

County of Schenectady

PE2 Action: Community Climate Action Plan

NYS Climate Smart Communities Program



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NEW YORK
STATE OF
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**Climate Smart
Communities**

May 2023

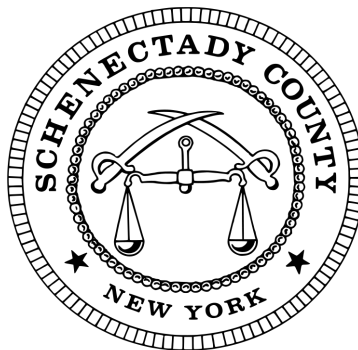


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A team of Cornell students working with professor Allison Chatrchyan in the Cornell Climate Smart Communities (CSC) class at Cornell University (ENVS 4444) for the Cornell Climate Stewards (CCS) program held several virtual meetings with Khila Pecoraro, Recycling and Composting Educator for Cornell Cooperative Extension (CCE) Schenectady County, and Charlie Davidson, Sustainability and Climate Smart Communities Coordinator for Schenectady County, and prepared a draft of this Climate Action Plan for the County of Schenectady, NY. The team of Cornell University students included: Maia Edwards, Finn Lynch, Max Vasicek, Jolie Wasserman, and Jamaur Williamson.

Student teams in the class were paired up to work with local communities or NGOs to assess climate action plans and identify and address their needs for research, policy recommendations, project planning, grant writing, or educational outreach to become NYS Registered or Certified Climate Smart Communities.

The objectives of this team were to conduct research and develop a report with CCE Schenectady County and the County itself to help them design a Certification Action for the NYS Climate Smart Communities program. The main goal was to help CCE Schenectady set a path of action to achieving Silver status as designated by the NYS CSC guidelines.

In addition to those mentioned above, several other individuals from Schenectady County assisted in collecting data and providing insight on the Climate Action Plan (CAP).

EXECUTIVE SUMMARY

Climate Smart Communities (CSC) is a New York State (NYS) program that helps local governments take action to mitigate the effects of climate change through reducing greenhouse gas (GHG) emissions and adapting to a changing climate. The CSC program began in 2009 as an interagency initiative of New York State and is jointly sponsored by the following agencies: Department of Environmental Conservation (DEC); Energy Research and Development Authority (NYSERDA); Department of Public Service; Department of State; Department of Transportation; Department of Health, and the NY Power Authority (NYPA).¹

Through CSC, communities across NYS work together to transition to zero carbon emissions, invest in community resilience, restore ecosystems, build a more just, healthy, and liveable future, and do their part within the region and beyond by contributing to climate change mitigation and adaptation. The program offers free technical assistance, grants, rebates for electric vehicles, and more.

By taking the CSC Pledge, communities commit to taking action on climate change and are designated Registered Climate Smart Communities. Becoming a member of the CSC program is free and voluntary; there are no fees or legal requirements. Instead, the Climate Smart Communities Certification Program includes a set of 100 green actions registered communities can choose from. These range from clean energy upgrades to implementing climate change educational initiatives. Certified communities are the foremost leaders in the state, having gone beyond the CSC pledge by completing and documenting a suite of actions that mitigate and adapt to the effects of climate change at the local level. Each community defines its own best strategies for cutting energy use, reducing emissions, and adapting to the effects of climate change. The CSC program is one of the few programs where local governments can find free technical support that is tailored to the needs of New York State communities.

As of March 2023, 376 NYS communities are registered with CSC: 91 are bronze certified, and 9 are silver certified. The link below shows a map of registered and certified CSCs within NYS:

<https://climatesmart.ny.gov/actions-certification/participating-communities/>

¹ Actions. <https://climatesmart.ny.gov/actions-certification/actions/#open/action/11>. Accessed 7 May 2023.

Schenectady County is currently registered with the CSC program, and was previously Bronze Certified. Updated documents must be submitted for the County to regain Bronze Certification or achieve Silver Certification.

PE2 ACTION: COMMUNITY CLIMATE ACTION PLAN

A climate action plan (CAP) is a strategy document that sets goals and outlines a set of initiatives that a municipality can implement to reduce greenhouse gas (GHG) emissions. Using a GHG emissions inventory as the foundation, a CAP defines GHG reduction targets and identifies which CSC priority actions can help achieve GHG reduction goals. By providing a framework for achieving the GHG targets, the CAP facilitates coordination between broader community engagement and local government leadership. In addition, the CAP supports effective action over time by establishing methods for assessing progress and adjusting the local strategy if GHG targets are surpassed. Development of the CAP and monitoring progress provide a focusing mechanism for the local CSC task force. Drafting a PE2 Climate Action Plan is a bronze and silver priority action for CSC communities and is worth 16 total points.

This CAP is organized into seven sections: (1) *Introduction*; (2) *Energy & Renewables: Buildings and Facilities*; (3) *Land Use, Transportation, and Vehicles*; (4) *Materials Management: Waste Reduction, Re-Use, Recycling, & Composting*; (5) *Natural Resources Management*; (6) *Outreach & Land Stewardship*; and (7) *Climate Adaptation & Preparedness*.

The *Introduction* will provide a summary of the CAP and an overview of GHG emissions inventories for the County of Schenectady. Sections 2-7 will take a more in-depth look at each corresponding area of interest, presenting various findings as well as the proposed CAP goals and recommendations.

Community Inventory Results

In April of 2023, a Community GHG Inventory was conducted for Schenectady County. This was done by extracting data from the Capital District Regional GHG Inventory which contains emissions data for the region from the year 2010. This method was first done by CCS Lynne Bailey and passed on to the team of Cornell students who helped develop this CAP. The main results show that the transportation sector in the County of

Schenectady consumes the largest percentage of the community's energy (40%). The residential sector is second (23%), however the residential, commercial, and industrial sectors combined, account for the largest proportion of the community's energy consumption (49%).

Community-wide GHG emissions in the County of Schenectady were approximately 1,523,806 metric tons of carbon dioxide equivalent (MTCDE) in 2010. The transportation sector accounted for the majority of the community's GHG emissions, with the residential and commercial sectors being second and third, respectively.

Government Inventory Results

Schenectady County's government operations were responsible for the emission of 9,681 MTCDE in 2010. This is equivalent to the amount of carbon sequestered annually by 2,064 acres of pine forest. As is often the case in local governments that do not own a wastewater treatment plant or landfill, the majority of emissions (62%) were a result of energy consumption in the County's Buildings and Other Facilities sector. When combined with energy use from buildings in the Airport Facilities and lighting in the Streetlights and Outdoor Lighting sectors, stationary energy consumption accounted for 65% of the County's GHG emissions. In 2010, the County spent \$2,371,606 on energy to operate its buildings, lighting, and vehicles.

Energy and GHG Emissions Reduction Target

Based on the Community and Government GHG inventories, the proposed overall goal is to reduce County-wide energy usage and GHG emissions 40% from 2010 levels by 2030 and a 85% reduction from 2010 levels by 2050, and net zero emissions by 2040. This goal is in line with other municipalities in the state of New York registered as CSCs.

Climate Action Recommendations

This Climate Action Plan (CAP) for Schenectady County includes recommendations for comprehensive policies and programs that will reduce greenhouse gas emissions, enhance operational and energy efficiencies, reduce energy costs, support local job growth, and adapt to a changing climate while improving quality of life, saving taxpayer dollars, and promoting social justice.

The proposed goals and initiatives are presented according to six different areas:

- 1) Energy & Renewables: Buildings and Facilities
- 2) Land Use, Transportation, and Vehicles
- 3) Materials Management: Waste Reduction, Re-Use, Recycling, & Composting
- 4) Natural Resources Management
- 5) Outreach & Land Stewardship
- 6) Climate Adaptation & Preparedness

1. INTRODUCTION

1-A. CLIMATE ACTION PLAN SUMMARY

Energy and Renewables: Buildings and Facilities

Proposed Goals:

- Reduce energy consumption, improve energy efficiency and reduce energy related costs.
- Support and promote the use of renewable forms of energy.
- Improve awareness of opportunities for energy efficiency & reductions.
- Reduce overall energy consumption and GHG emissions in the County of Schenectady by at least 85% of 2010 emissions by 2050.
 - Interim target: Reduce GHG emissions by 40% of 2010 emissions by 2030.
- The NY Climate Leadership & Community Protection Act (CLCPA) requires 70% of all of New York's electricity to come from renewable sources by 2030 and 100% zero emission generation by 2040. Schenectady County will strive to follow these guidelines.

Proposed Summary of Initiatives:

- Increase electrification and improve energy efficiency of residential buildings.
- Improve energy performance of commercial buildings.
- Conduct energy audits at all government facilities, and residential homes if possible, to identify opportunities to reduce electricity and natural gas usage.
- Encourage adoption of property assessed clean energy financing (C-PACE) throughout all municipalities in the County.
- Track and take advantage of federal, state and utility energy efficiency programs and Incentives.
- Create and adopt 'Green Building' standards.
- Explore Green Power Options and use of Renewable energy certificates (RECs).
- Remove barriers to and provide incentives to promote the use of renewable forms of energy in the County of Schenectady.
- Monitor and evaluate energy usage and greenhouse emissions.
- Establish policies and incentives for new development to achieve high standards for sustainability and resilient design.

Land Use, Transportation, and Vehicles

Proposed Goals:

- Capitalize on existing compact development and promote various modes of transportation and efficiency in providing public services and infrastructure.
- Reduce travel demand specifically that of single-occupancy private vehicles, reducing vehicles miles traveled in the County of Schenectady.
- Improve the existing sidewalk network to promote safe walking.
- Promote consistency and coordination between land use and transportation policies, improvements strategies and decision-making.
- Increase commuter use of public transportation to at least 10% by 2030.
- Increase the share of workers walking or biking to work to at least 10% by 2030.
- Electrify 15% of the County Government vehicle fleet by 2030.
- Decrease total transportation emissions below 2010 levels by 2030.

Proposed Summary of Initiatives:

- Increase funding for and accessibility of public transportation options:
 - Subsidize CDTA bus passes for County residents.
 - Expand the network of bike share programs within the County.
 - Advertise the expansion of these programs to increase use.
- Replace aging County fleet vehicles with electric or hybrid vehicles.
- Expand public electric vehicle charging stations around the County.
- Promote and expand accessibility to transit.
- Promote ridesharing, car and van pooling by offering free or discounted parking within the County
- Develop a Bicycling Master Plan.
- Improve Bike Infrastructure, Create Bicycle Friendly Zones.
- Develop a Pedestrian Master Plan.
- Improve sidewalks.
- Support Safe Routes to School program.
- Create rail trails.
- Assure that new development projects reflect the community's desires for a low carbon/low emissions future.

Materials Management: Waste Reduction, Re-Use, Recycling, & Composting

Proposed Goals:

- Decrease the amount of waste in landfills.
- Increase recycling initiatives.
- Increase widespread community food composting initiatives.
- Purchase environmentally preferable products.
- Reduce greenhouse gas emissions associated with the transportation and disposal of waste.
- Reduce the overall waste generated in the County of Schenectady by 20% by 2030.
- Increase the overall recycling rates in the County of Schenectady by 20%.

Proposed Summary of Initiatives:

- Assess the barriers to residential and commercial recycling and developing outreach programs and educational campaigns.
- Develop infrastructure and technical foundation to divert all major sources of organic waste away from landfills and into composting operations.
- Require County buildings to implement deconstruction and reuse policies on all construction and demolition projects.
- Purchase recycled materials, devices with multiple uses, double sided printers, and more durable products with less packaging.

Natural Resources Management

Proposed Goals:

- Work towards conservation of biodiversity and natural areas.
- Adjust zoning to more efficiently use energy and natural resources.
- Find ways to eliminate burdens on local natural resources such as promoting clean transportation (walking, biking) through methods such as creating new bike paths.
- Create a natural resource inventory to monitor anthropogenic tolls on local natural resources.

Proposed Summary of Initiatives:

- Create a task force to better understand climate risks and threats posed to availability of natural resources. Help plan for climate resiliency.
 - This would be a good addition to the County's current climate adaptation report.
- Develop a natural resource inventory (similar to a GHG inventory for natural resources) to keep track of available resources.
 - This will also help in future years to track the degradation of natural resources so Schenectady County can determine annual natural resource depletion (will help determine necessary changes in resource usage).

Outreach & Land Stewardship

Proposed Goals:

- Engage the local Schenectady community in energy and climate action initiatives.
- Improve climate change awareness and spread awareness of opportunities to reduce climate impact and GHG emissions.
- Create and promote sustainable, 'green' jobs.
- Create a Green Jobs community task force.

Proposed Summary of Initiatives:

- Develop an energy and sustainability training program for County government personnel.
- Work with local partners to engage the community in climate change awareness and sustainability initiatives.
- Adopt an Energy and Sustainability task force as an official body of the County government.
- Obtain and distribute materials from NYSERDA to encourage community and staff to participate in energy reduction initiatives.
- Update/create a Climate Action page on the County website.

Climate Adaptation & Preparedness

Proposed Goals:

- Prepare for and adapt to a changing climate.
- Create a Hazard Mitigation plan for the County of Schenectady.
- Create and encourage public access to all climate related projects and data.

Proposed Summary of Initiatives:

- Adopt a policy to consider climate impact and adaptation on all local projects.
- Seek projects that mitigate and minimize their impact on the environment.
- Carry out outreach on climate change and adaptation issues.
- Assess potential risk to water supply and implement water conservation measures.
- Create a citizen science monitoring program.
- Adopt and implement the local Climate Adaptation Plan.
- Carry out targeted and general outreach on climate change adaptation issues and actions.
- Collaborate with neighboring municipalities and County governments.

1-B. GREENHOUSE GAS EMISSIONS INVENTORY OVERVIEW

This Climate Action Plan for Schenectady County seeks to establish policies and identify strategies that will reduce GHG emissions to levels consistent with mitigating the worst effects of climate change. Scientific consensus suggests that an 80% reduction in GHG emissions under 1990 levels by 2050 is necessary to achieve that result, and New York State policy has set that as a long-term target for Statewide GHG emissions in the CLCPA Act.

Government Operations GHG Inventory

Schenectady County government has direct control over a significant number of buildings and other facilities and a large fleet of vehicles. Investment in, and management of, these assets can help bring about significant reductions in energy use and GHG emissions.

With the exception of renewable sources such as wind and solar, energy use is closely linked to GHG emissions. Energy consumption in Schenectady County's 35 buildings, covering 945,535 square feet, was the largest source of GHG emissions in 2010 (62% of total emissions, including Scope 3 sources). Energy use by the County's vehicle fleet was the second largest source of GHG emissions, comprising 17% of overall GHG emissions. In 2010, the County's vehicle fleet contained 88 diesel and 111 gasoline powered vehicles and mobile equipment. The County fleet also has a road paver and forklifts powered by propane fuel.

| SECTOR | ENERGY USE (MMBtu) | ENERGY COST (\$) | GHG EMISSIONS (METRIC TONS CO ₂ e) |
|--|--------------------|------------------------|---|
| Buildings and Other Facilities* | 88,104 | \$ 1,815,454.83 | 6,021 |
| Electricity | 34,525 | - | 3,152 |
| Natural Gas | 52,567 | - | 2,794 |
| Heating Oil | 990 | - | 74 |
| Propane | 21 | - | 1 |
| Vehicle Fleet** | 21,673 | \$ 396,747.78 | 1,577 |
| Diesel | 13,605 | \$ 244,533.59 | 1,008 |
| Gasoline | 8,026 | \$ 151,358.02 | 566 |
| Propane | 42 | \$ 856.17 | 3 |
| Streetlights and Outdoor Lighting | 1,515 | \$ 125,329.44 | 138 |
| Electricity | 1,515 | \$ 125,329.44 | 138 |
| Airport Facilities* | 1,397 | \$ 34,073.53 | 98 |
| Electricity | 632 | - | 58 |
| Natural Gas | 765 | - | 41 |
| TOTAL | 112,689 | \$ 2,371,605.58 | 7,834 |

**Energy cost data for the County buildings and facilities was provided in aggregate and could not be reported by source.*

***The Vehicle Fleet sector also produced 50 metric tons of CO₂e from refrigerants leaking from vehicle air-conditioning systems. These emissions were estimated based on a default quantity of refrigerant leaked per vehicle as defined in the LGOP. Data on the actual amount of refrigerant leaked from County vehicles were unavailable for 2010.*

Figure 1: 2010 Schenectady County Government Energy Use, Costs, and GHG Emissions by Sector and Source

Source: 2010 Greenhouse Gas Inventory and Forecast: Schenectady County. Government GHG Inventory Report_Final_SchenectadyCounty.pdf

Figure 1 breaks down the overall Government Operations GHG emissions by both sector and energy source. Buildings have the most energy use by far (88,104 MMBtu) which corresponds to a significant energy cost of \$1,815,455. Electricity and natural gas are the dominant sources of energy for buildings and other facilities. Figure 2 is helpful in gauging each sector's percentage of total Government Operations emissions.

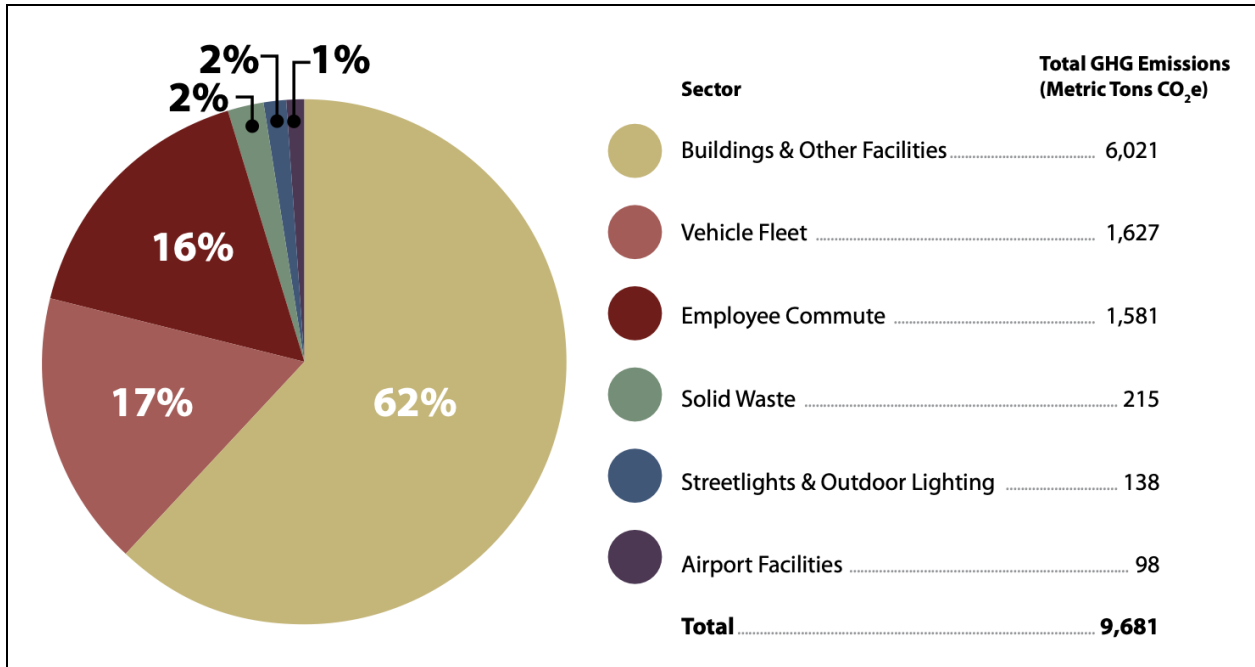


Figure 2: 2010 Schenectady County Government GHG Emissions by Sector.

Source: Schenectady County Climate Action Plan: June 2012. SchenectadyCounty_CAP_June22_Final.pdf

Community GHG Inventory

A Community GHG Inventory was developed for the year 2010, based on a GHG inventory published in 2013 by The Capital District Regional Planning Commission (CDRPC) for The New York Energy Development and Research Authority (NYSERDA). The emissions by sector are summarized in Table 1 and Figure 3. Schenectady County emitted an estimated 1,523,806 metric tons of carbon dioxide equivalent (MTCDE) in 2010. Energy use by homes and businesses combined for 49% across residential, commercial, and industrial sectors. Of this, residential energy use is the single largest source of emissions (23%), followed by commercial (16%), and industrial (10%). Transportation is the single largest sector in the County coming in at 40% of all GHG emissions.

Table 1: 2010 Schenectady County Community GHG Emissions by Sector

| Sector | Metric Tons CO2e | % of Total |
|--------------------|-------------------------|-------------------|
| Transport | 602,981 | 39.6% |
| Residential Energy | 355,131 | 23.3% |
| Commercial Energy | 237,056 | 15.6% |
| Industrial Energy | 151,425 | 9.9% |
| Fugitive | 125,385 | 8.2% |
| Waste | 47,460 | 3.1% |
| Agriculture | 4,368 | 0.3% |
| Total | 1,523,806 | 100.0% |

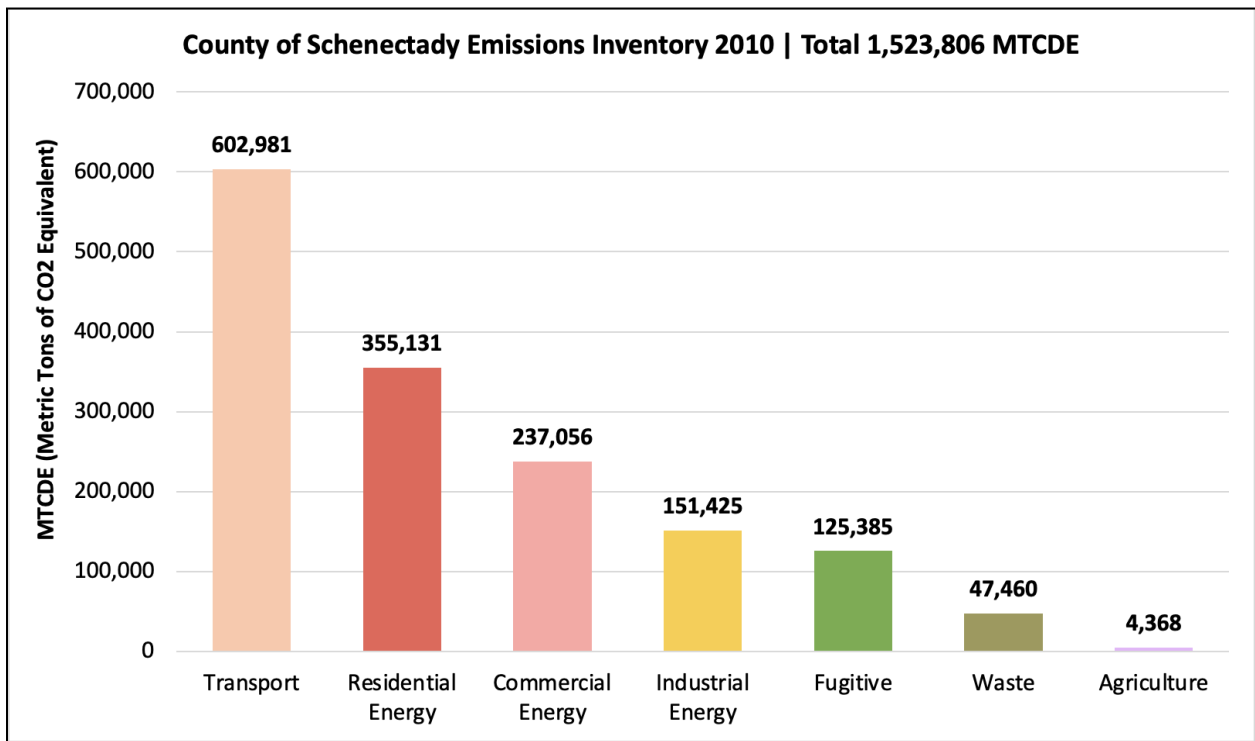


Figure 3: 2010 Schenectady County Community GHG Emissions by Sector

Table 2: 2010 Schenectady County Community GHG Emissions by Source.

| Source | Metric Tons CO2e | % of Total |
|--------------------|------------------|---------------|
| Gasoline | 415,605 | 27.3% |
| Natural Gas | 402,277 | 26.4% |
| Electricity | 193,991 | 12.7% |
| Diesel | 186,184 | 12.2% |
| Fuel Oil / Propane | 130,215 | 8.5% |
| Fugitive | 125,385 | 8.2% |
| Waste | 47,460 | 3.1% |
| Coal | 17,412 | 1.1% |
| Agriculture | 4,368 | 0.3% |
| Biofuels | 909 | 0.1% |
| Total | 1,523,806 | 100.0% |

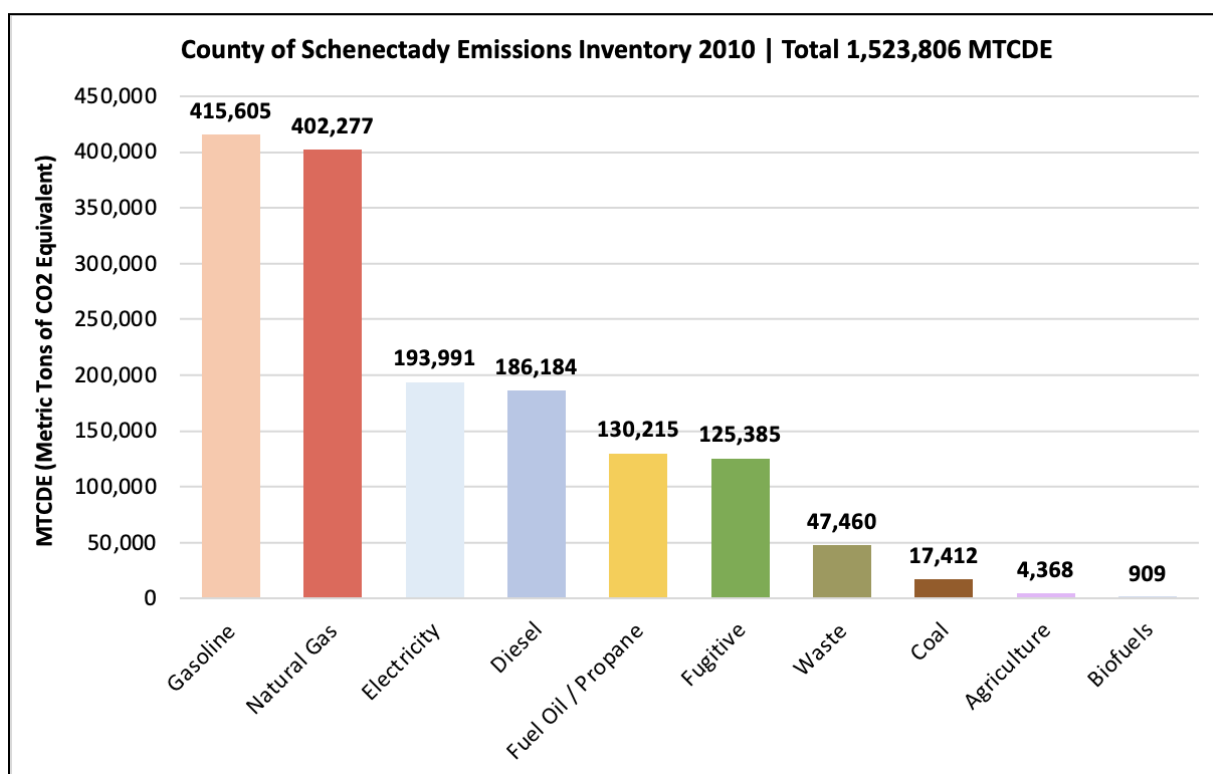


Figure 4: 2010 Schenectady County Community GHG Emissions by Source

The emissions by source are summarized above in Table 2 and Figure 4. Given the County's high transportation emissions, it makes sense that gasoline accounts for the most metric tons of CO₂ equivalent. Natural gas and electricity are the next most prevalent sources of GHG emissions due to residential, commercial, and industrial uses. Targeting the transportation sector and making buildings and facilities more energy efficient could be two major points of action for reducing the County of Schenectady's community GHG emissions.

1-C. CURRENT INITIATIVES & NEXT STEPS

Schenectady County's sustainability efforts and leadership in addressing its contributions to climate change pre-date this CAP by several decades. The Schenectady County Environmental Advisory Council (SCEAC) has led the community with regard to environmental initiatives since 1971. At that time, SCEAC was established by the Schenectady County Legislature to foster unified action on issues affecting the preservation, development and use of the natural and man-made features of the County. Today, SCEAC is highly engaged in issues relating to climate, energy, and sustainability.

Over the past ten years, the Schenectady County government has taken many actions to reduce overall energy consumption throughout the community and within its own operations. Its efforts serve as an excellent example for the rest of the community. The Go Green Schenectady County website, launched in 2010, promotes the County's actions and encourages residents and businesses to follow suit. The following section outlines just a few of the actions the County has taken to identify energy efficiency opportunities and implement strategies for improvement.

Since 2004, the County has worked with the New York State Energy Research and Development Authority (NYSERDA) to take advantage of state resources to improve energy efficiency within County government operations and through the broader community. This includes the County's approach to development projects utilizing assistance from the Metroplex Development Authority, which are strongly encouraged to work with NYSERDA to stabilize utility costs. Participation has also increased in recent years in programs such as:

- The EMPOWER program for income-eligible renters and homeowners
- Energy Smart Communities
- FlexTech

- Small Commercial Energy Audit Program

The County has been improving the energy efficiency of its buildings as a low-cost, high return method of going green and saving taxpayer dollars. As early as 2004, the County had an energy performance audit done at the County Central Library. Through the NYSERDA Small Commercial Energy Audit Program, the County also had six of its buildings audited in 2009, including:

- Two Department of Engineering and Public Works (DEPW) Garages
- Airport Tower
- Glenville Library
- Niskayuna Library
- Rotterdam Library

The 2009 audits resulted in numerous energy conservation measure (ECM) recommendations. In 2011, the ECMs were implemented in the Airport Tower and DEPW Garages and have resulted in an annual energy savings of 806 MMBTU (million British Thermal Units), a GHG emissions reduction of 29.4 metric tons CO₂e, and an annual cost savings of more than \$15,000. With an investment of approximately \$88,000, the payback on these investments took less than six years.

1-D. NEXT STEPS

The Schenectady County Climate Action Plan (CAP) will be presented for adoption to the County Legislature. Upon adoption of the CAP, the next steps are as follows:

- County staff will further research, reevaluate, and refine the CAP strategies to determine which actions would be the most cost effective and feasible to implement, based on existing staff resources, available funding, and government priorities.
- Each year the County will report its progress of reaching its GHG emissions reduction target and will describe the effectiveness and status of the CAP strategies. In alternate years, the progress report will include an updated emissions inventory.
- County staff will review and revise the CAP as needed based on the annual progress reports.
- The County will continue to lead by example through the implementation of energy efficiency, renewable energy, and other programs in its own operations.

2. ENERGY & RENEWABLES: BUILDINGS AND FACILITIES

2-A. FINDINGS

Buildings and facilities consume large amounts of electricity for heating and cooling, lighting, technology (such as computers or printers), and moving water. Facility operations also require the use of natural gas and oil, primarily for space heating. Air conditioning and refrigeration equipment in buildings can also emit hydrofluorocarbons (HFCs) and other greenhouse gasses when they leak refrigerants or fire suppressants.

Buildings in Schenectady County account for a majority of GHG emissions and a significant portion of energy use. It is important that we retrofit existing buildings to be more energy-efficient and ensure that new buildings are built to high efficiency standards that rely increasingly on renewable energy sources. As the County’s energy supply transitions to 100% carbon-free electricity, it is also critical that buildings are built or retrofitted for electric heating and cooling systems. Table 3 explains the main types of energy consumption in Schenectady County.

Table 3: Energy Consumption in Schenectady County

| Energy Consumption (Residential, Commercial, Industrial) | |
|---|---|
| Natural gas consumption | Direct emissions from burning natural gas in County residences and businesses |
| Electricity consumption | Indirect emissions at regional power plants caused by using electricity in the County |
| Fuel oil, propane, and wood consumption | Direct emissions from typical fuels consumed that are not supplied by the utility |

In 2010, Schenectady County emitted an estimated 1,523,806 MTCDE. This amount of GHG emissions is equivalent to the amount of carbon sequestered annually by 278,861 acres of pine forest (EPA’s Greenhouse Gas Equivalencies Calculator), more than double the area of the County. Energy use by homes and businesses is the largest emissions source at 49% spread across residential, commercial, and industrial sectors. Of this,

residential energy use is the single largest source of emissions (23%), followed by commercial (16%) and industrial (10%).

The County may consider pursuing a number of measures to retrofit its buildings to make them more energy efficient. Such measures include, but are not limited to, electric heat pumps, extensive lighting retrofits, chiller plant optimization, building management systems, and real-time remote monitoring. Other improvements consist of:

- Replace all single pane windows with energy efficient argon-filled double-pane windows.
- Replace existing constant-volume air handlers with variable-volume air handlers; the latter approach reduces energy consumed by fans and provides more efficient dehumidification.
- Investigate the feasibility of replacing existing inefficient air-cooled chiller with a ground-coupled geothermal system.
- Install a building management system with remote access to control and monitor climate conditions in the building.
- Replace the existing roof with an insulated standing seam metal roof and 100-kW solar panels as part of the phased approach.

2-B. PROPOSED GOALS

- Reduce energy consumption, improve energy efficiency and reduce energy related costs.
- Support and promote the use of renewable forms of energy.
- Improve awareness of opportunities for energy efficiency and GHG emissions reductions.
- Reduce overall energy consumption and GHG emissions in the County of Schenectady by at least 85% of 2010 emissions by 2050.
 - Interim target: Reduction in GHG emissions by 40% of 2010 emissions by 2030.
- The CLCPA is requiring 70% of all of New York's electricity to come from renewable sources by 2030 and 100% zero emission generation by 2040. Schenectady County will strive to follow these guidelines.

2-C. RECOMMENDATIONS

Community Recommendations

Reduce Overall Energy Consumption and GHG Emissions

- Create a local financing mechanism for energy retrofits such as a Property Assessed Clean Energy (PACE) program.
- Adopt Local Energy Conservation Code.
- Provide training for local code enforcement on 2010 Energy Conservation Construction Code of New York State (ECCCNYS).
- Create and Adopt 'Green Building' Standards.
- Explore potential for a 'Commercial Energy Policy.'
- Encourage all municipalities to adopt a lighting ordinance.
- Conduct energy audits at all facilities to identify opportunities to reduce electricity and natural gas usage.

Improve awareness of opportunities for energy efficiency and GHG emissions reductions

- Actively promote the use of 'on-bill financing' for residential energy efficiency home improvements.
- Consider a Community Energy Awareness or Energy Challenge Program.
- Create, fund and sustain a County 'Office of Energy & Sustainability.'
- Create and distribute outreach material of energy efficiency, renewable energy programs, including County weatherization programs.
- Work with local foundations to develop and implement energy and other sustainability initiatives.
- Promote NYSERDA and other programs available for advancing renewable energy at residential and commercial level.

Municipal Government Recommendations

Reduce Overall Energy Consumption and GHG Emissions

- Adopt and implement 'Municipal Energy Conservation Policy.'
- Create and implement a 'Government Facility Energy Improvement Plan.'
- Encourage streetlight conversion throughout the entire County and partner with other municipalities to achieve 100% conversion.
 - Note: The County has already converted some streetlights with energy efficient lighting such as LEDs.
- Adopt and implement 'Municipal Green Building Policy.'

- Adopt and implement 'Municipal Energy Efficient Procurement Policy.'
- Track and take advantage of federal, state and utility energy efficiency programs and Incentives.
- Consider becoming a 'Green Power Community' by participating in EPA Green Power Partnership.
- Explore the purchase of Renewable energy certificates (RECs), also known as 'green tags,' 'green certificates,' and 'renewable energy credits,' that can be used to meet renewable energy targets.
- Continue exploration of community scale municipal renewable facilities - such as municipal geothermal utility.

Improve awareness of opportunities for energy efficiency and GHG emissions reductions

- Create and implement a 'Government Facility Energy Improvement Plan.'
- Work with local foundations to develop and implement energy and other sustainability initiatives.
- Identify and describe training efforts to educate County staff on energy conservation and efficiency.
- Annually report energy use and energy budget.
- Work with utility providers to simplify billing records and access to utility usage data.

3. LAND USE, TRANSPORTATION, AND VEHICLES

3-A. FINDINGS

Despite its relatively small land area of just over 200 square miles, Schenectady County has traditionally been a heavily auto-dominated landscape with transportation options centered around the use of private vehicles. Over 80% of Schenectady County's 70,044 total workers commute to work alone in a personal vehicle, and more than half of the County's workforce commutes more than 20 minutes to work every day. Only 4% of the County's workers commute by public transportation, shown in Figure 5 ("Transportation Departments - Schenectady County, NY (Permits & Road Conditions)"). The number of Vehicle Miles Traveled (VMT) in Schenectady County in 2021 was 1.2 million, or 7,474 VMT per capita ("Schenectady County, NY Population by Year, Race, & More"). This is lower than the national average of 9,590 VMT per capita but higher than the New York state average of 6,767 VMT per capita ("Table 5-3: Highway Vehicle-Miles Traveled (VMT): 2005, 2010, Bureau of Transportation Statistics"). Nearly one in four of the County's 223 vehicle fleet have a mileage over 100,000 miles, and the fleet includes only 2 electric vehicles and 2 hybrid vehicles. Transportation is the single largest emissions sector in the County of Schenectady, accounting for 40% of the County's 1,523,806 MTCDE total yearly emissions (Capital District 2010 Regional GHG Inventory). Despite this, in 2022, Schenectady County was the first County to join the Capital District Transportation Authority (CDTA) Universal Access Program, which gives County employees unlimited ridership opportunities across the CDTA's service network. This includes access to the Central District Physicians' Health Plan (CDPHP) *Cycle!* bike sharing program.

Schenectady County Transportation Statistics

Find Schenectady County Means of Transportation To Work and Commute Transportation Times. Data Source: U.S. Census Bureau; American Community Survey, 2018 ACS 5-Year Estimates.

Schenectady County Means of Transportation To Work

| | Schenectady County | New York |
|--|--------------------|-----------|
| Total Workers (Age 16+) | 70,044 | 8,857,402 |
| Car, Truck, or Van | 63,943 | 5,515,207 |
| Car, Truck, or Van - Drive Alone | 59,122 | 4,913,896 |
| Car, Truck, or Van - Carpool | 4,821 | 601,311 |
| Car, Truck, or Van - Carpool, 2 Person | 3,726 | 457,762 |
| Car, Truck, or Van - Carpool, 3+ People | 1,095 | 143,549 |
| Public Transportation (Excluding Taxi) | 2,876 | 2,591,512 |
| Bus or Trolley Bus | 2,787 | 533,192 |
| Streetcar or Trolley Car, Subway or Elevated | 7 | 1,782,956 |
| Railroad or Ferry Boat | 82 | 275,364 |
| Walking | 2,016 | 569,444 |
| Taxi, Motorcycle, Bicycle, or Other Means | 1,209 | 181,239 |

Figure 5: 2018 Schenectady County Transportation Statistics

Source: Transportation Departments - Schenectady County, NY (Permits & Road Conditions).
<https://www.countyoffice.org/ny-schenectady-county-department-of-transportation/>. Accessed 4 May 2023.

3-B. PROPOSED GOALS

- Capitalize on existing compact development and promote various modes of transportation and efficiency in providing public services and infrastructure.
- Reduce travel demand specifically that of single-occupancy private vehicles, reducing vehicles miles traveled in the County of Schenectady.
- Improve the existing sidewalk network to promote safe walking.
- Promote consistency and coordination between land use and transportation policies, improvements strategies and decision-making.

- Increase commuter use of public transportation to at least 10% by 2030.
- Increase the share of workers walking or biking to work to at least 10% by 2030.
- Electrify 15% of the County Government vehicle fleet by 2030.
- Decrease total transportation emissions below 2010 levels by 2030.

3-C. RECOMMENDATIONS

- Increase funding for and accessibility of public transportation options:
 - Subsidize CDTA bus passes for County residents.
 - Expand the network of bike share programs within the County.
 - Advertise the expansion of these programs to increase use.
- Replace aging County fleet vehicles with electric or hybrid vehicles.
- Expand public electric vehicle charging stations around the County.
- Promote and expand accessibility to transit.
- Promote ridesharing, car and van pooling by offering free or discounted parking within the County
- Develop a Bicycling Master Plan.
- Improve Bike Infrastructure, Create Bicycle Friendly Zones.
- Develop a Pedestrian Master Plan.
- Improve sidewalks.
- Support Safe Routes to School program.
- Create rail trails.
- Assure that new development projects reflect the community's desires for a low carbon/low emissions future.
- Providing a tax benefit or financial incentive through parking policies and fees that offer incentives to use transit.
- Work with local business associations and local business leaders to promote transit, ridesharing, and carpooling.
- Review each development/transportation plan and project as an opportunity to improve safety, access and mobility for all travelers and promote alternatives to the automobile as integral elements of the local transportation system.

4. MATERIALS MANAGEMENT: WASTE REDUCTION, RE-USE, RECYCLING, & COMPOSTING

4-A. FINDINGS

Waste management emissions make up a small percentage of the total emissions of Schenectady County. Solid waste makes up about 2% of the total emissions by government facilities. Solid waste and wastewater treatment combined makes up about 4% of total emissions by the community. The majority of waste generated by the government (99%) is municipal solid waste (MSW) and the remaining 1% is medical waste. Government and community waste emissions originate from landfills where methane escapes and from combustion in waste-to-energy (WTE) plants. The County does not own or operate its own landfill or WTE plants and therefore has no direct sources of emissions. As a result, Schenectady County lists waste as scope 3 emissions and attributes them indirectly as waste generated by residents, businesses, and government buildings.

There are 4 wastewater treatment plants (WWTP) in the County, including the City of Schenectady WWTP, Niskayuna SD WWTP, Duanesburg SD WWTP, and Rotterdam SD WWTP. Wastewater treatment can create methane and nitrous oxide emissions. Due to the plants being fully aerobic, they all report very little to no methane emissions. Each plant, however, releases a small amount of nitrous oxide due to lack of specific denitrification treatment. Table 4 provides a summary of the emissions generated by the County due to waste management.

Table 4: 2010 County of Schenectady Waste Management Emissions

| Waste | MTCO ₂ e |
|--------------------------|---------------------|
| Solid Waste (Government) | 215 |
| Solid Waste (Community) | 43,160 |
| Wastewater Treatment | 13,676 |
| Total | 57,051 |

Waste reduction, reuse, recycling, and composting can provide significant benefits in combating climate change by eliminating or diverting the materials that may generate methane in a landfill and by providing valuable materials for industrial feedstocks that will help manufacturers reduce demand for energy and reduce pollution in the production process.

The importance of outreach and educational campaigns for the promotion of waste reduction, reuse, recycling and composting programs cannot be overemphasized. Regular communication with the public improves participation and the quality of the materials collected. A commitment to waste reduction and recycling from the County government will help increase citizen participation in these programs.

It is recommended that the County of Schenectady:

- Adopt a written Municipal policy establishing waste reduction and recycling goals that work towards ‘zero-waste.’
- Establish procedures to track total municipal government waste generated, recycled and disposed of by type (regular trash, C&D waste, tires, electronic equipment, other) by volume/weight.
- Develop a baseline for municipal government waste generated, recycled and disposed.
- Set up procedures to conduct periodic waste composition analyses (waste audits) to determine the greatest potential for reduction, set material-specific waste reduction goals and increase capture rates of recyclable materials.

4-B. PROPOSED GOALS

- Decrease the amount of waste in landfills.
- Increase recycling initiatives.
- Increase widespread community food composting initiatives.
- Purchase environmentally preferable products.
- Reduce greenhouse gas emissions associated with the transportation and disposal of waste.
- Reduce the overall waste generated in the County of Schenectady by 20% by 2030.
- Increase the overall recycling rates in the County of Schenectady by 20%.

4-C. RECOMMENDATIONS

County Recommendations

- Require County buildings to implement deconstruction and reuse policies on all construction and demolition projects.
 - Can provide an example for the private and local municipalities to do the same
- Ensure that all the necessary equipment is provided to promote recycling practices.
- Purchase recycled materials, devices with multiple uses, double sided printers, and more durable products with less packaging.
- Incorporate food waste into current yard waste composting operations.

Community Recommendations

- Increase community recycling rate by assessing barriers to residential and commercial recycling and developing outreach programs and educational campaigns.
 - Emphasize educational engagement through school districts.
 - Develop an electronic newsletter promoting sustainability initiatives and events.
 - Enhance user-friendliness of the County's website.
- Develop infrastructure and technical foundation to divert all major sources of organic waste away from landfills and into composting operations.
 - Encourage residential backyard composting through education and subsidies.
 - By composting on site, additional emissions are avoided from hauling compost to centralized facilities.
 - Connect grocery stores and farms to commercial composting facilities.

5. NATURAL RESOURCES MANAGEMENT

5-A. FINDINGS

Natural Resources are defined as any naturally occurring/produced materials that help sustain human life (fundamental activities such as eating and drinking) and/or non fundamental desires such as commerce and economic activity. Natural resources in Schenectady County include air, water, soil, trees, wildlife, and a wide variety of habitats including forests and reservoirs (Natural Resources Inventory).

Current County Resources:

Schenectady County has developed a Climate Vulnerability and Adaptation Report. The document lists potential constraints on natural resources including:

- Population increases can constrain water resources.
- Economic status to have enough resources to address these constraints (socioeconomic disadvantage).

The report also includes important supply and demand data for Schenectady County, including information on the aquifer system:

Table 5. Major Aquifer Systems in New York State

| System | Daily Demand (million gallons/day) | Daily Recharge (million gallons/day) | Well Field Storage (million gallons) | Days of Supply with No Inflow |
|--|---------------------------------------|---|---|----------------------------------|
| Jamestown - Cassadaga Creek (Crain 1966) | 4.8 | 30.1 | 3,000 | 625 |
| Schenectady - Mowhawk River (Winslow et al. 1965) | 26 | 15 (Plus Mowhawk River Infiltration) | 500 | 19 |
| Endicott/Johnson City - Susquehanna River (Randall 1977) | 16 | 41 | 1,700 | 106 |
| Cortland Homer Preble - Tioughnioga River (Miller 2004) | 6.5 | 24 | >1,000 | -150 |

Source: *Climate Vulnerability and Adaptation Report - For the City of Schenectady | January 2021.*
<https://cityofscheneectady.com/DocumentCenter/View/3409/City-of-Schenectady-Climate-Vulnerability--Adaptation-Report-2021>

Additionally, the DEC created a guide for creating natural resource inventories for Hudson River communities. This is a good starting point to look at for a potential Schenectady County NRI. Although the guide is made for Hudson River communities, it is applicable to Schenectady County because of the Mowhawk River that cuts through the County. Guidelines for inventory components include: municipal boundaries,

transportation and utility networks, regional water boundaries, surface water features, topography, and major landmarks (Creating a Natural Resources Inventory, Hudson River Estuary Program). Additionally, the DEC recommends including an inventory map to show “the location and extent (as known) of existing resources,” (Creating a Natural Resources Inventory, Hudson River Estuary Program). Table 6 summarizes the suggested inventory components and data for NYS river communities:

Table 6: Suggested Inventory Components and Recommended Data

| Inventory Component | Recommended Data |
|--|--|
| Base Map | Municipal boundaries, transportation and utility networks, topography, regional watershed boundaries, streams and water boundaries, landmarks, and aerial imagery. |
| Geology and Soils | |
| <i>Bedrock and Surficial Geology</i> | Bedrock and surficial geology features |
| <i>Soils</i> | Soil surveys |
| <i>Slopes</i> | Percent slope (calculated from digital elevation model) |
| Water Resources | |
| <i>Groundwater and Aquifers</i> | Unconsolidated aquifers |
| <i>Watersheds</i> | Regional, sub, and smaller watershed boundaries |
| <i>Streams and Waterbodies</i> | National Hydrography Dataset streams and waterbodies |
| <i>Floodplains</i> | FEMA floodway and floodplains |
| <i>Wetlands</i> | National Wetlands Inventory data, DEC Freshwater Wetlands data |
| <i>Water Quality: Assessment and Standards</i> | DEC Water Quality Classifications, DEC Waterbody Inventory/Priority Waterbodies List |
| <i>Water Quality: Potential and Known Contamination Sites</i> | SPDES permit and hazardous waste sites |
| Habitats and Wildlife | |
| <i>Significant Biodiversity Areas</i> | Schenectady County significant biodiversity areas |
| <i>Mohawk River Coastal and Shoreline Habitat</i> | Tidal wetlands, submerged aquatic vegetation, shoreline habitat type, significant natural communities |
| <i>Stream and Riparian Habitat</i> | DEC trout streams, migratory fish runs, known aquatic barriers |
| <i>Wetland Habitat</i> | See wetlands section above |
| <i>Forests</i> | Significant natural communities, large forest patches, matrix forests |
| <i>Grasslands and Shrublands</i> | Significant natural communities, NYS Bird, Amphibian, and Reptile Atlas data |
| <i>Rare Plant and Animal Species and Significant Natural Communities</i> | Areas of known importance for rare species, NYS Bird, Amphibian, and Reptile Atlas |
| <i>Unfragmented Habitat Blocks</i> | N/A |
| Climate | |
| <i>Climate Conditions and Projections</i> | Mohawk River sea level rise projections |
| Cultural Resources | |
| <i>Historic Resources</i> | National Register, NYS historic districts |
| <i>Scenic Resources</i> | Scenic areas of Statewide Significance, byways |
| <i>Recreation Resources</i> | Public trails, conservation lands, outdoor recreation amenities |
| Land Use | |
| <i>Zoning and Tax Maps</i> | Municipal zoning and real property tax records |
| <i>Land Use and Land Cover</i> | National land cover data |
| <i>Farmland</i> | Agricultural districts and important farm soil regions |
| <i>Conservation and Public Lands</i> | Conservation easements |

Source: Creating a Natural Resources Inventory. Hudson River Estuary Program.
https://www.dec.ny.gov/docs/remediation_hudson_pdf/nriall.pdf

List of Natural Parks & Wetlands:

Figure 6 shows the NYS protected lands for Schenectady County, as is represented in the New York Protected Areas Database (NYPAD). This excludes unknown areas (shown in red on the map) that are scattered throughout the County. These red zones have unknown designations, GAP status, and their category is fee: local government.

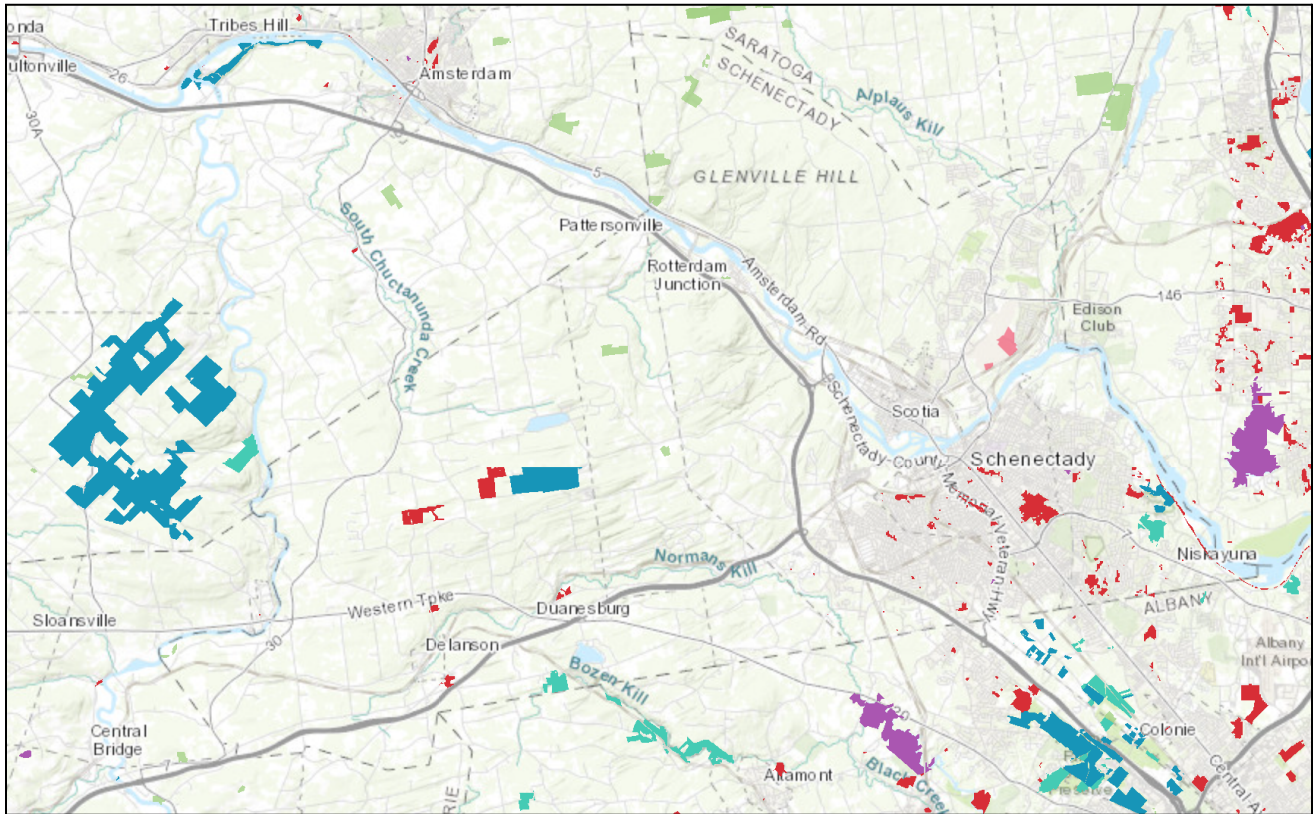


Figure 6: NYS Protected Areas in Schenectady County

Source: NYPAD Interactive Map | NYPAD. <https://www.nypad.org/InteractiveMap>. Accessed 4 May 2023.

Table 7. Suggested Inventory Components and Recommended Data

| Local Name | Local Designation | Local Manager/Owner | Category | Acres | GAP Status |
|--|---------------------------|---|-----------------------|-------|------------|
| Christman Sanctuary | Private Conservation Land | The Nature Conservancy | Fee: NGO | 97 | 2 |
| Featherstonhaugh State Forest | State Forest | NYS Department of Environmental Conservation | Fee: State | 689 | 3 |
| Mohawk Hudson Land Conservancy | Conservation Easement | Private | Easement: NGO | 0 | 3 |
| U.S. Natural Resources Conservation Service | WRP | Private | Easement: Federal | 28 | 2 |
| Moccasin Kill Sanctuary | Private Conservation Land | The Nature Conservancy | Fee: NGO | 96 | 2 |
| Schenectady Air National Guard Municipal Airport | Military Land | Department of Defense | Proclamation: Federal | 126 | N/A |
| Lisha Kill Natural Area | Private Conservation Land | The Nature Conservancy | Fee: NGO | 132 | 2 |
| Mohawk River | State Park | NYS Office of Parks, Recreation and Historic Preservation | Fee: State | 85 | 3 |

Source: NYPAD Interactive Map | NYPAD. <https://www.nypad.org/InteractiveMap>. Accessed 4 May 2023.

Table 8: Suggested Inventory Components and Recommended Data

| GAP Status | Definition |
|-------------------|--|
| 2 | "Managed for biodiversity - disturbance events suppressed." |
| 3 | "Managed for multiple uses - subject to extractive (e.g. mining or logging) or OHV use." |
| 4 | "No known mandate for biodiversity protection." |

Source: NYPAD Interactive Map | NYPAD. <https://www.nypad.org/InteractiveMap>. Accessed 4 May 2023.

The County also has three nature preserves: The County Forest Preserve, The Indian Kill Preserve, and The Plotter Kill Preserve (Schenectady County Nature Preserves & Bike Trail). These preserves are all open to the public for hiking, walking, and biking. The unknown red zones on the NYPAD map make up parts of these three County preserves. Schenectady contains several other natural parks including:

- Town of Schenectady: Anderson Dog Park, Blatnick Park, Central Park, Great Falls Natural Trail, Maalwyck Park, Riverside Park, Sanders Town Preserve
- Town of Delanson: Schenectady County Forest, Christman Bird & Wildlife Sanctuary
- Other: Collins Park in Scotia, Mohawk-Hudson Bike-Hike Trail in Niskayuna ("Schenectady County Forest")

5-B. PROPOSED GOALS

- Work towards the conservation of biodiversity and natural areas. Potential solutions include monthly County clean up volunteer days.
- Adjust zoning to more efficiently use energy and natural resources within the County.
 - Note: an NRI would facilitate the ability for natural resources to be included/considered throughout all stages of zoning plans.
- Find new ways to eliminate burdens on local natural resources.
 - For example, promote clean transportation (e.g., walking and biking) through methods such as creating new bike paths.
- Create a natural resource inventory to monitor anthropogenic tolls on local natural resources.

5-C. RECOMMENDATIONS

Importance of Developing a Natural Resources Inventory (NRI):

- Similar to a GHG inventory, an NRI can monitor anthropogenic tolls on the environment while specifically monitoring the effects on local natural resources.
- Developing an NRI is an adaptation climate strategy. Documenting changing natural resource characteristics as climate change worsens can help the County better conserve those resources for both current future generations.
- An NRI can specifically help the County prepare for its quick population growth. Since 2010, Schenectady County population size has grown by 2.8% (“Population of Counties in New York”). Specifically, the County’s population is expected to reach 162,000 by 2030 and 163,000 by 2040 (“Capital District Population & Projects”).
- Population growth may lead to development pressures as more housing, stores, etc. are needed to support more people. New infrastructure may encroach on previously untouched natural habitats or other natural areas/resources in Schenectady County to support additional developments. Although the County has not yet released specific information regarding additional land use needs, the following information indicates the potential for future development pressures:
 - The approved 2023 Schenectady County Operating Budget and 2023-2028 Capital Improvement Program:
 - \$49 million devoted to increased infrastructure investments including \$41 million for 2023 capital projects and \$4.8 million for airport improvements.
 - Preparedness-related investments include a Planning Environmental Linkage (PEL) study to “reroute the I-890 Exit 4C interchange at Washington Avenue and State Street” (“Schenectady County Legislature Approves 2023 Budget”).
 - 18 vacant lots and buildings in Hamilton Hill (owned by the City of Schenectady) were recently purchased by Capital Region Land Bank (and partners). These 18 properties will be turned into 40+ affordable homes (“Mayor McCarthy and Capital Region”). This shows the current need for additional housing in Schenectady County. However, there is also a need for “neighborhood stabilization” due to abandoned property issues (“Neighborhood Stabilization”). So, there is room for the County to address population growth by combatting the abandoned property problem before expanding development to untouched natural areas.

6. OUTREACH & LAND STEWARDSHIP

6-A. FINDINGS

The entire community of Schenectady is affected by the changing climate, energy choices, and opportunities for economic improvement connected with vigorous climate action. It is therefore important that the entire community have public access to the conversation of climate action within the County, including protection from risks and the benefits of participation.

Climate action should involve all community members and stakeholders in the County of Schenectady. Therefore, strategies for mainstreaming and integrating environmental stewardship and climate action must be thought of at the start of every project. Incorporating adaptation strategies and projects in community outreach and educational programs will help to spread awareness of climate change and motivation for action.

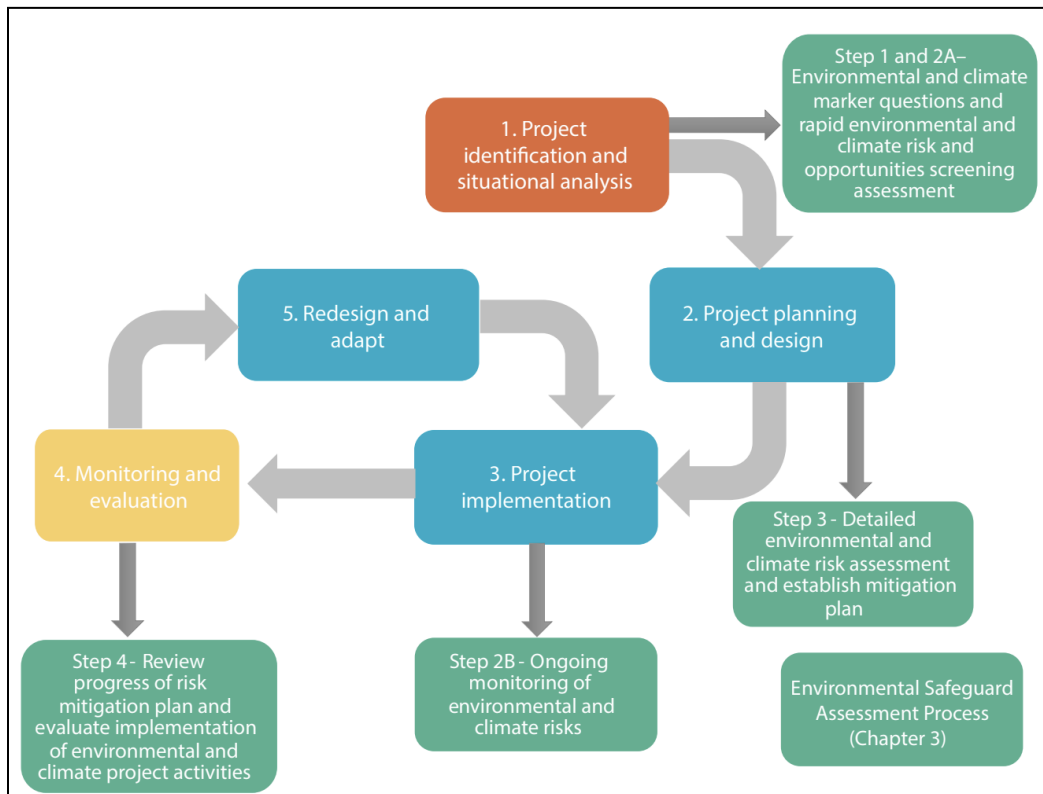


Figure 7: A Model for Incorporating Environmental Stewardship into County Projects.

Figure 7 provides a model with steps that can be taken to incorporate environmental stewardship at the beginning of every project cycle. This method was developed by World Vision in their Environmental Stewardship and Climate Action Handbook (“Environmental Stewardship and Climate Action Handbook”). To achieve the concerted action that will propel the County of Schenectady into a low-carbon, prosperous and innovative future, there is a need for vision, leadership, and a communications strategy which can be supplemented with a model alike.

The following is a quote from the *Center for Research on Environmental Decision Making* (Shome, Debika, and Sabine M. Marx. “The Psychology of Climate Change Communication”):

“The ultimate solutions to climate change are workable, cost-effective technologies which permit society to improve living standards while limiting and adapting to changes in the climate. Yet scientific, engineering, and organizational solutions are not enough. Societies must be motivated and empowered to adopt the needed changes. For that, the public must be able to interpret and respond to often bewildering scientific, technological, and economic information. Social psychologists are aware, through their painstaking scientific research, of the difficulties that individuals and groups have in processing and responding effectively to the information surrounding long-term and complex societal challenges.”

6-B. PROPOSED GOALS

- Engage people who live, work, and play in the County of Schenectady in energy and climate action.
- Improve awareness of opportunities to improve energy efficiency and reduce GHG emissions.
- Promote and create ‘Green’ Jobs.
- Create, promote, and expand a Climate Smart and Green Jobs Community Task Force.

6-C. RECOMMENDATIONS

- Public Education
 - Expand programs such as Schenectady Roots & Wisdom that bring together residents and engage community members in climate action.
 - Engage teachers and students in green infrastructure projects.
- Energy Challenge
 - Create an energy awareness program such as that in Red Hook or Hudson, NY (“10% Red Hook Challenge” & “Save Energy & Monday: Central Hudson”).
 - Expand knowledge of resources such as MyEnergyPlan that can help households reduce energy costs.
- Sustainability Ambassadors Program
 - Train County leaders as recognized County ambassadors who will advance green initiatives, outreach, and sustainability.
- Communications Media
 - Use ‘Facebook’, ‘Instagram’, and other social media to engage the community in action planning.
 - Update the Climate Action and CSC page on the County’s website.
 - Create public access for the action plan.

7. CLIMATE ADAPTATION & PREPAREDNESS

7-A. FINDINGS

The [January 2021 Climate and Vulnerability Report](#) for the City of Schenectady provides a thorough overview of the most prevalent climate risks the County faces, and details many proposed actions. The greatest climate risks in Schenectady are and will be increased flooding and extreme heat.

Flooding and Intense Downpours

There are over 5,700 properties in Schenectady County that have greater than a 26% chance of being severely affected by flooding in the next three decades. Flooding can cause damage to homes and businesses while cutting off utilities, emergency services, transportation, and impacting the economy. The flood risk for Schenectady County over the next 30 years is moderate, which means that flooding will affect day-to-day life within the community. This is based on the level of risk the properties face rather than the proportion of properties with risk.

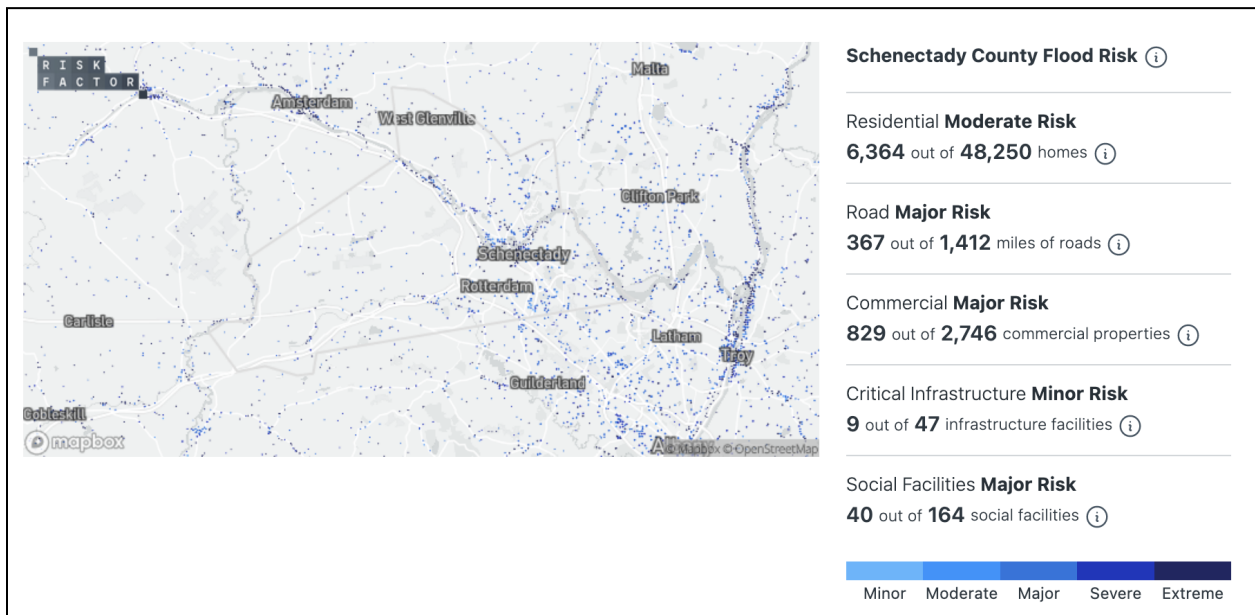


Figure 8: Map of Schenectady County Flood Risk.

Source: "Schenectady County, New York Flood Factor® Report." Risk Factor, <https://riskfactor.com>. Accessed 4 May 2023.

Overall, Schenectady’s roads, commercial infrastructure, and social facilities face major risk due to flooding in the upcoming decades.

Deeper floods caused by major events, such as hurricanes, are rare, but affect a greater number of properties than shallow floods caused by heavy rains. Nonetheless, Schenectady County must adapt to its changing environment in preparation for unseen events that will impact more properties (“Schenectady County, New York Flood Factor Report”).

Extreme Heat

“Hot” Days

Whenever the "feels like" temperature exceeds 96°F, it is considered a hot day in Schenectady County. 30 years ago, the number of days above 96°F would have been around 2 days. This year approximately 7 days are expected to reach or exceed 96°F.

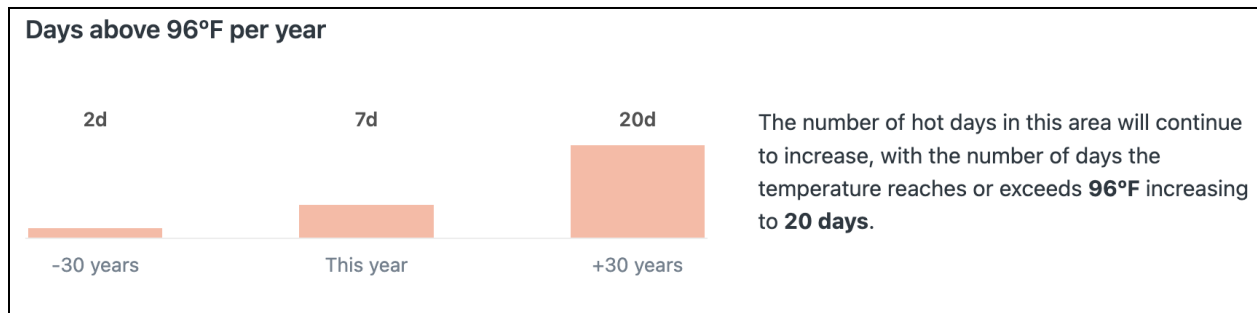


Figure 9: Schenectady County Heat Risk - “Hot” Days per Year

Source: “Schenectady County, New York Flood Factor® Report.” Risk Factor, <https://riskfactor.com>. Accessed 4 May 2023.

Health Caution Days

A “feels-like” temperature exceeding 90°F can be physically hazardous, especially for high-risk individuals such as young children and seniors. 30 years ago, the number of days above 90°F in Schenectady County would have been around 11 days. This year approximately 21 days are expected to reach or exceed 90°F.

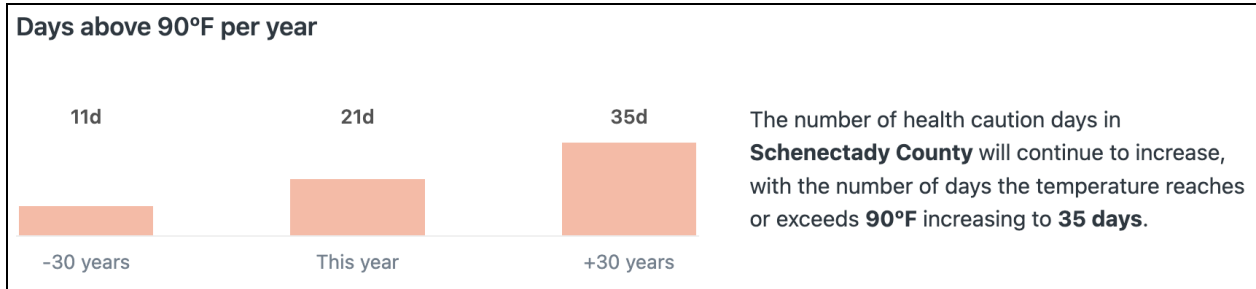


Figure 10: Schenectady County Heat Risk - Health Caution Days per Year

Source: “Schenectady County, New York Flood Factor® Report.” Risk Factor, <https://riskfactor.com>. Accessed 4 May 2023.

Dangerous Days

Temperatures become dangerously hot when the “feels-like” temperature reaches about 100°F. This increases the likelihood of heat exhaustion, stroke, and even death. In 2023, Schenectady will have approximately 3 dangerous temperature days, as compared to 1 day 30 years ago (“Schenectady County, New York Heat Factor Report”).

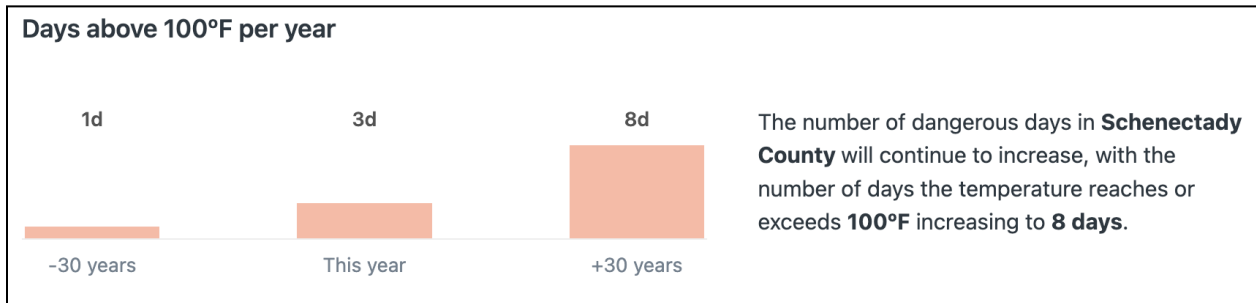


Figure 11: Schenectady County Heat Risk

Source: “Schenectady County, New York Flood Factor® Report.” Risk Factor, <https://riskfactor.com>. Accessed 4 May 2023.

7-B. PROPOSED GOALS

- Develop green infrastructure as a cost-effective and sustainable flood management solution.
- Develop “cool” public facilities for community use.
- Incorporate adaptation strategies into community outreach and education plans.

7-C. FINAL RECOMMENDATIONS

- Incorporate adaptation strategies in community outreach and climate education.
- Investigate potential use of riparian buffers along the Mohawk River..
 - 2.5 miles of Schenectady County border the Mohawk River and are at higher risk of flooding. Installation of riparian buffers along this area would mitigate flooding in this area.
- Encourage the planting of community rain gardens and bioswales.
- Increase the number of cooling centers and make sure that they are in each neighborhood.
- Create an Environmental Justice committee or task force that oversees the equitable implementation and distribution of resources used for climate adaptation.

The following page summarizes the proposed actions from the January 2021 Climate Vulnerability & Adaptation report that are still applicable for the county of Schenectady.

Table 9: Climate Vulnerability & Adaptation Report Actions

| Asset Category | Vulnerabilities | Proposed Adaptation/Mitigation Strategy | Responsible Entity | Priority |
|---------------------------------|---|--|--|----------|
| Energy Sources & Infrastructure | Energy price fluctuations | Community Choice Aggregation | City Council | Medium |
| Energy Sources & Infrastructure | Higher temps will impact demand for energy | Invest in cooling strategies/infrastructure (e.g., green roofs, tree planting, green spaces, etc.) Incentivize energy-efficient and energy-conserving building technology | Parks Dept., Utilities & Facilities | Medium |
| Energy Sources & Infrastructure | Increase in extreme weather events will increase likelihood of transformer failure and widespread outages | Micro-grid incentives and solar development to offset load. Tree trimming near power lines, transformers, and utility poles to lessen impacts from storms. | Parks Dept., Utilities | Low |
| Energy Sources & Infrastructure | Availability of renewables | REC purchasing, Solar development projects | Finance Dept. (with help of CSC Group) | Low |
| Transportation | Bus stop locations in poor condition. Shelter from weather events is critical | Work with local community organizations to obtain funding to improve bus stop shelters | CDTC, CDTA, CDRPC | High |
| Transportation | Lack of infrastructure to support and promote non-motorized movement throughout the city. | Increase pedestrian and multi-modal transportation-oriented design. | Engineering, DOT, CDTC, CDTA | High |

| | | | | |
|--------------------------------------|--|---|---|--------|
| Transportation | Number of railway and vehicular bridges could be at risk from flooding or erosion based on their locations | Develop alternative transportation plans for flooding events; invest in green transportation infrastructure in these areas in particular | Engineering, DOT | High |
| Transportation | Public transportation located within 100-year floodplain (26 bus routes) | Create a plan for rerouting buses as needed, in conjunction with new road plans as they are made. | CDTA, OGS, Development | Medium |
| Transportation | Heavy rainfall could increase number of landslides that are located close to busy streets and highways | Create more green spaces and buffer zones near particularly vulnerable areas | Development | Medium |
| Wastewater/Stormwater Infrastructure | High energy use, water quality impairment and water usage | Evaluate and update existing infrastructure and facilities (energy efficiency and flood-proofing); drought water restrictions | Water Dept. | High |
| Wastewater/Stormwater Infrastructure | Lack of green infrastructure | Implement a green purchasing policy - upgrade facilities with greener technology as they age/break | OGS (Water Dept.) | Medium |
| Wastewater/Stormwater Infrastructure | Increased demand for water supply | Enhanced monitoring of groundwater levels. Implement water conservation strategies. | Water Dept. | Low |
| Wastewater/Stormwater Infrastructure | WWTP is in an area that has frequent flooding events | Implement stormwater management plans. Invest in flood-proof technology for the plant; continual monitoring of water levels near the plant; research potential relocation of plant (long-term goal) | OGS (Water Dept.) | Low |
| Wastewater/Stormwater Infrastructure | Flooding by WWTP could impact water quality | Increase water quality testing after flooding events; create a plan for warning residents and providing an emergency supply of clean water | Water Dept., Fire Department, DEC | Low |
| Critical Facilities | Identify vulnerable facilities throughout City | Pinpoint facilities most at risk and rank them by importance and level of risk. Then develop a plan to improve and monitor facility infrastructure and/or relocate the facility | Office of General Services, Development Dept., Facilities and Utilities Dept. | High |
| Critical Facilities | Comprehensive plan to address facilities potentially at risk | See above | "" | High |

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| Ecological | Ice Jams | Implement a managed retreat approach in the historic Stockade District as outlined in the 2019 FEMA Stockade Resilience Study. Invest in live monitoring along the Mohawk River. | Development, Engineering, Mayor's Office, DHSES/FEMA | High |
| Ecological | Low diversity and fair to poor health conditions. Limited tree canopies in LMI neighborhoods | Conduct a full assessment of trees in the city; create a comprehensive Tree Maintenance Plan to maintain existing trees and plant new, more resilient, and non-invasive ones | Development Dept., DEC | Medium |
| Ecological | Certain plants and animal species may be at risk with rising temperatures | Inventory vulnerable species of plants and animals in the city; create a plan to study and protect the habitat of these species | Local community/grassroots organizations in partnership with City | Medium |
| Ecological | Invasive species will become more prevalent with rising winter temperatures and cause more destruction to existing species | Develop and implement invasive species management plan | Parks Dept. SCEAC | Low |
| Ecological | Significant flooding (Irene) | Restore wetland areas, restrict development adjacent to flood prone areas along the river, increase permeable surface requirements and preserve natural ecosystems. | Development, Engineering | Low |

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| Public Health | High heat days and heat related death or illness | Increase number of cooling centers and making sure they are in every neighborhood | Fire Dept. | High |
| Public Health | Poor air quality - disproportionately impacting LMI neighborhoods | Monitor air quality and make public data to inform people | Mayor's Office | High |
| Public Health | Vector Born Disease | Develop policy to handle possible increases in disease and/or infection | Mayor, Emergency Response Team | Medium |
| Public Health | Limited healthy and local food choices available | Build grocery stores in LMI areas. Promote local small-scale agriculture and CSAs/Farmer's Markets | Development, Golub Corp., SICM, Electric City Food Coop, City Mission | Medium |
| Public Health | Potential risk to water supply | Drought restrictions on water use; provide educational resources to public on water conservation | Water Dept., Fire Dept., DEC | Low |

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|-----------------------|--|---|---------------------------------|------|
| Socioeconomic | Social vulnerability (CDC) | Prioritize climate mitigation and adaptation efforts in areas that are most socially vulnerable | All Departments | High |
| Socioeconomic | Economic vulnerability | Increase access to jobs training focused on green building | Affirmative Action, Development | Low |
| Environmental Justice | Brownfield site locations | Create map and inventory of local sites; form economic partnerships with community groups to fund brownfield redevelopment | Development, Metroplex, DEC | High |
| Environmental Justice | Proximity to commercial and industrial sites | Zoning reforms including increase in the number of multi-family homes allowed in the city | Development Dept. | High |
| Environmental Justice | Limited access to green spaces | Increase funding toward gardens and parks in LMI (socially and economically disadvantaged) neighborhoods; repurpose vacant lots | Development Dept., DEC | Low |

Source: *Climate Vulnerability and Adaptation Report - For the City of Schenectady* | January 2021.
<https://cityofschenectady.com/DocumentCenter/View/3409/City-of-Schenectady-Climate-Vulnerability--Adaptation-Report-2021>

7-D. FINAL CONCLUSIONS

Schenectady County has been a climate leader in New York, joining CSC in April 2009. Over the past decade, the Schenectady County government has taken many actions to reduce overall energy consumption and GHG emissions throughout the community and within its own operations. Its efforts serve as an excellent example for the rest of the community. This climate action plan outlines a set of actions the County can take to pursue the goal of reducing energy usage and GHG emissions by 85% from 2010 levels by 2050, with a short-term target of 40% reduction from 2010 levels by 2030. These actions will help the County remain a leader in protecting the climate for future generations, and increase the resiliency of Schenectady County to future climate impacts.

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