion of saved monies for them to reallocate to new green project initiatives through a participatory democracy process.

Implementation Opportunities	<ul style="list-style-type: none"> • Enlists and engages neighborhoods in efforts to reduce CO2 emissions in community-at-large • Builds community within neighborhoods • Neighborhood based economic development opportunities may spin-off • Possibility of creating a community scale “dashboard” that tracks energy use/emissions/savings
Implementation Challenges	<ul style="list-style-type: none"> • Identification of mechanism for town to allocate saved funds to neighborhoods • Development of participatory democracy process and criteria for new green project initiatives • Marketing for participation of neighborhoods • Would this be available for apartment complexes?
Resources Needed (human and material)	<ul style="list-style-type: none"> • Full time person managing neighborhood portfolios and facilitating neighborhood efforts • Common spaces per neighborhood (i.e. for centralized neighborhood composting, solar panels, etc.) • Educational campaign on opportunities for greening ones neighborhood
Anticipated Cost	<ul style="list-style-type: none"> • Cost of full time person in charge of managing program • Marketing
Leadership	Neighborhood leaders
Partners	<ul style="list-style-type: none"> • Homeowner associations • Solarize Carrboro • Clean Energy Durham • Former Pete Street participants? • Town <ul style="list-style-type: none"> • Sustainability coordinator • Rec and Park (Clean Energy Durham Pete Street Effort) • Public Works • Businesses <ul style="list-style-type: none"> • Fitch • Solar installers • Weatherization installers • Fifth Season/other local nurseries • Local landscapers • Non-profits • Orange County Solid Waste Management – composting
Time Frame	Ongoing

Fit with Items	<ul style="list-style-type: none"> • Recycling and composting successes translate into savings associated with less frequent trash pick-ups • On-street parking park and ride permits? • Composting reduces trash headed for the landfill = cost savings + reduced methane gas • Neighborhood competitions awards program <ul style="list-style-type: none"> • Solarize • Energy Efficiency / Pete Streets • Street Lights off for Climate t Project
Next Step(s)	<ol style="list-style-type: none"> 1. Presentations laying out town’s CO2 responsibilities as measured through social equity lens and the urgency of CO2 reduction per the latest science <ul style="list-style-type: none"> • Town-wide initial presentation followed by • Presentations to neighborhoods that want to engage in green neighborhoods initiative 2. Create process for developing further program ideas and mechanism for neighborhoods to initiate <ul style="list-style-type: none"> • Set neighborhood CO2 reduction goals in line with town’s at large goal • 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) • Identify further potential programs and their contributions to reducing CO2 for the neighborhood (ongoing) • Develop neighborhood green participatory democracy process and criteria for new green project initiatives • Develop way for town to allocate funds • Support and facilitate neighborhoods participation 3. Awards program for neighborhoods achieving biggest reductions per energy sector (Trash, Transportation, Housing)
Evaluation Criteria	People reached. Energy saved. \$ reallocated.

Community Integration Recommendation 3: Expanded Capacity

Expand Staff and Community Capacity to Support Community Sustainability Initiatives

Community members could organize to form a coalition to meet regularly to review implementation of sustainability partnerships and programs, and to suggest new implementation measures. Alternatively/eventually/additionally, and in conjunction with expanded staff capacity, a new Advisory Board could be formed with responsibility for overseeing community climate action efforts. Resource hub for citizens interested in energy efficiency efforts/opportunities within the town

Implementation Opportunities	Additional staff could facilitate non-profit/ business partnerships to improve energy efficiency in the community, and to publicly recognize successes.
Implementation Challenges	Town has limited capacity to investigate and work with local partners to pursue these programs. Ability of community advocates to organize Funding to help residents interested in retro-fits Community organizing requires dedicated volunteers; not clear if sufficient interest exists Staff capacity is currently limited to support a new advisory board
Resources Needed (human and material)	Additional community volunteers and staff capacity
Anticipated Cost	Cost of hiring additional staff.
Leadership	Board of Aldermen, Staff Managers, Community Volunteers
Partners	Several programs have been developed in North Carolina to lower the barriers to energy efficiency adoption within a community.*
Time Frame	FY 2016/17 budget cycle (ideally, in conjunction with hiring of sustainability coordinator)
Fit with Items	20/20 challenges.
Next Step(s)	Staff and Board of Aldermen to consider in development of FY 2016/17 budget cycle and community champions to self-identify
Evaluation Criteria	Track adoption of efficiency measures incentivized by programs facilitated/supported by the Town.

*Examples include:

- 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. Contact is Michelle Lampert shellielampert@gmail.com
- 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.<http://www.nchfa.com/nonprofits/HPsystemvision.aspx>
- Transition Streets and Pete Street programs. 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 residents learn simple energy savings projects and behaviors.

- The State Energy Office runs the [E-Conservation Home Energy Improvements](#) program. This runs out in July, 2015. If it is not renewed, perhaps the Town of Carrboro could sponsor a similar program, or partner with Chapel Hill or the County to do so. The State Energy Office has been pursuing this for several years and is a valuable resource for learning what works.

Community Integration Recommendation 4: Qualified Energy Conservation Bonding

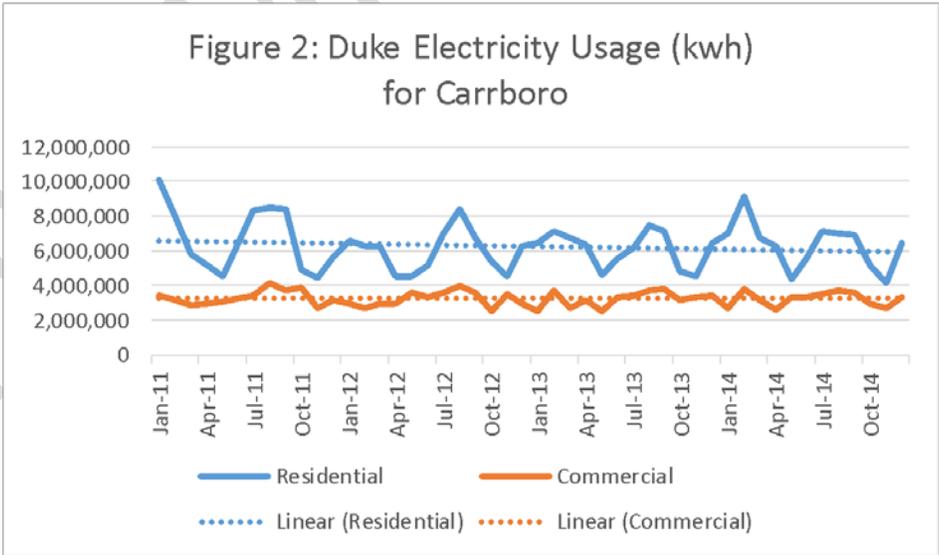
Obtain/use QECB authority to fund upfront costs

The Task Force is looking into the opportunity to obtain QECB funding authority, and will provide additional information with our final report.

Building Energy Efficiency Measures

Most Carrboro residents rent their homes; 33% of homes are owner occupied, compared to 59% renter occupied (the remaining 8% of homes are vacant)¹⁴. To achieve substantial GHG reduction from a home, usually some construction or retrofits are required. This additional cost to landlords is difficult to capture in higher rents. 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: new development planners, energy efficiency contractors, affordable housing advocates, renters, and landlords. For many rental properties, renters pay the utility bills and as a result, landlords have little financial incentive to monitor and reduce energy use. Conversely, renters have no incentive to make investments in a property they do not own. Energy performance rating/audit requirements 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, the required ratings can serve as an incentive for building owners to improve energy efficiency.

As a major emissions source, it is desirable to attempt to determine trends in electrical energy use over time. Duke Energy has been able to provide monthly electricity use data specifically for Carrboro beginning in January, 2011 through the end of 2014, 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. If this trend can be maintained or accelerated through the recommended, it will be very beneficial to pursuing the overall reduction targets. Any ability to determine how representative the trend is of years prior to 2011 would also be beneficial to the monitoring of overall progress.



¹⁴ UNC Capstone Team, 2015. 2012 Greenhouse Gas Emission Inventory for the Town of Carrboro, NC. <http://nc-carrboro.civicplus.com/DocumentCenter/Home/View/2788>

Buildings Recommendation 1: 50% Challenge

Reduce Emissions Attributed to Carrboro Buildings by 50% by 2025

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. If the private sector becomes engaged, the downtown area of Carrboro and Chapel Hill could evolve into a recognized “2030 District”[1]
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; more efficient buildings result in cost savings and support the green building sector
Leadership	Potential leaders include: existing and/or new nonprofit(s); the Carrboro Business Alliance; Chamber of Commerce; Triangle Green Building Council
Partners	Potential partners include: existing and/or new nonprofit(s); the Carrboro Business Alliance; Chamber of Commerce; Triangle Green Building Council
Time Frame	Immediate
Fit with Items	Renewable energy and transportation 20/20 challenges
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

[1] <http://www.2030districts.org/>

Buildings Recommendation 2: Energy Audit/Performance Rating

For existing buildings, require an energy audit and/or building energy performance rating, including utility bills from past year, at point of sale or lease.

It is recommended that building owners be required to provide the results of an energy audit and/or an energy performance rating (including one year of utility bills) 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 requirement could include potential/recommended energy efficiency improvement measures. This approach is being tested in cities such as Seattle, Portland, OR, and Austin, TX. A website tracking different jurisdictions efforts for transparency in energy efficiency can be found at <http://www.buildingrating.org/jurisdictions>. [Buildingrating.org/](http://www.buildingrating.org/) provides a way to view and compare policies that are being implemented to improve and benchmark building energy efficiency. It is likely that Carrboro would need to acquire statutory authority from the State to pursue such a strategy.

Implementation Opportunities	<ul style="list-style-type: none"> · Healthier buildings (better air handling and moisture control) · Lower carbon emissions. · Lower utility bills for occupants. · Provides a service to those looking to buy or rent and reaches a demographic not reached with many incentive based efforts · Addresses the unique situation in Carrboro with a high percentage of non-owner occupied buildings <p>The Town's Energy Efficiency Revolving Loan Fund is available for recommended improvements to commercial buildings. Can potentially support businesses performing energy ratings/audits</p>
Implementation Challenges	<p>It is likely that the Town does not have the authority to make this a requirement and would need special enabling legislation. 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.</p>
Resources Needed (human and material)	<p>Assuming the Town could obtain authority, there would be effort associated with outreach and education and crafting the details with stakeholders as well as monitoring for compliance.</p>
Anticipated Cost	<p>Significant costs are not anticipated but would need to be determined as part of implementation</p>
Leadership	<p>Board of Aldermen for policy direction, with support from the Economic Sustainability Commission, Town staff</p>
Partners	<p>Business Alliance, Chamber of Commerce, Board of Realtors, Triangle Green Building Council</p>
Time Frame	<p>Immediate</p>
Fit with Items	
Next Step(s)	<p>Staff to confirm that legislation is needed and Board to seek enabling legislation</p>
Evaluation Criteria	<p>Reductions in metered utility energy usage and costs.</p>

Buildings Recommendation 3: Rental Property Task Force/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 energy efficiency in rental units.

Implementation Opportunities	<ul style="list-style-type: none"> • Energy efficiency reduces waste and saves money in the long term • Energy efficiency retrofits create local jobs
Implementation Challenges	<ul style="list-style-type: none"> • The policy options to address this issue also have an impact on Town planning and affordable housing
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	Could be implemented within 1 year
Fit with Items	Lower energy costs and greenhouse gas emissions, shared economic prosperity
Next Step(s)	<ol style="list-style-type: none"> 1. Develop Task Force charge 2. Identify relevant stakeholders needed to agree to process in order to make impactful change 3. Identify outside organization to facilitate Task Force 4. Commission Task Force
Evaluation Criteria	Savings from lower energy bills could be put towards other projects. Keep energy dollars local. Reduces greenhouse gas emissions.

Buildings Recommendation 4: Rental Property Registry/Certification

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

A large percentage of housing in Carrboro are rentals. Landlords do not have an incentive to improve the energy efficiency of their properties since the tenants usually pay utility bills. The Town could 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.

Implementation Opportunities	<ul style="list-style-type: none"> · Lower residential carbon emissions. · Lower utility bills for tenants. · Provides a service to those looking to rent and reaches a demographic not reached with many incentive based efforts · Addresses the unique situation in Carrboro with a high percentage of non-owner occupied housing <p>The Town could potentially support performing energy ratings/audits</p>
Implementation Challenges	The Town does not have the authority to make this a requirement. The effectiveness of this program would be dependent on widespread adoption by Carrboro landlords. It may require outreach to the landlords and research on the how to best communicate a potential rating system.
Resources Needed (human and material)	Town staff (potentially a Sustainability Coordinator), 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	Immediate
Fit with Items	
Next Step(s)	Policy/management feedback
Evaluation Criteria	Reductions in metered utility energy usage and costs.

Buildings Recommendation 5: New Development/Building Energy Performance

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

This recommendation, pending outcome of request for statutory authority, would have the Town implement a section of the Building Code with additional energy efficiency requirements that the Town is not currently implementing. Alternatively, the Town could partner with Triangle Green Building Council to develop an optional checklist of efficiency performance/measures that, if implemented, would lead to special designation and public recognition.

Implementation Opportunities	Healthier buildings (better air handling and moisture control) Lower carbon emissions. Lower utility bills for occupants.
Implementation Challenges	Additional Town staff time. Buy in 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	Immediate
Fit with Items	20/20 challenges
Next Step(s)	
Evaluation Criteria	Number of buildings affected. Reductions in metered utility energy usage and energy intensity (energy use per square foot)

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.¹⁵ In September 2010, the League of American Bicyclists named the Town of Carrboro 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 and significant existing ridership. Carrboro has comprehensive bicycling and greenway plans and a good start on infrastructure for bicyclists and pedestrians. In order to get people out of their cars, Carrboro must keep working on the gaps, continue to connect neighborhoods to schools, and expand biking infrastructure to connect all areas of Carrboro to downtown. In addition, lower cost facilities and pavement markings can increase convenience, increase perceptions of safety, and provide official, visible recognition that bicyclists are legitimate users of the road. Significant federal and state funding exists to support greenways development. Local matching funds to access the federal/state funds for later phases of both the Bolin and Morgan Creek greenways has not been identified. Local fundraising has been successful in many areas and provides an opportunity to unite the whole community for a good cause. To go after funds, the Town of Carrboro needs to approve a route and alignment for phases 3 and 4 of the Bolin Creek greenway.

Additional introductory text for transit, promotion/education/outreach narrative, vanpool/carpool, idling policy narrative will be added for the final report.

¹⁵ 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.

Local leaders would announce an emissions reduction challenge to reduce community wide emissions by 50% from 2009 levels by 2025. The challenge could include a component focused on transportation/ motor vehicle emissions in Carrboro.

Implementation Opportunities	<ul style="list-style-type: none"> • Requirements and market for more fuel efficient/lower emission vehicles and pedestrian and bicycle infrastructure and transit system use continue to improve. • Land use planning is supporting mixed use, infill and redevelopment and community is proactive to further encourage non-vehicular modes.
Implementation Challenges	<ul style="list-style-type: none"> • High percentage of residents work outside Carrboro with significant challenges for using transit or commuting by bike or on foot. • Constraints exist for further development of bicycle and pedestrian facilities. • Non-vehicular transportation options in some parts of Town are more limited. • 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.
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	Quickly to be meaningful given timeframe
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: Improved Bike/Ped Infrastructure

Improve and Extend Carrboro's Bicycling and Pedestrian Infrastructure

Implementation Opportunities	Greenway and bike plan project implementation could be accelerated, providing off road options to more users sooner than likely with current efforts.
Implementation Challenges	<ul style="list-style-type: none"> ● Limited funding identified for greenway and sidewalk projects (especially the local match; existing bond funds recently expired) ● Leadership, capacity, and commitment to resolve conflicting community positions on alignment for future phases of Bolin Creek greenway ● Uncertain/delayed development plans delaying greenway implementation for State property in northern Carrboro ● Coordinating with multiple entities
Resources Needed (human and material)	<ul style="list-style-type: none"> ● Town Staff and other support to implement. ● Funding for greenway development and new bike and pedestrian facilities.
Anticipated Cost	TBD
Leadership	Board of Aldermen and Town Staff with support from the Transportation Advisory Board, the Greenways Commission, and the Carrboro Bike Coalition.
Partners	NCDOT, Chapel Hill-Carrboro City Schools, Local Business Community, BikeWalk NC.
Fit with Items	Reduce greenhouse gas emission from motor vehicle use by 20% by 2020.
Time Frame	
Next Step(s)	<ul style="list-style-type: none"> ● Connect northern Carrboro to downtown areas by dedicated/safer bike routes to include on and off road improvements (more below). ● Complete the Bolin Creek and Morgan Creek Greenways. In order to do this, Carrboro needs to: <ul style="list-style-type: none"> ○ Formally approve a route/alignment for phases 3 and 4 of the Bolin Creek plan. Because of differing positions by stakeholders, this could require a facilitated process. (FY 16/17) ○ Dedicate local matching funding (Board/staff to identify local match for Jones Creek greenway (FY 15/16) ○ Work closely with UNC since much of the planned greenway system crosses three separate tracts of land managed by UNC. (Specifically suggest that staff contact UNC staff for feedback on plans for future development.) ● Connect all Chapel Hill-Carrboro City Schools to surrounding neighborhoods by dedicated bike routes. ● Create bicycle boulevards by adding traffic calming features (e.g., speed humps, curb extensions, pedestrian crossways) on streets with a low volume of traffic and/or install cycle tracks (which are on-street bike lanes that are physically separated from motor vehicle lanes). This can be pursued in conjunction with stormwater treatment measures to create "Green Streets" ● Consider new forms of pavement markings, including bike boxes, shared lane markings or sharrows, and colored bike lanes, which increase perceptions of safety, help guide bicyclists and motorists, and provide official, visible recognition that bicyclists are legitimate users of the road. ● Improve the pedestrian experience in and around bus stops.

	<ul style="list-style-type: none"> • Provide bike parking at high-demand bus stops. • Work with the local business community to provide showers and bike locker for commuters. • In the longer term/larger community, ensure sufficient bike parking is supplied at future Light Rail stations
Evaluation Criteria	<ul style="list-style-type: none"> • Increase in the number of students biking or walking to school. • Increase in the number of residents biking or walking to commute to work. • Increase in the number of bike trips to downtown Carrboro. • Completion of greenways and dedicated bike routes. • Completion of bicycle boulevards, cycle tracks, and new pavement markings. • Increase in the number of businesses that install showers and bike lockers.

Transportation Recommendation 3: Enhanced Transit Service

Areas farther from Town have limited service from Chapel Hill Transit. Triangle Transit does not have a

Improve/extend transit service

stop in Carrboro to connect with other area job hubs.

Implementation Opportunities	<ul style="list-style-type: none"> • Transit service could be extended to new areas by adding one or more stops in Carrboro that is well connected to other transit, bike, and pedestrian access, and more hours of service • New Transit Oriented Development could be sited in Northern Transition Area
Implementation Challenges	<ul style="list-style-type: none"> • Transit funding • Difficulty siting more dense development in northern Carrboro
Resources Needed (human and material)	<ul style="list-style-type: none"> • Landowner, developer, and community support for new mixed use/transit oriented development
Anticipated Cost	Improved local transit service costs will depend on different factors, and are implemented by Chapel Hill Transit.
Leadership	Board, NTAAC, Transportation Advisory Board, Town staff for new development. Chapel Hill Transit for improved/expanded local transit service; TTA for regional transit. Other partners below can also provide leadership
Partners	Local business community, NTA neighbors
Time Frame	Immediate
Fit with Items	See separate recommendation for steps to promote transit service.
Next Step(s)	<p>Work with Triangle Transit and Chapel Hill Transit staff to provide additional feedback on plans for future service and ability to accelerate adding service, including both downtown Carrboro and Northern Carrboro.</p> <ul style="list-style-type: none"> • Enhance transit access points along the 15-501 corridor from Carrboro to Durham and provide more frequent, reliable bus service.
Evaluation Criteria	Number of bus commuters/trips

Transportation Recommendation 4: 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 to Carrboro could reduce vehicle miles traveled and emissions.

Implementation Opportunities	Add Triangle Transit vanpool parking or carpool to Carrboro parking areas, including downtown Carrboro and Northern Carrboro
Implementation Challenges	Requires partnership with Triangle Transit
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; Triangle Transit
Partners	Chapel Hill Transit, Triangle Transit
Time Frame	Immediate
Fit with Items	
Next Step(s)	Work with Triangle Transit 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 both downtown Carrboro and Northern Carrboro.
Evaluation Criteria	Number of vanpool, and carpool commuters

Transportation Recommendation 5: Additional Promotion of Walking, Biking, Transit

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

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	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.
Implementation Challenges	<ul style="list-style-type: none"> ● Challenge of changing set behaviors. ● Some greenway, bike route, and transit services are not yet complete. ● Transit services are spotty or non-existent in some areas ● Uncertain funding for new/renovated buses
Resources Needed (human and material)	<ul style="list-style-type: none"> ● Town Staff and partners support. ● Funding for additional greenway and bike facility development, bike racks, and transit services.
Anticipated Cost	TBD
Leadership	Town Transportation Planner, with support from Recreation and Parks staff, Transportation Advisory Board, Greenways Commission.
Partners	UNC, Chapel Hill Transit, Triangle Transit, 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
Next Step(s)	<ul style="list-style-type: none"> ● Continue, accelerate, and intensify efforts to: <ul style="list-style-type: none"> ○ Promote bike to work days. Studies have reported long-term increases in bicycling following bike-to-work days. ○ Work with the Carrboro Bicycle Coalition to put on and publicize on-going bicycle training. ○ Work with the Carrboro Bike Coalition to hold “Open Streets” days. ○ Work with Chapel Hill Transit and Triangle Transit 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. ○ 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. ○ Pursue efforts to implement land use and development

	<p>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.</p> <ul style="list-style-type: none"> ● 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. ● Research and implement a bike sharing system downtown. ● 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.
Time Frame	
Evaluation Criteria	<ul style="list-style-type: none"> ● Number of students biking or walking to school. ● Number of residents biking, walking, or using transit, carpooling or vanpooling to commute to work. ● Increased transit ridership.

Transportation Recommendation 6: Idling in School Loading Zones

Modify Town Code to limit idling in school loading zones

Implementation Opportunities	This is a simple, straightforward fix to a widespread problem that will reduce air pollution and GHG emissions
Implementation Challenges	Parental resistance, especially at elementary schools, and enforcement.
Resources Needed (human and material)	School system employee and/or police officer time to enforce
Anticipated Cost	Costs associated with staff time
Leadership	Board of Aldermen; CHCCS School Board
Partners	CHCCS and Town staff; PTA; individual school teams; TAB
Time Frame	Immediate
Fit with Items	
Next Step(s)	Board to direct staff to modify Section 6-24 to restrict idling in school zones
Evaluation Criteria	Monitoring of idling activity

Renewable Energy Measures

Carrboro's Climate Action Goal can be achieved 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 for 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 Task Force's 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 Task Force's second recommendation is to create a downtown geothermal heating and cooling district. 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. This recommendation is 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 participate in and benefit from the switch to renewable energy.

Renewable Energy Recommendation #1: Community Solar

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"> • Broadly share solar investment benefits, including keeping dollars local • Town of Carrboro buildings could be first adopters, but this approach could be deployed on other buildings • The community investment group would pay the upfront costs to develop solar (no financing support needed from the Town)
Implementation Challenges	<ul style="list-style-type: none"> • Requires considerable effort to organize support and investment • Requires specific action by NC General Assembly. Specifically, re-instatement of the NC Renewable Energy Tax Credit and provision of third-party sales of electricity. If one or both of these are passed, it may be possible to develop community solar projects in Carrboro.
Resources Needed (human and material)	Town staff would partner with an outside organization to develop the community investment group.
Anticipated Cost	There are options depending on how the electricity purchasing agreement with the community group is defined
Leadership	Town staff for development for Town buildings, Economic Development groups for development of community infrastructure
Partners	Work with organization that coordinates community investment group
Time Frame	Could be implemented within 2 years and would have benefits for many decades
Fit with Items	Lower energy costs and greenhouse gas emissions, shared economic prosperity
Next Step(s)	<ol style="list-style-type: none"> 1. Watch outcome in NC General Assembly 2. 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: Downtown Geothermal

Create a Downtown Geothermal Heating and Cooling District

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"> • Lower costs of heating and cooling • Century Center could be candidate for first adopter • 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 • A community geothermal utility would make it easier to adopt geothermal broadly by lowering costs and simplifying construction. • Savings from lower energy bills could be put towards other projects
Implementation Challenges	<ul style="list-style-type: none"> • Unknown technical feasibility • Large upfront costs; requires low-cost financing • New activity for Carrboro, but Orange County buildings in downtown Hillsborough have implemented geothermal heating and cooling and are realizing substantial savings
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	Could be implemented within two years, with benefits for many decades
Fit with Items	Lower energy costs and greenhouse gas emissions, shared economic prosperity
Next Step(s)	<ol style="list-style-type: none"> 1. Examine completed projects in Orange County 2. Solicit contracting support for feasibility study 3. If deemed feasible, develop preliminary design for Town of Carrboro buildings including financial assessment and environmental benefits. 4. Explore opportunities to develop a municipal utility 5. Explore ways to encourage developers towards installing geothermal in new projects
Evaluation Criteria	<ul style="list-style-type: none"> • Reduced energy bills. • Reduced greenhouse gas emissions. • More comfortable work environment for Town staff.

Renewable Energy Recommendation 3: Rental Property Task Force/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.

Implementation Opportunities	<ul style="list-style-type: none"> Renewable energy is clean energy and create local jobs
Implementation Challenges	<ul style="list-style-type: none"> The policy options to address this issue also have an impact on Town planning and affordable housing
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	Could be implemented within 1 year
Fit with Items	Task Force/Facilitative Process for Buildings
Next Step(s)	<ol style="list-style-type: none"> Develop Task Force charge Identify relevant stakeholders needed to agree to process in order to make impactful change Identify outside organization to facilitate Task Force Commission Task Force
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. The Task Force has identified recommendations to improve ecosystem health and resilience by reducing stormwater impacts, reducing deer herd pressure on forest health, increasing tree canopy and biodiversity, better management of invasive plants and encouragement of native plants, and managing organic waste and improving soil quality. These focus areas are discussed separately, but are highly interwoven. The following is a brief overview of each area to provide context for our recommendations.

Climate change is likely to increase the frequency and intensity of storms and droughts in our area, which will in turn increase the negative impacts of stormwater runoff that include erosion, flooding, nonpoint source pollution, and altered hydrology¹⁶. 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 projects¹⁷. The Task Force recommends that the Town create a stormwater utility or join Chapel Hill's utility, thereby ensuring 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 polluted runoff leaving their property.

Local and other studies have shown that excess deer are adversely affecting the health of our forests 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 are shifting from native wildflowers and woody plants to invasive plants and grasses. This threatens the ability of our forests to regenerate in a healthy way and continue to serve as diverse ecosystems and significant carbon sinks. Deer populations need to be reduced in size to avoid long-term negative impacts on forest regeneration. While several options exist for managing the density of deer herds, studies have found that the least inexpensive and most effective method is through culling programs. Such programs have been safely and successfully implemented in Duke Forest and Chapel Hill and many towns in North Carolina, and the Task Force recommends that Carrboro implement its own culling program to protect our forests from an expanding deer population that is too large now and may grow.

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 services¹⁸ (not just limited to climate protection/resilience and energy management) that affect both the local physical and social environment. 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

¹⁶ <http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=1131&context=scwrc>

¹⁷ <http://www.nrdc.org/water/pollution/storm/chap4.asp>

¹⁸ 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

stormwater management through infiltration and evapotranspiration. Trees absorb air pollutants, reducing exposure of dangerous chemicals to people and wildlife. There is therefore significant merit and synergy in managing the forest to reduce energy consumption and heat island effects and store carbon, while simultaneously enhancing air quality, water flow and quality, wildlife and biodiversity, soil quality, community well-being (economic vitality, sense of community and neighborhood empowerment), individual well-being and public health, aesthetics, noise abatement, and real estate and business.

Because native plants serve as the host plants on which our native insects lay their eggs, they are important both environmentally and economically. For example, 96% of North American birds (excepting seabirds) rely on native insects to feed their young¹⁹. According to The White House, as of 2009, pollination of US crops by native insects was valued at more than nine billion dollars.²⁰ Unfortunately, native plant species are being overrun 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”.²¹ 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.

The Task Force recommends that the Town consider including curbside composting in future studies of and plans for waste management for multiple reasons. 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. 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 CO₂ 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 the landfill for energy production. At the same time, reducing future methane production at the landfill is a positive preventive measure. Composting is considered to be the most effective way to combat the production of methane²². Seattle, Portland, and San Francisco have curbside composting programs that could offer examples for Carrboro²³. 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 located on Eubanks Road site in 2016. This will be in addition to the composting facility offered at its Walnut Grove

¹⁹ Tallamy, Douglas. *Bringing Nature Home*. Portland: Timberpress, 2010. Print.

²⁰ Office of the Press Secretary. Fact Sheet: The Economic Challenge Posed by Declining Pollinator Populations. Washington, DC: The White House. Retrieved 20 June 2014 from <https://www.whitehouse.gov/the-press-office/2014/06/20/fact-sheet-economic-challenge-posed-declining-pollinator-populations>

²¹ 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>

²² Dennings, Kelly. (2010). *The Link Between Recycling and Climate Change* [SlideShares]. retrieved from <http://www.slideshare.net/NCDENR/the-link-between-recycling-climate-change>

²³ 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>

Church Road Convenience Center in Hillsborough. However, many residents do not utilize these convenience centers, instead throwing their food scraps into the trash.

Ecosystem Recommendation #1: Stormwater Utility

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

Implementation Opportunities	<ul style="list-style-type: none"> • Fee structure can be set up for greater “environmental equity” (fees are based on actual runoff impact, not property value). • Emerging/innovative financing approaches exist for stormwater and green infrastructure • 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 • 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. • 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.⁴
Implementation Challenges	<ul style="list-style-type: none"> • Carefully planning the utility’s goals upfront. • Determining whether to create a new utility, join Chapel Hill’s utility, or explore an alternative approach that protects the benefits of a utility. • Determining a pathway for helping low-income individuals (exemptions, reimbursements, etc.). • Addressing 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 • 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.
Resources Needed (human and material)	<ul style="list-style-type: none"> • Funds for stormwater management/financing study • Eventually, new staff position(s) • Partnering agreement if collaborating with Chapel Hill • Funds for an education campaign
Anticipated Cost	See footnote ²⁴
Leadership	<ul style="list-style-type: none"> • Policy leadership from Board of Aldermen. • Management, technical, and administrative leadership from staff

²⁴ 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.

	<ul style="list-style-type: none"> EAB may be able to provide support
Partners	Potentially Chapel Hill, OWASA
Fit with Items	Reduced stormwater impacts, improved water quality, improved ecosystem health, improved soil quality
Next Step(s)	<ol style="list-style-type: none"> Complete stormwater management/financing study to address both administrative and policy opportunities and challenges in FY 2015/16 <ol style="list-style-type: none"> Examine nearby models already showing success (Chapel Hill, Durham, Greensboro, etc.) to determine best fit for Carrboro in creating a utility. Determine whether or not to partner with Chapel Hill's stormwater utility. Craft public outreach/education campaign about negative impacts of stormwater and economic/environmental benefits of a utility.
Evaluation Criteria	<ul style="list-style-type: none"> Town can consider annual surveys and other means of measuring public awareness about stormwater impacts and management Increased number of BMPs created and increased amount of area treated to control stormwater runoff* Improved stream health as measured by aquatic insects Changes in stream hydrology based on stream gage monitoring Availability of harvested rainwater in times of drought Utility is being funded by fees collected

<http://www.efc.sog.unc.edu/project/innovative-financing-approaches-stormwater-and-green-infrastructure>

The Town has been including future mandatory stormwater projects in its CIP, however, the financing mechanism (e.g., property tax increase, debt financing, fee basis) for pursuing these projects is not clear

*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>

Ecosystem Recommendation 2: Deer Herd Management

Pursue a Humane Deer Herd Management Program

Local and national studies have shown that excess deer adversely affect other wildlife species by causing a decrease in plant diversity and aiding in the spread of exotic plant species. Soil studies have shown that the seed stores in areas with deer overpopulation are shifting from native wildflowers and woody plants to invasive plants and grasses. This threatens the ability of our forests to regenerate and continue to serve as significant carbon sinks and healthy, diverse ecosystems. Autopsies done during the first two Duke Forest hunting seasons showed unhealthy kidneys in every deer killed, a sign of severe starvation. The chief of police and others expressed safety concerns when the Board of Alderman discussed bow hunting in 2012. The Town should review what other towns are doing to address safety in their deer management programs. 59 towns in North Carolina currently utilize an urban archery season to manage deer overpopulation, including Chapel Hill, Durham, Raleigh, and Pittsboro. The Office of Duke Forest is preparing for its eighth hunting season. There have been no documented archery related accidents for the past 40 years in North Carolina. Carrboro could write its own plan with restrictions, including that hunters must have the permission of landowners to hunt within property boundaries. These findings lead the Task Force to recommend that Carrboro reopen the consideration of an Urban Archery Season.

Implementation Opportunities	<ul style="list-style-type: none"> Thousands of vehicular accidents in North Carolina each year are related to deer.
Implementation Challenges	<ul style="list-style-type: none"> Contraceptives are expensive (\$600-800/doe) and only work when the deer population is isolated and does not have an opportunity to migrate in or out of a given area. Sterilization is expensive (\$800-1,000/doe) and is currently not legal in the state of North Carolina. Culling deer herds is an emotional issue, despite clear science that shows deer herd management results in a healthier deer population, produces a more intact forest ecosystem, and has a positive impact on other wildlife species. Educating citizens on above issues related to deer overpopulation.
Resources Needed (human and material)	<ul style="list-style-type: none"> Administrative support from Town Staff with help from the Environmental Advisory Board. Advice/guidance from other locales with an effective program already in-place. Promotional and educational materials.
Anticipated Cost	
Leadership	Policy leadership by the Board of Alderman. Administrative support from existing Town Staff and the Environmental Advisory Board. T
Partners	Town of Chapel Hill, Carolina North Forest Management, NC Wildlife Federation, Duke Forest
Fit with Items	All ecosystem measures

Next Step(s)	<ul style="list-style-type: none"> • Examine nearby urban archery plans (Chapel Hill, Durham, Duke Forest). In particular, examine means for addressing public input and what safety restrictions they included. (Summer 2015) • Write up draft urban archery plan. (September 2015) • Craft public outreach and education campaign about negative impacts of deer overpopulation and benefits of deer herd management. (September 2015) • Board of Aldermen to decide on public input process. (Fall 2015) • Submit letter of intent to participate in the Urban Archery Season to the NC Wildlife Resources Commission. (before April 1, 2016) • Finalize Urban Archery Plan (Spring 2016) • Craft public outreach and education campaign about urban archery season. (Spring 2016) • Implement urban archery season. (Fall 2016)
Evaluation Criteria	<ul style="list-style-type: none"> • Number of deer culled and reduction of deer per square mile. • Improved health of deer population. • Reduction in number of deer-vehicle collisions. • Return of forest understory (increase in native flora, decrease in exotic species, and increase in plant and animal biodiversity). Reduced loss of crops, gardens, and planted ornamentals.

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

Accelerate efforts to study and implement a comprehensive organics collection and composting program.

<p>Implementation Opportunities</p>	<ul style="list-style-type: none"> • Future plans should consider adding a more central drop-off location downtown for those unable to drive to current composting facilities. • Future studies and plans should include curbside compost collection. This would divert food waste from county landfills, reduce carbon emissions, and reduce the risk of potential groundwater pollution. Curbside composting can accomplish more than individual composting, as residents can compost items unable to be put in backyard piles, such as meat scraps, and residents without yards, such as apartment dwellers, have the opportunity to compost their food scraps as well. • 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. Funding for the program could come entirely from the reduction of trash hauling and tipping fees. • A backyard composting demonstration site(s) in a central location(s) could encourage people to participate in composting. • 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.
<p>Implementation Challenges</p>	<ul style="list-style-type: none"> • 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. • 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. • 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. • The Town will need to determine how to assess fees. 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?
<p>Resources Needed (human and</p>	<ul style="list-style-type: none"> • Potentially, further waste characterization studies • Composting equipment (bins, trucks).

material)	<ul style="list-style-type: none"> • A business to take the food waste if Carrboro isn't going to have its own composting site. • Utility or some way to process fees from participants. • Additional staff resources and/or partnerships with community groups 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. And the bins at the beginning of the program. Once the program is running, it will 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.
Time Frame	Local staff recommendation to the Solid Waste Advisory Group (SWAG) indicates three to four years to study and begin implementing a residential composting program. It's recommended that SWAG prioritizes this and provide direction to staff to accelerate.
Fit with Items	<ul style="list-style-type: none"> • Improved soil quality; • Improved water quality; • Decreased carbon footprint by: <ul style="list-style-type: none"> ○ reducing organic matter in landfills, thereby decreasing the amount of methane gas released into the atmosphere. ○ reducing tonnage of waste, thereby decreasing the number of trips to the transfer station.
Next Step(s)	<ol style="list-style-type: none"> 1. SWAG provides direction to prioritize (ASAP) 2. Local government staff collaborate to hire a consultant in FY 15/16 to complete study 3. Study includes lessons learned from other communities with successful curbside composting (San Francisco, Portland, Seattle) and locally successful programs (CHCCS, UNC, etc.) as well as how to collaborate with local contractors (Brooks, CompostNow, etc.). 4. Budget for and choose area for pilot program that includes residential and multi-family units (FY 16/17). 5. Expand program to entire town (FY 17/18).
Evaluation Criteria	Set a goal of ___% reduction in organic material being hauled to the transfer station by 2020, then another ___% by 2030.

Ecosystem Recommendation 4: Tree Coalition

Help community Members Form an Independent Tree Coalition

Considering the importance of trees to stormwater, climate change, and air quality mitigation, and human health, the Task Force recommends that the Town work with citizens to establish a tree coalition to promote the preservation and health of trees and the community forest in Carrboro. This group would promote the preservation and health of urban trees and the community forest in Carrboro, and be a resource for citizens who have questions about trees on their property.

The coalition would:

- Increase public awareness of the intrinsic value and beauty of trees;
- Provide oversight for a community scale urban forestry program;
- Educate citizens about proper tree selection, planting, and care;
- 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;
- Partner with local government and civic groups to improve and expand the Town’s tree canopy.

Implementation Opportunities	Trees mitigate climate change by acting as carbon sinks. Shading from trees reduces the heat island effect and lowers cooling costs for buildings. Trees stabilize and improve soil, reduce erosion and can improve storm water management through infiltration and evapotranspiration. Trees take up air pollutants reducing exposure to people and wildlife.
Implementation Challenges	Creating a new and sustainable organization. Connecting with the public.
Resources Needed (human and material)	Creation of a nonprofit organization to become a community champion for education, outreach, and action. Neighborhood and business champions. 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). Fiscal/policy and staff support from Town and North Carolina Urban Forest Council.
Anticipated Cost	Those costs associated with nonprofit establishment/management
Leadership	Community members pulled together by Town staff.
Partners	Possibly expand to Chapel Hill and Orange County? State or national non-profits? Arbor Day Foundation, National Wildlife Federation, etc.
Time Frame	Immediate
Fit with Items	Deer herd management; stormwater utility; invasive plant management (Note-
Next Step(s)	Recruit members, publicity, organizing

Ecosystem Recommendation 5: Discouraging Invasive Plants/Encouraging Native Plants

The Task Force is looking into a recommendation to further discourage the spreading of invasive plants and encourage more native plants, and will provide additional information with our final report.

PRELIMINARY DRAFT