



Sustainability Committee

Regular Meeting

~ Agenda ~

<http://www.townofboone.net/>

Jane Shook
828-268-6960

Thursday, February 13, 2020

5:30 PM Planning and Inspections Conference Room

I. Call to Order

II. Adoption of Agenda

III. Approval of Minutes

January 9, 2020 Meeting Minutes

IV. Old Business:

Toolkit Discussion

Draft Toolkit

Boone Energy Summary/Town of Boone Information

V. New Business:

Spring Speaker Series Focusing on Community Energy Planning

Sustainable Energy Speaker Series Flyer

Town of Boone Sustainability Forum ("Earth First Friday")

VI. Other Matters by Board Members or Staff

VII. Adjournment

**TOWN OF BOONE
SUSTAINABILITY COMMITTEE
MEETING MINUTES
THURSDAY, JANUARY 9, 2020
5:30 P.M.**

Members Present: Chairperson Quint David, Vice-Chairperson Harvard Ayers, Ben Scarboro, John Prickett and Lee Ball

Town Council Liaisons Present: Dustin Hicks, Nancy LaPlaca

Staff Members Present: Marty Little- Senior Planner and Marlene Crosby- Committee Secretary

Others Present:

Call to Order

Chairperson Quint David called to order the Boone Sustainability Committee, held in the Planning and Inspections Department – Upstairs Conference Room located at 680 W. King Street at 5:38 p.m.

Adoption of Agenda

Member Scarboro made a motion, seconded by Vice-Chairperson Ayers, to adopt the agenda as amended, with Chairperson David adding Public Comment after the Adoption of the Agenda and Election of Officers after Approval of Minutes.

Vote:

Aye – All

Nay – None

The motion passed.

Public Comment on Carbon Offsets

Ms. Mara Soo, Head of University Programs from UCapture, explained what this company does with carbon offsets and she handed out her business card (permanently attached.) Ms. Soo's company email address is mara@ucapture.com and the website is www.ucapture.com. She explained that this program is a free, green technology start-up that uses a current browser extension that only takes 30 seconds to download onto your computer. She said the browser gets 25,000 companies to pay for carbon offsets. She noted that the browser does not track your data and it does not advertise. She said that UCapture is affiliated with partner companies like Walmart, Target, Lyft, and Groupon. She said the browser extension is a way to get these companies that we shop with online to pay for carbon offsets and give us discounts for the offsets. She said if you go to a website of a partner company and purchase something, that website will pay UCapture from the sales commission. She said that 66 percent of that commission is used to purchase carbon offsets from verified carbon offset projects. She said this is a way to get funding for university research and nonprofits researching climate change mitigation.

Ms. Soo suggested presenting this carbon offset information to Council and local businesses. She said that the Howard Station Restaurant located on Howard Street in Downtown Boone is going

to be a part of the UCapture carbon offset program and it will include a discount program for their customers.

Mr. Marty Little, Senior Planner, asked Ms. Soo if there are other municipalities in North Carolina using the carbon offset program. She said that discussions have begun with a couple of municipalities but none in North Carolina. She said in North Carolina they have a lot of success with universities. She said that the projects that they are involved with are listed on the UCapture website. She said that if you scan her business card, it will open a link to her email address, and you can request information on the web links for said projects.

Approval of Minutes

Member Prickett made a motion, seconded by Member Ball, to approve the December 12, 2019 meeting minutes as written.

Vote:

Aye – All

Nay – None

The motion passed.

Discussion ensued on the member positions of the Sustainability Committee. Council Liaison LaPlaca talked about the things that the Council Liaisons can do on the Committee. Mr. Little noted that the Council Liaisons are not able to vote and are not part of the quorum for this Committee at this time. Mr. Little confirmed that at this time, the Sustainability Committee has six members which include two open member positions, not counting the Council Liaison positions.

Election of Officers

Chairperson David and Member Prickett nominated Vice-Chairperson Harvard Ayers for the position of Chairperson for the year 2020. Vice-Chairperson Ayers accepted the nomination for Chairperson because he has been on the Committee for a long while, starting with the Sustainability Task Force. It was the consensus of the Sustainability Committee for Vice-Chairperson Harvard Ayers to be the Sustainability Committee Chairperson for 2020.

Member Ball nominated Member Benjamin Scarboro for the position of Vice-Chairperson for the year 2020. Member Scarboro accepted the nomination for the position of the Sustainability Committee Vice-Chairperson, stating that he was one of the Chairpersons for the Sustainability Task Force and that he looks forward to being a part of the Town's drive towards Sustainability. It was the consensus of the Committee that Ben Scarboro be the Vice-Chairperson for 2020. The newly elected Officers will begin their tenure in February 2020.

Toolkit Discussion

Chairperson David began discussion on the draft Toolkit. He read aloud the "Intended Results" section found on page two of the draft Toolkit, included in the meeting packet. He said that these results are a good summary of the goals for all of the Town Departments. He noted that each Town Department has a large range of issues that the Sustainability Committee has been tasked with to make recommendations to help make each department more sustainable.

Chairperson David talked about the Police Department section of the draft Toolkit. He read aloud the "Summary" section found on page ten of the draft Toolkit. He noted that it has been proposed that the Police Department will be moving into the new Town of Boone Municipal Center, which will be proposed as a net zero building. He said as a result, there is not a lot of advice the Sustainability Committee can give. Chairperson David noted that the proposed time frame for the Town of Boone Municipal Center to be built is about two to three years depending on the Town budget.

Chairperson David began discussion on the topics that he had written for the Police Department. He said that he based his information for the Police Department on the STARS rating system. Chairperson David noted that the Police Department could track and monitor their employee greenhouse gases, focus on the turn-over of employees and living wages, give free tickets to employees and their families for events, conduct equity training, form a resilience plan for the top ten issues that the Police see daily, and note any noticeable stormwater issues that the Town needs to address.

Discussion ensued on net-metering. Council Liaison LaPlaca said, as the Sustainability Committee is reviewing the Town Departments, to look for a department that might be appropriate for some type of net-metering or net-metering pilot. Member Ball said when the net-metering pilot is done, he suggests looking into residential, government and businesses. He noted that he felt that there are a lot of opportunities for net-metering in businesses. Council Liaison LaPlaca noted that a large percentage of New River Light and Power goes to the Downtown area. Member Ball said that hopefully a green district would jumpstart the net-metering.

Discussion ensued on net-zero and net-positive. Council Liaison LaPlaca said that net-zero means that a building will produce as much energy as it uses. Member Ball said that net-positive means a building will produce more energy than it uses.

Discussion ensued on the status of the new Town Municipal Center. Member Ball asked how far along the Town is with the Request for Proposals (RFP) process. Mr. Little said he believes that the Town is beyond the RFP process and is currently in the design phase. Member Ball said from his experience, he has seen a lot of a misalignment of ideas with the best intentions in the design phase. He suggested following up with Mr. John Ward, Town Manager, to see what language was in the RFP. He suggested making sure that the construction company that is hired to build the center is experienced in net-zero and net-positive building.

Discussion ensued on recommending geothermal heating and cooling for the new Municipal Center building. Member Prickett said he uses this type of system in his house and it works great. He noted that this type of system does not take care of all of the electricity usage, but the system as a whole reduces the costs.

Discussion ensued on doing an analysis of vehicle mileage for the Police Department. Mr. Little explained that the Sustainability Committee could make a recommendation to Council to have an analysis completed on vehicle mileage, which is important in helping to gather the greenhouse gas data.

Discussion ensued on reducing costs at the historical Town of Boone Jones House. Chairperson David said one way to reduce costs is to provide solar outside of the house, possibly in the parking lot. He suggested permanent solar panels for the Christmas lights usage. He said it is difficult to find ways to reduce costs in a 100-year old building. He suggested finding ways for efficiency improvements within the historic limitations. He suggested one way is to baseline the energy usage and come up with a plan for offsets, or solar, for however many units they are using.

Discussion ensued on the proposed recommendations presented by the former Cultural Resources Director, Ms. Pilar Fotta. Mr. Little read the following recommendations: upgrade toilets, upgrade to double-paned windows, upgrade the refrigerator to a more efficiency mode, dog waste disposal bags and reduce waste for event give aways.

Discussion ensued on energy audits on the Town-owned buildings. Chairperson David said this topic can be included into the draft toolkit. He also noted that Mr. Ward had said that most of the Town-owned buildings have had energy audits. Member Ball said there was a free energy audit program but people did not use it. Council Liaison LaPlaca said that energy audits are beneficial. Member Ball said that there needs to be a way for homeowners to be able to have energy audits. He said that incentives are needed for renters but the landlords have to be involved with them.

Discussion ensued on the need for composting in the High Country. Member Ball said that the Town of Boone needs a composting facility.

Chairperson David talked about incentives for Town employees who submit ideas to help reduce the carbon usage. He gave an example of shorter workdays or reduced work hours.

Chairperson David suggested putting together a list of the individual Town Department recommendations along with the Sustainability Committee recommendations and divide the recommendations into broad categories. He suggested also including proposed Town-wide recommendations. He suggested making the first page the summary of the recommendations.

Other Matters by Committee Members or Staff

Chairperson David reminded the Sustainability Committee that the next meeting is scheduled for February 13, 2020.

Adjournment

Member Ball made a motion, seconded by Vice-Chairperson Ayers, to adjourn the meeting at 7:03 p.m.

Vote:

Aye – All

Nay – None

The motion passed.

Quint David, Sustainability Committee Chairperson

Marlene Crosby, Committee Secretary

Mara Soo
Head of University
Programs, UCapture

mara@ucapture.com
[linkedin.com/in/marasoo](https://www.linkedin.com/in/marasoo)



Scan the QR code
to email me a note!

Offset your
organization's
carbon footprint,
for free, with

UCAPTURE
SAVE MONEY. SAVE THE PLANET.



Draft Toolkit

Town of Boone

Sustainability Committee

February 13, 2020

Stated Town Goals

- Climate neutrality for Town of Boone municipal operations by 2030
- 100% renewable energy for municipal operations by 2040
- 100% renewable energy for the Town of Boone community by 2050

Background

At the April 18, 2019 Boone Town Council meeting, the Town Council adopted the sustainability goals listed above in an effort to address climate change at the local level. The three goals are focused on two tiers of scope: municipal operations, which includes day-to-day functions of the Town of Boone as an organization and its employees, and the community as a whole. In order to address the first goal, climate neutrality for municipal operations by 2030, the Town Council charged the Boone Sustainability Committee with learning about the Town's daily tasks and recommending steps each department could take in order to move closer to achieving climate neutrality in the specified timeframe. These recommendations, as Council directed, should take the form of a toolkit, where each department could access a menu of opportunities in pursuit of neutrality.

Town of Boone Municipal Operations

The Town of Boone is comprised of nine departments, which serve in a wide range of capacities. These departments are made up of Administration, Finance, Fire, GIS, Human Resources, Planning & Inspections, Police, Public Works, and Cultural Resources. The energy needs of the Town of Boone vary greatly between several departments, as they perform unique functions for the community (for example: Public Works, which includes streets/sidewalk maintenance crews and the Wastewater Treatment Plant, has different needs than the Police Department, just as the Fire Department differs in needs from Planning & Inspections, and so on). While some recommendations apply to a broad range of municipal services, the Sustainability Committee recognized that others must be tailored to certain departments specifically.

Process

In learning about the functions of each department, the Sustainability Committee hosted several meetings with the Town Manager and each department head individually over the course of 2019. The departments housed in Town Hall were combined, as their energy needs are very similar. The framework for each meeting consisted of a presentation by the Town Manager and/or department head, discussion and questions from the Sustainability Committee, and finally a discussion of potential recommendations for the presented department as well as Town operations on a larger scale.

Intended Results

This toolkit aims to address, at least partly, Town Council's goals of climate neutrality for municipal operations by 2030 by presenting the Council with a list of recommendations for implementation through Town-wide and department-specific policy. This toolkit is not intended to be a cure-all for Boone's climate needs, but may serve as a first step towards policy and behavioral changes that increase the Town and its employees' awareness of climate change, and how daily tasks impact the bigger picture. This toolkit is meant to be a catalyst for greater sustainability practices in the Town of Boone.

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Town Hall (Administration, Finance, Utility Billing, Human Resources, Downtown Coordinator, Downtown Police, & Parking)

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Public Works

Police

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Appendix

Executive Summary

To be completed at the end of the draft.

Town-wide Recommendations

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Explore incentive programs for employees who
- Explore alternative work hours for employees (four 10-hour days vs. five 8-hour days)
- Analyze energy bills for each Town-maintained building; ask about viewing demand charges
- Prioritize non-gasoline or hybrid alternatives when purchasing new vehicles
- Convert interior lights to LED wherever possible
- Explore incentives for employees who live in city limits for within a certain distance to town
- Track employees' miles traveled and include in overall gas mileage inventory
- Purchase local food and beverages for Town events
- Ensure all supplies for Town events are recyclable or compostable and limit/remove plastic/Styrofoam

Planning & Inspections

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Evaluate department mailings that are not required by law and determine other means of notifications beside mailings
- Explore digital alternatives to printing meeting agenda packets

Town Hall (Administration, Finance, Utility Billing, Human Resources, Downtown Coordinator, Downtown Police, & Parking)

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Explore possibility of cloud data storage
- Explore digital alternatives to printing Council agenda packets
- Combine other town notifications in utility bills
- Allow residents to opt out of mailings and receive notifications electronically

Cultural Resources

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Upgrade toilets
- Replace windows with double-pane windows (within historic designation)
- Upgrade refrigerator to a more energy efficient model
- Continue to look for alternatives for dog waste disposal bags
- Continue to look for ways to reduce packaging and waste for event giveaways

Public Works

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Monitor when non-gasoline alternatives become available for specialized vehicles
- Explore alternative methods for drying solids at the wastewater treatment plant as expansion becomes necessary
- Explore other ways to advertise and provide education on toilet rebate program
- Consult engineer on developing technologies for raw water system

Police

Summary

Built Environment: Getting a new net-zero building so n/a for now

Climate and energy: Add actual employee miles to GHG inventory. What emissions from the GHG inventory can't be offset due to safety issues, so we can address those separately, i.e. police cruisers etc. If electric bikes work well, we should get more.

Economy and Jobs: Job retention strategy and living wage update.

Education/Arts/Community: Updated community event budget and free tickets for employees/families to town events.

Equity and Empowerment: Ensure poverty/civil rights/human services training avail for officers.

Health and Safety: Big one for this dept. Resilience plan issues- top 10 issues department notes i.e. dangerous intersection needs improvement, drug use going up, elderly & accessibility around town etc. etc.

Natural Systems: Any storm-water or other issues the town needs to address, since this dept sees them first?

Discussion

Built Environment:

Looks like they have done some energy efficiency upgrades, and the new building will be net zero. New heat pumps are much better than older ones, so I always advise folks to price that out. In a building they may not be in soon likely not worth worrying too much over.

Climate and energy:

Already going paperless where possible, not sure what other 'waste' the dept might make. I will always recommend more digital when possible. Have some data on greenhouse emissions, most cities also keep up with employee travel emissions separately. Maybe come up with a mitigation plan for the emissions we can't get rid of, i.e. extra renewable or trees, offsets etc. Frankly the current police office is a great place to showcase some solar, but if we are leaving the building hopefully the new one will have some as well. If they are excited about electric bikes, then get them all one. For many departments their largest emissions source might actually be their employees driving into work- recording this even if just a guesstimate in miles driven each day would be a good start as part of reporting. We see it for the PD because they let folks take cars home, but every department likely has this same issue.

Economy and Jobs:

We did seem to have some employee retention issues. Maybe looking at workload, pay scale/studies, and exit interviews of why folks leave. For example, if they can't find affordable family housing nearby, we need to look into it and do something about it. If they are underpaid and always leave for a pay bump we

need to look into it. Having a reliable and sustainable police dept needs reliable and sustainable employees as well.

Education/Arts/Community:

Diversity, Community cohesion, historic preservation. Officers are present at many local events, so maybe a program to not only allow them to attend for work but also tickets/passes for them and their families as well. Coffee with a cop events are going well but maybe some extra budget for more community-cohesion type events for them to attend?

Equity and Empowerment:

Not sure what poverty and civil rights training our officers go through, but they are the front lines for a lot of this stuff on the street so it is extremely important they are trained and know what they represent when dealing with these issues every day. We sort of glanced off this but poverty and inequality issues are a big deal in this community.

Health and Safety:

This is a big one for this dept as well as the fire dept. Safe communities, emergency management, hazard mitigation, and preparedness for weather are issues our community needs to have a plan for in order to be resilient and sustainable. What might be interesting here is a yearly review of issues the dept is noticing increasing or decreasing in the community, and making sure the council is aware of it. Years back we had a town/gown committee talk about suicide and drug use and it was very eye-opening, but what changes did we actually make to deal with those changing issues? What is the #1 safety issue in Boone? Traffic? Heroin? High blood pressure? This department has the ability to make a big impact in this category of community sustainability, if we give them the chance. What are the top 5 intersections that could use safety improvement?

Natural Systems:

Green infrastructure and water come up here in relation to public safety. I know some of our folks are swift-water certified due to the flooding that happens in our area. Focusing on safety issues since this is the police dept, what areas would they recommend improvements being made if there is a spot where folks are getting flooded too often? An ounce of prevention is worth a pound of cure etc. etc.

Staff Recommendations

- Continue purchasing electric assist bicycles when available
- Investigate and test non-gasoline patrol cars

Fire

Summary

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Discussion

Built Environment:

Climate and energy:

Economy and Jobs:

Education/Arts/Community:

Equity and Empowerment:

Health and Safety:

Natural Systems:

Staff Recommendations

- Electric vehicle to conduct non-emergency uses, such as fire inspections and travel
- Increase preparedness and planning
- Video conference for stations to allow training to be conducted without movement of apparatus between stations
- Solar water heater for station #1 and #3
- Continue the upgrade of lighting to LED in apparatus storage areas
- Network recommendations:
 - Virtualization of servers
 - Improved connectivity between facilities
 - Centralized locations

Conclusion

To be completed at the end of the draft.

Appendix

Department summary materials and minutes of department meetings

Marlene Crosby - EXTERNAL EMAIL - Sus committee info

From: Quint David <_ _>
To: Marlene Crosby
Date: 2/10/2020 12:03 PM
Subject: EXTERNAL EMAIL - Sus committee info
Attachments: Boone Energy Summary.xlsx; TOB Energy Action Plan 4_11_2019 (3).pdf

Marty, Marlene,

Could you forward this info to our sustainability committee members?
 Thanks!

Howdy folks,

I have been down with the flu a few days, but as I come out of the haze I thought about some suggestions I wanted to offer to get our task finished up.

Attached is appstates 2010 emissions reduction plan, their 2019 chart, ashevilles chart, the chart Marshal put together for the town of Boone (the excel file), and the 4/2019 version I put together prior to our untimely committee charge change a year ago.

I would recommend that as part of our department recommendations:

1. That our document clearly state the towns current goals. We will deal with recycling, water conservation, local food, equality etc etc later, I hope.
2. Since it appears our current goals are 100% renewable and 100% emissions reductions specifically for municipal operations, the document needs to clearly state what we think current levels of those are. It would obviously be a good idea to spend more time than volunteers on a committee have to make sure these numbers are correct at some point. However, the numbers our previous council member Marshal Ashcraft put together are likely the best place to start.
3. We can go over other sustainability issues all day, and likely should, however if the towns only current goals are energy and emissions reduction I would suggest we drop those other discussions and simply present charts like appstate and asheville have. If you read ashevilles sustainability management plan, they go into other things like transportation, water, waste, and land use for obvious reason, as do the STAR community framework, as did our previous tenets of sustainability, however without Boone having goals in those areas it is not clear if our recommendation is being solicited in regards to those items. Since I haven't heard much input from members on those topics either, it might be good to stick to the numbers just to get something done.

So for example planning and inspections:

	Vehicles & Equipment (gallons)	Greenhouse Gases (tons)	Building Electricity (kwh)	Greenhouse Gases (tons)	LP & NG bldgs & other gallons/therms	Greenhouse Gases (tons)	TOTAL GHG (tons)
*Police	33,739	334.7	165,720	79.5	1,254 therms	7.3	421.5
Fire	6,071 D 3,175 G	69.0 31.5			2,668 therms 536 gallons	15.6 3.4	84.6 34.9
Cultural Resources	86	0.9	28,692	13.8	151 therms	0.9	15.6
Town Hall Building & Administration	286	2.8	163,715	78.6			81.4
Planning & Inspection	983	9.8	73,513	38.3	2,535 gallons	16.1	64.2
TOTALS BY SECTOR		846.4 19% of total		2,653.0 59.6% of total		950.5 21.4% of total	4,449.9

1. Vehicles: Switch to electric, or 40+mpg vehicles, would drop about 5-10 tons off vehicles depending on the grid's renewable percentage.

2. Building: have staff participate in the energy star rating system to determine where the building falls in line with similar building uses. 73k kwh is about 6 houses worth of electricity, and 2535 gallons of propane seems like a lot, but without comparing to other office-type uses, it is impossible to know if this is high, low, or normal. <https://www.energystar.gov/buildings/reference/research-reports/portfolio-manager-datatrends> For office type uses the median is 184kbtu per sqft, so working the building electricity backwards $73,513\text{kwh} = 3,412.14 = 250,836,647.82$ and $1\text{p } 2535\text{gal} = 91,502 = 231,957,570 = 231,957,570 + 250,836,647.82 = 482,794,217\text{ btu}/1000 = 482,794\text{kbtu}$

So if the planning department (maybe including post office too) is around 2600sqft, then they are using about what the "average" office does according to energy star.

3. Generic building recommendation: 50% better than "average" for existing buildings, 100% for new. make sure there is no electric strip heat, switching to LEDs and energy star equipment, install new low temperature rated heat pumps to minimize or eliminate propane/fuel usage. 10-25mt savings.

Note: this estimate is based on a heat pump running at an average COP of 3. Not all heat pumps are the same and low-temp rated models are required in our climate.

Total estimated reduction savings: 15-35mt co2 equivalent.

Offset or renewable required: 49.2 - 29.2mt co2 equivalent

Other recommendations:

1. Include employee commuting miles in ghg calcs. Work from home day, housing vouchers or efficient vehicle vouchers, to reduce miles driven can lower commute co2.
2. Public and employee recycling.
3. Sustainability officer? Energy efficiency handouts for the public?

V. Projected GHG Emissions

Projected Emissions, FY 2009, 2015, 2025, 2050 (Not including offsets)					
Scope	Emissions Source	FY 2009 MT eCO ₂	FY 2015 MT eCO ₂	FY 2025 MT eCO ₂	FY 2050 MT eCO ₂
Scope 1	Steam and Backup Generators	21,861.6	18,887	18,887.6	-
	Fleet Vehicles	2,571.8	1,887.3	1,128.8	-
	Refrigerants/Chemicals	265.7	265.8	222.8	-
	Agriculture	11.0	106.5	760.9	198.5
Scope 2	Purchased Electricity	33,467.6	31,574.1	15,787.0	-
Scope 3	Faculty/Staff Commuting	2,048.0	1,740.8	1,065.0	512.0
	Student Commuting	1,928.5	1,839.2	1,002.8	482.1
	Directly Financed Air Travel	4,120.7	3,914.7	3,708.6	3,298.6
	Directly Financed Ground Travel	723.4	687.2	651.1	578.7
	Study Abroad	1,643.6	1,972.3	2,301.0	2,136.6
	Solid Waste	590.0	501.5	354.0	204.5
	Wastewater	57.4	45.9	34.4	23.0
	Paper	212.4	144.7	106.2	63.7
	Scope 2 T&D Losses	3,803.4	3,844.7	1,814.9	-
	Total Scope 3 Emissions	29,812.2	30,677.9	23,908.9	974.9
Total Scope 2 Emissions		33,467.6	31,574.1	15,787.0	-
Total Scope 3 Emissions		15,227.4	13,694.9	10,238.0	7,299.2
All Scopes		79,332.2	63,946.5	39,527.6	7,638.7
Offsets	Forest Preserves	-48	??	??	??
	Composting	-19.2	??	??	??
	Renewable Energy	0	??	??	??
	Total Offsets	-67.2	??	??	-7,638.7
Net Emissions		76,706.8	??	??	0.0

sustain Appalachian
Towards Climate Neutrality

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Climate Action Plan
September 2010

2019 Carbon Emissions Table for Climate Action Template

Carbon Impact	Source	Calculated Data	MT eCO ₂	%	% of total
Scope 1	Purchased Electricity	kWh purchased	25,586	40.7%	66.9%
	Steam and Backup Generators	mmBtus of Natural Gas Purchased	16,450	26.2%	
Scope 3	Faculty/Staff Commuting	miles/mode/frequency from survey	5,109	8.1%	30.2%
	Directly Financed Air Travel	miles flown	4,373	7.0%	
	Student Commuting	miles/mode/frequency from survey	4,037	6.4%	
	Study Abroad	miles flown	2,544	4.1%	
	Scope 2 T&D Losses	calculation based on purchased kWh	1,500	2.4%	
	Directly Financed Ground Travel	miles reported	1,408	2.2%	
Scope 2	Refrigerants/Chemicals	pounds reported	696	1.1%	2.8%
	Solid Waste	tonnage reported	604	1.0%	
	Fleet Vehicles	fuel purchased	265	0.4%	
	Paper	pounds purchased	164	0.3%	
	Wastewater	gallons reported	37	0.1%	
	Agriculture	pounds applied	17	0.0%	
Total			62,790	100%	



S U S T A I N A B I L I T Y M A N A G E M E N T P L A N

Reduction Goals Total 2% reduction from FY07 baseline
(MTCO₂e) = 719.60

Table 2-5: Reduction Goals Scenario Forecast

Sector	Actual FY07	Forecast FY15	Forecast FY25	Forecast FY47 ¹	Forecast FY50
Buildings	10,094	8,479	6,460	2,019	1,413
Vehicle Fleet	6,077	5,104	3,889	1,215	851
Employee Commuting	5,197	4,366	3,326	1,039	728
Streetlights	4,317	3,627	2,763	863	604
Water/Sewer	7,967	6,692	5,099	1,593	1,115
Asheville	2,564	2,154	1,641	513	359
Total	36,216	30,422	23,178	7,243	5,070
Percent Change since FY07		-16.0%	-36.0%	-80.0%	-86.0%

¹Units = MTCO₂e

²FY 2047 is the year the 80% reduction target should be met

The Emissions Gap

The findings from the No-Action and Reduction Goals scenarios were compared to determine the gap in GHG emissions (Table 2.6, Figure 2.4). In other words, if the current trend of increasing emissions continues in the City, how far away from the original reduction goal does that bring the City?

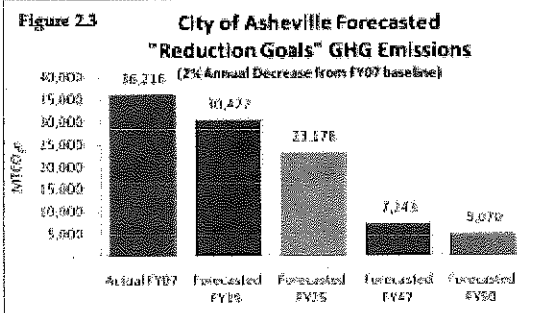


Table 2-6: GHG Emissions Gap between Forecasted No-Action & Reduction Goals Scenario

Scenario	Actual FY07	Forecast FY15	Forecast FY25	Forecast FY47 ¹	Forecast FY50
Baseline	36,216	-	-	-	-
No-Action	-	38,173	40,769	47,118	50,653
Reduction Goals	-	30,422	23,178	7,243	5,070
Emissions Gap	-	(7,752)	(17,590)	(39,874)	(45,583)
Percent difference		-20%	-43%	-85%	-90%

¹ Units = MTCO₂e

²FY07 is the year the 80% reduction target should be met

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Quint David

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