



**Module: Introduction**

**Page: Introduction**

**0.1**  
Introduction

Please give a general description and introduction to your city.

Cleveland is located in northeastern Ohio on the southern shore of Lake Erie. It was founded in 1796 near the mouth of the Cuyahoga River, and became a manufacturing center owing to its location on the lake shore, as well as being connected to numerous canals and railroad lines. Since then, Cleveland's economy has diversified to include sectors financial services, healthcare, biomedical, and many others.

As of 2010, Cleveland city proper had a total population of 396,815, making it the 45th largest city in the U.S. Greater Cleveland, the Cleveland-Elyria-Mentor Metropolitan Statistical Area, ranked 28th largest in the United States with 2,068,283 people in 2011.

Cleveland exhibits a continental climate with four distinct seasons. The record high is 104 °F (40 °C), and the record low is -20 °F (-29 °C). Due to its proximity to Lake Erie, Cleveland typically experiences lake effect snow (especially on the city's east side) from mid-November until the lake freezes, usually in late January or early February.

**0.2**  
Emissions Accounting Choice

By checking the boxes below you are indicating that you have fuel and/or GHG emissions data to report at this time.

- Select Government to report emissions from your local government operations (also referred to as 'corporate' or 'municipal'): relating to those emissions arising from the operations of the local government.
- Select Community to report emissions from the entire city (also referred to as 'geographic' or 'city-wide'): encompassing emissions which are within a particular geopolitical region, over which the city government can exercise a degree of influence through the policies and regulations they implement.
- Select both boxes to report fuel and/or emissions for both inventories.
- Do not select either box if you have no fuel and/or GHG emissions data to report this year.

Government  
Community

**Module: Governance**

**Page: Governance**

**1.0**

Please describe the process by which the city reviews its progress and manages overall responsibility for climate change.

The Sustainable Cleveland Municipal Action Plan (SC-MAP) is a concrete sustainability action plan for Cleveland's municipal operations. The SC-MAP establishes an organizational philosophy toward sustainability and climate change through proven policy, goals, actions, and performance metrics. While it is primarily intended to lay out specific actions for City staff, the SC-MAP also provides context for the public to understand the City's approach to sustainability in its operations and witness the results.

Through the SC-MAP, the City recognizes the need to lead by example in promoting sustainability, but creating a truly sustainable economy in Cleveland requires the entire community. This is why the City of Cleveland is leading a process to create a community-wide Climate Action Plan (CAP) to not only reduce greenhouse gas (GHG) emissions, but also make Cleveland more resilient by preparing for existing and predicted changes in the climate. The CAP will be distinct from the SC-MAP in that it will focus on issues and activities in the community beyond the City's own municipal operations and footprint. To chart this path forward, the City is engaging public as a whole and experts and community leaders from across Northeast Ohio through its 40-member Climate Action Advisory Committee.

Each April, the City will be issuing an annual report that reviews progress on the Sustainable Cleveland 2019 initiative, including implementation of both the SC-MAP and the CAP. In August 2009, Mayor Frank G. Jackson convened the first Sustainable Cleveland 2019 Summit, bringing together hundreds of people to design a 10-year initiative for "building a thriving green city on a blue lake" by the 50th anniversary of the infamous Cuyahoga River fire. Sustainable Cleveland engages everyone to work together to design and develop a thriving and resilient Cleveland that leverages its wealth of assets to build economic, social and environmental well-being for all.

**1.1**

Do you provide incentives for management of climate change issues, including the attainment of GHG reduction targets?

Yes

**1.1a**  
Please complete the table.

Who is entitled to benefit from these incentives?	The type of incentives	Program description
Citizens	Monetary	Climate Change Photo Contest, with cash awards for the winners. This will take place Summer 2013.
City employees	Other: Training	City employees have free access to Sustainability 101 training, as well as access to training and certification on green building best practices.

**1.2**

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

At the national level, one key existing policy that impacts our emissions profile is the new vehicle efficiency requirements for automakers. Requirements for power plant emissions, along with lower prices for natural gas, are also resulting in fuel switching from coal to natural gas.

Key regional activities include transportation projects chosen by the Northeast Ohio Areawide Coordinating Agency, our metropolitan planning organization. In terms of adaptation, a select number of studies have been completed that analyze regional climate change impacts, including a county-level Natural Hazards Mitigation Plan. Other cities that border the Great Lakes, such as Chicago and Toronto, have also performed analyses and outlined priority actions.

**Module: Risks & Adaptation**

**Page: Physical Risks**

**2.0**  
Do current and/or anticipated effects of climate change present significant physical risks to your city?

Yes

**2.0a**  
Please list and describe the effects of climate change which you expect to experience in your city, together with anticipated timescales.

Effects of climate change	Level of risk	Anticipated timescale in years	Impact description
More hot days	Serious	Short-term	During heat waves, high electricity demand combines with climate-related limitations on energy production capabilities, increasing the likelihood of electricity shortages and resulting in brownouts or even blackouts. Warming would also decrease the number of days with snow on the ground, which may improve traffic safety. In winter, oil and gas demand for heating would also decline.
Increased urban heat island effect	Serious	Short-term	Events such as the Chicago heat wave of 1995, which resulted in over 700 deaths, will become more common. Unless actions are taken to reduce pollutants that lead to ozone formation, increased temperatures and more stagnant air would also lead to more ground-level ozone.
Increased frequency of large storms	Serious	Short-term	Precipitation is projected to increase in winter and spring, and to become more intense throughout the year. This pattern is expected to lead to more frequent flooding, increasing infrastructure damage, and impacts on human health. Such heavy downpours can overload water treatment facilities, leading to more combined sewer overflow events that increase the risk of water-borne diseases, which thrive in warmer temperatures, and more water advisory days.
Other: Lower lake levels	Serious	Current	Reductions in Great Lakes water levels lead to impacts on shipping, infrastructure, beaches, and ecosystems. In the summer, with increasing evaporation rates and longer periods between rainfalls, the likelihood of drought will increase and water levels in the lake, as well as in rivers, streams, and wetlands, are likely to decline.

**2.1**  
Please describe any compounding factors that may worsen the physical effects of climate change in your city.

In many ways, climate change will exacerbate many existing factors in Cleveland. Some of the key factors include:  
 Poverty rates  
 Existing Combined Sewer Overflow events  
 Old infrastructure and above-ground utilities  
 Air quality, as Ohio is still quite coal-dependent  
 Lakeshore development  
 Areas with limited tree cover within the city proper  
 High asthma rates in some parts of the city

**2.2**  
Do you consider that the physical impacts of climate change could threaten the ability of businesses to operate successfully in your city?

Yes

**2.2a**  
Please explain the reasoning behind your response.

The projected increase in frequency of large storms and lower lake levels could affect how utilities and the Port operate, as well as lakefront and riverfront businesses.

**2.3**  
Please select the primary process or methodology used to evaluate the physical risks to your city.

Primary Methodology	Description
ICLEI climate adaptation methodology (ADAPT)	The ICLEI ADAPT tool was used to get started, giving the team a sense of the type of questions we should be asking. This is being supplemented by state and regional vulnerability assessments, as well as those of Great Lakes cities (e.g. Toronto, Chicago).

**Page: Adaptation**

**3.0**  
Do you have a plan for increasing your city's resilience to the expected physical effects of climate change?

No

**3.0a**  
Please explain why not and any future arrangements you have to create a plan.

Adaptation planning is part of the community-wide Climate Action Plan currently in development, to be complete in 2013. Part of this planning effort includes identifying the key next steps to create a more detailed vulnerability assessment and actions to improve resilience.

**3.1**  
Please describe the actions you are taking to reduce the risk to your city's infrastructure, citizens, and businesses from climate changes as identified on the previous page (Q2.0a).

Effects of climate change	Actions to reduce vulnerability	Action Description
More hot days	Crisis management including warning and evacuation systems	The City of Cleveland has an Emergency Operations Plan that is reviewed and updated annually to address adaptation-related topics, including heat emergencies. The plan contains the preparedness/prevention phase as well as the declaration of a heat emergency.



**Page: Local Government - Methodology**

**LGO1.0**

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

Fri 01 Jan 2010 - Mon 31 Dec 2012

**LGO1.1**

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

Companies, entities or departments over which operational control is exercised

**LGO1.2**

Please indicate which of the following major sources of emissions are included in your municipal GHG emissions inventory.

Source of emissions	Status
Airport(s)	Included
Buildings	Included
Buses	Not applicable
Electricity generation	Included
Electricity transmission and distribution	Included
Employee commuting	Included
Incineration of waste	Not applicable
Landfills	Not applicable
Local trains	Not applicable
Maritime port	Not applicable
Municipal vehicle fleet	Included
Regional trains	Not applicable
Roads / highways	Included
Street lighting and traffic signals	Included
Subway / underground	Not applicable
Thermal energy	Included
Waste collection	Included
Wastewater treatment	Not included
Water supply	Included

**LGO1.3**

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

Local Government Operations Protocol (ICLEI/The Climate Registry/California Climate Action Registry/California Air Resources Board)

**LGO1.3a**

Please explain your methodology (including use of additional protocol), methods of calculation, and processes for data collection.

This inventory was assembled through the collection and analysis of utility data, compiling of municipal and utility records, and discussions with City of Cleveland staff. Associated GHG emissions for all activities were calculated using an approach consistent with the International Council for Local Environmental Initiatives (ICLEI) - Local Governments for Sustainability's Local Government Operations Protocol as the main guiding document, with methodologies from The Climate Registry (TCR), the World Resources Institute (WRI), the Intergovernmental Panel on Climate Change (IPCC), and the U.S. Environmental Protection Agency (EPA) also referenced.

Tools - Inventory Management System:

Most of the calculations used to develop this inventory were carried out in an Information Management System (IMS), a Microsoft Excel-based spreadsheet that collects into one tool the original data, methodology applied, emission factors selected and a summary of GHG emission results. The IMS also provides charting, forecasting and benchmarking capabilities.

Additional Notes:

- > Diesel use for generators and Cleveland Public Power's turbines to meet occasional peak demand, have been included in the overall fuel consumption numbers. Besides, these turbines are the only source of electricity generation as applicable to local government operations, but has been marked in LGO 1.2 as 'Included'.
- > Roads, Highways is considered 'included' in LGO from the maintenance perspective to include Scope 1 & 2 emissions associated to the Division of Streets.
- > Fuels consumed as relevant to Scope 1 emissions have been included in LGO 1.4

**Attachments**

[https://www.cdproject.net/sites/2013/59/35859/CDP\\_Cities\\_2013/Shared\\_Documents/Attachments/CDPCities2013/LocalGovernment-Methodology/Appdx\\_A\\_\(GHG\\_Inv\\_Meth\)\\_for\\_CDP.docx](https://www.cdproject.net/sites/2013/59/35859/CDP_Cities_2013/Shared_Documents/Attachments/CDPCities2013/LocalGovernment-Methodology/Appdx_A_(GHG_Inv_Meth)_for_CDP.docx)

**Page: Local Government - Energy Data**

**LGO1.4**

Please give the total amount of fuel that your local government has consumed this year.

Fuel	Amount	Units
Motor gasoline (petrol)	4974470	L
Diesel/Gas oil	4738188	L
Natural gas	4651162	Therms
Other: Acetylene	1911387	L
Other: Liquid Propane	19413	L

**LGO1.5**

How much electricity, heat, steam, and cooling has your local government purchased for its own consumption during the reporting year?

Type	Amount	Units
Electricity	409967874	kWh
Steam	35328000000	Btu
Cooling	24331260000	Btu

**Page: Local Government - GHG Emissions Data**

**LGO1.6**

Please provide total (Scope 1 +Scope 2) GHG emissions for your local government's operations, in metric tonnes CO2e.

387331

**LGO1.7**

If applicable, please provide the following GHG emissions.

Scopes are a common categorization method.

Scope 1: All direct GHG emissions (with the exception of direct CO2 emissions from biogenic sources).

Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity in metric tonnes CO2e emitted	Total Scope 2 activity in metric tonnes CO2e emitted
49389	337942

**LGO1.8**

Do you measure Scope 3 emissions?

Yes

**LGO1.8a**

Please complete the table.

Source	Emissions (metric tonnes CO2e)	Comment
Employee Commuting	6769	Numbers based on employee surveys. Most employee commuting emissions are from use of personal vehicles (80%). Includes Gasoline and Diesel fuel based emissions
Municipal Financed Travel	104	Based on airlines miles traveled. Other modes of employee business travel not included.
Solid Waste	923	Emissions based on solid waste estimates for total city staff, computed using average solid waste generated/per capita numbers.

**LGO1.9**

Where it will facilitate a greater understanding of your government emissions, please provide a breakdown of these emissions by department, facility, greenhouse gas (CO2, CH4, N2O etc) or by any other classification system used in your city.

Department / Facility / GHG / Other	Type	Emissions (metric tonnes CO2e)
Finance	Total figure	2980
General Government	Total figure	824
Port Control	Total figure	55658
Public Health	Total figure	1474
Public Safety	Total figure	22639
Public Utilities	Total figure	151085
Public Works	Total figure	37784
Street & Traffic Lights	Total figure	60492
CPP T&D Losses	Total figure	54190
Other	Total figure	8001

**LGO1.11**

Please explain why your emissions have increased, decreased, or stayed the same from the previous year.

Not Applicable.  
2010 Baseline Inventory that's being reported is our 1st comprehensive GHG inventory.

**Page: Local Government - External Verification**

**LGO1.12**

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

No

**LGO1.12a**

Please provide any other relevant information about the emissions verification process.

**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.

Fri 01 Jan 2010 - Fri 31 Dec 2010

**C1.1**

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

Geopolitical Boundary - physical areas over which local government has jurisdictional control

**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.

US Community Protocol for Accounting and Reporting

**C1.3**

Please explain your methodology (including use of additional protocol), methods of calculation, and processes for data collection.

This inventory was assembled through the collection and analysis of data with City of Cleveland staff as well as other city stakeholders such as utilities, regional coordinating agencies, local organizations and large emitters. Associated GHG emissions for all activities were calculated using an approach consistent with the International Council for Local Environmental Initiatives (ICLEI) - U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (ICLEI) as the main guiding document, with methodologies from The Climate Registry (TCR), the World Resources Institute (WRI), the Intergovernmental Panel on Climate Change (IPCC), and the U.S. Environmental Protection Agency (EPA) also referenced.

Tools - Inventory Management System:

Most of the calculations used to develop this inventory were carried out in an Information Management System (IMS), a Microsoft Excel-based spreadsheet that collects into one tool the original data, methodology applied, emission factors selected and a summary of GHG emission results. The IMS also provides charting, forecasting and benchmarking capabilities

Additional Notes:

- > Scope 1 emissions includes stationary combustion and industrial process related emissions reported by some of the large emitters in the city. Direct fuel consumed numbers are not available for these emitters.
- > Emissions associated with electricity generation plants is included under Scope 2 as indirect emissions, except electricity consumed numbers reported from Rail transit under Scope 1 emissions.
- > Only fuels consumed that were inventoried under Scope 1 emissions have been reported in C1.7

**C1.4**

Please detail total (Scope 1 + Scope 2) emissions for your community, in metric tonnes CO2e.

12892686

**C1.5**

If applicable, please provide a breakdown of your GHG emissions by scope.

Scopes are a common categorization method.

Scope 1: All direct GHG emissions (with the exception of direct CO2 emissions from biogenic sources).

Scope 2: Indirect GHG emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling.

Total Scope 1 activity in metric tonnes CO2e emitted	Total Scope 2 activity in metric tonnes CO2e emitted
8753654	4139032

**C1.6**

Where it will facilitate a greater understanding of your community's emissions, please provide a breakdown of these emissions by end user (buildings, water, waste, transport), economic sector (residential, commercial, industrial, institutional), IPCC sector (stationary combustion, mobile combustion, industrial processes, waste), greenhouse gas (CO2, CH4, N2O etc.) or any other classification system used in your city.

End user / Economic sector / IPCC sector / GHG / Other	Emissions (metric tonnes CO2e)
Residential Buildings	1636528
Commercial Buildings	1784014
Industrial Buildings	3163022
Street and Traffic Lights	60771
On-road Transportation	1058789
Airline Transportation	189884
Transit	50394
Marine Vessels	40629
Industrial Emissions	5016966
Solid Waste	146727
Water/Wastewater	122197
District Heating and Cooling (2 utility companies)	308581

**C1.7**

Please give the total amount of fuel consumed in your city during the reporting year.

Fuel	Amount	Units
Motor gasoline (petrol)	385218071	L
Diesel/Gas oil	72901167	L
Natural gas	571078089	Therms

**C1.8**

How much electricity, heat, steam, and cooling has been consumed by your city during the reporting year?

Type	Amount	Units
Electricity	6238348351	kWh

**C1.11**  
Do you measure Scope 3 emissions?

Yes

**C1.11a**  
Please complete the table

Source	Emissions (metric tonnes CO2e)	Comment
Airline transportation	189885	Emissions computed based on Airport Traffic data from 2 Cleveland Airports Estimated Total Jet Aviation Fuel Consumed = 76,705,046 liters. Estimated Total Aviation Gas Fuel Consumed = 312,069 liters
Marine Vessels	40629	Marine emissions are accounted for based on the port's area of authority, incoming and outgoing, so both legs of trip are included. The area of authority as defined in the Great Lakes Marine Air Emissions Study of 2006 was used. Hoteling is electric only and captured in Scope 2 for the Port. Estimated total Solid Fuel consumed = 33 Mgal/day Estimated total Liquid Fuel consumed = 1.6 Mgal/day
Solid Waste	146728	Includes Emissions computed from Residential and Commercial Solid Waste.

**C1.12**  
Please explain why your emissions have increased, decreased, or stayed the same from the previous year.

Not Applicable. 2010 Baseline Inventory that's being reported is our 1st comprehensive GHG inventory.

**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

**C1.13a**  
Please provide any other relevant information about the emissions verification process.

**Module: Strategy**

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

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

Yes

**6.0a**  
Please provide details of your reduction target.

Baseline year	Baseline emissions (metric tonnes CO2e)	Percentage reduction target	GHG sources to which the target applies	Target date	Comment
2010	395126	20%	Entire Emissions Inventory	2020	
2010	395126	50%	Entire Emissions Inventory	Other: 2030	The anticipated emissions reductions in 6.1 are for annual emission reductions in the year 2030. These are not cumulative emission reductions up to 2030. Actions that generally go beyond the boundary of city buildings, but are led by the City, such as community-wide recycling, are included in Community.

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

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Energy Demand in Buildings > Building performance rating and reporting	1300	Adopt and implement a Sustainable Building Policy, including 30% beyond code for energy efficiency in new buildings, and 20% for major renovations
Energy Demand in Buildings > Energy efficiency/retrofit measures	17000	Significantly reduce energy consumption, demand and cost across all City departments through energy efficiency.
Energy Demand in Buildings > Energy efficiency/retrofit measures	1100	Reduce energy use in City buildings through no- and low-cost conservation measures.
Energy Demand in Buildings > Energy efficiency/retrofit measures	6400	Install new Building Automation Systems (BAS) for City buildings with high energy use or complex systems, and fully utilize existing systems. Establish a building re-commissioning and tune-up program.
Outdoor Lighting > LED / CFL / other luminaire technologies	13000	Replace streetlights with LED lights, thereby saving the City money through reduced energy and maintenance costs.
Other: Water System Pumping and Treatment Optimization	26000	Finalize and implement an Energy Management Plan to reduce energy consumption and costs for Cleveland Division of Water.
Energy Demand in Buildings > Renewable on-Site energy generation	13000	Install a variety of renewable energy systems at City facilities and on City lands.

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Energy Supply > Low or zero carbon energy supply generation	97000	Increase the amount of advanced and renewable energy in the electricity supply portfolio that serves City facilities.
Transport > Transportation demand management	4600	Reduce employee commuting vehicle miles travelled (VMT) through the increased use of tele-working and alternative transportation modes, such as the public transit system, carpooling, biking, and walking. Reduce municipal fleet VMT both for regular vehicle routes and for occasional staff travel.
Transport > Improve fuel economy and reduce CO2 from motorized vehicles	2800	Establish policy to ensure all new vehicle purchases and retrofits are more efficient conventional, hybrid, electric or alternative fuel vehicles, such as compressed natural gas. Enforce the City's anti-idling policy using appropriate technology, education, and training.

**Page: GHG Emissions Reduction - Community**

**7.0**  
Do you have a GHG emissions reduction target in place for your community?

No

**7.0b**  
Please explain why you do not have an emissions reduction target.

The community will finalize its GHG emissions reduction target in Summer 2013, once the Climate Action Plan is completed.

Activities identified in 7.1 will be expanded upon once the plan is final. The anticipated emissions are annual reductions anticipated in the year 2030.

**7.1**  
What activities are you currently undertaking to reduce emissions city-wide?

Emissions reduction activity	Anticipated emissions reduction over lifetime (metric tonnes CO2e)	Action description
Energy Supply > Clean energy procurement strategies	1300000	In June 2008, the City of Cleveland adopted a citywide Advanced Energy Portfolio Standard (AEPS). The standard ensures that 15% of Cleveland Public Power's energy comes from advanced or renewable sources by 2015, 20% by 2020, and 25% by 2025.
Energy Demand in Buildings > Energy efficiency/retrofit measures	950000	There are numerous programs in Cleveland that provide assistance and incentives for retrofitting and weatherizing buildings. Key programs include the Home Weatherization Assistance Program, Warm & Healthy Homes, utility incentives, and the EnergySaver program. There is also a Cleveland 2030 District that was recently formed to make significant reductions in commercial building energy use.
Energy Demand in Buildings > Building codes and standards	N/A	Residents and developers seeking tax abatement for up to 15 years for residential projects must meet Cleveland Green Building Standards. In addition, all residential and commercial buildings in Ohio must now meet the 2009 IECC
Waste > Recycling or composting collections and/or facilities	6300	The Mandatory Automated Waste Collection program represents a significant step in Cleveland to increase participation in recycling. The city is also exploring ways to increase recycling rates among businesses, and to make composting easier.
Urban Land Use > Eco-district development strategy	N/A	Cleveland currently has two eco-district, one on the west side of the city (Detroit Shoreway) and the other on the east (Urban Agriculture Innovation Zone in Kinsman).

**Page: Planning**

**8.0**  
List any climate change-related projects for which you hope to attract private sector involvement.

Climate change-related projects for which we hope to attract private involvement will be identified in the community-wide Climate Action Plan, which is scheduled to be completed in summer 2013.

**8.1**  
Does your city incorporate desired GHG reductions into the master planning for the city?

Yes

**8.1a**  
Please describe the ways that the master plan is designed to reduce GHG emissions.

The community-wide Climate Action Plan, which is scheduled to be completed in summer 2013, will include a GHG reduction goal and a wide variety of actions to meet that goal. The intent is for each action, whether it's a policy, program, or specific project, to have key stakeholders identified that help lead implementation.

**8.2**  
Please describe any renewable energy targets or goals and how the city plans to meet those targets.

In 2008, the City of Cleveland adopted a voluntary Advanced Energy Portfolio Standard (AEPS) that calls for 15% of Cleveland Public Power's (municipal utility) energy to come from advanced or renewable sources by 2015, 20% by 2020, and 25% by 2025. The largest utility in Northeast Ohio, FirstEnergy, is subject to Ohio's Renewable Portfolio Standard, which requires the state's four investor-owned utilities to generate at least 12.5% of their electricity from renewable sources.

**Page: Water**

**9.0**  
Do you foresee substantive risks to your city's water supply in the short or long term?

Yes

**9.0a**  
Please identify the risks to your city's water supply as well as the timescale.



Risks	Timescale	Risk description
Inadequate or aging infrastructure	Current	Stormwater is a challenge for urban areas and parks in Cleveland. The 22,000-acre Emerald Necklace surrounding the metro area has become the region's catch-basin for storm water runoff. Not only does this cause considerable damages to park properties, the runoff is also accelerating the erosion of hundreds of miles of waterways within the parks system, flushing around 45,000 tons of silt out into Lake Erie each year. Erosion-control problems can be found in at least 13 of the 17 reservations that make up the park system. At the same time, Greater Cleveland's earliest sewers (primarily within the city and its inner-ring suburbs) are combined sewers. Built around the turn of the 19th century, these sewers carry sewage, industrial waste, and stormwater in a single pipe. When heavy rain events occur, control devices may allow some of the flow (a combination of stormwater and sewage) to overflow into area waterways to prevent urban flooding and damage to wastewater treatment facilities. This event is called a combined sewer overflow or CSO.
Flooding	Medium-term	Heavy downpours are now twice as frequent in the Midwest as they were a century ago. Under the higher-emissions scenario, Ohio's spring rainfall is projected to increase almost 15 percent over the next several decades and about 30 percent toward the end of the century. This may lead to more flooding, delays in the planting of spring crops, and declining water quality in rivers, streams, and storage reservoirs.
Increased water stress or scarcity	Long-term	Water levels in the Great Lakes are projected to decline both in summer (due to increased evaporation caused by higher temperatures) and winter (due to a decrease in lake ice). This decline can have significant impacts, such as significantly lengthening the distance to the lakeshore, affecting beach and coastal ecosystems, exposing toxic contaminants, and impairing recreational boating and commercial shipping.

**9.0b**

Please describe the actions (on the supply and demand side) you are taking to reduce the risks to your city's water supply.

The City and the Northeast Ohio Sewer District are working to address CSOs through both gray and green infrastructure projects. Below are some examples of actions related to protecting the city's water, building on actions described in the adaptation section:

- A city ordinance includes permitting requirements for construction and post-construction site stormwater runoff control
- The Big Creek Watershed Plan identifies numerous priority conservation and development areas, as well as opportunities for stormwater retrofits. Considering the urban nature of Big Creek, stormwater retrofits are the primary means for improving watershed function and expanding green infrastructure.
- The Kerruish Stormwater Control Facility Dam is used for flood control purposes. The improvement project consisted of clearing and grubbing of the dam area, removing trees, repairing the dam structure including primary spillway, construction of a new emergency secondary spillway and constructing access roadways. This project improved the structure of the dam, the hydraulics during a major storm, the water quality and enhance aquatic habitat.

CDP