



Module: Introduction

Page: Introduction

0.1 Please give a general description and introduction to your city including your city’s boundary in the text box below.

Administrative boundary	Description of city
City/Municipality	The incorporated limits of the City of Greensboro lie entirely within Guilford County, North Carolina, USA. The current total municipal area is 133.77 square miles.

0.2 Emissions Accounting Choice  
Reporting emissions is optional for all cities. By checking the boxes below you are indicating that you have fuel and/or greenhouse gas (GHG) emissions data to report at this time.

Select ‘Government’ to report emissions from your local government operations (sometimes referred to as ‘corporate’ or ‘municipal’ emissions).  
Select ‘Community’ to report emissions from the entire city area over which the city government can exercise a degree of influence through the policies and regulations they implement (sometimes referred to as ‘geographic’ or ‘city-wide’ emissions).  
Select both boxes to report fuel and/or emissions for both inventories.

IF YOU HAVE NO FUEL AND/OR GREENHOUSE GAS EMISSIONS TO REPORT DO NOT CHECK EITHER BOX.

Community

M0.0 Would you like CDP to use the responses provided in the main questionnaire as your city's submission to the Global Covenant of Mayors for Climate and Energy (Compact of Mayors)?

My city is not participating in the Global Covenant of Mayors

Module: Governance

Page: City Details

0.3 Please provide information about your city's Mayor in the table below.

Leader title	Leader name	Current term start	Current term end	Total time in office (years)
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Mayor	Nancy Vaughan	2015	2017	4
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#### 0.4

Please provide details of your city's annual operating budget.

Annual operating budget	Currency	Budget year start	Budget year end
519671117	USD US Dollar	Fri 01 Jul 2016	Fri 30 Jun 2017

#### 0.5

Please provide details of your city's current and projected population.

Current population	Current population year	Projected population	Projected population year
287027	2017	293862	2020

#### 0.6

Please provide details of your city's GDP.

GDP	Currency	Year of GDP	Source

#### 0.7

Please provide further details about the geography of your city.

Average annual temperature (in Celsius)	Land area (in square km)	Average altitude (m)	Longitude (e.g. -120.9762)	Latitude (e.g. 41.25)
15.0	346.5	272	36.07	79.79

Page: Governance

#### 1.0

Please describe the impact of national and/or regional climate change activities on your city's own climate change activities.

Greensboro has a goal of stabilizing the City's overall greenhouse gas emissions at 2010 levels by 2020, as stated in the 2011 Sustainability Action Plan. There are no current state level policies on climate change that are likely to impact our local climate change activities. Recent changes enacted at the federal level may result in increases in greenhouse gas emissions nationally and throughout North Carolina and impede efforts at all levels to slow climate change.

#### 1.1

Please describe how your city manages overall responsibility for climate change mitigation (emissions reduction) and adaptation (climate risk reduction).

The City's current policy stance is that responsibility for emissions reductions lies with the individual entities that produce emissions. The 2011 Sustainability Action Plan establishes a goal of stabilizing the City's overall greenhouse gas emissions at 2010 levels by 2020. However, there is no coordinated effort or centralized responsibility for promoting actions that would contribute to reducing GHG emissions.

The City does not have a climate change adaptation plan. The 2011 Sustainability Action Plan includes a policy stating that "The City should develop a framework for adapting to a changing climate and integrating adaptation into its plans, ordinances and programs." No actions have been taken toward implementing this policy.

1.2

Does your city incorporate desired sustainability goals and targets (e.g. GHG reductions) into the master planning for the city?

Response	Description
No	The 2011 Sustainability Action Plan establishes aspirational goals, including a GHG reduction target. This plan has not been formally adopted by the City. The goals and policies of the City's current comprehensive plan do not incorporate specific sustainability goals or targets, such as GHG reductions.

Module: Risks & Adaptation

Page: Climate Hazards

2.0

Has a climate change risk or vulnerability assessment been undertaken for your local government area?

Yes

2.0a

Please attach and provide details on your climate change risk or vulnerability assessment. Please provide details on the boundary of your assessment, and where this differs from your city's boundary, please provide an explanation.

Publication title	Year of publication	Attach the document	Web link	Boundary of assessment relative to city boundary (reported in 0.1)	Explanation of boundary choice	Primary author of assessment
Guilford County Hazard and Risk Assessment, 2015	2015	<a href="https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared_Documents/Attachments/Cities-2.0a-C3-AttachtheDocument/Guilford%20County%20Hazard%20Identification%20Risk%20Assessment%202015.pdf">https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared_Documents/Attachments/Cities-2.0a-C3-AttachtheDocument/Guilford County Hazard Identification Risk Assessment 2015.pdf</a>	<a href="http://readyguilford.org/download/Guilford-County-HIRA-2015.pdf">http://readyguilford.org/download/Guilford-County-HIRA-2015.pdf</a>	Larger – covers the whole city and adjoining areas	Covers all of Guilford County, North Carolina. The City of Greensboro is located entirely within Guilford County and is the largest municipality (by both population and land area) in the county.	Other: County Government

**2.0b**

Please select the primary process or methodology used to undertake the risk or vulnerability assessment of your city. If your city uses a combination of methodologies, please select the main methodology used.

Primary methodology	Description
Other: FEMA	Principally a qualitative assessment as recommended by FEMA in its "How-to" guidance document titled "Understanding Your Risks: Identifying Hazards and Estimating Losses" (FEMA Publication 386-2).

**2.1**

Do the current and/or anticipated effects of climate change present a significant risk to your city?

Yes

**2.1a**

Please list the most significant climate hazards currently faced by your city and indicate the probability and consequence of these hazards.

Climate hazards	Probability of hazard	Consequence of hazard
Drought	High	High
Extreme hot days	High	Medium High
Forest fire	Medium	Medium
Flash/surface flood	High	Medium High
Cyclone (Hurricane/Typhoon)	High	High
Lightning/thunderstorm	High	Medium High
Tornado	Medium High	Medium High
Other: Winter Storm	High	Medium High

**2.1c**

Please identify how you expect climate change to affect the frequency and intensity of the hazards faced by your city and when you expect to experience those changes.

Climate hazards	Change in frequency	Change in intensity	Anticipated timescale
Drought	Increasing	Increasing	Current
Extreme hot days	Increasing	Increasing	Current
Forest fire	Increasing	Increasing	Current
Flash/surface flood	Increasing	Increasing	Current
Cyclone (Hurricane/Typhoon)	Increasing	Increasing	Current
Lightning/thunderstorm	Increasing	None	Current
Tornado	Increasing	Increasing	Current
Other: Winter Storm	Increasing	Increasing	Current

Page: Climate Hazards II

**2.1d**

Please describe the magnitude of the impact of these hazards and identify three critical assets or services that may be most impacted.

Climate hazards	Magnitude of impact	Impact description	Asset or service	Asset or service	Asset or service
Drought	Extremely serious		Water Supply & Sanitation	Food and agriculture	Public health
Extreme hot days	Extremely serious		Energy	Food and agriculture	Public health
Forest fire	Serious		Food and agriculture	Residential	Emergency Management
Flash/surface flood	Serious		Transport	Public health	Water Supply & Sanitation
Cyclone (Hurricane/Typhoon)	Serious		Emergency Management	Transport	Energy
Lightning/thunderstorm	Serious		Emergency Management	Information & Communications Technology	Energy
Tornado	Serious		Emergency Management	Information & Communications Technology	Energy
Other: Winter Storm	Less serious		Energy	Transport	Emergency Management

## 2.2

**Do you consider that the effects of climate change could threaten the ability of businesses to operate successfully in your city?**

Response	Explanation
Yes	The ability of businesses to operate successfully would most likely be disrupted by climate change effects that impact water supply & sanitation, energy production & distribution, transportation services & infrastructure, and information & communications systems.

**Page: Adaptation**

## 3.0

**Has the Mayor or local government committed to adapting to climate change across the geographical area of the city, town or settlement?**

No

## 3.1

**Does your local government have a plan that addresses climate change adaptation?**

No

## 3.1b

**Please explain why not and/or any future arrangements you have to create a plan.**

Greensboro's 2011 Sustainability Action Plan establishes a policy to "develop a framework for adapting to a changing climate and integrating adaptation into its plans, ordinances and programs." However, this Plan has not been formally adopted by the City, and no coordinated steps to implement this policy have been taken.

### 3.2

The Global Covenant of Mayors requires cities to complete [these additional questions](#) on the climate hazards affecting your city and your city's plans to adapt to these hazards. Other cities wishing to disclose further detail about their adaptation efforts are also encouraged to fill out the download. [Click here to download the additional questions.](#)

### 3.3

Please describe the actions you are taking to reduce the risk to, or vulnerability of, your city's infrastructure, citizens, and businesses from climate change as identified on the previous page.

Climate hazards	Action	Action description
Drought	Diversification of water supply	Also, water distribution system interconnections.
Extreme hot days	Cooling centers, pools, water parks/plazas	
Forest fire	Crisis management including warning and evacuation systems	
Flash/surface flood	Restrict development in at risk areas	
Cyclone (Hurricane/Typhoon)	Crisis management including warning and evacuation systems	
Lightning/thunderstorm	Crisis management including warning and evacuation systems	
Tornado	Crisis management including warning and evacuation systems	
Other: Winter Storm	Crisis management including warning and evacuation systems	

Page: Social Risks

### 4.0

Does your city face any social risks as a result of climate change?

Yes

### 4.0a

Please complete the table

Social risks	Anticipated timescale in years	Impact description
Fluctuating socio-economic conditions	Short-term	
Increased risk to already vulnerable populations	Short-term	

Module: Opportunities

Page: Opportunities

### 5.0

Does climate change present any economic opportunities for your city?

No

### 5.0b

## Why not?

The most likely economic opportunities resulting from climate change are in the agriculture sector (longer growing season, potential for introduction of new crops) and in the green technologies market. Greensboro has very little agricultural activity within City limits. The industry clusters that are the focus of Greensboro's economic development strategy do not include green technologies.

### 5.1

**Does your city collaborate with businesses in your city on sustainability issues or projects?**

Response	Description
Yes	Greensboro contracts with the firm ReCommunity for management of recyclable materials collected through the City's curbside single-stream recycling program.

### 5.2

**List any climate change-related projects for which you hope to attract private sector financing, and provide any details on the estimated overall costs and status of the project. If your city does not have any relevant projects, please select None under Project Area.**

Project area	Status of project	Status of financing	Project description	Total cost of project (USD\$)	Total investment cost needed (USD\$)
None					

**Module: Emissions - Community**

**Page: Community - Date and Boundary**

### C1.0

**Please state the dates of the accounting year or 12-month period for which you are reporting a GHG measurement inventory for your community.**

Tue 01 Jan 2013 - Tue 31 Dec 2013

### C1.1

**Please indicate the category that best describes the boundary of your community GHG emissions inventory.**

Administrative boundary of a local government

**Page: Community - GHG Emissions Data**

### C1.2

**Please give the name of the primary protocol, standard or methodology you have used to calculate GHG emissions.**

Primary protocol	Comment
U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (ICLEI)	

### C1.3

**Which gases are included in your emissions inventory? Tick all that apply.**

CO2

**C1.4**

Please detail total (Scope 1 + Scope 2) emissions for your community, in metric tonnes CO2e and provide a comment on the level of confidence in the accuracy of your community emissions figure.

Total emissions (metric tonnes CO2e)	Attach your inventory	Level of confidence	Comment on level of confidence
4467691	<a href="https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared_Documents/Attachments/Cities-C1.4-C2-Inventory/Greenhouse_Gas_Inventory_Update_with_Notes_03-24-15.pdf">https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared_Documents/Attachments/Cities-C1.4-C2-Inventory/Greenhouse Gas Inventory Update with Notes 03-24-15.pdf</a>	Medium	

**C1.5**

If applicable, please provide a breakdown of your GHG emissions by scope. Where values are not available, please use the comment field to indicate the reason why.

Scope	Metric tonnes CO2e	Level of confidence	Comments
Scope 1 emissions excluding emissions from grid-supplied energy generation			
Scope 1 emissions from grid-supplied energy generation within the city boundary			
Total Scope 1 emissions (Row 1 + Row 2)			
Total Scope 2 emissions			

**C1.6c**

Where it will facilitate a greater understanding of your community's emissions, please provide a breakdown of these emissions by the US Community Protocol sources.

US Community Protocol Sources	Sector	Scope	Emissions (metric tonnes CO2e)
Built Environment	Residential buildings	Total figure	1078827
Built Environment	Commercial buildings	Total figure	1335268
Built Environment	Industrial buildings	Total figure	453245
Transportation and Other Mobile Sources	Transportation	Total figure	1485117
Solid Waste	Waste	Total figure	115234

**C1.7**

Please give the total amount of fuel (referring to Scope 1 emissions) consumed in your city during the reporting year.

Fuel	Amount	Units	End user / Economic sector / IPCC sector / Other	Sector
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**C1.8**

How much electricity, heat, steam, and cooling (referring to Scope 2) has been consumed by your city during the reporting year?

Type	Amount	Units	End user / Economic sector / IPCC sector / Other	Sector
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**C1.11**

Do you measure Scope 3 emissions?



**C1.12**  
Please indicate if your emissions have increased, decreased, or stayed the same since your last emissions inventory, and please describe why.

Reason for change	Please describe why
Decreased	The inventory prepared in 2015 (based on 2013 data) indicated a decrease in GHG emissions compared with the prior inventory prepared in 2010 (based on 2007 data). The 2007 inventory found that a total of 5,365,412 tons of CO2e were emitted in Greensboro. The 2013 inventory showed a decrease of 897,721 tons to 4,467,691 tons of CO2e. Among the factors found to be contributing to this reduction were: 1) greater energy efficiency and conservation in the residential and commercial sectors; 2) reduced number of industrial operations that are highly energy intensive; 3) conversion of Duke Energy's power generation plant fleet away from coal-fired units to natural gas fired units; and 4) reduced total motor vehicle miles traveled in Greensboro. Additional factors that may have influenced this reduction include: 1) the national economic recession, during which many commercial and industrial sectors experienced significant contractions, many workers were unemployed, and many households downsized to smaller less energy consuming dwellings; and 2) the Better Buildings for Greensboro program, which received \$4.7M through American Recovery and Reinvestment Act of 2009. The program provided: a) free compact fluorescent lightbulbs, b) low-flow showerheads, c) Kill-A-Watt energy usage meters, d) home energy efficiency audits e) low-interest financing for purchase of energy-efficient appliances, f) energy bill rebates for home energy-efficiency upgrades, and g) funding for energy-efficiency upgrades to business and government buildings.

**Further Information**

**Page: Community - External Verification**

**C1.13**  
Has the GHG emissions data you are currently reporting been externally verified or audited in part or in whole?

No

**C1.13b**  
Please describe your plans to verify your emissions in the future.

There are currently no plans to externally verify or audit Greensboro's GHG emissions data in the future.

**Module: Strategy**

**Page: GHG Emissions Reduction - Local Government Operations**

**6.0**  
Do you have a GHG emissions reduction target in place for your local government operations?

No

**6.0b**  
Please explain why you do not have a local government operations emissions reduction target.

Setting a local government operations emissions reduction target was not considered or included in Greensboro's 2011 Sustainability Action Plan. There are no plans to introduce a local government operations emissions reduction target in the future.

**6.1**  
**What actions are you undertaking to reduce your emissions in your local government operations?**

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Energy efficiency/ retrofit measures		Several City facilities have been recommissioned with high efficiency electrical and mechanical systems.
Improve fuel economy and reduce CO2 from motorized vehicles		Greensboro Transit Authority currently operates several hybrid diesel-electric buses, and plans to purchase all-electric buses in its next round of fleet replacements.
LED / CFL / other luminaire technologies		Greensboro's high-pressure sodium streetlamps are being replaced with LED fixtures. Traffic signals are also being retrofitted with LED fixtures as the incandescent lights cease functioning.
On-site renewable energy generation		Several Greensboro fire stations have been equipped with solar thermal water heating units. Several other City facilities have been equipped with solar PV panels.
Recycling or composting collections and/or facilities		Greensboro operates a single-stream curbside recycling collection service. Plans are in development to expand and enhance this service, increase recycling rates, and reduce contamination rates.

Page: GHG Emissions Reduction - Community

**7.0**  
**Does your city have a climate change action plan for reducing GHG emissions?**

Yes

**7.0a**  
**Please attach your city's climate change action plan below.**

Publication title	Year of publication	Attach	Web link
Sustainability Action Plan Greensboro, North Carolina	2011	<a href="https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared_Documents/Attachments/Cities-7.0a-C3-AttachPlan/Greensboro_Sustainability_Action_Plan_-_Final,_01-04-11.pdf">https://www.cdp.net/sites/2017/41/50541/CDP_Cities_2017/Shared Documents/Attachments/Cities-7.0a-C3-AttachPlan/Greensboro Sustainability Action Plan - Final, 01-04-11.pdf</a>	<a href="http://www.greensboro-nc.gov/modules/showdocument.aspx?documentid=1194">http://www.greensboro-nc.gov/modules/showdocument.aspx?documentid=1194</a>

**7.1**  
**Do you have a GHG emissions reduction target in place for your community? Tick all that apply.**

Base year emissions (absolute) target

**7.1a**

Please provide details of your total city-wide base year emissions reduction (absolute) target. In addition you may provide details of your sector-specific targets, by providing the baseline emissions specific to that target.

Sector	Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	Target date	Comment
Total	2007	5365412	0.0%	2020	Goal is to stabilize at baseline emissions level.

## 7.2

What actions are you undertaking to reduce emissions city-wide?

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Awareness and education for non motorized transport		The Greensboro Department of Transportation conducts various awareness and education efforts to promote non-motorized transport.
Brownfield redevelopment programs		The Greensboro Planning Department is currently managing a mixed use redevelopment of a remediated former brownfield site, which will effectively expand the City's central business district.
Energy efficiency/ retrofit measures		Building owners may apply to receive rebates of up to 50% of permit fees for construction of new energy-efficient buildings or energy-efficient retrofits of existing buildings.
Green space and/ or biodiversity preservation and expansion		Greensboro requires open space dedication and drainage-maintenance & utility easements in connection with certain types / scales of development activity.
Improve bus infrastructure, services, and operations		The Greensboro Transit Authority is currently developing an update of its comprehensive transit system plan, which will seek to improve its infrastructure, services, and operations.
Improve fuel economy and reduce CO2 from bus and/or light rail		Greensboro Transit Authority currently operates several hybrid diesel-electric buses, and plans to purchase all-electric buses in its next round of fleet replacements.

Emissions reduction activity	Anticipated emissions reduction – cumulative over the lifetime of the action (metric tonnes CO2e)	Action description
Improve the efficiency of waste collection		Greensboro operates a single-stream curbside recycling collection service. Plans are in development to expand and enhance this service, increase recycling rates, and reduce contamination rates.
Landfill management		Greensboro's recycling collection service diverts hundreds of tons of waste from landfills each year. The City's now-closed White Street Landfill sells a portion of the methane produced to a retailer.
LED / CFL / other luminaire technologies		Greensboro's high-pressure sodium streetlamps are being replaced with LED fixtures. Traffic signals are also being retrofitted with LED fixtures as the incandescent lights cease functioning.
On-site renewable energy generation		Several Greensboro fire stations have been equipped with solar thermal water heating units. Several other City facilities have been equipped with solar PV panels.
Recyclables and organics separation from other waste		Greensboro's recycling collection service diverts hundreds of tons of waste from landfills each year. The City's now-closed White Street Landfill sells a portion of the methane produced to a retailer.
Transportation demand management		Greensboro Transit Authority's Corporate Connections program allows employers to subsidize employees' transit passes. The Greensboro Transportation Department adopted a complete update of its Bicycle, Pedestrian, and Greenways Master Plan in 2015, to guide development of new facilities for non-motorized transportation. Greensboro adopted a new Land Development Ordinance in 2010, which created standards for reduction of minimum required off-street parking when site is located within 1,000 feet of a transit stop, and/or when on-site bicycle parking is provided. Off-street parking requirements can also be completely waived for development on existing lots that do not meet minimum lot width requirements. A subsequent amendment to the LDO allows up to 100% shared parking, subject to certain conditions. Incentives come in the form of reduced costs of parking construction and resulting stormwater management treatments, and simplified permitting process. Also, structures officially designated as historic and structures (greater than 50 years old) deemed to have historic value, are exempt from off street parking requirements. A reduction of up to 30% of required parking is available for sites served by greenways. Accessory Dwelling Units are permitted as accessory uses in all residential zoning districts, subject to setbacks and other applicable standards. The "Upper Story Residential" use category allows dwelling unit to be occupied on second floor of a structure with a business use on the ground floor.
Urban agriculture		Greensboro's zoning ordinances have been amended to allow urban farms and community gardens as principal uses in residential zones. The Greensboro Parks & Recreation Department operates a community garden program that rents garden plots in neighborhood parks to interested residents.
Waste prevention policies and programs		All City of Greensboro facilities are equipped with prominently located and clearly marked recycling receptacles.
Water metering and billing		The Greensboro Water Resources Department will be upgrading all water meters to smart meter units. The water billing fee schedule includes the ability to enact and enforce multi-stage water conservation regulations in the event of a drought event.

8.0

Please indicate the energy mix of your electricity consumed at the city-wide scale.

Energy source	Percent
Coal	
Gas	
Oil	
Nuclear	
Hydro	
Biomass	
Wind	
Geothermal	
Solar	
Unknown sources	

8.1

Does your city have a renewable energy or electricity target for consumption and/or production of energy?

No

8.1b

Please explain why you do not have a renewable energy target or a renewable electricity target and any plans to introduce one in the future.

A renewable energy target was not considered or included in Greensboro's 2011 Sustainability Action Plan. There are no plans to introduce a renewable energy target in the future.

9.0

Do you foresee substantive risks to your city's water supply in the short or long term?

No

9.0b

Please explain why you do not consider your city to be exposed to any substantive water-related risk.

The Randleman Reservoir, which was completed in 2010, is anticipated to have sufficient capacity to serve Greensboro's projected drinking water needs through 2060.

Please  
note

If you did not select anything in the dropdown list for Q9.0 on the Water Supply Risks page, nothing will be displayed on this page. Please go back to the Water Supply Risks page to confirm your choice or continue to the next section.

**Module: Compact of Mayors**

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