



# Seneca County

## Environmental Conservation Plan

June 2014

Preserving and protecting the best in our environment,  
while recognizing the need for change

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## Introduction

Seneca County is at the geographic center of the world-renowned Finger Lakes Region. The County's environment is highly prized by residents and non-residents alike, and its protection and maintenance are priorities.

Bookended by the largest and longest Finger Lakes—Seneca Lake and Cayuga Lake—and endowed with fertile soils, steep slopes, forests, wildlife corridors, historic communities, and many other natural and cultural resources, the County's environment is a delicately-balanced system. For example, the County's lakes, streams, wetlands, floodplains, and groundwater supplies are so interconnected that nutrient runoff from agricultural and residential lands can threaten, not just the waterway it immediately enters, but the entire water ecosystem.

Seneca County residents also have direct evidence of their connections to global ecosystems. Worldwide, wastes are produced at a rate that exceeds the capacity of the environment to absorb them, and so we need landfills for solid wastes. Landfills are the result of humans' use of natural resources over the past 200 years to create wealth, while not fully understanding how ecosystems work. The industrialized world is moving towards a future of less waste generation and more sustainable development, but, in the meantime, Seneca County is dependent on revenues from a large landfill that processes and stores waste from long distances.

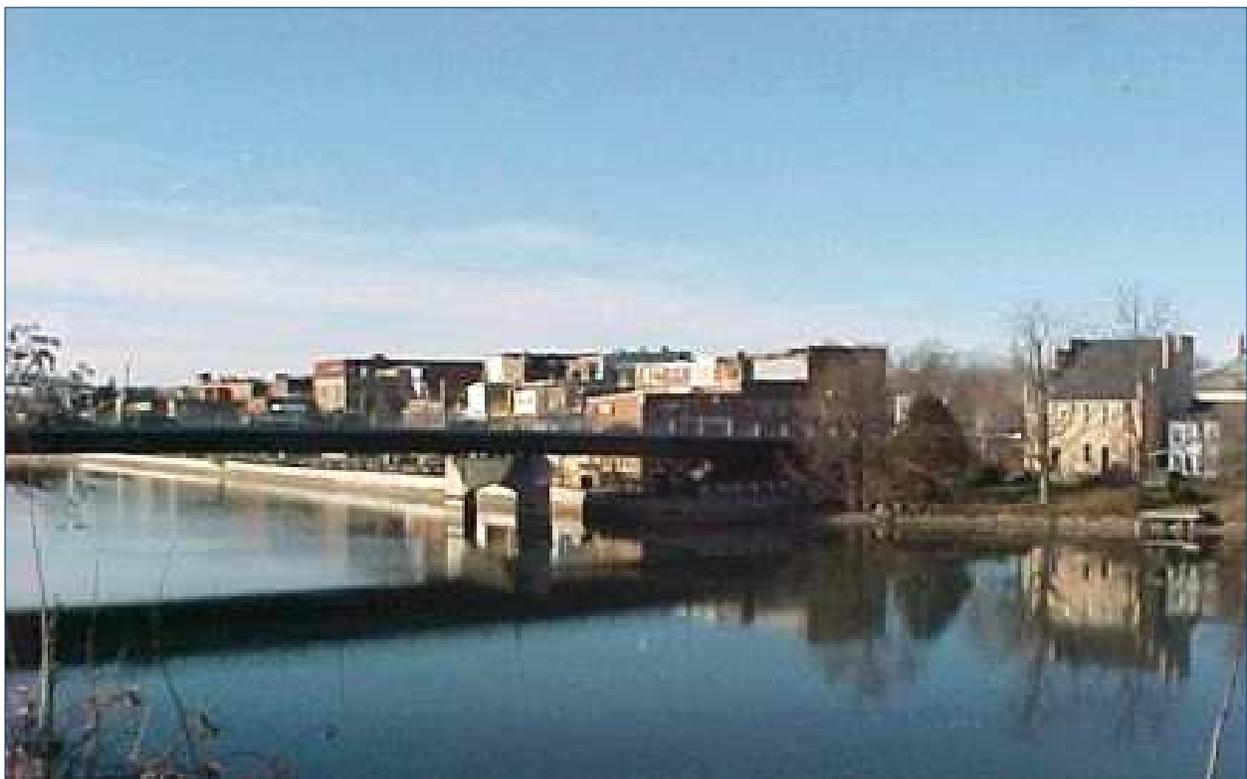
Seneca County's residents express a deep desire to preserve and protect the best in their environment. At the same time, they recognize the need for change. Change is needed to create employment, keep property taxes at a reasonable level, provide better infrastructure and community facilities, increase recycling, revitalize communities, generate renewable energy, and improve public health and education.

Change is also needed in the environment. Protecting an historic building, for example, may require finding a contemporary use for it. Protecting an irreplaceable landscape may require attracting tourists. Seneca County's responsibility to the environment is not to choose between keeping things as they are or changing things, but to manage the County's special natural and cultural resources with understanding and humility.

This means providing leadership to help residents define the change they want to see, to tap the vast potential of businesses to contribute to desired change, to support communities in providing better places and having a strong sense of who they are and what they want to protect, and to work in partnership with local, state, and regional groups to address environmental management issues.

All of these responsibilities overlap, creating an integrated and mutually-reinforcing approach to environmental protection, economic prosperity, and social and cultural well-being. It's a path to a sustainable future for Seneca County.

This section of the comprehensive plan details some of the important natural resources in Seneca County and their inter-relationships. The information comes from a variety of sources, most notably the New York State Department of Environmental Conservation, United States Environmental Protection Agency, *A Green Print for Seneca County* (Finger Lakes Land Trust: 2010), and the *Seneca County Comprehensive Plan* (1995). Other references are noted.





## Water Resources

Lakes, streams, and wetlands are an integral part of Seneca County’s heritage. They have important social and economic values including drinking, irrigation, industrial uses, fishing, recreation and leisure, and scenic and aesthetic importance. During public input sessions for the comprehensive plan, residents and other stakeholders identified a range of vital values embodied by the County’s water resources:

Table 1. Water Resource Values

Environmental	Economic	Social
<ul style="list-style-type: none"> <li>• Water quality maintenance (filtering, sedimentation, etc.)</li> <li>• Natural land drainage</li> <li>• Flood water conveyance and storage</li> <li>• Wildlife habitat (migratory birds, fish)</li> <li>• Ecological corridors</li> <li>• Biodiversity maintenance/ threatened species protection</li> <li>• Scientific research</li> <li>• Uniqueness</li> </ul>	<ul style="list-style-type: none"> <li>• Drinking water supply</li> <li>• Water use (crop lands, dairy, industrial)</li> <li>• Tourism</li> <li>• Sport fishing</li> <li>• Public infrastructure</li> <li>• Water quality</li> </ul>	<ul style="list-style-type: none"> <li>• Aesthetic/landscape</li> <li>• Recreation</li> <li>• Heritage</li> <li>• Conservation</li> <li>• Education and awareness</li> </ul>

## Surface Waters

Surface water resources—lakes, river, and streams—form an integral part of the natural resource base of Seneca County; indeed, they are perhaps the defining element of the County’s environment. They strongly influence the physical development of the County and immeasurably enhance its aesthetic quality and economic potential. Seneca Lake and Cayuga Lake; several smaller lakes and ponds, especially the Junius Ponds; the Seneca River and Cayuga-Seneca Canal; ten major streams with numerous tributaries; and about fifty waterfalls constitute focal points of water-related recreational activities; supply water for drinking and irrigation; attract tourists; provide a desirable setting for properly planned residential development; and create an environmental aesthetic quality in Seneca County that is second-to-none.

There are no “impaired” surface waters in Seneca County. Section 303(d) of the federal Clean Water Act requires states to develop a list of waters, commonly referred to as the *303(d) list*, that are not meeting federal water quality standards. States are required to submit a list of impaired waters to EPA for approval every two years. The New York State Department of Environmental Conservation’s latest 303(d) list, issued in 2012, includes no waterways from Seneca County, though impairment in Pond Brook from agricultural runoff is suspected, but not verified.



This does not mean that Seneca County can relax its vigilance of its water resources. Most stream corridors are on private property and thus susceptible to development pressures. While many stream corridors provide opportunities for passive recreation, especially fishing and hiking, while protecting wildlife habitats and stream water quality, they are not public open space. The County’s surface waters are especially susceptible to degradation through improper land use development and management. Water quality can be degraded by excessive pollutant loads, including nutrient loads that result from malfunctioning and improperly-sited septic sewage systems; runoff from impervious surfaces; runoff from construction sites; less-than-careful agricultural practices; and the filling of adjacent wetlands, which serve to contain and remove plant nutrients in runoff. According to research scientists from Hobart and William Smith Colleges, summer algae blooms are increasing in both Seneca and Cayuga Lakes, a sign of declining water quality.

New York State offers a voluntary Agricultural Environmental Management program to help farmers implement best management practices to control runoff, recycle nutrients,

and conserve soil. The program, which is delivered by the Seneca County Soil and Water District, offers customized farm-by-farm assessments. About 60 farms in Seneca County are currently enrolled. In recent years, the program has expanded to help connect farmers with new opportunities including the production of renewable energy and reduction of greenhouse gas emissions.

Seneca County has about 72 miles of lake shoreline, divided roughly equally between Seneca and Cayuga Lakes. Most lakefront property is privately-owned and used for single-family homes. The trend is for more lakeside housing and for larger permanent homes to replace seasonal cottages. Almost all of these residences are serviced by on-site sewage systems. New septic systems are regulated to ensure installation and operation; however, many older systems leak. About 11 miles of lakefront property is privately owned, but remains undeveloped, mostly because of steep slopes and other environmental constraints.

The state and federal governments also own important lake frontage, with public access to the lakes at four state parks: Seneca Lake, Sampson, Lodi Point, and Cayuga Lake. There is also limited public access to Cayuga Lake at the federally-owned Montezuma National Wildlife Refuge.

The properties fronting Seneca Lake and Cayuga Lake, private and public, are designated as Coastal Management Areas by New York State, and the property bordering the Seneca River is designated as an Inland Waterway Area. Cities, towns, and villages on these waterfronts are eligible for assistance from the State to create Local Waterfront Revitalization Programs. Communities with Local Waterfront Revitalization Programs essentially create waterfront management strategies which identify current and anticipated problems of waterfront degradation, establish policies to address those problems, and determine opportunities for economic development—all consistent with community goals. No waterfront communities in Seneca County have become LWRP communities.

## **Groundwater**

Groundwater from wells is the only source of drinking water for a third of Seneca County's residents. Groundwater is a critical resource, not only because it is used by residents as their source of water, but also because surface waters depend on it for recharge.

Groundwater can be contaminated through both point and non-point source pollution. The US Environmental Protection Agency defines point source pollution as "Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." Examples include an industry or a municipal treatment plant discharging wastes directly into a waterway.

Non-point source pollution is defined by the EPA as “Pollution caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and groundwaters.” These pollutants include excess pesticides from agricultural lands and residential areas; oil, grease, and toxic chemicals from runoff from parking lots and other impervious surfaces; sediment from improperly managed construction sites, crop lands, forests, and eroding stream banks; salt from roads; and bacteria and nutrients from animal wastes and faulty septic systems.

According to the EPA, groundwater is most susceptible to contamination by non-point source pollution in areas within:

- 250 feet of a private well or 1,000 feet of a municipal well.
- 300 feet from streams and 1,000 feet from lakes and rivers.
- A delineated wetland or floodplain.
- Where soil depths to groundwater or bedrock are less than 2 feet.

## **Watersheds**

What is done on the land ends up in the waterways. Thus the whole catchment, or watershed, needs to be considered, and therefore everyone who lives in the watershed has a stake in its health. A watershed can be defined as an interconnected area of land draining to a common point such as a lake from surrounding higher elevations. Notable uplands in Seneca County include the Finger Lakes National Forest and the former Seneca Army Depot. Essentially, watersheds—streams, wetlands, floodplains, and upland areas acting together—are a sort of crossroads for the interaction of water, energy, and organisms. They perform a critical function in the environment, especially the protection of drinking water.

There are two watersheds in Seneca County, associated with Seneca Lake and Cayuga Lake. Watershed protection is vital to the well-being of the residents in Seneca County since the lakes provide the majority of the drinkable/usable water. Both

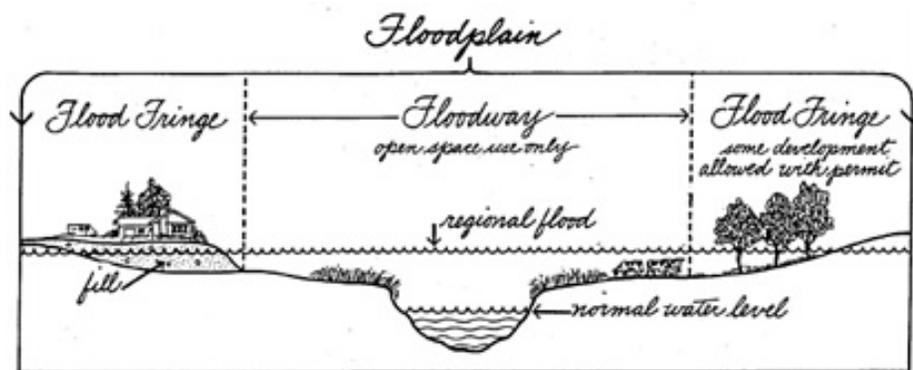


lakes have watershed management plans, which are the basis of cooperative public and private efforts to consider and mitigate the impacts development and human activities play on the lakes and watersheds. On Seneca Lake, the Seneca Lake Area Partners in Five Counties (SLAP-5) leads efforts to limit pollution, increase awareness, and adopt best-management practices related to watershed protection. The Cayuga Lake Intermunicipal Watershed Organization provides the same advocacy role for Cayuga Lake.

The Seneca Lake Watershed Management Plan is in the process of being updated.

## Floodplains

Floods are Seneca County's most common and most expensive natural disaster, and therefore sound floodplain management is critically important. A floodplain is the area inundated by a flood. A floodplain includes a floodway, flood fringe, and other flood-affected areas.



According to the Federal Emergency Management Agency, a floodway is the channel of a river or stream and the adjoining land needed to carry the waters from a major flood that can be expected to occur once in a hundred years; or, said another way, a floodway is an area that has a one percent or greater chance of experiencing a major flood in any single year. During such a major flood—commonly known as a 100-year, one-percent, base, or regional flood—the entire floodplain, or Special Flood Hazard Area, is inundated to a height called the Regional Flood Elevation. Because the floodway is characterized by rapidly moving and often treacherous water, development is severely restricted in a floodway. In New York State, all development within Special Flood Hazard Areas is subject to floodplain development regulations. Essentially, most or all development within a floodway is prohibited, and development in the flood fringe, which stores excess floodwater until it can infiltrate or discharge back into the channel, must be elevated above the Regional Flood Elevation.

FEMA designates and maps 100-year and 500-year floodplains. The National Flood Insurance Program is available to property owners in many floodplains. In Seneca County, several municipalities administer the insurance program.

A potential benefit under the National Flood Insurance Program allows local policyholders in communities that participate in a Community Rating System to receive lower premiums. CRS communities agree to implement effective floodplain management measures to reduce flood and erosion damage. No municipalities in Seneca County participate in the CRS.

**Both floodplains and watersheds provide significant environmental benefits:**

- **Flood control**
- **Protection of public health**
- **Filtration of runoff through vegetation**
- **Supply of water for various uses**
- **Provision of unique habitats for flora and fauna**

Beyond safeguarding property values, proper floodplain management provides other important benefits. Healthy and intact floodplains reduce and filter sediments into surface waters, store floodwaters during major storms, and providing habitat for fish and wildlife.

In Seneca County, floodplains contain important elements of the natural resource base, including woodlots, wetlands, and wildlife habitat. They, therefore, constitute prime locations for parks, recreation, and open space. Seneca County is committed to making every effort to discourage incompatible development of floodplains and to encourage compatible park, recreation, and open space uses.

## **Wetlands**

Wetlands are essentially transition zones between land and water. They generally occur in low-lying areas and near the bottom of slopes, particularly along lakeshores and stream banks, and on large land areas that are poorly drained. For many years, wetlands were considered wastelands that needed to be eliminated, and parts of many communities are built on drained and filled wetlands. Today, the multiple benefits of wetlands are recognized, including:

- Stabilization of lake levels and stream flows.
- Capture and storage of plant nutrients in runoff, thus reducing the rate of nutrient enrichment of surface waters and associated weed and algae growth.
- Contribution to atmospheric oxygen and water supplies.
- Reduction in stormwater runoff by providing storage areas for floodwater.
- Protection of shorelines from erosion.
- Reduction in stream sedimentation by capturing soil particles suspended in runoff.
- Provision of areas for groundwater recharge and discharge.

- Provision of habitat for a wide variety of plants and animals.
- Source of educational and recreational activities.

Seneca County is endowed with some of the most productive, attractive, and best-conserved wetlands in the world. The Montezuma Wetlands Complex, Junius Ponds, Seneca Meadows Wetlands, and Canoga Marsh are national models for conservation practices and wildlife management, offering opportunities for both passive observation of striking vistas of flora and fauna, especially migratory birds, and active sport hunting and fishing.

Wetlands are not conducive to economical residential, commercial, or industrial development. Generally, wetland soils are characterized by high compressibility and instability, low bearing capacity, high shrink-swell potential, and high erodability. This drives up the costs of development, particularly for roads, foundations, and public utilities. If the limitations of wetland soils are ignored, likely results may include flooding, wet basements, unstable foundations, failing pavement, and excessive infiltration of clear water into sanitary sewers.

Almost all wetlands in Seneca County are protected by state and federal law. Disturbances within a state-regulated wetland or its 100-foot buffer require a permit from the NYS Department of Environmental Conservation. Disturbances of more than one acre of federal wetlands require permitting through the US Army Corp of Engineers. Both the NYSDEC and the US Army Corp of Engineers require mitigation when natural wetland sites are destroyed.

Seneca County recognizes the important natural functions of wetlands and will continue efforts to protect these areas by discouraging costly—monetarily and environmentally—wetland draining, filling, and development.



## Hydrofracking

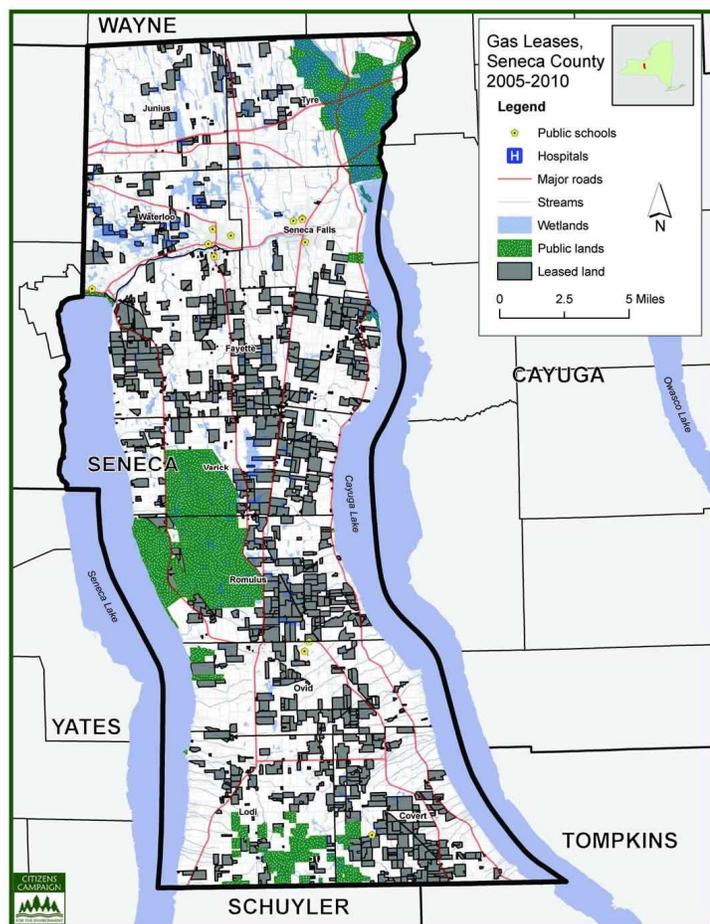
Weighing the risks of hydrofracking against the opportunities is not always simple. Most of the opportunities are economic, immediate, and accrue to individuals; many of the risks are environmental, longer-term, and cost-shared by the community.

The process of pumping water, sand, and chemicals two miles into the ground to release gas reserves from shale, threatens to contaminate surface waters and groundwater supplies—a risk that is fiercely disputed by energy companies. Chemicals must be transported and stored before and after drilling, and residential drinking wells are often close to drill pads.

A 2011 study by Duke University scientists of 19,000 homes in Pennsylvania near hydrofracking wells found that homes that used local groundwater for drinking lost 19.7% of their value up to 1.25 miles from a drill site. Homes with public water appreciated up to 11%. In 2012, Nationwide Insurance Company announced that it will no longer cover hydrofracking-related damage. Most other insurance carriers add numerous “exceptions” to homeowners’ policies strictly limiting hydrofracking damage claims.

The residential real estate markets and the home insurance industry appear to be betting that more damage may be done by as-yet unknown or unproven long-term problems associated with shale gas extraction.

According to the Citizens Campaign for the Environment, a nonprofit environmental advocacy group, many property owners in Seneca County have leased their properties for natural gas extraction.



Map 1. Gas Leases Seneca County, 2005-2010 >>>



# Natural Features

## Steep Slopes

The hills of Seneca County were formed when the area deglaciated approximately 20,000 years ago. Steep slopes fairly encircle Seneca and Cayuga Lakes, and ravines crisscross much of the County.

The New York State Department of Environmental Conservation's *Stormwater Design Manual* defines steep slopes as 15% or greater. The manual says that "development on slopes with a grade of 15% or more should be avoided, if possible," to minimize erosion, soil loss, degradation of surface water, and excessive storm water runoff. A recent analysis by the Finger Lakes Land Trust of private vacant lands in Seneca County along Seneca and Cayuga Lakes reveals that the majority contain slopes of 15% or greater.

Basically, steep slope development can magnify the erosion and water quality problems posed by general development. The removal of vegetation during construction exposes the soil, leading to increased surface runoff and erosion. If not properly contained, the erosion and runoff can increase sedimentation in streams and lakes and thus reduce water quality. The potential impact on water quality is especially critical for Seneca County given the significance of its surface waters.

Beyond erosion and water quality, there are many other important reasons to protect the integrity of steep slopes. Steep slopes can become public safety hazards and can cause property damage when slope failures occur near development. Moreover, removal of vegetation, especially trees, can destabilize slopes due to the eventual loss of root systems.

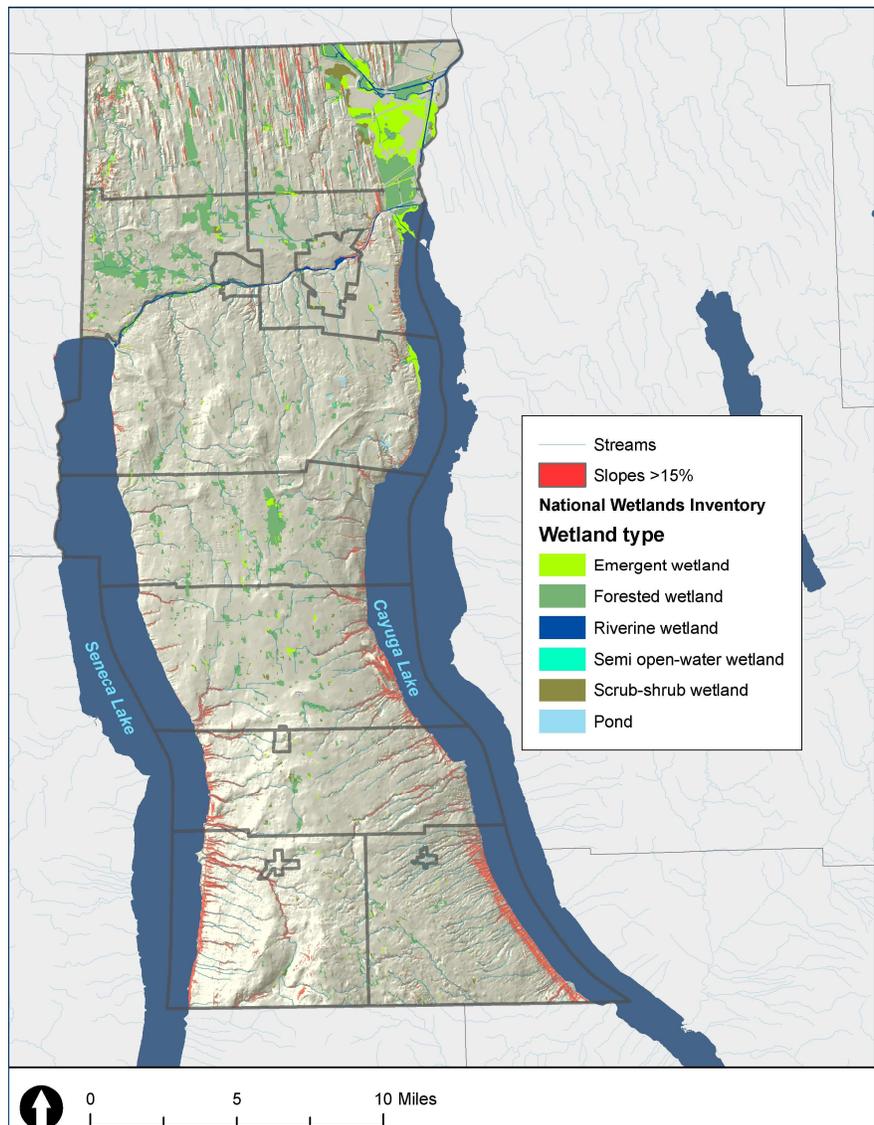
And septic systems and swimming pools located in steep slope areas can malfunction and potentially lead to slope failure.

In addition to safety concerns, steep slopes can be valued for aesthetic and economic qualities, which can influence property values. Steep slopes in Seneca County provide vantage points for scenic views and are themselves scenic resources. Ravines between the slopes provide safe habitats and travel corridors for wildlife and act as natural boundaries between property uses. They also provide specialized growing conditions for ferns and many other plants. The lakeside slopes, in particular, are cultivated for wine vineyards. The slopes and water help moderate winter temperatures providing an ideal microclimate for grape production, a mainstay of the County's agricultural and tourism industries.

For all of these reasons, Seneca County is committed to valuing and protecting steep slope areas.

Map 2. Steep Slopes, Streams, Wetlands >>>

Source: Karen Edelstein



## Forests and Woodlands

About 18% of Seneca County is forested. The largest managed forested areas include approximately 1,600 acres of swamp woods in the Montezuma Wildlife Refuge and 5,200 acres of the Finger Lakes National Forest. Most of the forested land in the County is scattered woodlots, interspersed with homes, farms, and other developments. The County’s woodlands contribute to clean air and water, regulate surface water runoff, maintain of a diversity of plant and animal life, offer scenic and recreational opportunities, and provide jobs in timber and grazing.

With good management, forests and woodlands can serve a multitude of beneficial functions virtually forever. Unfortunately, woodlands, which require a century or more to develop, can be destroyed through mismanagement in a comparatively short time. The destruction and degradation of woodlands, particularly on slopes, can contribute to stormwater runoff, the siltation of lakes and streams, and the destruction of wildlife habitat.

The Finger Lakes National Forest plays a vital role in deterring forest fragmentation and maintaining large blocks of forested land in Seneca County. Recreation and tourism profit from the Interloken Trail and No-Tan-Takto Trail, part of the Finger Lakes Trial System, within these public lands. The forest is open to public hunting, fishing, and camping, as well. The forest provides habitat for a large number of plants and animals, including a significant number of threatened and endangered species. It is one the state’s most important nesting and breeding areas for songbirds and raptors. The forest is also important to the County economy. Commercial timber harvesting and animal grazing are permitted.

The US Forest Service manages the lands in its care not just for economic benefits, like timber production, or social values, like recreation, but also for the ecological services they provide, including water and soil quality, wildlife habitat, and native biological diversity.

Private lands surrounding the forest have traditionally been devoted to compatible uses, especially agriculture and hunting. In recent years, however, residential development has been increasing. The US Forest Service projects that a third of the land surrounding the Finger Lakes National Forest will succumb to residential development by 2030. The forest ecosystem and the amenities that can be offered can be altered when new houses are built on private property near a forest.

Table 2. Finger Lakes National Forest-Area Residential Development, 2000-2030

<b>Finger Lakes National Forest, 2000-2030</b>			
<i>percentage of adjacent private land projected to experience housing density increase</i>			
<b>distance from forest boundary (miles)</b>			
<b>0 to 0.5</b>	<b>0.5 to 3</b>	<b>3 to 10</b>	<b>0 to 10</b>
28%	31%	25%	27%

Source: US Forest Service. *National Forests on the Edge*, 2007.

The most recent Land and Resource Management Plan for the Finger Lakes National Forest was adopted in 2006. The plan addresses land management, recreation facilities management, and proposed boundary expansion. The last issue has elicited controversy locally. Expansion of the forest has removed private land from local tax rolls, causing concern in some communities.

In order to protect and conserve private forests and woodlands, New York offers property tax savings through its Section 408-a program. Individuals, corporations, estates, or any other private entities that own 50 or more contiguous acres of woodlands may qualify. In order to receive a tax exemption, property owners must agree to manage the land for forest crop production, forest recreation, and/or watershed management for ten years. Owners must also prepare a land management plan for approval by the New York State Department of Environmental Conservation. The overall goals of the Section 408-a program are to encourage commercial forestry and thereby encourage good forest management practices and reduce incentive to sell forest lands for other purposes.

Seneca County is committed to supporting the maintenance of its forests and woodlands for their total values: scenery, wildlife habitat, open space, education, recreation, air and water quality protection, and job creation.

## **Carbon Sink**

According to data produced for the Finger Lakes Regional Sustainability Plan, Seneca County emits about 552,000 metric tons of greenhouse gases each year, but stores 7.7 million metric tons in its forests, waterways, and agricultural lands. Seneca County is what's known as a "carbon sink"; that is, it absorbs more carbon gases than it releases each year.

To mitigate climate change and reduce greenhouse gas emissions, there are many proposals to create national and international carbon trade markets. When such a market or markets are formed and policies are available, the carbon credits generated by Seneca County's forests and woodlands, lakes, and farms may be able to be traded by communities or individual landowners in the carbon market. The County and its residents could thus benefit financially from its forest and water ecosystem and sound environmental management.



***Seneca County's woodlands, waterways, and farmlands remove and store large quantities of carbon from the atmosphere.***

Seneca County will remain alert to the potential of carbon credits.

## Recreational Facilities

The abundance of public parks and trails in Seneca County attracts hundreds of thousands of visitors each year. Combined with wineries, historic sites, lakes, and other natural resources, the County’s recreational facilities form the heart of a tourist industry that employs close to 900 workers and encourages visitors to spend \$50 million in the County each year.

New York State maintains five state parks and one golf course in the County. For many residents and visitors, the parks provide the main point of access to the water.

Table 3. State Parklands

State Parks in Seneca County		
Name	Size (acres)	Public Water Access/Amenities
Cayuga Lake	188	Beach; marina; boat launch; camping
Lodi Point	10.8	Boat launch; marina
Sampson	1552	Beach; marina; boat launch; camping; maritime museum
Seneca Falls Urban Cultural		Marina; pedestrian promenade
Seneca Lake	141	Beach; boat launch; camping; spray ground

New York State also owns and operates several wildlife management areas in Seneca County at Cayuga Lake/Canoga Marsh, Willard, and Montezuma. They are open to the public for fishing, hunting, hiking, and observing wildlife. In addition, the state owns and operates the Junius Ponds Unique Natural Area. The New York State Natural Heritage Program considers this site unique for its rare plant and animal species, including one of the top three examples of rich graminoid fern in the state.

Other unique assets available to the public in Seneca County include the world’s largest herd of white-tailed deer at the Seneca Army Depot, which attracts tourists and scientists from all over the world. The former army depot is also considered an Important Bird Area by the National Audubon Society. The Montezuma National Wildlife Refuge and Finger Lakes National Forest are prime, nationally-significant, bird habitats and attract numerous bird watchers. Because of its lakes, agricultural land, and large open spaces, Seneca County has become a magnet for migrating and nesting birds, and a center of grassland bird conservation efforts in New York State.

The Seneca Meadows Recreation and Education Center, created by the operators of the Seneca Meadows Landfill as mitigation for filling wetlands, provides public environmental education and recreation on a 600-acre site.

Multi-use trails are found in the state parks and wildlife management areas, Montezuma National Wildlife Refuge, Seneca Meadows Complex, and Finger Lakes National Forest. Efforts are underway to link many of these trails into a Countywide network that would be connected to other trails in the Finger Lakes Region. For example, the County continues development of the Cay-Sen Trail along the Cayuga-Seneca Canal, which is envisioned to cross the width of the County and connect to the Erie Canalway Trail. The County is also planning, in coordination with Cayuga and Tompkins Counties, a trail that will encircle Cayuga Lake. Seneca County is committed to soliciting grant funds for the implementation, expansion, and maintenance of trails to serve multiple users.

## Visual Resources

The Cayuga Scenic Byway and the proposed Route 414/Seneca Lake Scenic Byway are the only officially designated or nominated scenic roads in Seneca County, but they by no means exhaust the County's visual assets.

Seneca County's visual and aesthetic resources are matchless. The rolling hills, vineyards, agricultural and pastoral landscapes, two finger lakes, historic structures, and traditional settlement patterns provide views and vistas which are all but impossible to replicate.

At public meetings for the comprehensive plan, residents frequently expressed their desire for economic development, but not at the expense of the County's visual and aesthetic resources.



***Vulnerable areas often provide not only beautiful vistas but also some of the last refuges for rare plants and animals. More than 90% of the plants and 75% of the animals on New York's list of endangered and threatened species are protected on state management areas.***

## Vulnerable Natural Lands

Together, surface waters, groundwater, floodplains, wetlands, steep slopes, forests, woodlands, parks, recreational facilities, and visual resources represent environmentally sensitive areas that deserve special consideration in local planning. Individually, all of these resources are important spaces for natural resource activity. They become even more functional when they can be linked together as environmental corridors. Wildlife, plants, and water all depend on the ability to move freely within the environment from space to space. Seneca County is committed to promoting and maintaining contiguous environmental corridors in order to maintain the quality and quantity of the natural ecosystem.

Site protection and corridor enhancement can be accomplished by several means, including land acquisition from willing sellers, donations, conservation easements, conservation subdivisions, and cooperative agreements.



## Cultural Resources

Historic markers identify and honor the important people, places, and events that have contributed to Seneca County's history and heritage. There are 41 historical markers registered with the New York State Education Department in Seneca County. The state registry is not a comprehensive list of all the historic assets in the County. Due to budget cutbacks, the state maintains the marker database, but cannot fund the installation of new markers. In any event, designation of a property with a historical marker conveys no special status, rights, or benefits to the owners, many of which are private individuals who keep their properties closed to the public.

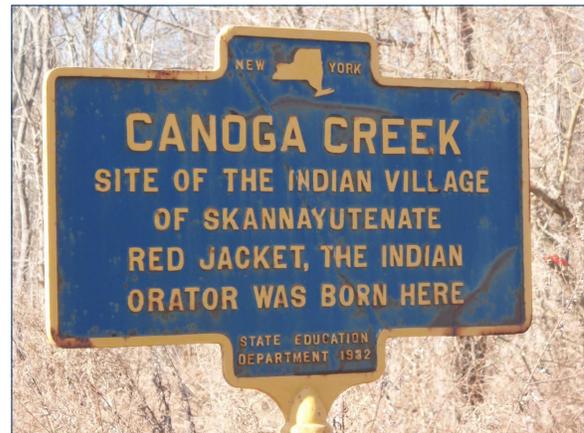
The New York State Office of Parks, Recreation, and Historic Preservation notes many Archaeological Sensitive Areas in Seneca County. These include archeological sites, unmarked cemeteries, marked cemeteries, and cultural sites throughout the County. Similar to the registry of historic sites, the collection of archaeological sensitive areas is not a comprehensive or complete list; it only includes sites reported to the state, and some listed sites may be altered or no longer exist. By some estimates, less than 1% of the archaeological sites in the state have been identified.

Some resources are deemed so significant that they are listed as part of the National Register of Historic Places. The National Register is the official national list of historic properties in America worthy of preservation, maintained by the National Park Service, and includes the Women's Rights National Park in Seneca Falls. Other sites of national interest in Seneca County, include the Peter Whitmer Farm, birthplace of the founder of the Mormon Church

and a sacred landmark of the Church of Latter Day Saints, and the National Women’s Hall of Fame in the Seneca Falls Historic District.

A community with a historic preservation ordinance may apply for Certified Local Government status with the NYSORHP. The establishment of a historical preservation ordinance is one of the most proactive methods a community can take to preserve cultural resources and maintain its character. Once a community is certified, it becomes eligible for technical assistance and dedicated preservation grants from the state. There are currently about 75 Certified Local Governments in New York State, including the Village of Seneca Falls.

Cultural resources—and programs and special events associated with them—are very effective methods of bringing people of a community together. Not only do these special resources, programs, and events build community spirit—what has become known as social capital—but they are proven to give communities of all sizes a creative edge to face new and difficult challenges. Arts and cultural experiences can also be important to the local economy. They can act as magnets to draw people into communities and regions and to extend visitor stays.



Unfortunately, there are many threats to the County’s cultural resources. The quality and integrity of many historic sites, as well as traditionally-designed streets and neighborhoods, are vulnerable. Development pressures, private ownership, rehabilitation and maintenance costs, and the effects of time often make it difficult to preserve these important cultural resources. Moreover, New York State has concentrated on high yield tourism strategies based around natural resources in Seneca County, yet these are the most fragile and least renewable resources. It has largely been up to local communities and the federal government to preserve and exploit cultural resources.



Cultural resources can be protected through preservation ordinances and tax credits, as well as attention to high-quality building and site design.

Seneca County is committed to planning with municipalities to minimize negative effects on important cultural resources in order to preserve community character and support the economy.

# Renewable Energy Facilities

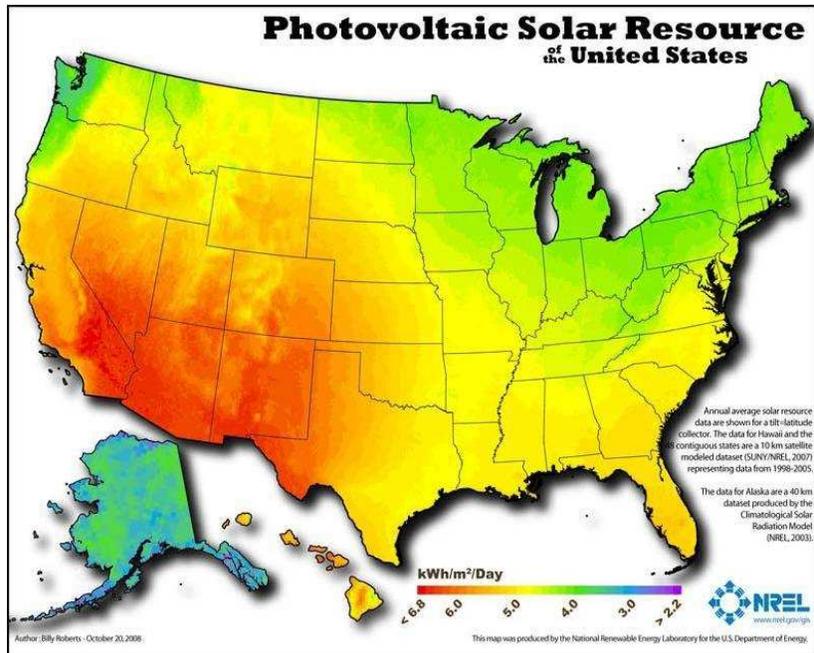
To manage rising energy costs, promote local economic development, and protect the natural environment, many local governments and property owners in New York State are looking at renewable energy resources to meet community energy demands. The following section provides a broad-level discussion of some of the local and renewable energy resources available for Seneca County residents, businesses, and communities. Additional information can be obtained from the New York State Energy Research and Development Agency.

The focus on renewable energy practices and systems will continue and is likely to increase over time. Seneca County is committed to supporting renewable and sustainable energy sources.

## Solar

Two types of solar energy systems are well-suited to Seneca County communities: solar electric photovoltaic and solar hot water systems. The map shows the solar PV potential across the United States. How much energy a PV or solar hot water system produces depends on the size and orientation of the collecting surface and site characteristics, such as overshadowing. As a general rule of thumb, PV systems require a minimum solar radiation of 3.5 kWh/m<sup>2</sup>/day to be economically viable.

Map 3. Solar PV Potential in the US



A public solar energy system is in use in Seneca County at the County Law Enforcement Center.

## Geothermal

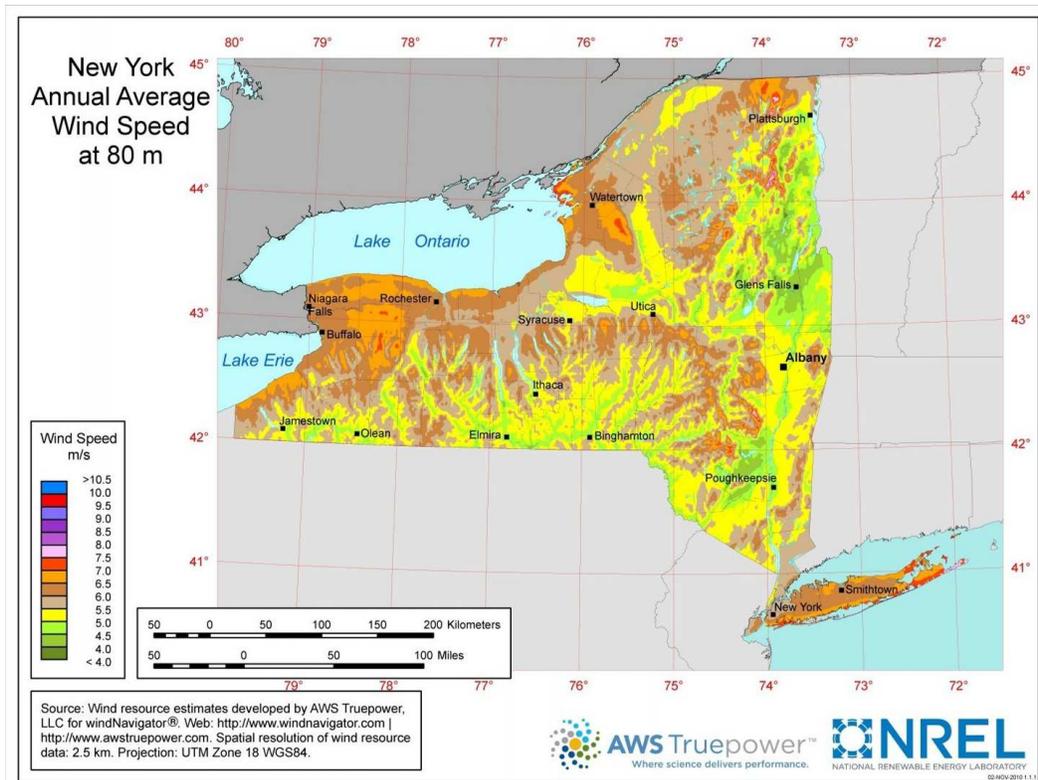
Geothermal power uses the natural sources of heat inside the earth to produce heat or electricity. In essence, a geothermal heat pump transfers heat stored in the ground to a building during the winter, and then transfers it out of the building and back into the ground during the summer. Most geothermal power is generated using steam or hot water from underground. There are no commercial or public geothermal systems in use in Seneca County.

## Wind

Wind energy production is optimized when wind turbines are located at the place with the highest, steadiest wind speeds (the energy produced is related to the cube of the wind speed). As the figure on this page illustrates, most of Seneca County is not particularly well-suited for commercial-scale wind systems, which are typically installed between 80 and 100 meters high, and require average annual wind speeds around 6.5 meters per second at that height.

However, this is a generalized assumption, and there may be opportunities for small and commercial scale wind systems in the County. NYSERDA provides free online tools and reports to help evaluate the feasibility of generating wind power on a particular site. Currently, there are no commercial or public wind energy systems in use in Seneca County. Nevertheless, the County monitors draft ordinances to regulate such use should a wind farm be proposed.

Map 4.  
NYS Average  
Wind Speeds  
>>



## Biofuels

Biofuels offer an alternative energy source provided by fuels that can be grown or produced locally through agricultural or waste resources. Biofuels are derived from biomass and can be used for liquid biofuel or biogas production. Crops and crop residues are the main sources of biomass for the production of liquid biofuels.

The primary food crops used for biofuel production in Upstate New York are corn for ethanol production and soybeans for biodiesel production. Several farmers in Seneca County grow crops for ethanol. Corn stalks, hay, wood pulp, and even grape seeds are also used for biofuels.

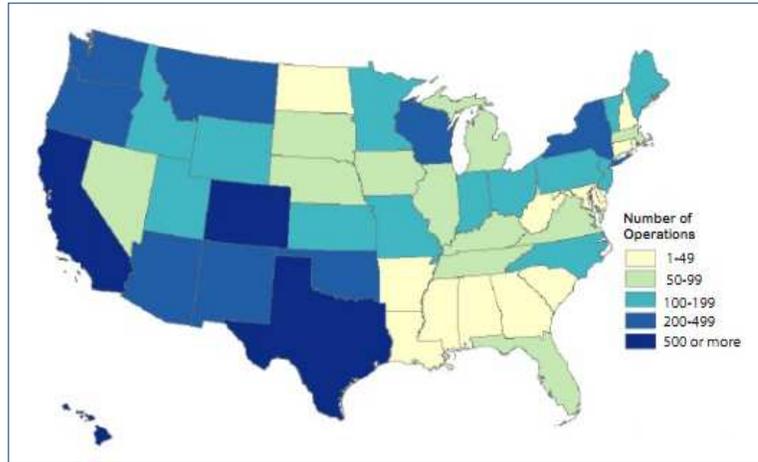
The main sources of biomass for biogas (methane) production are animal wastes and landfills.

Animal wastes are continuous and unavoidable on farms.

Interest in the use of digesters to produce methane from animal waste is growing in Seneca County, both as a supplementary energy source and as a way of managing waste.

The Seneca Meadows landfill converts gas to energy directly for heat and by generating electricity for public consumption. One private company in the Seneca Army Depot is dedicated to biofuel production.

Map 5. US Farms Producing Renewable Energy



***Renewable energy generation is becoming an important part of farm management.***

Source: USDA Census of Agriculture, 2009

## Hydropower

Water was the first natural resource used to generate electricity, and hydropower remains the primary form of renewable energy. Commercial hydroelectricity is no longer produced at Seneca Falls or elsewhere in Seneca County. The potential energy from a water source is determined by the distance the water travels vertically and the quantity of water flowing past a given point. More water falling or flowing faster produces more energy.

In Seneca County, relative calm waters and competing uses for those waterways, such as recreation, tourism, and industry preclude most commercial hydroelectric generation. However, a micro-hydro system can produce enough electricity for a home or farm and may be feasible on many streams and waterfalls in the County.



# Solid Waste Planning

## Landfills

In 1988, the US Environmental Protection Agency issued new federal standards for landfills to better protect humans and the environment from contaminated groundwater, soils, and air, and from diseases spread by scavengers. Compliance with the new regulations was expensive, and, as a result, over 10,000 small landfills closed and were replaced by about 3,000 “megafills”. It was at this time that Seneca Meadows Landfill began to expand. Seneca Meadows Landfill operations now cover about 400 acres, store and process over 6,000 tons of waste each day from several US states and Canada, and employ over 150 workers. The landfill is permitted to operate until 2023 and has plans to expand.

The new, larger landfills are safer than the pre-1988 facilities, yet bring their own set of concerns. These include a negative public perception of imported garbage and environmental justice issues since most megafills are located in rural and economically-poor counties, as well as concerns about truck traffic and air, water, visual, and noise pollution. Existing EPA regulations have been in place for 25 years, not enough time in the opinion of some observers to definitively judge their effectiveness in preventing landfill failures and in protecting human and environmental health.

Megafills can be a major financial boon to the counties that host them. Seneca County receives over \$2 million each year as a result of landfill operations, which helps pay for County services.

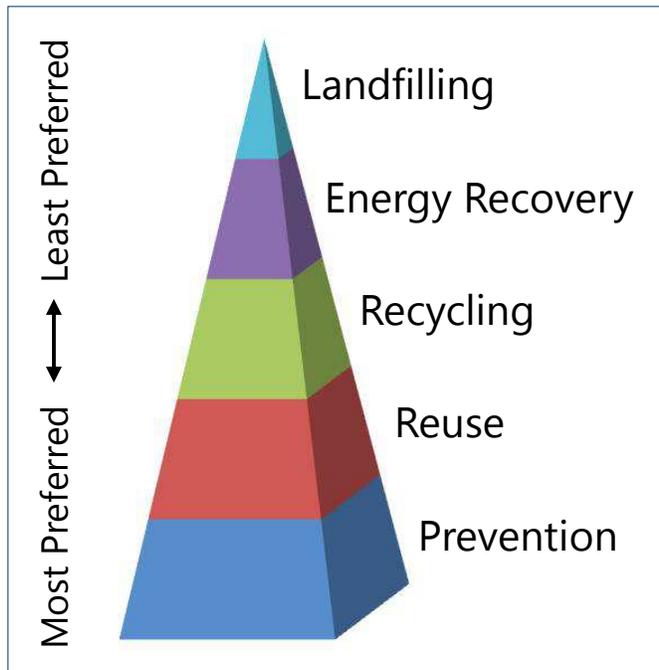
## Waste to Sustainability

The Finger Lakes Regional Sustainability Plan notes an opportunity to “shift perceptions from ‘waste management’ to ‘sustainable materials management’.” The idea is that nature doesn’t recognize waste, only various resources to be used as effectively and efficiently as possible. It’s also the idea that nature is a circular system, in which wastes serve as the raw materials for the next generation of products.

Around the world, there is a shift to what is called the “zero waste” model, where everything is recycled and reused, and nothing is landfilled. Super Materials Recycling Facilities are opening as alternatives to landfills with business models predicated on reusing close to 100% of waste. Waste material is weighed and sorted, separated into its various constituent parts, inspected for consistency, re-sorted, and reprocessed, or baled for specialist reprocessing and re-manufacture or energy recovery. The goal is to transform everything into something of value, and not landfill anything unnecessarily.

For example, waste paper is recovered and recycled back into paper or paper-based products, plastics are reprocessed into pellets or substitute timber, and all recovered metals are likewise extracted and reprocessed. What can't be reduced, reused, or recycled at the Super Materials Recycling Facility is sent to partner businesses for special processing. Converting energy to waste is considered only after all other strategies have been considered. Landfilling waste is the last and least-desirable option. The European Union, for example, utilizes a waste management hierarchy as a decision-making tool to achieve zero waste.

Table 4. Solid Waste Management Hierarchy



Source: Adapted from European Union Solid Waste Management Hierarchy

In addition, former landfills around the world have been converted to a variety of public uses, including nature reserves, sports complexes, golf courses, ski slopes, and sculpture gardens.

### Local Solid Waste Management

Residential and commercial trash collection and recycling are the core of solid waste management in Seneca County. The idea is to divert products from the waste stream and recycle more, and this can be influenced by public policies. The table on the following page summarizes some of the best solid waste management practices from counties and other local governments around the country. These best practices are intended to contribute to higher waste diversion/recycling levels in communities and thus reduce the amount of household and municipal waste going to landfills.

Table 5. Local Government Solid Waste Management Best Practices

<b>Local Government Solid Waste Management Best Practices</b>
<p><b>Residential</b></p> <ul style="list-style-type: none"> <li>● Mandatory recycling participation and/or mandatory provision of recycling service.</li> <li>● Variable rate system where garbage charges are based on the size of subscribed container and recycling and composting collection are free (i.e., the less garbage you produce, the less you pay - also called Pay-As-You-Throw or PAYT).</li> <li>● Food waste collection program (usually combined with yard waste).</li> <li>● Ban on disposal of recyclable and compostable items in the garbage container (garbage is not picked up if recyclable or compostable items are in trash or a fine is levied).</li> </ul>
<p><b>Multi-family</b></p> <ul style="list-style-type: none"> <li>● Recycling service required with garbage either free with garbage service or at an extra charge.</li> <li>● Mandatory recycling requirement.</li> <li>● Some communities have food waste collection for multi-family.</li> </ul>
<p><b>Commercial</b></p> <ul style="list-style-type: none"> <li>● Mandatory recycling.</li> <li>● Mandatory food waste (some absolute; others if food waste generating business).</li> <li>● Free collection.</li> <li>● Styrofoam ban for restaurants.</li> <li>● Food-service containers must be recyclable or compostable (local govt. approves containers).</li> <li>● Recycling plan.</li> </ul>
<p><b>Construction/Demolition</b></p> <ul style="list-style-type: none"> <li>● Mandatory recycling percentage.</li> <li>● Economic incentive – fee required with permit, fee returned if recycling quota met (50-65%).</li> <li>● Disposal bans.</li> <li>● Materials must be taken to a certified facility with mandated recycling percentage requirements.</li> <li>● Waste management plans submitted with construction and/or demolition permit application (this is used in conjunction with mandatory or deposit fee), and final reporting after project completion.</li> </ul>
<p><b>Waste Reduction (Reduce, Reuse)</b></p> <ul style="list-style-type: none"> <li>● Green purchasing (buy recycled, lower toxicity).</li> <li>● Product reuse centers/exchanges.</li> <li>● PAYT.</li> <li>● Educational partnerships.</li> <li>● Opt-out of yellow pages and junk mail.</li> <li>● Extended producer responsibility.</li> </ul>
<p><b>Event Recycling</b></p> <ul style="list-style-type: none"> <li>● Recycling requirement.</li> <li>● Styrofoam ban.</li> <li>● Municipality or local waste hauler provides containers or collection services.</li> <li>● Recyclable or compostable food/beverage packaging requirement.</li> </ul>

Source: Adapted from *Best Practices for Local Government Solid Waste Recycling, Diversion from Landfill and Waste Reduction* (Mecklenberg County Land Use and Environmental Services Agency: 2011).

# Environmental Conservation

## Goals and Strategies

The preceding overview of the many distinct—but highly integrated—elements that comprise Seneca County’s natural and cultural environment offers several considerations for moving forward:

- In many important ways, Seneca County embodies what it means to be sustainable. While there are clear challenges and vulnerabilities, communities in the County exist without overly degrading the natural environment; the economy has proven more resilient than in most rural Upstate counties; and the County is culturally diverse. Generally, Seneca County is a very green county between two very blue lakes.
- Seneca County has not leveraged the power of sustainability to its advantage. By consciously incorporating sustainability into its decision-making processes, the County could better tap into the growing pool of financial and other resources available for sustainable development.
- Many of the natural, scenic, and cultural resources that County residents value are privately owned. The application of public policies, regulations, and investment is thus justified to protect that public interest in private places.
- Everyone must be able to participate in conserving and sustaining the environment, since people’s everyday decisions, over time, often do the most harm to the environment.
- One doesn’t have to be an expert to protect the environment. Everyone in the County should have the opportunity to contribute his or her knowledge of the value of places and to participate in decisions about their future.
- Change in the natural and cultural environment is inevitable, caused by natural processes; normal wear and tear; people’s decisions regarding jobs, housing, and leisure; and technological change.
- Environmental conservation means managing change in ways that best sustain community values.
- Decisions about change must be reasonable, transparent, and consistent; for this to happen, decisions must be guided by public policy.

The following goals and strategies were developed with these considerations in mind.

**Goal 1. Protect and enhance the integrity and economic viability of Seneca County's natural resources for current and future residents.**

**Strategy 1A.** Create and maintain an inventory of significant natural resources and vulnerable lands, including, but not limited to, farmland, groundwater, surface waters, wetlands, woodlands, steep slopes, scenic resources, open space networks, grassland habitats, and wildlife corridors.

**Strategy 1B.** Work with local land conservancies, property owners, and other stakeholders to establish requirements for the sustainability of vulnerable lands and to prioritize and protect those of highest value.

**Strategy 1C.** Periodically assess the change in significant natural resources and vulnerable lands.

**Strategy 1D.** Establish a program of significant vulnerable land acquisition by public and private land conservation organizations for the purpose of restoration and protection from inappropriate development.

**Strategy 1E.** Collaborate with towns and villages to suggest and agree upon appropriate incentives to preserve agricultural lands, open space networks, ecological corridors, cultural and historic assets, and other natural resources, such as purchase of development rights, transfer of development rights, conservation easements, cluster development regulations, and other best practices.

**Strategy 1F.** Educate communities on the full potential of SEQR to protect community resources, including use of the guiding principles in the Seneca County Economic Development Plan.

**Strategy 1G.** Encourage landowner participation in the NYS Real Property Tax Law 480-a Program to encourage stewardship of private woodlands.

**Strategy 1H.** Ensure that resource extraction and production activities are at world best practice level.

**Strategy 1I.** Educate the public about the environmental, economic, cultural, and historic value of natural systems for sustainability.

**Strategy 1J.** Educate policymakers about true fiscal costs of development, including operations and maintenance.

**Goal 2. Ensure the long-term preservation of surface and groundwater resources in Seneca County.**

**Strategy 2A.** Continue to support the development, update, and implementation of watershed management plans, including identifying and evaluating the interrelated components of the local watersheds, and protecting and/or restoring the natural function of the components of the local watersheds.

**Strategy 2B.** Establish riparian buffers on both sides of major streams.

**Strategy 2C.** Support programs that prevent the spread of exotic species, restore natural areas to their native state, and reduce non-point and point source pollution into local waterways.

**Strategy 2D.** Encourage compliance with best practice agricultural performance standards for surface and groundwater protection.

**Strategy 2E.** Establish and enforce performance and maintenance standards for on-site disposal systems.

**Strategy 2F.** Develop model land use regulations, and encourage their adoption by local governments, to control erosion, including:

- Requiring soils suitable to the permitted property use.
- Defining standards for tree buffering, preservation, and coverage in new developments.
- Establishing a process for regular on-site inspections of erosion, sediment, and other pollution control practices during development.
- Establishing limits for grading to minimize the impact of development footprints, maintain existing topsoil onsite, and protect existing vegetation and habitat.
- Avoiding, where feasible, development on slopes greater than 15%.
- Encouraging shared driveways for adjoining properties, as appropriate.

**Strategy 2G.** Discourage development in areas with documented threatened and endangered species, and in wetlands, floodplains, and streams in order to protect the benefits and functions they provide.

**Strategy 2H.** Limit development on roads prone to flooding.

**Strategy 2I.** Work with municipalities to regularly maintain roadside ditches and drainage swales.

**Strategy 2J.** Encourage waterfront communities to develop a joint Local Waterfront Revitalization Program to identify and support appropriate water-dependent and water-enhanced uses, as well as public access, on the County's waterfronts.

**Goal 3. Promote sustainable waste management.**

**Strategy 3A.** Create a county government program of green procurement, increased recycling, and reduced energy and resource use.

**Strategy 3B.** Encourage all local governments to reduce resource use and undertake energy audits.

**Strategy 3C.** Educate the public and municipal officials on the benefits of alternative energy generation and address the potential negative impacts.

**Strategy 3D.** Develop and promote the adoption of local policies that accommodate domestic and community alternative and renewable energy generation and use.

**Strategy 3E.** Develop and promote the adoption of codes and policies that promote energy conservation and efficiency.

**Strategy 3F.** Hold an annual Sustainable Living Festival, and encourage residents and communities to fully participate in achieving a sustainable future.

**Strategy 3G.** Examine how the landfill levy can better reflect the environmental and social costs of waste disposal.

**Strategy 3H.** Work with the landfill owner/operator, New York State, regional organizations, and regional universities to create research and economic development opportunities focused on a zero-waste model.

**Strategy 3I.** Encourage the deployment of pilot projects in the County to validate technology and eventual commercialization of resource- and energy-efficient technologies, including net zero waste.

**Seneca County  
Nothing Wasted**

**Goal 4. Continue to identify and promote the preservation of cultural, historic, and scenic resources that celebrate Seneca County's heritage.**

**Strategy 4A.** Improve knowledge of the County's heritage to promote a wider appreciation of the value of cultural heritage, including knowledge of the economic benefits of heritage and landscape conservation.

**Strategy 4B.** Work with tourism, business, and community groups to prepare a heritage tourism strategy.

**Strategy 4C.** Continue to promote local festivals, fairs, farm tours, history tours, winery tours, foodie tours, and so on that celebrate the County's heritage.

**Strategy 4D.** Promote high quality site and building designs throughout the County to uphold property values and reinforce community character.

**Strategy 4E.** Encourage the practice of developing a design that fits the site rather than manipulating a site to fit the design in order to minimize the amount of land disturbance.

**Strategy 4F.** Encourage development that adheres to the principles of smart growth and green building.

**Strategy 4G.** In conjunction with local communities, maintain site and building design guidelines based on sound planning principles for all new development, in order to reinforce the rural and village character of the County.

**Strategy 4H.** Enhance the existing character of village and rural areas of the County by protecting existing investment and lifestyle choices.

**Strategy 4I.** Support programs, such as home-care, respite care and assistance with home modifications that facilitate aging in place.

**Strategy 4J.** Encourage innovative concepts in housing designs and architecture, especially universal design, which requires structures to be designed and built to be accessible to all members of the community, ultimately reducing costs for modifications as the population ages.

**Strategy 4K.** Work with nonprofit housing organizations to provide programs, such as home repair assistance, tool libraries, housing education, and weatherization and energy-efficiency programs, to enable lower income homeowners to stay in their homes and maintain them in good condition.

**Strategy 4L.** Strive to preserve the rural and village character and minimize the visual impact of large scale development. Maximize the amount of natural vegetation preserved on each site.

**Strategy 4M.** Protect and improve scenic routes and other viewsheds along transportation corridors.

**Strategy 4N.** Improve the visibility and amenities of existing multi-use trails.

**Strategy 4O.** Enhance and expand the bicycle and pedestrian infrastructure to close gaps and create connections between destinations, mindful of the rights of private property owners.

**Strategy 4P.** Develop a system of Blueways, or water trails, to link shoreline sites and commercial venues.



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